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MORRIS FISHBEIN, M D

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DEPARTMENT, JANUARY-JUNE 1935

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| *American Journal of Diseases of Children A. M. A. Chicago | Frankfurter Zeitschrift für Pathologie Munich |
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| American Journal of the Medical Sciences Philadelphia | Guy's Hospital Reports London |
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| American Journal of Public Health New York | International Journal of Psychoanalysis London |
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SUBJECT INDEX

This is an index to all the reading matter in THE JOURNAL. In the Current Medical Literature Department only the articles which have been abstracted are indexed.

The letters used to explain in which department the matter indexed appears are as follows: "BI" Bureau of Investigation, "E," Editorial, "C," Correspondence, "ML," Medical Economics, "ab," abstract, the star (*) indicates an original article in THE JOURNAL.

This is a subject index and one should, therefore, look for the subject word, with the following exceptions: "Book Notices," "Deaths," "Medical Abstracts" and "Societies" are indexed under these titles at the end of the letters "B," "D," "M," and "S." State board examinations are entered under the general heading State Board Reports, and not under the names of the individual states. Matter pertaining to the Association is indexed under "American Medical Association." The name of the author, in brackets follows the subject entry.

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Coll—College
Conf—Conference
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Conv—Convention
Dist—District
Hosp—Hospital
Internat—
International
M—Medical
Med—Medicine
Nat—National
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WHAT SHOULD A PATIENT WITH ARTHRITIS EAT?

WALTER BAUER, MD
BOSTON

A time-honored question with physicians as well as with laymen is What should a patient with arthritis eat? If the type of diet prescribed for patients with arthritis is any criterion in answering this question, one is forced to conclude one of two things (1) that the diet indicated varies considerably from patient to patient or (2) that there exists no unanimity of opinion concerning the correct dietary for an arthritic patient.

CLASSIFICATION AND DIAGNOSIS OF JOINT DISEASES

Any discussion of the dietary in arthritis cannot be adequately presented without stressing the fact that an accurate diagnosis is the first requisite. In other words the physician's first duty, when confronted with a patient complaining of symptoms referable to the skeletal system is to determine whether or not the patient has arthritis, and if so, what type.

Therefore, some simple, workable classification of joint disease should be followed by all. The one that I employ is a slight modification of that proposed by Allison and Ghormley,¹ which is based on the pathologic changes and the etiologic agent.

CLASSIFICATION OF JOINT DISEASE

I Origin known

1 Traumatic

Synovitis
Loose bodies and cartilages
Sprains, etc.

2 Bacterial agent

Tubercle bacillus
Gonococcus
Staphylococcus
Streptococcus
Pneumococcus
Meningococcus
Typhoid bacillus
Dysentery organisms
Amebic
Bacillary
Spirochete of syphilis
Acquired
Congenital (tenosynovitis syphilitica)
Influenza bacillus
Brucella organisms

3 Neuro arthropathies (Charcot's joints)

Tabes dorsalis
Syringomyelia
Leprosy, etc.

4 Metabolic (?)

Gout

5 Constitutional

Hemophilia
Hysteria

6 Anaphylactic

Serum sickness

II Origin unknown or uncertain

1 Degenerative arthritis Synonyms Hypertrophic arthritis, osteo-arthritis type II arthritis

2 Proliferative arthritis Synonyms Rheumatoid arthritis, atrophic arthritis, type I arthritis, and chronic infectious arthritis

3 Rheumatic fever

With such a classification in mind, one should be able to differentiate and properly diagnose the various arthritides. However, it must be realized that there are other diseases in which the patient complains of symptoms referable to the skeletal system. There are many such diseases, the more common ones being undulant fever, chronic meningococcus septicemia, osteoarthropathy, low-grade osteomyelitis with multiple foci, hyperparathyroidism, myxedema, acromegaly, functional disease, and the like.

Thus, it must be apparent that no specific therapy can be prescribed for the patient with skeletal symptoms until he has been thoroughly studied and the proper diagnosis made.

DIETARY IN ARTHRITIS OF KNOWN ORIGIN

If a patient does have arthritis, what considerations should be given to his dietary? In the case of a patient with arthritis of known origin, is there any specific diet indicated? In the group of arthritides of known origin, the diet indicated is that which would ordinarily be prescribed whenever dealing with the particular disease or etiologic agent responsible for the arthritis. The one exception in this group is the patient with gout when the diet indicated is one of low purine content. It is noteworthy that, with the exception of gout, there is no specific diet for arthritis of known etiology.

DIETARY IN ARTHRITIS OF UNKNOWN OR UNCERTAIN ORIGIN

The arthritides of unknown origin represent the types of arthritis that have given rise to so much controversy concerning the diet in arthritis. Undoubtedly the chief reason for such controversy lies in the fact that these types of arthritis represent the group of unknown etiology and therefore have been subjected to certain

From the Medical Clinic of the Massachusetts General Hospital.
Publication 14 of the Robert W. Lovett Memorial for the study of crippling disease, Harvard Medical School.
Read before the Section on Miscellaneous Topics Session on Nutrition at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.
¹ Allison, N. A., and Ghormley, R. K. *Diagnosis in Joint Disease*. New York: William Wood & Co. 1931.

dietary regimens and speculations Without doubt such dietary regimens and speculations have been employed in order to evaluate their therapeutic effect as well as to determine whether or not diet is an important etiologic factor in arthritis of unknown origin

The dietary treatment of these two types of arthritis will be considered separately, because I look on them as being distinctly different disease processes, in no way causally related

DEGENERATIVE OR HYPERTROPHIC ARTHRITIS

Degenerative or hypertrophic arthritis is the type of arthritis known as senile arthritis, or the "chronic rheumatism" of the elderly The association of age and chronic traumatism in the production of this type of joint disease has long been known² The name degenerative arthritis^{2c} adequately describes the cartilage changes that are always observed in this type of joint disease Probably all other changes in the joints are secondary to these primary cartilage changes The first alteration noted is pronounced striation of the articular cartilage matrix, then fibrillation of the cartilage and the appearance of "crevasses" At this stage, microscopic examination reveals that the articular cartilage surface has a frayed appearance The ends of these fibrils may become detached, are finally worn down or disappear entirely Pronounced osteoid tissue formation may be seen, which later becomes calcified to form the marginal osteophytes The changes in the synovial membrane are not characteristic They are usually absent or at best minimal and never show any evidence of inflammation The change in the bone is chiefly a thickening of the subchondral plate Heberden's nodes exhibit all these changes At the onset Heberden's nodes may appear as red, swollen, at times fluctuant, tender terminal phalangeal joints, which ultimately appear as hard, ugly, disfiguring nodes which usually interfere very little with joint function

My associates and I³ are of the opinion that degenerative arthritis is the result of the "wear and tear" of increasing age and repeated trauma and not the result of an inflammatory process, metabolic disturbances or endocrine dysfunction, as some workers have contended⁴ We further believe that it is in no way related to proliferative (rheumatoid) arthritis We are of this belief for the following reasons

1 If the patellas of animals are permanently displaced by an operative procedure without entering the joint, intra-articular changes of a type similar to the changes observed in degenerative or hypertrophic arthritis are encountered²

2 If one examines human joints subjected to unusual use or repeated trauma, extensive changes indistinguishable from degenerative arthritis are found, whereas the

control joint (the opposite joint) shows no changes or only minimal changes²

3 If roentgenographic, macroscopic and microscopic examinations of human knee joints representing various ages from the first to the ninth decades are made, one notes that, with each succeeding decade of life beyond the second, the knee joint shows increasing pathologic changes, degenerative in nature and confined for the most part to the articular surface (These joints, at least six for each decade, were obtained at necropsy from individuals who, so far as we could determine, had never had symptoms of joint disease) In such a study one learns that the earliest as well as the most advanced lesions observed are identical in kind to those commonly spoken of as the characteristic lesions of degenerative or hypertrophic arthritis Arteriosclerosis is not an important etiologic agent in producing such lesions, because either minimal or marked changes may be found in patients with marked peripheral arteriosclerosis²

If hypertrophic arthritis is nothing more than degenerative joint changes due to the "wear and tear" of increasing age and repeated trauma, then what possible role can diet play in its treatment? If the symptoms complained of are confined to the weight-bearing joints and the patient is overweight, a reduction diet is indicated In prescribing such a diet, it is essential to maintain an adequate protein and vitamin intake Such a reduction diet should be at the expense of the carbohydrates and the fats to a point where the caloric intake is sufficiently lowered to bring about the required weight reduction Simple weight reduction will often result in the weight-bearing joints becoming symptom free because the load carried on the joint has been lessened Thus, one must appreciate that the beneficial results obtained with a reduction diet are due to simple weight reduction and not due to a reduced carbohydrate intake One must further realize that, at the time the marginal osteoid tissue proliferation is taking place, the periosteum may become elevated and, in consequence, pain may result Once this marginal osteoid tissue proliferation ceases and this tissue becomes calcified, pain may no longer be present In other words, some of the marginal joint changes may be responsible for the symptoms, and, once these have become quiescent, these symptoms will disappear Any treatment including dietary may therefore be given the credit for beneficial therapeutic results, whereas the improvement may well be due to the natural evolution of some of the joint changes This may well be the case in Heberden's nodes, which, as previously stated, are tender and painful in the earliest stages, whereas they subsequently become quiescent

PROLIFERATIVE OR RHEUMATOID ARTHRITIS

Rheumatoid arthritis still remains a disease of unknown etiology The fact that most of the people with rheumatoid arthritis have very pronounced constitutional symptoms has led most workers to believe that the joint symptoms are only a part of a disease that is constitutional in nature There probably are many factors that are causally related and responsible for this disease syndrome Certain clinical and laboratory observations suggest that infection plays a rôle Whether infection is the most important etiologic agent cannot be stated with certainty If it were, one might argue that the constitutional symptoms of patients so afflicted are merely a constitutional expression resulting

2 (a) Garrod, A. E. *A Treatise on Rheumatism and Rheumatoid Arthritis* London: Charles Griffin & Co., 1890 (b) Axhausen, Georg *Ueber einfache aseptische Knochen und Knorpelnekrose, Chondritis dissecans und Arthritis deformans*, *Arch. f. klin. Chir.* 88: 519, 1912 (c) Nichols, E. H. and Richardson, F. L. *Arthritis Deformans*, *J. M. Research* 21: 149, 1909 (d) Smith Petersen, M. N. *Traumatic Arthritis: Histologic Changes in Hyaline Cartilage*, *Arch. Surg.* 18: 1216 (April) 1929 (e) Knaggs, R. L. *Diseases of the Bone*, New York, William Wood & Co., 1926

3 Unpublished data. Bennett, G. A. and Bauer, Walter *Degenerative Changes in Joints Resulting from Continued Trauma and Increasing Age and Their Relation to Hypertrophic Arthritis* *Am. J. Path.* 9: 931 (Nov.) 1933 Bauer, Walter in discussion on Keefer, C. S., Parker, F. Jr., Myers, W. K. and Irwin, R. L. *The Relationship Between the Anatomical Changes in the Knee Joint with Advancing Age and Degenerative Arthritis* *Tr. A. Am. Physicians* 48: 55, 1933

4 Crowe, H. W. *Bacteriology and Surgery of Chronic Arthritis and Rheumatism*, New York: Oxford University Press, 1927 Jones, R. L. *Arthritis Deformans*, New York, William Wood & Co., 1909 Cecil, R. L. *Arthritis of the Menopause* in *Textbook of Medicine* Philadelphia: W. B. Saunders Company, 1928

from the same infection. The answer to such questions must await the results of further investigations into the etiology of rheumatoid arthritis.

The pathology of the joints in this type of arthritis has been studied quite extensively by Nichols and Richardson,⁵ Hare⁶ and others.¹ These changes consist of proliferation of the synovial membrane and connective tissues of the subchondral bone spaces, round cell infiltration, increased vascularity and bone atrophy. The most marked and constant feature of the joints is that of proliferation; all other changes are secondary to it. Proliferation of the synovial membrane and of the connective tissue of the subchondral bone spaces is usually present. Destruction of the articular cartilage results if the proliferating synovial membrane called pannus grows over and eventually invades it. Invasion of the articular cartilage from below similarly results because of connective tissue proliferation in the subchondral bone spaces. These changes have been interpreted by some workers as being due to infection. The important thing to remember is that the intra-articular changes in rheumatoid arthritis are in no way similar to those of degenerative arthritis and are not causally related. It is true that the joints of an individual 50 or 60 years of age show the changes characteristic of degenerative arthritis as a result of the "wear and tear" of increasing age. Rheumatoid arthritis may at some later date develop in such an individual. If it does and if a joint so affected is examined, one will find the characteristic pathologic changes of both rheumatoid and degenerative arthritis. Furthermore, rheumatoid arthritis with the characteristic periarticular swelling of the metacarpophalangeal joints (spindle fingers) may later develop in a person with Heberden's nodes and thus the telltale evidence of both diseases may be present. Rheumatoid arthritis may result in sufficient joint change so that the joint is no longer a stable joint. As a result of this mechanical instability, the joint may be subjected to increased trauma as well as "wear and tear," and in consequence one will find degenerative changes as well as the intra-articular changes of rheumatoid arthritis. However, such instances and observations are no reason or proof of the unitarian theory held by some workers.⁶ The examples just cited represent nothing more than the existence of two diseases in one individual.

One of the most important things to be remembered concerning rheumatoid arthritis is that the disease is characterized by remissions and relapses. Therefore, one will always find it difficult to evaluate the form of therapy employed because one is always confronted with the question: Is the improvement due to the treatment employed, or are we dealing with a natural remission occurring during the time a specific form of therapy was used? During a remission, a patient may become absolutely symptom free, but as a rule there are certain residual aches and pains. Many factors seem to play a role in precipitating a relapse or bringing about a remission. Remissions may last months or years. Because a disease characterized by remissions is being dealt with, one should be most cautious in speaking of cures. Certainly one should allow for a lapse of at least five years, preferably ten, before a patient is pronounced cured.

As previously stated, the question of the correct dietary to be employed in treating patients with rheumatoid arthritis has long been a subject of much controversy. In consequence, the medical literature contains many papers concerning "the dietary treatment of rheumatoid arthritis." Many of these reports reveal that the essential controls were omitted, and therefore a volume of otherwise valuable work is rendered invalid.

The following is a list of the diets that are being prescribed for patients with rheumatoid arthritis: (1) omission of the so-called acid fruits and vegetables, (2) allowing only one type of food substance at each meal (protein, fat or carbohydrate), (3) altering the acid-base balance of the diet, (4) omitting from the diet foods to which the patient is hypersensitive, (5) a low protein diet, (6) a reduced caloric intake and (7) a low carbohydrate diet.

An attempt will be made to evaluate each of these dietary prescriptions, if possible on the basis of (1) the rationale for prescribing them, (2) the results obtained, and (3) the deleterious effects that might ensue if the prescriptions were adhered to indefinitely.

Acid Fruits and Vegetables—The omission of the so-called acid fruits and vegetables would seem to be based more on fancy than on fact. The foods that are commonly called acid fruits include tomatoes, oranges, grapefruit, lemons and the like. These foodstuffs contain very weak organic acids, citric and malic acid, which are easily oxidized in the body. In great part they are present as salts of basic elements, and these are left in the blood as alkaline carbonates. Thus, it will be seen that acid fruits and vegetables serve as available alkali to the body. Furthermore, these foodstuffs represent the chief source of vitamin C. They also contain vitamin A. They are available the year round and are essential to a well balanced diet. Clinical experience with a high vitamin diet has not brought forth any contraindication to their use. They should be permitted and prescribed.

Faddists' Diets—Faddists have hit on the idea that one should not eat a mixed diet, contending that the presence of protein in the stomach interrupts starch digestion. This is a fallacy. There is no significance in this interruption. Starch digestion begins in the human mouth when mixed with saliva. Digestion is interrupted in the stomach when the fluid is acid, since starches are digested only in a slightly alkaline medium. Starch digestion is resumed in the small intestine, where the alkaline pancreatic juice furnishes the necessary amylolytic enzyme, the starch-digesting enzyme. Therefore the interruption is a physiologic one, occurring whether one eats an all starch meal or a mixed meal. Furthermore, certain animals—dogs, cats and cows—have no starch-digesting ferment in their saliva, but they thrive on foods rich in starches. All their starch digestion takes place after the food has left the stomach. It is unlikely that nature put these animals at a disadvantage in this respect.⁷

Acid-Base Balance of Diet—Some physicians occasionally prescribe a basic diet in rheumatoid arthritis because of the "tendency to an acid system." The "acid system" is a myth. As L. J. Henderson points out, "Neutrality is a definite, fundamental, and important characteristic of the organism." One need make no conscious effort to maintain a basic diet in an arthritic person any more than in the normal one. A well bal-

⁵ Hare, T. An Investigation of the Etiology and Pathogeny of Equine Chronic Arthritis (Rheumatoid Arthritis). Vet. Rec. 7: 411 (May 7) 1927.

⁶ Archer, B. H. Chronic Nonspecific Arthritis. Etiology and Treatment with Special Reference to Vaccine Therapy, J. A. M. A. 102: 1449 (May 5) 1934. See additional references in this article.

⁷ McCollum, E. V. and Becker, J. E. Food Nutrition and Health. Baltimore: Lord Baltimore Press, 1933.

anced, well mixed, adequate diet in no way disturbs the acid-base balance of the body

Detection of Food Hypersensitivity—There are doubtless certain human beings who are hypersensitive to certain foods. In such instances there is usually a family history of allergic disease or the patient himself may be subject to asthma, hay fever, eczema or urticaria. If one suspects that a patient with rheumatoid arthritis is hypersensitive to certain foods and that this hypersensitivity to food is causally related to his arthritis, one can verify or disprove this assumption by carrying out certain simple tests. The responsible food may be found if the patient will keep an accurate diary of symptoms and of what he has eaten. Skin tests may give a hint as to the offending food, but ordinarily they are of little use. In a suspected case, the simplest experiment to carry out would be to have the patient live on only a few foods such as meat, rice, butter and sugar, and, if improvement is noted, other foods may be added one at a time. In this way, any foods which repeatedly result in an exacerbation of symptoms may be suspected of being causally related. I have never seen a patient with rheumatoid arthritis due to food hypersensitivity. Any such experiment would have to be very carefully controlled before being interpreted as conclusive.

A Low Protein Diet—The prescribing of a low protein diet is a relic from the days when rheumatoid arthritis was confused with gout. There is no justification for the limitation of proteins in the dietary of a patient with rheumatoid arthritis. There are many reasons why it should be liberal, such as the maintenance of a normal serum protein level, supplying iron, as well as the "antianemic" principle.

A Reduced Caloric Intake—Certain workers⁸ claim that the employment of a low caloric intake for a limited period of time is occasionally of distinct value. Under well controlled experimental conditions⁹ we have never been able to demonstrate any beneficial results from either a starvation or a semistarvation diet. Certainly it should never be tried in undernourished patients or persons with any complication such as fever or anemia. When a reduced caloric intake is employed, the experimental conditions must be extremely well controlled if one is to attach any significance to observed improvement.

Carbohydrate Restriction—Probably the one dietary restriction most frequently imposed on the patient with rheumatoid arthritis is a reduction of carbohydrates. The rationale of such a dietary is based on the following: (1) that a high percentage of rheumatoid arthritis patients have abnormalities of the colon and that such abnormalities are corrected by employing a low carbohydrate, high vitamin diet, particularly high in vitamin B,¹⁰ (2) that these patients have difficulty in utilizing starches,¹¹ (3) that patients with rheumatoid arthritis have a "delayed sugar" removal from the blood following the ingestion of 100 Gm of dextrose, (4) that a patient with rheumatoid arthritis improves on a low carbohydrate diet per se.⁸ Each of these points will be discussed separately.

We⁹ are in agreement with Archer⁶ and Haft¹² that there is no evidence to sustain the suggested theory that the observed colonic abnormalities are in any way specifically related to the disease rheumatoid arthritis. We further believe as they do that the incidence of such colonic abnormalities is no higher than one observes in a similar series of nonrheumatic cases. They probably represent "a manifestation of chronic disease states rather than a condition peculiar to chronic arthritis."

Carbohydrate indigestion and inability to utilize starches properly have been offered as evidence in favor of a low carbohydrate diet for rheumatoid arthritis.¹¹ Carbohydrate indigestion is probably a relatively rare disorder. Many of its supposed symptoms are very similar to those seen in functional disorders of the gastro-intestinal tract, which are quite common in the patient with rheumatoid arthritis. One will obtain a much clearer understanding of both carbohydrate indigestion and functional gastro-intestinal disturbances with the reading of Alvarez's writings, particularly his book on nervous indigestion. Any physician will profit by acquainting himself with this book. The finding of starch granules in the stool¹¹ is at best only suggested evidence of the inability to utilize starches, unless the starch-containing foods ingested by the arthritic and the normal subject are well controlled. If there is an inability to utilize starches, it must be due to a diminished secretion of the amylolytic enzyme. I am unaware that such a diminished secretion has ever been demonstrated in arthritic patients.

Demonstration of a "delayed sugar removal" from the blood has also been offered as evidence in favor of employing a low carbohydrate diet in patients with rheumatoid arthritis.⁸ This evidence is offered as strongly suggesting that, "whether or not any additional mechanism be concerned, denial to the muscular tissues of their usual degree of contact with the circulating blood interferes with the withdrawal of glucose so that when sugar is fed a 'lowered tolerance' results. This clearly suggests that circulatory changes contribute to the pathology of arthritis." A diminished sugar tolerance curve has not been demonstrated by some workers.¹³ Archer⁶ states that, "in typical cases of rheumatoid arthritis, no evidence of a diminished sugar tolerance was demonstrated." In the routine work up of each patient with rheumatoid arthritis⁸ we do an arterial-venous sugar curve following the ingestion of 100 Gm of dextrose. We have noted that the high point in the curve often goes above what is considered normal, yet the majority of the curves are back to the fasting blood sugar level by the end of the third hour, always by the fourth. This higher type of curve would seem to be due to a delayed sugar removal, as shown by the fact that the arterial-venous separation at the peak of the curve is less than that observed in normal persons. The delayed sugar removal does not allow one to conclude that there exists any abnormality of carbohydrate utilization. In fact Cecil, Barr and Du Bois¹⁴ demonstrated a normal rate of utilization of ingested carbohydrates in the series of cases that they studied. The combination of a lowered metabolic rate and a delayed sugar removal is cited as reason for decreasing "the metabolic load," and this is best accomplished by a

⁸ Pemberton, Ralph. *Arthritis and Rheumatoid Conditions*. Philadelphia: Lea & Febiger, 1929. See additional references in this book.

⁹ Unpublished data.

¹⁰ Fletcher, A. A. and Graham, Duncan. The Large Bowel in Chronic Arthritis. *Am. J. M. Sc.* 179:91 (Jan.) 1930. Fletcher, A. A. The Nutritional Factor in Chronic Arthritis. *J. Lab. & Clin. Med.* 18:1140 (Aug.) 1930.

¹¹ Monroe, R. T. and Hall, F. C. The Feces of Patients with Chronic Arthritis. *Arch. Int. Med.* 47:764 (May) 1931.

¹² Haft, H. H. The Colon Changes in Chronic Arthritis Compared with Other Chronic Diseases. *Am. J. M. Sc.* 185:811 (June) 1933.

¹³ Archer, B. H. Sugar Tolerance in Arthritis. *J. Chronic Infections Arthritis. Arch. Int. Med.* 44:37 (July) 1929 footnote 6.

¹⁴ Cecil, R. L., Barr, D. P. and Du Bois, E. F. Clinical Calorimetry. XXXI Observations on the Metabolism of Arthritis. *Arch. Int. Med.* 29:583 (May) 1922.

reduction of carbohydrates. A significant lowered metabolic rate is seldom encountered in patients with rheumatoid arthritis.¹⁵ Du Bois¹⁵ sums up the situation by stating that the change in basal metabolism is such as might be expected in a crippling disease in which patients are forced to lead sedentary lives and remain bedridden. Various workers,¹⁶ making duplicate blood sugar curves on the same individual, have considered that any lowering of the second curve was the result of the treatment employed. However, Lennox,¹⁷ who has had a very unusual experience with repeated blood sugar curves on the same individual points out that he is loath to conclude that a lowered second curve is necessarily due to the treatment or the therapeutic procedures employed. Granted that a delayed removal may exist secondary to circulatory changes, what evidence has one that restriction of carbohydrates will favorably influence the disease with which the patient is afflicted? There are other diseases in which an associated delayed sugar removal can be demonstrated, such as hypertension¹⁸ and endocrine disturbances,¹⁹ yet we do not restrict the carbohydrate intake.

One can always argue that clinical experience proves that a low carbohydrate diet is efficacious in treating patients with rheumatoid arthritis.⁸ Certain workers²⁰ disagree with such a statement. As previously pointed out, much valuable therapeutic information concerning rheumatoid arthritis has become invalid because of failure to control adequately the experimental conditions. Therefore before any dietary treatment is instituted the patients must be in a "steady state." If, under such conditions, improvement is observed with great regularity, one may be led to suspect that the improvement is the result of the treatment.

What evidence has one that these patients may improve on a high carbohydrate intake? Lockie and Bowen²¹ have been kind enough to allow me to quote from their experience with high carbohydrate diets in patients with rheumatoid arthritis. They have had under observation four "extreme cases" on a mixed diet containing from 450 to 525 Gm of carbohydrate daily for from two to five months each and during this time have observed improvement. The only other treatment employed was light physical therapy and tonsillectomy in one patient. They state "Certainly the high carbohydrate diet has had no harmful effect. We believe some of the improvement which we have seen may be attributed to the general improvement in nutrition." Dawson writes "We have repeatedly put clinic patients on a restricted carbohydrate diet and then on an unlimited carbohydrate intake. As you can well imagine, the patients have always done better under optimal nutrition." He instructs his patients "to eat a well balanced diet consisting of everything and any-

thing well tolerated, especially fresh fruit and vegetables." He further states "There are few rheumatoid arthritis patients whom I would rather treat than those whose nutrition has been maintained in a faulty state on a low carbohydrate diet." My experience⁹ has been similar to that just quoted.

I therefore am of the opinion that one is not doing wrong to prescribe a well balanced, adequate diet for a patient with rheumatoid arthritis. Careful dietary histories obtained from our series of rheumatoid arthritis patients⁹ reveal deviations and abnormalities similar to those observed in the average American dietary, namely, a high carbohydrate intake in a large percentage, an inadequate protein intake in a fair percentage, and a low intake in calcium, phosphorus, iron and vitamins in a large percentage. In order to overcompensate for the inadequacies that exist in the average American dietary even though we have no proof that it is a deficiency disease, we advise observance of the following dietary to patients with rheumatoid arthritis. A

An Example of the Diet Frequently Given to a Patient with Rheumatoid Arthritis

Breakfast

Fresh fruit—average serving
Orange or grapefruit juice—1 glass
Eggs—2
Bacon—3 slices
Rye bread toast—1 slice
Butter—2 squares
Coffee with 40% cream

Dinner

Clear soup or broth
Meat or fish—average serving
Vegetable—average serving
Fruit or vegetable salad with mayonnaise
Extra vegetable—average serving
Milk or buttermilk—1 glass
Rye bread—1 slice
Butter—2 squares
Fruit dessert

Supper

Tomato juice—6 ounces
Liver chicken or lamb chop—average serving
Vegetable cooked—average serving
Fresh vegetable as lettuce tomatoes celery, etc.
Rye bread—1 slice
Milk or buttermilk—1 glass
Fruit dessert

- 1 Sugar bread and other desserts would be allowed in this dietary if the patient were not overweight.
- 2 In addition to the above we usually prescribe cod liver oil or one of the cod liver oil concentrates as well as some one of the vitamin B concentrate preparations.

high vitamin, high caloric (unless they are overweight) diet, adequate in respect to calcium, phosphorus and iron. In order to insure an adequate intake of vitamins A, D and B, we often prescribe cod liver oil or one of the vitamin A and D concentrates as well as a vitamin B concentrate. We advise restriction of carbohydrate intake for indicated weight reduction or when the maintenance of an adequate dietary is impossible because of the high carbohydrate intake. If such a diet contains too much roughage for the patient, it must be reduced but not at the expense of vitamins. In some arthritic patients with functional disturbances of the gastro-intestinal tract, it may be necessary to institute a soft diet which satisfies these requirements. This can best be done by following Alvarez's soft diet or some modification of it.

It is well for every physician to remember that there is no specific therapy for rheumatoid arthritis and that every one treating these patients should study them carefully, correct all abnormalities, treat the patient as a whole and observe the effect on the course of the disease.

Therefore, in treating patients with rheumatoid arthritis, one should always give them a list of specific instructions to follow. A copy of a high vitamin, high

15 Du Bois E F Basal Metabolism in Health and Disease Philadelphia, Lea & Febiger 1927

16 Pemberton^{*} Cajori F A Crouter C Y and Pemberton Ralph The Effect of Changes in the Circulation on Carbohydrate Utilization J Biol Chem 60:89 (Nov.) 1925 Pemberton Ralph Cajori F A, and Crouter C Y Influence of Focal Infection and the Pathology of Arthritis Results of Experiments J A M A 85:1793 (Dec. 5) 1925 Influence of Focal Infection and the Pathology of Arthritis Results of Experiments Second Paper J A M A 87:2148 (Dec. 25) 1926

17 Lennox W G and Bellinger M Repeated Blood Sugar Curves in Nondiabetic Subjects J Clin Investigation 4:331 (Aug.) 1927

18 Herrick W W Hypertension and Hyperglycemia J A M A 81:1942 (Dec. 8) 1923

19 Janney N W and Isaacson V I J The Blood Sugar in Thyroid and Other Endocrine Diseases The Significance of Hypoglycemia and the Delayed Blood Sugar Curve Arch Int Med 22:160 (Aug.) 1918

20 Archer^{*} Bauer, Walter Bennett G A and Short C L. Speculations on the Etiology of Rheumatoid Arthritis New England J Med 208:1035 (May 18) 1933

21 Lockie L M and Bowen B D Buffalo General Hospital Personal communication to the author

caloric (if indicated) diet, adequate in respect to calcium, phosphorus and iron, in the form most suitable considering all factors, should be given to each patient. The list should also contain instructions pertaining to the taking of vitamin concentrates, rest, exercises physical therapy or any procedure or therapeutic agent to be employed. All this enables the patient to carry out one's instructions to the last detail. Furthermore, such a regimen makes the patient realize that some one is genuinely interested in all the details pertaining to his life and his disease. This in turn often has a very beneficial effect on the patient's morale. Once it has improved, the patient is encouraged and makes an extreme effort to overcome his handicaps and fight his disease.

CONCLUSIONS

1 The first requisite in treating each patient with skeletal symptoms is to determine whether or not the symptoms are due to arthritis and, if so, to determine the type of arthritis. Not until this has been done should one attempt to prescribe a diet.

2 There is no specific diet for patients with arthritides of known origin other than the dietary which would ordinarily be prescribed whenever the particular disease or etiologic agent responsible for the arthritis is dealt with. Gout is the one exception.

3 Degenerative and rheumatoid arthritis represent the diseases one ordinarily thinks of as chronic arthritis. They are not causally related or due to the same etiologic agent.

4 (a) In degenerative arthritis, diet is indicated only in the presence of obesity, and then it should be sufficiently low in calories to allow weight reduction but adequate in every other respect.

(b) There is no evidence to prove that a low carbohydrate diet is indicated in rheumatoid arthritis, nor is there any proof that it is efficacious in curing the disease. Patients with rheumatoid arthritis should eat a diet high in calories (unless they are overweight), high in vitamins and adequate in respect to calcium, phosphorus and iron.

ABSTRACT OF DISCUSSION

DR L. MAXWELL LOCKIE, Buffalo. Dr. Bauer has sounded a timely warning concerning the dietetic treatment of patients with rheumatoid or chronic atrophic arthritis. Many of these patients will lose weight quickly from their disease and it seems unnecessary to cut down the amount of carbohydrates or total number of calories unless the symptoms are aggravated. In a group of cases of atrophic arthritis studied by Dr. Bowen and myself at the Buffalo General Hospital, no untoward effects were noted during the months of observation while a high carbohydrate diet was being given, about 500 Gm of carbohydrates, 50 Gm of protein and 50 Gm of fat. These patients were better at the end of the study. None of them were made worse. Also during studies on a group of patients with typical gout it has been noticed that symptoms of the disease could be brought on by the use of a high fat diet. This was tried because of the observations of Harding on a group of normal women in various stages of pregnancy. He found that the blood uric acid would increase while they were given a high fat diet. Also Lennox noted that during periods of starvation the blood uric acid would mount and that when a high carbohydrate meal was given it could be brought down to normal within a day but that, if a high fat meal was given, no change was noted. So it seems that people with typical gout should be fed a diet high in carbohydrates and their symptoms should be carefully watched if they are given a diet low in carbohydrates and high in fat.

DR. WALTER BAUER, Boston. A few words of caution may be in order. To evaluate any form of special therapy in

patients with rheumatoid arthritis, one must have control study periods for each patient. The patient should first be treated with general measures such as rest, exercises for all joints and a well balanced diet until he comes to a steady state at which improvement is no longer observed. Once this steady state has been reached, one is justified in instituting the particular form of special therapy that one is interested in evaluating. If, under such conditions, results are obtained with any regularity, then and only then is one in a position to suspect that the treatment employed was responsible for the results observed. The fact must never be lost sight of that one is dealing with a chronic disease characterized by remissions and relapses and that therefore one must proceed with caution before speaking too enthusiastically concerning any special treatment. The same facts must be borne in mind when one speaks of cures.

THE TREATMENT OF PERFORATED "PEPTIC" ULCERS

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This paper deals only with the acute perforations that demand immediate operation. It does not concern those cases of perforation of marginal ulcers causing gastroduodenal fistulas, chronic abscesses posterior to the stomach, intermittent leakage with blockage to which attention was called by Lund¹ in 1905, or even the forme fruste types of perforated ulcers recently described by Singer.²

The deductions reached are largely based on personal experience in the treatment of forty-one such cases. This experience has been greatly influenced, however, by numerous visits to other hospitals, conversation with other surgeons, and a careful review of the literature. Of course it is generally conceded, even by the most radical adherents of the nonsurgically inclined of medical men, that surgery offers the best hope of recovery. Therefore this discussion will be confined to surgical intervention in this condition, as considered under the following three headings:

1 Drainage after closure of the perforation

2 Advisability of immediate gastro-enterostomy following closure of perforation

3 Treatment of perforations on the posterior wall of the stomach and duodenum associated with hemorrhage

DRAINAGE AFTER CLOSURE OF THE PERFORATION

The type of closure is a somewhat different problem in each individual case. Therefore I shall not discuss this further than to state that I have been disappointed in finding in the vast majority of cases infiltration and other changes so extensive as to present some type of pyloroplasty.

I have been somewhat surprised in visiting various clinics to find some of the surgeons making it a rule to institute drainage after the closure of the opening, regardless of the time elapsing since the perforation, the results of smears of the peritoneal exudates, or the condition of the peritoneum.

Replies received from more than 100 surgeons gave the following information. These figures are only approximately accurate, owing to the fact that many of the replies were indefinite. However, these percentages are sufficiently correct to disclose that there was

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1 Lund, F. B. Subacute Perforation of the Stomach, with Report of Three Cases. *Boston M & S J* 152: 516-518, 1905.

2 Singer, H. A. Perforated Peptic Ulcer with Intermittent Leakage. *J A M A* 102: 112 (Jan 15) 1934.

no uniformity of procedure in the handling of these cases of perforation as regards drainage

About 20 per cent drain in every case. Most of these employ a drain through a remote stab incision. About 60 per cent drain only in the late cases or in cases in which there is evidently definite pus formation. About 20 per cent close the abdominal wall in every case without any drainage. In other words, 80 per cent do not use drainage as a rule.

Recently the dictum as regards peritonitis "when in doubt, drain" seems well on the way to being supplanted by the slogan "when in doubt, don't drain." No matter what one's individual views on this changing opinion might be, consideration should first be given to the nature of the fluid to be drained and the ability of the peritoneal cavity to assist in extrusion of the offending material. Therefore a study should be made of the bacterial flora, the gastric and duodenal contents, and the toxic effect of bile and pancreatic secretion in the peritoneum.

A review of the literature discloses that hydrochloric acid, even in minute quantities, has an inhibitory effect on the growth of bacteria. This work has been done many times in different parts of the world with such uniform results that to duplicate the experiments would be useless.

To any one interested in this subject the papers of the following authors are recommended: Poppens,³ Klinge,⁴ Krueger,⁵ Johnson and Arnold,⁶ Saunders, Holsinger and Cooper,⁷ Onufrio,⁸ Valdon,⁹ Saunders,¹⁰ Swift,¹¹ Arnold,¹² Risen, Sears and Downing,¹³ Nedzel and Arnold,¹⁴ and Furbush and Arnold.¹⁵

Since the bacteria one would expect to find in the stomach depend largely on the condition of the mouth, teeth and throat, a study of the bacterial flora of this locality should be made. It has been frequently demonstrated in the laboratory that minute quantities of hydrochloric acid will inhibit and prevent the growth of all such bacteria.

Numerous investigators have demonstrated by smears and cultures taken from the stomach that the higher the hydrochloric acid content the less the chances are of finding bacteria in the stomach. A clinical example of this is to be found in the fact that bacteria are frequently found in carcinoma of the stomach with its low acidity while they are practically never present in the ulcer case with its high acidity. Whether the action of the hydrochloric acid only inhibits the growth of bacteria or destroys them is of but little practical impor-

tance in deciding on the question whether or not to drain.

Johnson and Arnold⁶ demonstrated the bactericidal power of the acidity of the gastric juice in *in vivo* experiments, using dogs. They concluded that the "acid-secreting stomach does not seem actually to destroy bacteria."

Lloyd Arnold¹² proved that "there was a correlation between the acid-base balance of the contents of the lumen of the stomach and the viable bacteria. When free hydrogen ions appear, the bacteria within the contents are nonviable. Bacteria are viable when an acid-deficit condition exists." In other words the action of the acid gastric juice on bacteria has been shown to be more bacteriostatic than bactericidal in nature.

Numerous surgeons have taken smears and cultures of the stomach and duodenal contents while doing operations for peptic ulcer. These smears and cultures have uniformly been negative for bacteria in smears and colonies on culture. The following quotation¹⁰ is interesting in this connection:

Stomach. Smears made from the gastric contents during digestion show a large variety of organisms: gram-positive cocci, yeast and sarcinae, sporing bacteria, vibrios, spirochetes and leptothrix-like organisms. With the exception of the spore-bearing aerobes (*B. mesentericus*, *B. megatherium*, *B. subtilis*), which are probably carried in with food, the bacteria are largely derived from the mouth. Coliform organisms are rarely isolated and are usually of *B. lactis-aerogenes* type. *B. Welchii* and *B. sporogenes* may be found along with lactic acid bacilli (*Boas-Opper bacillus*) where there is delay in emptying the stomach. Three to four hours after a meal the gastric contents are practically sterile.

In contemplating whether or not to drain it might be well to consider the condition of the teeth, tonsils, and the like, and if the mouth was found to be foul, such a finding might justify drainage of the peritoneum.

Klinge⁴ considers the gastric mucosa to have a bacterial killing power independent of its hydrochloric acid secretion.

On the other hand, Knott¹⁷ has shown that the only lethal agent to bacteria in the stomach is the free hydrochloric acid, which, being in an almost completely ionized state, provides a high concentration of hydrogen ions. On this hydrogen ion the bactericidal power of mineral acid depends. He has demonstrated that the other secretions of the stomach are not inhibitory to infective bacteria. He found that the strengths of free hydrochloric acids required to inhibit the subsequent growth of various pathogenic bacteria after twenty minutes' exposure fell within the range of free hydrochloric acid values encountered in normal gastric juice.

I have taken smears of perforated "peptic" ulcers and cultures from the peritoneal cavity of twenty-one patients but have failed to obtain any definite information. This failure could easily be due to the fact that the culture contained some hydrochloric acid. And, in addition, my failure to grow cultures might easily have been due to not employing the technic of anaerobic culture recently worked out by Meleney and his co-workers.¹⁸

To any one especially interested in the problem of the immunologic and serologic side of peritonitis, the

3 Poppens, P. N. Bacteriology of Fasting Stomach and Duodenum. Experimental Study in Dogs, *Am J M Sc* 161: 203 (Feb.) 1921.

4 Klinge. Bactericidal Function of Stomach, *Arch f Verdauungskr* 47: 159 (Feb.) 1930.

5 Krueger, Hugo. Histology of Experimental Acute Gastritis from Dilute Hydrochloric Acid, *Am J Physiol* 94: 402-426 (Aug. 30) 1930.

6 Johnson T. M., and Arnold Lloyd. Has Free Gastric Acidity Bactericidal or Bacteriostatic Power? *Proc. Soc. Exper. Biol. & Med* 29: 501-503 (Jan.) 1932.

7 Saunders, E. W., Holsinger, H. B., and Cooper, Mary A. Ana-phylactic-Like Reaction Produced by the Streptococcus of Gastric Ulcer. *Am J M Sc* 187: 249 (Feb.) 1934. The Role of Infection in Gastric and Duodenal Ulcer. *Ibid* 187: 246 (Feb.) 1934.

8 Onufrio. Microbicidal Effects of Dilute Hydrochloric and Acetic Acid, *Gior ital di mal esot. e trop* 4: 131 (May 31) 1931.

9 Valdon. Bacteriology of Stomach Relation to Postoperative Diseases and Complications, *Arch ed att; d Soc ital di chir* 35: 759-778 1929.

10 Saunders, E. W. A Bacteriological and Clinical Study of Gastric Ulcer. *Ann Surg* 91: 222 (Aug.) 1930.

11 Swift, H. F., Hitchcock, C. H., Derick, C. L., and McEwen, C. Bacteria of Stomach and Duodenum. *Am J M Sc* 181: 1 (Jan.) 1931.

12 Arnold, Lloyd. The Bacterial Flora Within the Stomach and Small Intestine. *Am J M Sc* 186: 471 (Oct.) 1933.

13 Risen, Leo, Sears, H. J., and Downing, L. M. The Duodenal Flora in Achlorhydria, *Am J M Sc* 175: 386 (March) 1928.

14 Nedzel, A. J., and Arnold, Lloyd. Influence of Gastric Acidity upon Viability of Bacteria in Isolated Stomach. *Proc. Soc. Exper. Biol. & Med* 29: 499 (Jan.) 1932.

15 Furbush, S. F., and Arnold, Lloyd. Influence of Gastric Acid Secretion upon the Bactericidal Power of the Gastro-Intestinal Tract. *Proc Soc. Exper. Biol. & Med* 28: 372 (Jan.) 1932.

16 A System of Bacteriology. In Relation to Medicine. Medical Research Council. London. His Majesty's Stationary Office. S. 357. 1931.

17 Knott, F. A., and Thornton, J. W. *Guy's Hosp Rep* 83: 63 (Jan.) 1933.

18 Meleney, F. L., Harvey, H. D., and Jern, Helen Z. Peritonitis. Correlation of the Bacteriology of Peritoneal Exudates and the Clinical Course of the Disease in One Hundred and Six Cases of Peritonitis. *Arch Surg* 22: 1 (Jan.) 1931.

articles of this group of experimenters will be found to be extremely instructive. They not only studied the subject of peritonitis from an experimental point of view but also carefully analyzed clinically 106 cases of secondary peritonitis. However, in this group there was not a single case of peritonitis due to perforated gastric ulcer. There were two due to perforations of the duodenum in this group. One of these showed no bacteria on culture or smear. The other case showed nothing on smear but yielded four different species on culture. It is interesting to note the prognostic value these workers attach to the comparison of the smears of the peritoneal fluid made at the time of operation with the cultures—if fewer species appeared in culture than were seen on smears the patients all recovered.

In addition to the inhibitory effect of small quantities of hydrochloric acid on the growth of bacteria, the bacteriostatic influence of the peritoneum has to be considered as a contributing factor in the patient's defense. On the other hand, there is much to be learned concerning the synergistic or antagonistic effects of multiple bacteria found in peritonitis of different types. This has also been fully dealt with by Meloney and his associates.¹⁹

In a recent article Roberts and Johnson²⁰ state that the aseptic peritoneal cavity is a misnomer. Their studies led them to believe that in 80 per cent of instances a growth can be obtained from cultures taken from within the peritoneal cavity, irrespective of whether the patient is male or female or of any clinical evidence of intraperitoneal inflammatory reaction. Further, they found that the flora from within the peritoneal cavity differed markedly from the air of the operating room and therefore arrived at the conclusion that bacteria were normally found in more than 80 per cent of cases.

There have been too many peritoneal cavities opened without harmful effects, however, for such an observation to be of much practical importance, and certainly very little possible bearing on the subject of drainage in perforated "peptic" ulcers.

The bacterial flora of the duodenum presents a somewhat different picture from that normally found in the stomach. It is well known that bacteria flourish in the duodenum in patients suffering with chronic biliary tract and gallbladder disease, provided there is a low acidity present. In these cases of perforated "peptic" ulcers, however, the acidity is practically always excessively high and in the vast majority of cases sufficiently high to prevent the growth of bacteria even in the duodenum in those cases of duodenal ulcer associated with biliary tract disease. In the majority of cases the perforation is so close to the pylorus and the edema so extensive that it is impossible to state accurately whether the ulcer is gastric or duodenal.

Of course, both bile and pancreatic juices are badly tolerated by the peritoneum, but the quantity of either of these is so small that they do not present a serious problem as regards immediate mortality in these cases.

Wangensteen²¹ and Walters and Bollman²² have described the results of larger collections of bile in the

peritoneal cavity. Any one interested in this subject will find both of these articles instructive.

While it might sound like a trivial and unnecessary suggestion, still I feel it to be highly important to protect the incision with several more layers of gauze or towels than are usually employed—a point apt to be omitted in the surgeon's natural desire to close the perforation as quickly as possible.

It is my practice to have an assistant aspirate the peritoneal cavity, especially the two lumbar fossae and the pelvis, by means of a suction tube, while the operator is closing the perforation, and then to close the abdomen without drainage. It is not unusual to aspirate 1,000 cc or more of fluid. In the exceptional and very late case, a lumbar or pelvic puncture drain might be an aid. I employ silver wire, after the manner of Shipley,²³ or some nonabsorbable through-and-through sutures in addition to the usual closure, so in case the incision is contaminated the skin suture can be removed and pack the incision wide open with some antiseptic gauze. Up to the present time the necessity to open a contaminated incision has arisen only in three cases—two of these patients recovered, and one died.

In my series of forty-one cases, secondary abscesses have developed in four, and the possibility of this postoperative complication should be constantly kept in mind, for very early incision and drainage of such abscesses is essential to the recovery of a patient who has previously withstood the demands made on his defensive mechanism. One of these four patients with secondary abscess died.

It is my misfortune to have seen in consultation four cases in which a drain had been placed somewhere near the point of closure of the perforation and the drain brought out through the incision. Either gastric or duodenal fistulas developed in all four of these patients, and all died after lingering for days discharging irritating fluid through a fistula onto a very painful, macerated skin. Perhaps this unhappy experience has done much to focus my attention on the necessity of not employing drainage in these cases except when absolutely necessary, and then to have the drain placed remote from the suture line.

ADVISABILITY OF IMMEDIATE GASTRO-ENTEROSTOMY FOLLOWING CLOSURE OF PERFORATION

For some years many surgeons advocated doing a gastro-enterostomy after the closure of the perforation in every case in which the patient's general condition would justify such a procedure. Unquestionably, these patients had a far more comfortable postoperative course with a gastro-enterostomy, but the nasal suction tube, as described by Wangensteen,²⁴ has done away largely with this indication for an immediate gastro-enterostomy.

A few years ago a gastro-enterostomy was generally considered by surgeons to be the proper procedure in the treatment of duodenal ulcer, but recently the internists have certainly demonstrated the great value of medical treatment.

I now feel that, when the patient's general condition is good, the perforation fairly recent and the site of ruptured ulcer such as to produce evident obstructive symptoms later, a gastro-enterostomy is indicated.

19 Meloney F L, Olpp John, Harvey H D and Jern Helen Z. Peritonitis Synergism of Bacteria Commonly Found in Peritoneal Exudates. *Arch Surg* 85 709 (Oct.) 1932.

20 Roberts K, Johnson W W and Bruckner H S. The Aseptic Peritoneal Cavity A Misnomer. *Surg, Gynec & Obst* 57 752 (Dec.) 1933.

21 Wangensteen O H. On the Significance of the Escape of Sterile Bile into the Peritoneal Cavity. *Ann Surg* 84 691 (Nov.) 1926.

22 Walters, Waltman, and Bollman J L. Results of Accumulations of Bile Around the Liver. *J A M A* 81 239 (July 28) 1928.

23 Shipley A M. Broken Down Abdominal Incisions. *Ann Surg* 88 452 (Sept.) 1925.

24 Wangensteen O H, and Paine J R. Necessity for Constant Suction to Inlying Nasal Tubes for Effectual Decompression or Drainage of Upper Gastrointestinal Tract. *Surg, Gynec & Obst* 57 601 (Nov.) 1933.

However, in the vast majority of cases the less that is done to these patients the better are their chances of recovery.

Only three of my patients have had a subsequent operation done for pyloric obstruction. In my series of forty-one cases a primary gastro-enterostomy has been done in eight cases. One of these eight patients died. This case might have been unwisely selected for further operative intervention rather than the closure of the perforation.

TREATMENT FOR PERFORATIONS ON THE POSTERIOR WALL OF THE STOMACH AND DUODENUM ASSOCIATED WITH HEMORRHAGE

In this series I have had three cases of acute perforation on the posterior wall, and all three of them were associated with repeated massive hemorrhages. All these patients died. If I have another similar case I shall certainly try the method of Allen and Benedict²⁵ and do a partial gastric resection, which they have so well described. Any surgeon who has seen one of these cases is not favorably impressed with the statement so frequently made that "bleeding ulcers don't perforate and perforating ulcers don't bleed." Alton Ochsner has operated successfully in one such case by the Allen and Benedict method. This was done two months ago and I am reporting this with his permission.

Carefully supervised postoperative medical treatment is most essential in all cases. In fact, surgery is only an aid, though a most important one, in the course of the medical treatment of all "peptic" ulcers.

Only twelve out of the forty-one patients had been treated for peptic ulcer previous to admission to the hospital. Nine of my forty-one patients have died, or a mortality of about 22 per cent. This includes two patients who died shortly after admission to the hospital without having had an operation.

The physicians who have referred these patients to me have sent them into the hospital at an earlier period than is usually done in other localities, and to them should be given the credit for this satisfactory showing. After all is said and done, the combination of early diagnosis and immediate operation contributes most to a low mortality rate.

CONCLUSIONS

- 1 Drainage of the peritoneal cavity should be avoided if possible.
- 2 Continuous gastric suction through a nasal tube has decreased the indications for an immediate gastro-enterostomy.
- 3 Partial gastric resection is the operation of choice in those cases of posterior perforations of the stomach or duodenum which are associated with massive hemorrhage.

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ABSTRACT OF DISCUSSION

Dr. Roy D. McClure, Detroit. In 1900 Drs. Harvey Cushing and L. E. Livingood (*Johns Hopkins Hosp Rep* 9:543-591, 1901) published a comprehensive and thorough study of the bacteriology of the gastro-intestinal tract, showing the bacterial flora at different levels and the time at which they were found. The main conclusion, which I think has a bearing on this subject, was that the bacteria found in the upper gastro-intestinal tract depended on the length of time after the meal had been taken and the type of bacteria which had been in that meal. They also found—thirty-four or thirty-five years

ago—that the bacteria which did persist were the streptococci. I have gone over a series of cases in the Henry Ford Hospital and in seventy-five cases, in all of which drainage was done there was a mortality of 26 per cent, which is 2 per cent higher than Dr. Trout's, which in that small group of cases perhaps meant one or two more deaths. In studying the cause of this death rate it is hard to arrive at definite conclusions. Of the operators in our clinic one man who was a resident surgeon had four cases without a death, another man, an associate of mine, had eleven cases with four deaths. I know that it was not a matter of skill or of the treatment. There are several other factors concerned in the cause of death that perhaps should be considered. First, of course, is the length of time elapsed since the perforation. I do not believe that is as important a point as is the amount of soiling. The amount of soiling depends, of course, on the size of the perforation, and this determines the amount of adhesions that the omentum or intestine makes over that perforation. If it is a large sudden perforation there is very little chance of such adhesions and there is a great amount of soiling. The third point is the one first brought out by Dr. Cushing: the length of time after the meal and the type of bacteria present in that meal. Another definite factor in the high mortality is the amount of surgery done. Dr. Trout has just said that gastro-enterostomy or resection should be done at the time of operation. My conclusion is that the less done at the time of operation the better. I believe that with the help of the Rehfuess tube, simple closure of the ulcer and drainage (perhaps he is right about no drainage) the patient can be gotten over the immediate shock and at a later date, as is now being practiced in our clinic: resection or posterior gastro-enterostomy can be done.

Dr. J. M. Donald, Birmingham. I realize that it is undesirable to attempt to employ any one operation for every case. This is especially true in surgery of the stomach or duodenum. I should like, however, to discuss the treatment of acute perforation of a duodenal ulcer, on the anterior wall by a local excision followed by pyloroplasty. In the cases seen early, even under twelve hours the duodenum is easily accessible and in the absence of obstruction local excision, followed by a closure as in pyloroplasty, can be done practically as safely as a simple closure. I believe that simple closure should be reserved for those cases in which the condition of the patient does not warrant any more surgery than is absolutely necessary, when the perforation has been present for many hours, when the duodenum is fixed by adhesions and cannot be easily mobilized, and in the presence of obstruction. The advantages of a local excision with a pyloroplasty are, first, that the ulcer is removed, second, that the pylorus is made larger than it was before, relieving the possibility of future obstruction, and third that the patient has the same chance of a permanent cure that he would following the operation for nonperforated ulcer. Dr. Judd in a large series of cases in 1930 reported 90 per cent of cures with the excision of nonperforated duodenal ulcer, whereas Gilmour and Saint reported sixty-four cases in which they did a simple closure for acute perforation, and in 33½ per cent over a period of five years a second operation was necessary. Another advantage of this operation is that by excising this friable, infected, ulcerated tissue surrounding the perforation, and bringing the normal duodenal wall to the stomach and closing it in a transverse fashion one obtains a cleaner and a more satisfactory closure. This operation takes but a few minutes longer than the simple closure and in a small series in my experience the convalescence has been smoother and was followed by fewer complications than in those following simple closure. I think that prophylaxis ought to be considered as well. Not only do a large percentage of the cases give a history of a preexisting peptic ulcer, but the history is suggestive of a penetrating type of ulcer. The pain is more severe than in the ordinary peptic ulcer. When the x-rays show a penetrating ulcer, surgical intervention should be urged in order to excise the ulcers before they reach the point of perforation. I feel that, if this plan is followed, the mortality will be materially lowered.

Dr. Hugh H. Trout, Roanoke, Va. I failed to mention that a review of the literature, as well as my own experience, shows that in less than 10 per cent of the cases in which a gastro-enterostomy or any type of plastic operation had been

²⁵ Allen, A. W. and Benedict, E. B. *Acute Massive Hemorrhage from Duodenal Ulcer*. *Tr Am S A* 51:257, 1933.

omitted was a secondary operation for the relief of obstruction required. My attention to omission of drainage was called by a very unpleasant experience with four cases in which drainage had been done. I admit that the drainage had not been properly done. It had not been done in our clinic but it might just as well have been done there. Drainage had been done through the abdominal incision and the drain was placed close to the perforation. A fistula developed in all four and all four patients died with a fistula draining a painful, irritating fluid on a macerated skin. My experience in going over these forty-one cases has been that only six of the patients knew they had an ulcer. In talking to a large number of surgeons I found that practically all of them agree that only a small percentage of the patients knew they had an ulcer before the acute perforation.

CEREBRAL NEOPLASMS

THE DIAGNOSIS IN THE ABSENCE OF GENERALIZED INTRACRANIAL PRESSURE PHENOMENA

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OMAHA

The classic cardinal symptoms of increased intracranial pressure are lacking in from 15 to 30 per cent of large groups of patients with intracranial tumors, according to the studies of many observers. Since a diagnosis of cerebral neoplasm is rarely made in the absence of pressure phenomena, it is our belief that many more patients die of unrecognized cerebral neoplastic disease than the reports in the literature would indicate.

Headache, the most prominent symptom of brain tumor, is absent in at least 10 per cent of cases,¹ while papilledema, considered by many observers the most valuable pressure sign, is absent in from 15 to 30 per cent of cases.² Vomiting, usually a late symptom dependent on high grade internal hydrocephalus, occurs still less frequently. Other pressure phenomena are more uncommon. Headache, vomiting and choked disks are present together in only about 60 per cent of cases.¹

The diagnosis of cerebral neoplasms has been so intimately linked with the symptom triad of intracranial pressure that one is often misled into believing tumor to be excluded if pressure signs are absent. Of recent years, however, more reports are appearing of cases diagnosed early before the appearance of late pressure symptoms. The incidence of these early diagnoses will increase, owing to refinements in diagnosis through mechanical aids, such as spinal manometric readings, combined ventricular and lumbar estimations, improved roentgenologic technic and the use of encephalography in obscure lesions.

Some neurologists feel that in clinics in which mechanical aids are resorted to frequently, neurologic diagnostic acuity is lacking. This criticism may be true in many instances, but very excellent careful diagnostic observers state that frequently they cannot make nor even suspect a diagnosis of tumor from the symptoms presented. With this group of patients showing no

pressure phenomena, one must use the technical aids of the laboratory to improve the percentage of correct diagnoses.

It has been our privilege in the last few years to study twelve tumor cases of this type, verified as space consuming lesions by encephalography, operation or necropsy. In all these instances generalized increased intracranial pressure phenomena interpreted by symptoms or signs, including increased manometric cisternal or spinal readings, were lacking. We feel that a study of these cases is worthy of report in order to stimulate interest in earlier diagnoses of cerebral neoplasms.

Many causative factors in the production of increased intracranial pressure are in dispute. There are several theories as to the cause of papilledema. It is fairly well agreed, however, that the principal cause of cranial hypertension is disturbance of the outflow of cerebrospinal fluid. This interference is usually some degree of block of cerebrospinal fluid in the ventricular system, producing internal hydrocephalus or obliteration of some of the subarachnoidal channels, interrupting the absorption of cerebrospinal fluid. The tumor seems to raise intracranial tension very little until its growth interferes with the circulation of the cerebrospinal fluid. The location of the tumor is highly important in the production of early or late pressure phenomena. Midbrain and subtentorial tumors practically always show early pressure signs, while frontal lesions may develop to unusual size without increased pressure.

Many cases are reported that markedly distort or compress the ventricular system, even producing obstruction of the cerebellar foramen magnum and yet do not show an increase of pressure sufficient to produce papilledema.⁴

Fundus change usually goes hand in hand with hypertension of the cerebrospinal fluid. We usually expect to find blurring of the nasal margin with a spinal manometric reading around 20 mm of mercury. This means that papilledema is often a late manifestation of increased pressure, and the more frequently spinal manometric readings are made the larger will be the number of cases detected in the early stages with beginning increased tension from 10 to 20 mm of mercury. The manometer in our hands gives the most reliable and earliest guidance in the diagnosis of a pressure lesion.

Many still are afraid to use lumbar puncture in suspected cases of brain tumor. Masson,⁵ in a review of spinal puncture studies in 200 patients with tumors, concluded from the evidence of his series that there is little danger in lumbar puncture even in patients with tumors of the posterior fossa. Our rule is to exercise great care with spinal or cisternal punctures in the presence of papilledema. We still consider that pressure lesions of the posterior fossa contraindicate puncture because of the ever present danger of inducing cerebellar herniation,⁶ unless the information is necessary to make a diagnosis. In any case of suspected tumor in which spinal puncture is done, a 22 gage needle should be used for the first puncture to reduce to the minimum possibilities of cerebellar herniation.

Local pressure signs may be highly diagnostic long before generalized pressure manifestations appear.

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Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the authors' reprints.

Read before the Section on Nervous and Mental Diseases at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

1. Brain W. E. A Clinical Study of Increased Intracranial Pressure in Sixty Cases of Cerebral Tumor. Brain 48: 105-125 (March) 1925.

2. Osato, Michael. General Criteria for the Diagnosis of Brain Tumor. General Symptoms J. A. M. A. 99: 2012-2019 (Dec. 10) 1932.

4. Butterfield, D. L. Types and Location of Brain Tumors and Other Space Displacing Masses Within the Cranial Cavity Occurring Without "Choked Disk." New York State J. Med. 31: 1001-1011 (Aug. 15) 1931.

5. Masson, C. B. Dangers of Diagnostic Lumbar Puncture in Increased Intracranial Pressure Due to Tumor of the Brain. Review of 200 Cases, Arch. Neurol. & Psychiat. 31: 1141-1150 (May) 1929.

6. Bennett, A. E. Cerebellar Herniation. J. A. M. A. 100: 1922-1923 (June 17) 1933.

Such roentgenographic signs as evidence of local calcification, rarefaction of bone, increased diploic vessel marking and shifting of the pineal shadow are valuable aids in diagnosis and localization. These occasionally give leads to the diagnosis of tumor before neurologic signs are present. Brain⁷ found that 23 per cent of his tumor cases presenting normal optic fundi showed areas of calcification suggestive of a tumor. For this reason all patients suspected of having tumors should have roentgen studies of the skull made even in cases in which encephalography is contemplated.

Epileptiform attacks, grand mal, petit mal or jacksonian seizures are often the first symptoms of cerebral neoplasm and occur frequently before generalized pressure phenomena appear, in some instances years ahead of other tumor symptoms. Parker⁷ found in 313 cases of brain tumor that sixty-seven patients, or 21.6 per cent, had major seizures. In thirty-eight of these cases the convulsions were the initial symptom, in thirteen cases, or 4.1 per cent, seizures preceded all other symptoms or signs by one or more years. Gotten⁸ reported three tumors found on routine encephalographic examination in fifty-six cases of so-called epilepsy. Two of these tumors were completely removed. The incidence of unsuspected focal lesions as a cause for epilepsy was 53 per cent in his series. No pressure signs were present in any of these cases. It has been our practice to recommend encephalography in all adult epilepsies. The more frequently we resort to this examination the higher we find the percentage of organic causes for convulsions, occasionally we find a case appropriate for surgical therapy.

Jacksonian motor or sensory attacks beginning after 30 years of age are more likely to be caused by tumor. Any focal attack followed by motor weakness or sensory changes and increased reflexes should be explored surgically whether pressure signs are present or not. Often a slightly increased manometric reading will be found on spinal puncture. If there is doubt, encephalography definitely decides, by giving information not obtainable by any other diagnostic method. Bailey and Cushing⁹ in their studies of glomatous tumors called attention to occasional jacksonian epilepsies of long duration in cases of cerebral astrocytomas. They reported two of these relatively benign tumors that did not show pressure symptoms.

Fincher and Dowman¹⁰ in a study of 130 patients with jacksonian epilepsy found brain tumor in thirty-two. Of these, twelve, or 37.5 per cent, gave no evidence of increased intracranial pressure. These authors state "This statistical fact is of particular value since it emphasizes the possibility of intracranial neoplasm in cases presenting evidence of localized neurologic manifestations without symptoms and findings of general increased intracranial pressure."

Psychic manifestations are often the first symptoms in brain tumor, particularly in the tumors located in anterior portions of the cerebrum. Jameison and Henry¹¹ in a study of twenty-six psychotic patients in whom brain tumor developed found that in about one third of the cases a well developed psychosis had been

recorded before there was any indication of the tumor. The cerebral neoplasm was diagnosed before death in only 30 per cent of these cases, illustrating the need for more careful study of the etiology of atypical mental states. The psychic reactions accompanying brain tumor, though often so variable as to be of little value in localization, in the absence of other etiologic factors often serve as clues to the diagnosis of the tumor, especially if the psychotic reaction is of an organic type. A frontal lobe syndrome with change of personality (affective change), impairment of mental retention and mental activity and loss of insight should cause one to suspect tumor in cases in which cerebral arteriosclerosis and syphilis can be ruled out. In the absence of pressure phenomena, encephalography is indicated to confirm the diagnosis.

One of the most confusing diagnostic problems in cerebral neoplastic disease is the differentiation between vascular thromboses, softenings and invasive tumors without manifest pressure phenomena occurring during the sclerotic age. The diagnosis is further complicated by the combined pathologic changes of neoplasm and cerebral vascular softening or hemorrhage. Pressure signs are latent because the increased size of the tumor is compensated by the diminution in size of the senile brain and the degeneration of a large amount of brain tissue, so that the total intracranial contents are not above normal.

Bickel and Frommel¹² found in forty cases of death caused by brain tumor that six cases had been diagnosed as vascular softening and tumor was not suspected. The course of the disease with successive apoplectiform attacks was short in these patients, all more than 60 years of age. None of these six patients had increased pressure signs.

Riley and Elsberg¹³ report four similar cases, all infiltrating gliomas with cerebral degeneration, which did not show increased intracranial pressure. They believe that in these cases a diagnosis must be made ante mortem by diagnostic puncture or ventriculography.

Globus and Strauss¹⁴ reported seven cases, about one of which, a spongioblastoma, they stated that the clinical manifestations were indistinguishable from those of vascular lesions and that the tumor could be identified during life only by ventriculography.

Wechsler and Gross¹⁵ reported seven cases of brain tumor in which diagnoses of vascular or degenerative lesion were made.

Surgery in the group of malignant gliomas without pressure is particularly discouraging, since destroyed brain tissue cannot be restored and a more extensive defect is likely to follow surgical intervention. With the aid of encephalography and experience, perhaps some of these malignant gliomas can safely be declared inoperable. Failure of such cases to respond to dehydration therapy, involvement of the speech center, and rapid progression of symptoms are definite contraindications to operation.

12 Bickel, G. and Frommel, E. Les tumeurs cerebrales à forme de ramollissement thrombotique progressif, *Rev. méd. de la Suisse Rom.* 44: 33-34 (Jan.) 1924.

13 Riley, H. A. and Elsberg, C. A. Differential Diagnosis Between Cerebral Degeneration, Infiltrating Cerebral Neoplasm and Infiltrating Cerebral Neoplasm with Degeneration, *Arch. Neurol. & Psychiat.* 15: 48-74 (Jan.) 1926.

14 Globus, J. H. and Strauss, Israel. Vascular Lesions and Tumors of the Brain. Difficulties in Differential Diagnosis. *Arch. Neurol. & Psychiat.* 15: 568-587 (May) 1926. Spongioblastoma Multiforme? Primary Malignant Form of Brain Neoplasm. *Arch. Neurol. & Psychiat.* 14: 139-191 (Aug.) 1925.

15 Wechsler, I., and Gross, H. Tumors of the Brain Simulating Vascular and Other Degenerative Lesions. *M. J. & Rec.* 130: 394-397 (Oct. 2) 1929. 439-443 (Oct. 16) 1929.

7 Parker, H. L. Epileptiform Convulsions. The Incidence of Attacks in Cases of Intracranial Tumor, *Arch. Neurol. & Psychiat.* 23: 1032-1041 (May) 1930.

8 Gotten, Nicholas. The Incidence of Brain Tumors in Epilepsy. *J. A. M. A.* 86: 1118-1121 (April 4) 1931.

9 Bailey, Percival, and Cushing, Harvey. Classification of Tumors of the Gloma Group. Philadelphia, J. B. Lippincott Company, 1926.

10 Fincher, E. F. Jr., and Dowman, C. E. Epileptiform Seizures of Jacksonian Character, *J. A. M. A.* 97: 1375-1381 (Nov. 7) 1931.

11 Jameison, G. R., and Henry, G. W. Mental Aspects of Brain Tumors in Psychotic Patients, *J. Nerv. & Ment. Dis.* 78: 333-353 (Oct.), 500-518 (Nov.) 1933.

The following group of tumor cases presented interesting diagnostic problems with an absence of increased intracranial pressure phenomena. In the majority of cases encephalography gave valuable confirmatory information.

REPORT OF CASES

CASE 1—*A large inoperable glioblastoma multiforme, no pressure phenomena, diagnosis proved by encephalography, death within one year*

R C, a man, aged 39, an airmail pilot, examined, Sept 28, 1932, had for several months noted a slight slowing up in the efficiency tests of the airmail service. About August 1 he first noted attacks of numbness of the right foot and leg. These attacks increased, involving the right hand and producing transient ataxia with momentary blurring of consciousness. About September 20, a major generalized seizure occurred.

The initial complete neurologic examination was entirely negative. Cisternal puncture showed a pressure of 4 mm of mercury, 4 cells per cubic millimeter with normal serologic constituents.

The patient was admitted to the hospital for encephalography, October 4. While under the effects of morphine and scopolamine preliminary to air injection a convulsion was witnessed. The spasm began in the right foot, focal at first, but quickly spread bilaterally in a generalized seizure. A transient weakness of the right seventh nerve, right arm paresis with right ankle clonus, extensor plantar reflex and hypalgesia of the entire right side were observed.

Encephalographic examination after the introduction of 125 cc of air revealed that the right anterior horn was normal in size but was displaced from 6 to 8 mm toward the right. No air was seen in the left lateral ventricle. There was obliteration of the subarachnoid spaces over the left cortex. The interpretation was a partial block of the foramen of Monro on the left side due to tumor in the left parietal region.

An exploratory operation performed by Dr W McK Craig at the Mayo Clinic revealed a soft mass at a depth of about 3 cm in the left parietal lobe. No tumor tissue was found on aspiration. Convalescence was stormy. The patient became aphasic and had a right hemiparesis following the operation, but this gradually improved. Severe convulsions recurred at intervals, high voltage roentgen treatments were given, but the patient died about nine months after operation from medullary compression.

Necropsy revealed a large tumor mass in the left medial parietal region with considerable necrosis and indistinct separation from brain tissue.

The diagnosis was glioblastoma multiforme.

CASE 2—*A large meningioma showing only local pressure phenomena, diagnosed by x-rays, complete removal and recovery*

Mrs P D, aged 50, was examined, May 15, 1933. In October 1932 the patient first noted attacks of cramping of the right foot. After several such attacks there occurred clonic spasm of the entire right half of the body without loss of consciousness. After a free interval of about six months the attacks recurred. There were no other complaints.

Complete neurologic examination revealed only a slight paresis of the right lower face and arm. A cisternal puncture showed a pressure of 6 mm with normal cellular and serologic changes in the fluid.

Roentgen examination of the skull showed a prominent diploe over the left parietal region and a thin layer of calcification along the falx in the midline region. A faint shadow measuring 2 by 3 cm was seen in the left superior parietal region.

Encephalographic studies after the removal of 120 cc of fluid revealed a shift to the right of about 6 mm, and the left lateral ventricle was shifted downward about 3 mm. There was flattening and depression of the posterior half of the anterior horn of the left lateral ventricle. The third ventricle was enlarged. No air was seen in the left cortical subarachnoid spaces, and only a moderate amount was seen over the left cortex. The interpretation was a space-consuming lesion of the left parietal frontal region, particularly parietal, probably a meningioma.

A left parietal exploration was performed by one of us (J J K). There was no increase in intracranial pressure. Over the left superior parietal region, about 2 to 3 cm from the superior sagittal suture, a tumor measuring 5 by 6 cm was found beneath the dura. The tumor was firmly attached to the dura and adherent to the cortex beneath. The tumor was completely removed with about 2 cm of the dura.

The diagnosis was meningeal fibroblastoma, parasagittal.

The patient made a normal recovery with a slight residual right facial and arm weakness remaining for a time.

CASE 3—*A probable glioblastoma multiforme, diagnosed by encephalography, inoperable, death within six months, general ized pressure signs in the terminal stages*

Mrs C K M, aged 41, seen, April 4, 1932, complained of fatigue and was slightly lethargic. In December 1931, following a head cold treated as sinusitis a dull, aching pain developed over the left eye. This pain increased in severity during March and the patient's husband (a physician) noted that she had a slight right lower facial weakness on smiling and some trouble in recalling names, with memory lapses.

A complete neurologic examination revealed only a lower right facial weakness and a slight paraphasia. A cisternal puncture showed pressure of from 4 to 6 mm of mercury with normal cellular and serologic constituents in the fluid.

Roentgen examination of the skull showed a suggestion of pressure markings in the left frontal region and a small area of bone rarefaction in the anterior left temporal region.

Encephalography after the removal of 175 cc of fluid revealed that the right lateral ventricle was about six times the normal size. The left lateral ventricle showed an encroachment on the middle portion of the floor adjoining the midbrain. There was a rounded tumor mass about 3 by 4 cm in diameter below the left lateral ventricle. The right border extended across the midline from 10 to 15 mm. An irregular elevation from the floor of the left lateral ventricle about 11 cm anterior to the junction between the anterior and inferior horns nearly separated the ventricle into an anterior and posterior division.

A left frontal exploration was carried out by one of us (J J K). No increased intracranial pressure was found and no definite tumor was detected.

High voltage roentgen treatments were given. The patient gradually became more aphasic and mentally confused. In June the first signs of generalized increased intracranial pressure appeared. The patient died. Necropsy was not performed.

CASE 4—*A clinical diagnosis of traumatic hematoma or cyst proved to be an oligodendroglioma, recurrence after removal, death two years later*

W S, a man, aged 28, examined, Oct 15, 1932, had fallen about 20 feet, from a scaffold in October 1929. He was unconscious about one hour and hospitalized for one week at the time of the accident. In March 1930 left-sided sensory and motor spasms began, starting in the left thumb and fingers, followed by tonic spasm of the hand, and ending in unconsciousness. These attacks soon occurred daily but were partially relieved by continuous ingestion of phenobarbital. The patient had noted a few headaches since the accident.

A complete neurologic examination revealed no focal signs. The spinal fluid pressure was 10 mm of mercury with normal cellular and serologic changes.

Encephalographic studies after removal of 100 cc of fluid revealed a moderate obliteration of the subarachnoid markings over the right cerebral hemisphere with compression and slight displacement of the right lateral ventricle to the left. The interpretation was a pressure lesion in the region of the right motor area. The clinical diagnosis was a delayed subdural hematoma or cyst.

Exploration over the right motor area by one of us (J J K) revealed flattened convolutions and pressure obliteration of the subarachnoid spaces. There was a focal lesion of the motor cortex with vascular and fibrous attachments of the arachnoid and dura, with old thrombosis of the cortical vein and a definite fibrous scar in the cortex beneath, measuring about 1 cm in diameter. The cortex beneath this area felt soft and degenerated. Faradic stimulation of the scar caused a sensation and movement in the left thumb similar to the onset of an attack. Stimulation of the normal motor cortex above this caused

movement of the entire arm. The scarred area, 3 cm in diameter, was excised. A decompression opening was made in the temple and the wound was closed.

The cellularity of the tissue with the uniformity of cell size and lack of intercellular substance corresponded to an oligodendroglioma of a rather rapidly growing type.

A slight residual weakness of the left hand with hypalgæstia followed the operation. The patient received a course of high voltage roentgen therapy and returned home. The convulsive seizures progressed and the patient died in the fall of 1934, not under our observation.

CASE 5—Treated for epilepsy about ten years; no generalized pressure signs, probable clinical diagnosis meningioma, pathologic diagnosis malignant oligodendroglioma; recurrence after removal, died eighteen months later.

J. A. H., a man aged 54, examined July 28, 1930, had first begun having generalized convulsions at about the age of 43. For a number of years he had been treated for epilepsy by a neurologist. During the past year the spells had become more severe and the patient had noted memory loss with some trouble in understanding and in expressing himself. There had been only very slight headache in the upper cervical region for two weeks.

Complete neurologic examination revealed a word naming aphasia, a word reading aphasic reaction and a right homonymous hemianopsia. A cisternal puncture showed a pressure of 8 mm of mercury with normal cellular and serologic constituents.

Roentgen examination of the skull showed a calcified area 5 by 6 cm in the left temporoparietal region.

An exploration by one of us (J. J. K.) over the left inferior parietal area revealed some calcified plaques in the temporal dura. A tumor about 4 cm in diameter was found adherent to the dura. It was soft and vascular with no apparent capsule, and was completely removed. There was considerable troublesome bleeding.

The diagnosis was oligodendroglioma.

The patient made a good recovery with some residual hemianopsia and right leg and right arm weakness, which gradually improved under high voltage roentgen therapy. He became worse after eighteen months and died in April 1932.

CASE 6—A roentgen and clinical diagnosis of cerebral cyst proved to be a benign oligodendroglioma; six years of focal spasms without generalized pressure signs, recovery following surgical removal of tumor.

G. McK., a boy, aged 8 years, examined Aug. 17, 1931, had complained for six years solely of attacks of stiffness in the arms, legs and neck, lasting a moment and followed by transient flaccid weakness of the right arm. There was never complete loss of consciousness, the attacks occurred in serial form every few months at first, they became more severe later, with complete normality in the free intervals.

A complete neurologic examination was entirely negative but during observation a seizure occurred. The arms and neck were rigid, the right arm was straight and the left flaccid. There was a slight tremor, the legs were immobile. The patient stared but was conscious and the attack lasted only a minute. Immediately following the attack the right arm and face were paretic for a minute but there was no disturbance in reflex activity or sensation.

A spinal puncture showed pressure of from 6 to 8 mm with normal cellular and serologic constituents.

A roentgenogram of the skull showed a rather smooth defect in the inner table of the medial portion of the left parietal bone, about 3 cm in diameter. Prominent digital markings were present in both parietal and frontal regions. There was some increase in density over the parietal region with one large area of lessened density 1 inch in diameter toward the vertex which would suggest some bone destruction of the inner table in this area.

The interpretation was evidence of some old increase in intracranial pressure and a questionable defect in the vertex portion of the left parietal bone, suggesting meningioma. The clinical diagnosis was cerebral cyst.

An exploratory bone flap done by one of us (J. J. K.) revealed a rather tense dura that felt cystic in the medial

parietal region. The needle struck 5 cc of clear fluid at a depth of 2 cm. When the dura was opened a soft tumor in the medial posterior parietal region was found covered by thin edematous cortex. Silk sutures were placed deeply about surrounding blood vessels, the tumor was freed by blunt dissection and removed. It measured 4 by 5 cm, had no capsule and was too soft to keep intact.

The diagnosis was oligodendroglioma.

High voltage roentgen therapy was given and the patient was dismissed on the twelfth day in good condition. Since then there has been no evidence of recurrence and no return of epileptiform attacks. He is well and active, with normal neurologic manifestations.

CASE 7—A clinical picture simulating an encephalitic infection with absence of pressure phenomena proved at necropsy to be a malignant astroblastoma.¹⁶

H. S., a girl aged 8 years, was referred to Dr. J. A. Henske Oct. 20, 1930, with evidence of a progressive chorea with asthenia for about three months. At the initial examination the condition appeared to be quite typical of acute infectious chorea. November 15 a complete neurologic examination by Dr. G. A. Young revealed vertical nystagmus on upward gaze, bilateral ataxia of the arms and legs involving the left side more than the right, involuntary choreiform movements, an absence of the left abdominal reflex, left ankle clonus and an extensor plantar reflex. In the Romberg position the child deviated to the left. All forms of sensation were normal.

Several spinal fluid examinations never showed pressure above 10 mm of mercury. The optic fundi were always normal. There were occasional febrile reactions, with leukocytosis up to 17,800. The entire picture suggested an infectious process. The diagnosis at this time was a chronic encephalitis, with mid-brain, bulbar, pontile, cerebellar pathway involvement.

A progressive stupor developed and bilateral pyramidal tract signs and bulbar involvement were noted in the terminal stage. The child died, Feb. 14, 1931.

At necropsy the external appearance of the brain was essentially normal. On the left side of the pons was a tumor which caused it to bulge somewhat and become flattened and spread out, owing to pressure against the base of the skull. This area measured 4 by 3 by 2 cm and was closely adherent to the surrounding tissue. The tumor was white, rather firm, and more or less uniform in gross appearance. Adhesions extended backward to the cerebellum. The lateral ventricles were markedly dilated on both sides and in about equal amounts. The third ventricle also was dilated widely and contained a large amount of clear fluid. The tumor extended well into the pons, involving an area nearly 3 cm in diameter. There was a marked pressure furrow of the foramen magnum.

The diagnosis was astroblastoma.

CASE 8—A malignant glioblastoma multiforme; recurrent apoplectic attacks simulated vascular disease until spinal pressure of 16 mm led to diagnosis by encephalography; recurrence after removal; death within one year.

Mrs. A. S., aged 46, was examined, Oct. 11, 1928. Eight weeks before, a left hemiparesis had developed within a few hours. Under hospital observation the patient made a good functional recovery within two weeks. One week later, after exertion, the patient again lost the use of the left half of the body and focal left-sided convulsive seizures occurred at intervals.

The general physical and neurologic examinations were negative except for left hemiparesis with pyramidal tract reflex signs and some hypalgæstia. The blood pressure was not increased.

Roentgen examination of the skull revealed some shadows of increased density in the right frontal area.

The patient had no generalized intracranial pressure symptoms or signs until after an encephalogram one month after admission, when haziness of the optic disks appeared. The first pressure sign was 16 mm of spinal fluid pressure. This finding raised the first suspicion that the apoplectic syndrome was probably caused by a neoplasm and led to the use of encephalography.

¹⁶ We are indebted to Dr. J. A. Henske for the privilege of reporting case 7.

CEREBRAL NEOPLASMS—BENNETT AND KEEGAN

JOUR. A. V. A.
JAN. 5, 1935

Encephalography showed poor filling of the right anterior horn with a shift of the ventricles to the left from a filling defect in the midportion of the ventricle. The interpretation was a subcortical tumor of the right parietal lobe.

December 17, a right superior parietal exploration was made by one of us (J. J. K.) and 50 cc of straw colored fluid was removed near the anterior horn of the right ventricle at a depth of from 3 to 4 cm. In the temporal subarachnoid space in the region of the lateral cerebral fissure was an old basilar subarachnoid hemorrhage. The tumor, about 3 cm in diameter, was found in the parietal lobe. The surface was firm and well defined, in the deeper portions it appeared soft and degenerated. It was enucleated, the corpus callosum was seen in the floor of the cavity.

The tumor removed at operation weighed 52 Gm, was soft, friable and hemorrhagic, with no capsule. Microscopic sections showed densely massed moderately small cells with little stroma. The tumor cells in well preserved areas were rather uniform in size, with numerous mitotic figures. Other areas showed necrosis and hemorrhage from rupture of numerous thin walled blood vessels.

The diagnosis was glioblastoma multiforme. An aseptic meningitis followed the operation with a spinal fluid pleocytosis. Roentgen therapy was given the patient, who made a good functional recovery for six months. In May 1929 a recurrence of the left hemiparesis occurred. A large amount of cystic fluid was aspirated but a convulsive state followed, and the patient died, July 24, 1929, of medullary compression.

At necropsy a large protuberant mass was fixed to operative adhesions in the right parietal region. The diagnosis was glioblastoma multiforme.

CASE 9—A malignant glioblastoma multiforme without generalized pressure signs diagnosed by encephalography death within nine months.

J. H., a man aged 35, was examined at the University Hospital, May 4, 1929. In February 1928 the patient had been refused life insurance on account of glycosuria and diabetic spells, asthma and spasmodic jerks of the right arm and leg. Under hospital observation at this time blood sugar readings were as high as 233 mg per hundred cubic centimeters. The neurologic examination was negative. A tonsillectomy was performed and he was dismissed on a diabetic regimen.

The patient was readmitted, August 20, on account of progressive weakness of the right half of the body with some occipital headache. Examination at this time disclosed a slight right hemiparesis with absent abdominal reflexes but no other pyramidal tract signs. Spinal puncture showed 10 mm of mercury pressure and three days later the pressure was 14 mm.

The patient was becoming somewhat somnolent. Encephalographic studies were then carried out, which revealed a filling defect of the left lateral ventricle, with the right ventricle dilated and the ventricles shifted to the right. The clinical and roentgenologic interpretation was a probable subcortical glioma in the left postcentral region.

A left parietal craniotomy operation by one of us (J. J. K.), September 18, revealed a very tense dura and lack of normal resistance to the exploring ventricular needle, and 5 cc of thick yellow fluid was released at a depth of 3 cm. In view of the tension, depth and probable malignant character of the tumor in the left parietal lobe, further exploration was not done. The patient's condition gradually became worse following operation and he died, November 11.

Necropsy disclosed flattened cerebral convolutions and a tumor, about 5 cm in diameter, deep in the left temporoparietal region. A diagnosis of glioblastoma multiforme was made.

CASE 10—An inoperable craniopharyngioma, with general pressure signs lacking simulated an infectious encephalopathy diagnosed by encephalography death ten months after onset.

M. J. O., a man, aged 39, in February 1932 was confined to bed one week with influenza, during which time he was drowsy and apathetic and had double vision. His strength was never

fully regained and gradually failing vision was noted. Since July the patient had been unable to read. Dr. W. H. Stokes at this time found the vision 20/40 in both eyes, the visual fields and fundi were normal with a slight vertical nystagmus. In August all work was stopped and the vision was reduced to 20/200 in each eye. The fields then showed central scotomas with involvement of the blind spot and a sector defect for color in the lower part of the right nasal field and the lower part of the left temporal field. The results of examination seemed to be in keeping with retrobulbar neuritis. The patient's complaints at this time were fatigue, poor vision, memory failure and low-grade fever.

Repeated neurologic examinations revealed no focal manifestations. Cisternal puncture showed a pressure of 4 mm of mercury, normal cell count, normal protein content, and a negative Wassermann reaction. The colloidal gold curve was 1122110000. A tonsillectomy was performed, following which there was a prolonged fever until October. The lethargic state and mental confusion progressed. By September the vision was reduced to 7/200 and 9/200 and a definite pallor of the temporal halves of the optic nerves was present. The sinuses were explored but no definite infection was discovered. Neurologic examinations were still negative except for the eyes. In September the spinal pressure was 4 mm of mercury, the protein content was increased, but otherwise the fluid was normal. The mental deterioration was becoming profound.

The general impression of the examiners was that the cerebral disorder was most likely a toxic or inflammatory encephalopathy. The patient then stuporous, was taken to the Mayo Clinic in December 1932.

A diagnosis of indeterminate brain lesion was made and encephalography carried out. This suggested a prechiasmatic lesion, probably basofrontal. A right frontomotor exploration was carried out. On elevation of the frontal lobe exploration nerves and chiasm were found to be involved in an inoperable tumor mass which seemed to extend from the third ventricle anteriorly. Death followed within twenty-four hours.

At necropsy there was found a large infiltrative invasive cystic tumor of the third ventricle, growing forward and involving the optic chiasm and nerves. The microscopic appearance of the tumor corresponded to a cystic adamantinoma of the floor of the third ventricle.

CASE 11—Parasagittal meningioma, no generalized pressure signs, diagnosis confirmed by x-ray, complete recovery following removal.

H. O., a man, aged 40, seen, Feb. 16, 1933 at the Nebraska Methodist Hospital, gave a history of attacks of numbness and later weakness in the left foot, beginning in January 1931. Recently he had developed epileptiform attacks involving the left side of the body with residual left sided spastic weakness persisting between attacks. He had no headaches, nausea or vomiting.

The neurologic examination showed a left hemiparesis of the spastic type, greater in the leg than in the arm, with very little sensory loss. The spinal fluid pressure was 4 mm of mercury and the serology was negative. There was no papilledema or impairment of the visual fields.

A roentgenogram of the skull revealed an area of hyperostosis in the right superior parietal region with an underlying intracranial mottled calcification about 2 cm in depth and 3 cm in diameter. The parietal diploic venous channels were accentuated on both sides, more on the left.

A diagnosis of right parasagittal meningioma was made and right parietal craniotomy performed by one of us (J. J. K.), March 4, 1933. Owing to considerable hemorrhage in elevation of the bone flap, a two stage operation was decided on and the dura was not opened. Following this operation signs of intracranial pressure appeared, partly relieved by hypertonic dextrose intravenously. Second stage operation was performed, March 11, and a large firm, encapsulated tumor was removed from the right medial parietal region. Microscopic sections showed the tumor to be a rather dense fibrous type of meningioma.

The postoperative recovery was satisfactory with considerable edema of the brain and herniation for a few days and increased paralysis of the left side for a time, but gradual

improvement occurred with relief from pressure and only slight residual spastic disability of the right foot remained

CASE 12 — Case illustrating difficulties in differentiation between epidemic encephalitis and third ventricle tumor

M. E., a boy, aged 9 years, admitted to the University Hospital, March 7, 1934, had begun to complain of diplopia and lethargy in school about four weeks before. In about one week weakness of the right half of the body began and developed to hemiparesis. Just before admission the lethargy and asthenia became progressive. There was no history of headache or febrile infection.

Complete examination disclosed a complete left third nerve palsy, double fixed pupils, a right hemiparesis with pyramidal tract reflexes, a slow pulse and coma from which the patient could be aroused momentarily to cooperate. Spinal puncture showed 6 mm of pressure, 7 cells per cubic millimeter, normal protein content and 54 mg of sugar per hundred cubic centimeters. A second puncture twelve hours later showed 4 mm of pressure with normal constituents of the fluid.

The patient was treated on the basis of an infectious process. Forced spinal fluid drainages were carried out with hypotonic saline, about 200 cc of fluid was removed at a drainage. There was no improvement in symptoms; the only change in the spinal constituents was an increase in cells and protein content with a colloidal gold curve reading of 333322100. The temperature ranged from 100 to 105 F most of the time.

The patient died with a terminal hyperpnea of 110 F on March 22.

Necropsy revealed a grossly circumscribed lesion, apparently a soft yellowish invasive tumor completely surrounding the third ventricle. There was no block; the lateral ventricles measured about twice the normal size, the tumor 3 by 5 cm.

Sections of the midbrain region in which extensive necrosis gave the gross appearance of tumor with a rather sharply defined border showed no definite tumor tissue. Large areas of complete necrosis were bordered by extensive mononuclear cell tissue and perivascular infiltration with many endothelial macrophages, in some places almost occluding the lumen of blood vessels, and bordering degenerated areas filled with chromatin particles.

The diagnosis was acute epidemic encephalitis with necrosis.

COMMENT

In none of these twelve cases was the characteristic triad of generalized increased intracranial pressure present. None of the cases presented fundoscopic changes of the pressure type. In only two instances was the spinal pressure reading above 10 mm of mercury during our diagnostic observation period. One patient had a pressure of 14 mm and another had a pressure of 16 mm, giving the first indication of a pressure lesion. Headache was noted in only two instances and in these increased pressure was a doubtful cause. Vomiting was not present in any case during the diagnostic observation period.

The most valuable single early diagnostic symptom or sign was focal spasms. In eight cases jacksonian seizures were present. One patient had been treated for an essential epilepsy for about ten years. The earliest symptom in one case was a sensorium change, in one case, progressive blindness, in another, progressive choreiform movements, in one, recurrent hemiparetic attacks along with focal spasm, and in another case, lethargy with diplopia.

In six cases (50 per cent) the roentgen examination showed localized changes suggestive of localized pressure with other conditions suggestive of an intracranial neoplasm. In seven cases encephalographic studies were made and considered diagnostic of tumor with accurate localization in each instance. Four of these cases presented marked distortion, compression and displacement of the lateral ventricles, indicating large tumors, but there was no definite increase in the intra-

cranial pressure. In two cases roentgen studies of the skull were not made.

In nine cases we made a diagnosis of cerebral neoplasm in the absence of generalized intracranial pressure phenomena. In three instances a diagnosis of inflammatory encephalopathy was considered more likely. In case 10 the correct diagnosis of tumor was made later in another clinic by encephalography. In an 8 year old child (patient 7) the tumor was not suspected but was found at necropsy. In another child (patient 12) a typical syndrome of lethargic encephalitis was present. At necropsy gross examination revealed what was apparently a third ventricle tumor, but the histologic report was encephalitis. Two tumors in the region of the third ventricle presented the greatest diagnostic difficulties in this group because of the febrile disorder, the short duration of the illness and the complete lack of pressure phenomena.

There were three excellent functional recoveries in the group, and three instances of palliative relief for several months from decompression and partial removal. Of the fatal cases, five patients with a highly malignant glioblastoma multiforme died within one year after the onset of symptoms. In two cases, oligodendrogliomas recurred and death occurred within two years. One patient is still alive and in good health three years later. One patient with craniopharyngioma died within ten months. Two of the three recoveries were in patients with benign meningiomas.

CONCLUSIONS

1 The classic cardinal symptoms of increased intracranial pressure are lacking in from 15 to 30 per cent of patients with cerebral neoplastic lesions.

2 The size of the neoplasm has little to do with the production of intracranial hypertension. The location of the tumor has much more to do with the degree of hypertension present.

3 The spinal manometer is a more accurate guide in the diagnosis of a pressure lesion than the fundoscopic examination.

4 Localized pressure phenomena in certain cases are highly diagnostic before generalized pressure symptoms appear. Some of these local signs are the results of roentgen examinations, epileptiform seizures, especially focal spasms and organic psychotic reactions.

5 In certain cases a clinical differentiation cannot be made between vascular lesions, thrombotic or hemorrhagic, and cerebral neoplasms, especially the "spongio-blastomas". In these cases encephalography is the only accurate diagnostic method in which pressure signs are absent. Rapid progression of symptoms with involvement of the speech center, a large defect shown on encephalography with an absence of intracranial hypertension and no improvement on dehydration all indicate an inoperable type of glioma. With these criteria one should be able to prevent unnecessary surgical exploration.

6 Tumors in the region of the third ventricle, especially in children, simulate infectious encephalitic disease, run a short febrile course and at times show no pressure signs. In these cases a positive diagnosis could probably not have been made even with encephalography.

SUMMARY

In twelve cases of cerebral neoplasm, generalized intracranial hypertension was absent. In ten cases the diagnosis was correctly made before pressure signs

were manifest. The results of encephalographic examination confirmed the diagnosis in seven instances. We believe that various diagnostic methods should be used more generally to make earlier diagnoses of brain tumor in doubtful cases.

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ABSTRACT OF DISCUSSION

DR ALFRED W. ADSON, Rochester, Minn. This paper emphasizes the importance of making an early diagnosis in cases of tumor of the brain and calls attention to mechanical means that have proved of value in arriving at a proper diagnosis. The disturbance of intracranial pressure by encephalography can result in a fatality; therefore such an examination should be performed in an operating room where there are facilities for immediate craniotomy. Although encephalography supplies much information concerning the size and contour of the convolutions, subarachnoid spaces and the ventricles, I do not believe it should be used indiscriminately, nor should it be used in cases in which the history and clinical observations clearly indicate the situation of the lesion, since the procedure is painful, requires hospitalization of the patient, and incurs unnecessary expense.

DR LLOYD H. ZIEGLER, Albany, N. Y. Tumors that grow slowly in adults and do not occlude the foramina of Monro, Magendie and Luschka or the aqueduct of Sylvius may attain a large size without producing choked disks or other evidences of intracranial pressure. Intracranial adaptations to slow growing neoplasms are remarkable by the relative absence of symptoms. In children, before the cranial sutures have united, intracranial growths may not produce, until late, the usual clinical pressure symptoms. The authors report one case of astroblastoma of the pons in a child, aged 8 years. This tumor usually occurs in the cerebral hemispheres. I wonder if this could have been a spongioblastoma, which is more likely to be found in the brain stem in children. It is a well known fact that, despite its proximity to the aqueduct of Sylvius and the third ventricle, a neoplasm of the pons produces intracranial pressure late in its course. It is almost impossible at times to differentiate between encephalitis, neoplasm and vascular lesions. In fact, neoplasms may occlude or erode blood vessels to complicate the picture. In every patient who has otherwise unexplained convulsions or petit mal attacks, brain tumor should be suspected. A transient sensory or motor disturbance in an extremity must be explained, usually by some alteration in brain physiology which includes the possibility of neoplasm. Unless one has had much clinical neurologic experience, frontal tumor syndromes may be erroneously disposed of as premenstrual psychoses, psychoses associated with arteriosclerosis, or even depressions or involutional melancholia. A change in personality without corroborative evidence is not sufficient for diagnosing frontal tumor. The authors have stimulated neurologists to think more profoundly about the likely neuropathology and mechanism of intracranial lesions without pressure signs. As experience accumulates, it is doubtful whether encephalography would need to be employed so regularly, but its value is well brought out by the authors in difficult and puzzling cases.

DR GEORGE W. HALL, Chicago. This is an important subject and there are some practical things that should be noted in the discussion. In cases in which there is calcification of the pineal body, one can usually rely on the shifting of that body in making a definite diagnosis between vascular lesions and a tumor located in one or the other hemisphere. Naffziger called attention to this sign, namely, the shifting of the calcified pineal body to the opposite side in which the tumor was located. When one sees patients who show evidences of motor aphasia, for instance in right handed individuals, the shifting of the pineal body to the right is a sign that cannot be safely overlooked. I think it is well to emphasize again what was mentioned in the paper, namely, that one should be extremely careful in making a lumbar puncture in these cases, especially when the tumor is located in the infratentorial region.

DR TEMPLE FAY, Philadelphia. Drs Bennett and Keegan should be congratulated on calling attention to the fact that 15 per cent of cases with intracranial neoplasm may show no signs of increased intracranial pressure. I have had to abandon the idea of "increased pressure" as an index of intracranial pathology. "Pressure" is the amount of force (in terms of physics) of one body of matter resisting or opposing another. "Pressure" is only an index of the apposition of forces. "Pressure" inside the cranial cavity represents the relationships of the contingent volumes, the volume of a tumor, gradually growing and expending itself against the volume of blood, the spinal fluid volume and the brain. If there is an equal shift of volumes, there is going to be no change in pressure. There may be a gradual shift of volume at the expense of a tumor or a collection of fluid but always at the expense of some other volume. Either the container must enlarge or some other component surrender its space. "Focal" or "general" symptoms appear when the volume shift is such that the brain cannot function locally or generally from the standpoint of its nutrition. If a knowledge of physics and hydraulics is applied and "volume" relationships are considered in correlation with clinical symptoms, one will find this "no pressure" mystery explained. In the terminal stages of edema or edemas of the brain in which blood has been displaced gradually and equally, one finds low "pressures" with unconsciousness. High "pressures" frequently occur without symptoms. Cases cannot be compared on a pressure basis alone. Some attack has been made on the question of encephalography. I say from a large experience that in careful hands, and with proper precautions, that procedure is safe and of extreme diagnostic importance. In this I concur with the authors.

DR W. J. GARDNER, Cleveland. I agree heartily with the authors as to the value of the mechanical aids they have described in intracranial diagnosis. I have used encephalography in well over 100 cases of expanding lesions in the brain, and I have used it regardless of the presence of choking of the optic disks. If choking of the optic disks is absent, the encephalograms are likely to be more satisfactory. When a choking of the optic disks is present, the ventricles will not be visualized in a certain proportion of cases. The precautions to be observed are simple. Encephalography should not be carried out when a surgical lesion is suspected unless the operating room is prepared for craniotomy as soon as the films are developed. Within an hour from the time the procedure is started the films are readable, and if a surgical lesion is present, and particularly if there is increased intracranial pressure, the operation should not be delayed. There is no question that once the spinal fluid is removed it tends to reaccumulate more rapidly, and that constitutes the danger in delaying operation. I have made encephalograms in nine cases of suprasellar tumor with very definite results in each case. In most instances the tumors were definitely outlined by the air in the subarachnoid space. In some of these cases, a diagnosis could not have been made by ventriculography because of the absence of ventricular distortion. Encephalography has disclosed several unsuspected subdural hematomas. Encephalograms are made in post-traumatic cases if the spinal fluid is the least bit yellow. Parasagittal meningiomas, of course, very frequently have no increase in the intracranial pressure and occur in the age when it is difficult to differentiate the lesion from cerebral vascular disease. There is some risk in performing encephalography in patients with arteriosclerosis. Even here, however, I believe that the advantages of the procedure outweigh the disadvantages. I feel that these mechanical aids are extremely valuable but should, of course, be used only when definitely indicated and then should be used unhesitatingly.

DR ALBERT S. CRAWFORD, Detroit. Those who are interested in neurologic surgery are grateful to the authors for presenting this subject, because such papers are increasing the general knowledge all over the country and bringing earlier diagnosis of brain tumors. As has been brought out, brain tumors may develop without the old, well recognized triad of headache, choked disks and vomiting. Because of such papers, there is an increasing suspicion among the diagnosticians for brain tumors. As a result, a larger percentage of cases are seen in time for early operation and hence more cures result. I agree

with Dr Adson that encephalography is a procedure that has danger in it but, on the other hand, it is being done safely in increasing numbers and I think with justification, especially in this group of cases. If encephalography is to be done, it should be done by one who is ready to take care of any complications that might arise. One variation I have been using in cases in which there may be trouble afterward is to make a preliminary occipital trephine, close up the skin and go ahead with the encephalography. If complications develop from obstruction in the posterior fossa, the trephine is ready and a needle can be quickly put into the ventricle and the pressure reduced without the delay of an operation. These cases constitute a group that may be called brain tumor suspects. There is developing an increasing suspicion that these cases may be brain tumors, and neurologists are now more commonly putting that down as a possibility. Previously brain tumor was one of the last things thought of by diagnosticians. Now it is put near the top of the list, and rightfully. It is by a more critical study of the "suspects" with a careful follow up, if at first negative, that continuing improvements in results can be hoped for.

DR WALTER ABBOTT, Des Moines Iowa. In the past two years I have seen three cases in the classification Dr Bennett has brought forth lesions of the third ventricle. One was a congenital defect and the other two were ball valve tumors. There were fluctuating symptoms and in all cases the spinal manometric readings were within normal limits. Encephalography was carried out and the ventricles were not filled satisfactorily, necessitating a secondary procedure ventriculography. As Dr Adson and Dr Crawford have mentioned I think that often in these third ventricle lesions although they are few in my experience, encephalography alone is not satisfactory.

DR A E BENNETT Omaha. The question of the indiscriminate use of encephalography has been brought up with which I agree. There is still fear of using encephalography in fourth ventricle tumors and other posterior fossa tumors. The only accident that I have had was in a ball valve third ventricle tumor in which an encephalogram was done and the patient died of cerebellar herniation a few hours afterward. I am fearful of that type of tumor. I agree with Dr Abbott that those tumors are difficult of diagnosis even with encephalography. Neurologists are going to see more and more of these tumor suspects earlier and should give increased attention to this subject. Everything available has had to be used to make an early diagnosis. I was glad to have Dr Fry bring out the relationship between the various brain volume states of edematous nature and obstructive lesions within the ventricular system. Some concepts in these situations will have to be revised if the mechanics of intracranial pressure is to be understood. I think Dr Gardner is even more courageous than we are in the use of encephalography in the diagnosis of his tumors, as illustrated in one of his cases in which they made a diagnosis of posterior fossa tumor by encephalography. We are afraid to go ahead in those cases as yet.

The Impersonal Attitude—Within the last few decades there has been a growing recognition that the disease has been overemphasized, that the patient has been somewhat neglected. Physicians with great experience and much human sympathy have been dismayed by the impersonal attitude of scientifically trained physicians who are so dehumanized that they treat their patients with the precision and the detachment with which they treat their experimental guinea-pigs and mice. Such an attitude may seem to bear the hallmark of science and therefore to be beyond criticism. This attitude toward the problems of medical practice may claim the authority of science only if science be very narrowly interpreted as being confined to the precincts of the laboratory and only if the actual phenomena of human nature be looked upon as outside the sphere of scientific observation. To do justice to his patient the physician must take into consideration not only the precise laws of the laboratory but also the laws which regulate the reaction of man to his environment even though these laws cannot be formulated in mathematical or precise physical terms.—Campbell, C Macfie. *Psychiatry from the Standpoint of the General Practitioner, Pennsylvania M J* 38 59 (Nov) 1934

TOTAL ABLATION OF THYROID IN ANGINA PECTORIS AND CON- GESTIVE FAILURE

A SUMMARY OF RESULTS IN TREATING SEVENTY-FIVE PATIENTS DURING THE LAST EIGHTEEN MONTHS

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Our purpose in this communication is to summarize our experience during the last eighteen months in treating seventy-five patients with chronic heart disease by removing the entire normal thyroid gland¹. Our efforts have been directed in five main directions: (1) clinical appraisal of the therapeutic value of the procedure,² (2) establishment of criteria for the proper selection of patients, (3) reduction in the risk of operation through study of the surgical technic and the best possible preoperative and postoperative care,³ (4) study of the mechanisms whereby the development of hypothyroidism results in relief of angina pectoris and congestive failure,⁴ (5) investigation and control of the secondary consequences of the hypothyroid state.⁵ Although final conclusions concerning these problems await the results obtained over a period of years, it may be helpful to state the results based on our present experience.

The group of seventy-five patients with chronic heart disease which forms the basis of this report was carefully selected from a much larger number of patients with heart disease treated at the Beth Israel Hospital. No patient showed any of the clinical signs or symptoms of thyrotoxicosis. Only patients found to have unquestionably normal thyroid glands by our pathologist Dr Monroe Schlesinger are included in this report. Most of the patients were chronic invalids confined to bed and chair existence. Other patients regularly suffered congestive heart failure when they undertook effort or showed attacks of angina pectoris at rest or on slight or moderate exertion. Every patient had been incapacitated for long periods in spite of having received all available medical therapeutic measures. Their clinical course was such that any

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From the Medical Research Laboratories of the Beth Israel Hospital and the Department of Medicine, Harvard University Medical School.

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Because of lack of space this article is abbreviated in *THE JOURNAL*. The complete article appears in the authors' reprints. It will include case reports illustrating the degree of improvement characterized by statements and by tables 2 and 5.

1 Blumgart H L, Levine S A and Berlin D D. Congestive Heart Failure and Angina Pectoris. The Therapeutic Effect of Thyroidectomy on Patients Without Clinical or Pathologic Evidence of Thyroid Toxicity. *Arch Int Med* 51: 866 (June) 1933.

2 Blumgart H L, Riseman J E F, Davis David and Berlin D D. Therapeutic Effect of Total Ablation of Normal Thyroid on Congestive Heart Failure and Angina Pectoris. III. Early Results in Various Types of Cardiovascular Disease and Coincident Pathologic States Without Clinical or Pathologic Evidence of Thyroid Toxicity. *Arch Int Med* 52: 165 (Aug) 1933.

3 Berlin D D. The Therapeutic Effect of Thyroidectomy on Congestive Heart Failure and Angina Pectoris in Patients with no Clinical or Pathologic Evidence of Thyroid Toxicity. II. Operative Technique. *Am J Surg* 21: 173 (Aug) 1933.

4 Weinstein A A, Davis David, Berlin D D and Blumgart, H L. Observations on the Mechanism of the Early Relief of Pain in Patients with Angina Pectoris and Congestive Failure After Total Ablation of the Normal Thyroid Gland. *Am J M Sc* 187: 753 (June) 1934.

5 Gilligan Dorothy R, Volk Marie C, Davis David and Blumgart H L. Therapeutic Effect of Total Ablation of Normal Thyroid on Congestive Heart Failure and Angina Pectoris. VIII. The Relation Between the Serum Cholesterol, the Basal Metabolic Rate and the Clinical Aspects of Hypothyroidism. *Arch Int Med*, to be published.

striking improvement could be definitely attributed to the operative procedure. Patients received the usual medical treatment for heart disease in the hospital for from weeks to months before operation to reduce the operative risk to a minimum. Patients were operated on in the presence of signs of congestive failure only.

TABLE 1—*Etiology of Heart Disease of Fifty Patients with Circulatory Failure*

Type of Disease	Number of Cases
Rheumatic heart disease	20
Arteriosclerotic heart disease*	14
Hypertensive heart disease	3
Congenital heart disease	2
Syphilitic heart disease	1
Cor pulmonale	1

* Five of these patients also had hypertension.

after protracted medical treatment had failed to produce any further improvement.^a Operation on such patients is not advised.

RESULTS IN PATIENTS WITH CONGESTIVE FAILURE

Of the seventy-five patients with chronic heart disease, fifty patients were treated primarily for recurrent congestive failure of rheumatic, arteriosclerotic, hypertensive, congenital or syphilitic etiology (table 1). The ages of the patients ranged from 18 to 69 years, twenty-four were males, twenty-six females. The post-operative improvement in our patients has been judged by the loss of edema at rest or its failure to reappear on exertion, by diminution in pulmonary congestion as evidenced by disappearance of hydrothorax or râles, by the disappearance of orthopnea, by the diminution of cyanosis, by the increased capacity to undertake work, by the absence of dyspnea on moderate exertion, and by functional tests which are to be elsewhere described. Twenty-four of these patients have maintained compensation and have shown decided improvement for from two to eighteen months. For the first time in from months to years they are up and about the entire day without discomfort and without reappearance of the signs or symptoms of congestive failure. Four patients are able to undertake only light work, while twenty patients are living a life of moderate activity, and, although not indulging in heavy labor, many are economically rehabilitated. In more than

TABLE 2—*Results in Fifty Patients with Circulatory Failure*

Result	Number of Cases
Compensation maintained (2 1/2 months)*	24
Recurrent decompensation (temporary)†	6
Operative deaths	6
Subsequent mortality	6
Unimproved	2
Recently operated on	6

* All patients working or able to work.

† All patients responded readily to treatment and have maintained compensation for from four to six months since recurrent failure.

half of these patients the postoperative period ranges from six to eighteen months, eight have maintained their compensated state for more than a year. Case 1 is given as representative of this group of twenty patients (table 2) who are economically rehabilitated.

6 Blumgart, H. L., Berlin, D. D., Davis, David, Ruzman, J. E. F. and Weinstein, A. A. Treatment of Angina Pectoris and Congestive Heart Failure by Total Ablation of the Thyroid in Patients Without Thyrotoxicosis. X. With Particular Reference to the Pre and Post-operative Medical Management. *Ann Int Med* 7: 1469 (June) 1934.

CASE 1—*Arteriosclerotic heart disease, rheumatic heart disease, congestive failure for three years, angina pectoris, marked improvement eighteen months after operation.*

G. F., a man, aged 52, a chef, entered the hospital complaining of shortness of breath, palpitation and substernal pain of three years' duration. Three years prior to admission, while working, he suffered an attack of severe precordial pain which radiated down both arms. Despite several months of rest in a sanatorium, dyspnea and substernal pain were experienced on exertion. For two years before admission he had increasing edema of the legs. For nine months the patient was completely bedridden because of congestive failure and angina pectoris. Physical examination showed orthopnea, cyanosis, marked enlargement of the heart, auricular fibrillation and a mid-diastolic murmur at the apex. The liver was enlarged and tender, there was pitting edema of the legs and sacrum and moist rales at the bases of the lungs. The basal metabolism was minus 2 per cent, and arm to tongue circulation time was 44 seconds. These signs of congestive failure diminished after further treatment but did not disappear completely.

Total ablation of the normal thyroid gland was performed Dec 15, 1932. The basal metabolism had decreased to minus 28 per cent four weeks after operation. The patient was able to undertake moderate exercise without recurrence of signs and symptoms of congestive failure or angina pectoris. Three and one-half months after operation he was given work in the hospital as a porter in the research laboratories, working eight hours a day, six days a week. One and a half years after operation the patient was still at work full time. Physical examination revealed no sign of congestive failure, the patient complained of no dyspnea or precordial pain on exertion. The basal metabolism was minus 26 per cent, the arm to tongue velocity was 42 seconds.

The patient with arteriosclerotic and rheumatic heart disease, angina pectoris and congestive failure of three years' duration has shown conspicuous improvement for one and a half years after operation. He shows no evidence of congestive failure and at no time has he had dyspnea, palpitation, pain in the chest or edema while at work. In spite of the permanent lowering of the metabolic rate and the development of mild unprogressive symptoms of myxedema, he has shown none of the mental slowness usually associated with severe spontaneous myxedema. He is carrying out his work satisfactorily and, mentally, is a normal person.

Of the twenty-four patients with congestive failure who have maintained their improvement, four are able to undertake only light work. The average duration of postoperative improvement in these four patients is seven and one-half months.

Two patients have shown little or no improvement following operation. The clinical abstract of case 16 is illustrative of this group.

CASE 16—*Arteriosclerotic heart disease, cardiac failure of three years' duration, bronchial asthma, pulmonary emphysema, angina pectoris, no improvement eleven months after operation.*

W. B., a man, aged 64, admitted to the Beth Israel Hospital, June 13, 1933, complained of shortness of breath and swelling of the legs. In 1929 he was unable to walk more than a block because of dyspnea. During the years 1929-1933 he was admitted to hospitals five times for congestive failure. In May 1932 several attacks of substernal and precordial pain developed, radiating to the back and to the left arm. On admission, physical examination revealed a rigid thorax with increased anteroposterior diameter. The lungs were hyperresonant, with numerous ronchi and many coarse rales at both bases. The liver was moderately enlarged. There was pitting peripheral edema. Basal metabolism was minus 10 per cent. The arm to tongue circulation time was 18 seconds.

Four days after entry extensive bronchopneumonia developed, the patient was moribund and was treated in an oxygen tent for ten days. During his twenty-four day preoperative course congestive failure persisted, in spite of digitalis, rest and salyrgan. After diuresis he always regained edema fluid in spite of absolute bed rest. July 6, 1933, total ablation of a

normal thyroid gland was performed. On discharge, thirty-nine days after operation there were still occasional rales at the right base, the liver was still enlarged, and there was peripheral pitting edema. The basal metabolic rate was minus 21 per cent, the arm to tongue circulation time 24 seconds. Three months after operation the patient stated that he felt improved and that he experienced precordial pain only occasionally. The lungs were clear, the liver was not palpable, there was slight but definite pitting edema over the legs in spite of almost constant bed rest. Nine months after operation the patient noted that in spite of prolonged bed rest he was still markedly dyspneic when out of bed for more than two hours, and he still experienced precordial pain on moderate exertion. Physical examination showed slight pitting edema over the sacrum and legs. The basal metabolism was minus 30 per cent.

The patient has shown relatively little improvement after operation in spite of a persistent drop in metabolism and prolonged bed rest. He still shows some signs and symptoms of congestive failure. While the patient no longer gains edema fluid at complete bed rest, he is still incapacitated to such an extent that the operation cannot be considered to have made his life significantly more comfortable. Operation in such patients who in spite of all medical measures gain edema on complete bed rest is not recommended.

Congestive failure recurred temporarily in six patients after operation. These patients had experi-

TABLE 3—Causes of Recurrent Failure or Subsequent Death in Twelve Patients with Circulatory Failure

Cause of Failure	Number of Cases
Recurrent failure (1 to 8 months postoperative)	6
Cause unknown	3
Overactivity	1
Recurrence of bronchial asthma	1
Discontinuance of digitalis with rapid ventricular rate	1
Subsequent death (1 weeks to 12 months postoperative)	6
Cardiac failure	
Marked stenosis of mitral ring	1
Development of aortic aneurysm	1
Alcoholic and physical excesses	1
Cerebral embolus	1
Pulmonary edema (3 weeks postoperative)	1
Cause unknown	1

enced definite improvement after operation. In one patient with auricular fibrillation, the recurrence of congestive failure was due to the omission of digitalis, in a second, to excessive work, in a third, to the recurrence of severe bronchial asthma. In three patients, there was no known cause of recurrence of failure. With appropriate treatment they have again remained free of signs and symptoms of circulatory insufficiency from four to six months after recurrent failure (table 3). Six of our patients with congestive failure have died during the last eighteen months (table 3).

RESULTS IN PATIENTS WITH ANGINA PECTORIS

Of the seventy-five patients with chronic heart disease, angina pectoris was present in thirty-two. In nineteen of these thirty-two patients, the anginal syndrome was the major disabling factor. In the remaining thirteen patients, angina pectoris was overshadowed in five patients by cardiac asthma, and in eight by congestive failure. In two of the five patients with cardiac asthma and in four of the patients with congestive heart failure, angina pectoris was experienced at least several times a week while the patient was confined to bed. In brief, of the thirty-two patients who suffered from angina pectoris, the condition was sufficiently pronounced in twenty-five so that the therapeutic effects of the operation on this syndrome could be

definitely evaluated⁷ (table 5). The etiology of angina pectoris was arteriosclerotic or hypertensive in twenty-three patients and rheumatic in two. The ages of the patients ranged from 41 to 70 years.

Of the twenty-five patients, eight patients have had no recurrence of attacks of angina in spite of activity

TABLE 4—Exercise Test

Days Before Operation	Temperature, F	Exercise		Comment	Basal Metabolic Rate per Cent
		Trips	Minutes		
20	56	0-7	4-4	Anginal attack	-4
19	56	66	4-3	Anginal attack	-9
18	56	66	4-3	Anginal attack	-9
1	56	73	4-6	Anginal attack	-5
Days After Operation*					
12	50	142	10-0	No attack	-16
13	52	250	21-0	No attack	-16
23	48	307	15-0	No attack	-18
4	48	240	20-0	No attack	-18
48	53	383	30-0	No attack	-24
180	48	410	30-0	No attack	-31

* Up to the time of writing 440 days after operation we have not been able to precipitate attacks of angina pectoris in this patient (A. B.) in repeated tests.

for from three to eighteen months after operation and have required no glyceryl trinitrate. The average duration of complete relief in these patients is ten months.

Of the remaining seventeen patients, five, bedridden or completely incapacitated preoperatively, have experienced only occasional attacks since operation, are capable of undertaking considerably more activity than was previously possible, and have returned to remunerative occupations or housework. The average duration of moderate relief in these five patients is ten months. The exercise tolerance of these patients has increased more than 100 per cent. Two patients, completely relieved of anginal attacks for four and nine months, recently have suffered recurrence of attacks following an automobile accident in one instance and coronary occlusion in another. Three other patients, after striking improvement, recently have had recurrences of attacks coincident with excessive rise in metabolic rate induced by thyroid. This medication has now been discontinued. One patient a woman, aged 70, confined to bed before operation because of angina pectoris and cardiac asthma, was completely free of symptoms for

TABLE 5—Results in Twenty-Five Patients with Angina Pectoris

Results	Number of Cases
Complete relief from angina 3 to 18 months*	8
Infrequent attacks with increased activity	5
Recurrence of angina after 3 to 9 months of complete relief	6
Little or no relief	4
Recently postoperative	2
Operative deaths	0

* One patient, aged 70, died of coronary occlusion after three months of complete relief of intractable cardiac asthma and angina pectoris.

three months after operation when she suffered coronary occlusion and died. There have been no other subsequent deaths in patients with angina pectoris.

Four patients have shown no increase in their exercise tolerance and still have attacks of angina, which are as frequent but less severe than before operation. These patients have not been able to return to work.

7. Riseman, J. E. F. and Stern, B. A. Standardized Exercise Tolerance Test for Patients with Angina Pectoris on Exertion. *Am J M Sc* 188: 646, 1934.

and the results do not in our opinion justify the operative procedure. In this group of four, three patients showed preoperative metabolic rates of minus 19, minus 23 and minus 24 per cent and, in view of considerations elsewhere discussed, would not now be operated on.

SELECTION OF PATIENTS

An attempt was made to select patients who showed a relatively stationary or slowly progressive clinical course. Any definite improvement could therefore be attributed to the operation. It was felt, moreover, that although these patients were severely incapacitated

TABLE 6—Total Ablation of Normal Thyroid Gland

Number of patients with heart disease*	71
Operative deaths†	6

* No deaths in the last thirty consecutive operations

† All patients had advanced congestive failure

their cardiac lesions were relatively nonprogressive, so that the benefit conferred by the operation would be maintained. Patients with short histories of rapidly progressive heart disease, on the other hand, might be expected to show only temporary improvement,⁸ since the induction of the hypothyroid state would not presumably retard the progress of the underlying pathologic condition. Patients with malignant hypertension and similarly patients with rheumatic, syphilitic or arteriosclerotic heart disease who gave a short but rapidly progressive history of congestive failure or angina pectoris have not been operated on. Our present conception of the patient with congestive failure most likely to gain the greatest benefit from operation is one with rheumatic or hypertensive arteriosclerotic heart disease who, despite a long history of frequent episodes of decompensation after moderate exertion, nevertheless becomes compensated on rest in bed. Such a patient is usually economically incapacitated but not constantly confined to bed. The basal metabolic rate should preferably be not lower than minus 10 per cent,

TABLE 7—Postoperative Complications After Total Thyroidectomy in Seventy-Five Patients with Heart Disease

Complications	Number of Cases
Parathyroid insufficiency*	10
Transient (1 to 2 weeks)	14
Chronic†	2
Recurrent nerve injury (unilateral)	12
Transient	9
Permanent	3
Bilateral nerve injury	0

* No convulsions or spontaneous Trousseau signs

† Signs and symptoms completely controlled by calcium medication and vitamin

and the patient should show none of the unfavorable factors mentioned later.

For reasons to be discussed later, we have come to regard a preoperative basal metabolic rate lower than minus 15 per cent as an unfavorable factor and are disinclined to operate when the basal metabolic rate is lower than minus 20 per cent. The basal metabolic readings in congestive failure with no hyperthyroidism are frequently very high.⁹ For this reason, we do not consider the metabolic rate readings true basal measurements until the patient has become free from the signs of congestive failure on complete bed rest. Duplicate measurements were always made and repeated on

different days, until the averages of such duplicate analyses checked within 5 per cent.

Only patients who showed repeated attacks of angina pectoris while at rest in bed or who showed characteristic attacks after given amounts of exercise under standardized conditions are included in this report¹⁰ (table 4). The value of the standardized exercise tolerance test as an aid in diagnosis and as a means of evaluating treatment has been outlined elsewhere.⁷ The patient with angina pectoris most likely to derive the greatest benefit is one who develops attacks on slight or moderate exertion but not at rest and whose basal metabolic rate is not lower than minus 10 per cent.

Since the effect of total thyroidectomy on the immune reactions of acute infections is unknown, the operation has not been performed in the presence of clinical evidence of active rheumatic fever. It would, moreover, be difficult to judge whether improvement in such patients was due to the cessation of active infection or was the result of thyroidectomy. Patients with active pulmonary infection, such as bronchiectasis, as well as those with recent vascular accidents or marked renal insufficiency were considered unsuitable subjects. Healed coronary thrombosis is not considered a contraindication to operation. Fourteen of our patients had a history of from one to three attacks of coronary thrombosis, but in every instance the last attack had occurred at least four months before operation.

PREOPERATIVE MANAGEMENT

All our patients were poor risks in the ordinary surgical sense. Every possible aid was utilized to bring the patient to the best preoperative condition.⁶ Operation in the presence of signs of congestive failure is inadvisable. In patients with auricular fibrillation, somewhat greater doses of digitalis were employed, so that the ventricular rate would be adequately controlled during operation. All sedatives used during the operative and postoperative course were administered days or weeks before operation to be certain that idiosyncrasies or hypersensitivity were not present. In several patients who showed excitement after morphine, other sedatives were used. Oxygen therapy was used when indicated as a prophylactic and therapeutic measure.¹¹ Special nurses trained to recognize early complications cared for the patients under the supervision of the medical service.

POSTOPERATIVE MORTALITY

The operative mortality for the entire series was 8 per cent, six patients having died within the first week after operation. All deaths were due to postoperative pulmonary complications and all occurred in patients with advanced congestive failure. No patient with angina pectoris uncomplicated by congestive failure died during or shortly after operation. No death has occurred in the last thirty consecutive operations, although the later patients were fully as precarious risks as our earlier subjects (table 6).

SURGICAL HAZARDS

The greatest surgical hazards are postoperative cardiac failure and terminal bronchopneumonia, recurrent nerve injury, parathyroid insufficiency, and failure to remove the thyroid gland completely.

⁸ White, P. D. *Heart Disease*, New York: Macmillan Company, 1931.
⁹ Hamilton, B. E. *Heart Failure of the Congestive Type Caused by Hyperthyroidism*. J. A. M. A. 83: 405 (Aug. 9) 1924.

¹⁰ Ruzman and Stern. *Master, A. V. and Oppenheimer, E. T. A Simple Exercise Tolerance Test for Circulatory Efficiency with Standard Tables for Normal Individuals*, Am. J. M. Sc. 177: 223 (Feb.) 1929.
¹¹ Wayne, E. J. and La Place, L. B. *Observations on Angina of Effort*, Clin. Sc. 1: 103 (July) 1933.
¹¹ Barach, A. L. *The Therapeutic Use of Oxygen in Heart Disease*, Ann. Int. Med. 5: 428 (Oct.) 1931.

1 *Postoperative Complications* — The incidence of postoperative complications has been reduced by careful preoperative and postoperative treatment and improved surgical technique.¹ All operations are now performed under local procaine hydrochloride anesthesia for we have found that local anesthesia carries less risk than general anesthesia and is attended by relatively little reaction. The incidence of postoperative pulmonary complications has been lessened by the employment of minimal sedation.

2 *Recurrent Laryngeal Nerves* — The recurrent laryngeal nerves represent the greatest surgical hazard of the operation because of their intimate anatomic relation to the thyroid and their variable position. Not infrequently the recurrent nerves may actually course through a portion of the gland substance. This problem has been fully discussed by one of us.¹² Operative speed is hazardous and unnecessary. There have been twelve unilateral nerve injuries in this series of which nine have been transient paralyses (table 7). As a reliable means of preventing bilateral laryngeal paralysis, direct laryngoscopy is performed by Dr L. M. Freedman after one lobe of the thyroid has been removed.¹³ In two instances the recurrent laryngeal nerve on the first side of the operation was injured and the operation was terminated. The vocal cord later returned to normal and the other lobe of the thyroid was subsequently removed. Injury to one vocal cord involves no serious consequences. In practically all our cases the spoken voice was unaltered when one vocal cord was paralyzed. The danger of reliance on the voice test as a substitute for direct laryngoscopy is obvious.

3 *Parathyroid Insufficiency* — This has not been a serious complication in any of our cases. No patient has shown convulsions or carpopedal spasm or any of the other serious manifestations of parathyroid tetany. Parathyroid extract has never been required. Detailed studies of the problem are available in a previous communication.¹⁴ In sixteen patients transient paresthesias or positive Chvostek's or Trousseau's signs were observed after operation. Calcium medication was effective in controlling these signs and symptoms. On cessation of calcium medication from a few days to a few weeks after its institution, no recurrence of signs or symptoms was manifest in fourteen of these patients. Only two patients continue to require calcium therapy. The transient nature of the deficiency in most of these cases suggests that temporary injury to the parathyroids or to their nerves or their lymphatic or blood supply gave rise to these mild symptoms.

4 *Failure to Remove the Thyroid Gland Completely* — The failures of previous investigators¹⁵ as well as of

ourselves¹ to achieve favorable results in the treatment of chronic heart disease by maximal subtotal thyroidectomy convinced us of the necessity of removing every vestige of thyroid. In two earlier patients minute remnants of thyroid, close to the recurrent laryngeal nerves, were not removed, the lowering in the metabolic rate was only temporary and, correspondingly, clinical improvement was present for only a few weeks.¹ In these patients, as well as in others too ill for operation, roentgen radiation used either alone or as an adjunct to maximal subtotal thyroidectomy has failed to produce any appreciable persistent lowering of the basal metabolic rate.¹⁶ For these reasons, all seventy-five patients in this series were subjected to total ablation of the thyroid gland. Without exception, evidence of persistent hypothyroidism has developed.

MECHANISM OF THE EARLY RELIEF OF SYMPTOMS

Immediately after operation many patients with angina pectoris or congestive failure have shown disappearance of localized areas of hyperesthesia and hyperalgesia and of precordial pains constantly present before operation. Patients with angina pectoris subject to frequent attacks at complete rest have noted the absence of any further attacks immediately after operation. This early relief is experienced before changes in the basal metabolic rate or velocity of blood flow occur and is due to interruption, at the time of operation, of nerve paths bearing pain impulses from the heart to the central nervous system.⁴ The early relief due to interruption of afferent nerve pathways is usually transient, with subsequent return of symptoms if the basal metabolic rate does not drop appreciably in the meantime.

MECHANISM OF THE LATE RELIEF OF SYMPTOMS AND SIGNS

The permanent relief of congestive failure and of pain of angina pectoris occurs later in the postoperative course coincident with the development of the hypothyroid state. The extent of permanent relief has generally been related to the degree of induced hypothyroidism as indicated by the reduction in the basal metabolic rate. Of six patients who showed little or no improvement, four had basal metabolic rates of approximately minus 20 per cent before operation. Because of the low preoperative level, the metabolic rate could be permitted to drop only another 10 per cent after operation before thyroid administration was required to control the distressing symptoms of myxedema. In many patients the restoration of the preoperative levels by means of thyroid caused the return of the previous signs and symptoms of congestive failure and a recurrence of attacks of angina pectoris. With discontinuation of thyroid medication, these patients soon became free from symptoms.

Extensive studies have been made of the exact mechanism whereby the hypothyroid state confers relief to patients with chronic heart disease. Earlier measurements of the velocity of blood flow in normal subjects and in various clinical conditions showed that congestive heart failure was characterized by a discrepancy between the tissue demands of the body as gaged by the metabolic rate, and the supply of blood as gaged

12 Berlin D. D. The Recurrent Laryngeal Nerves in Total Ablation of the Normal Thyroid Gland. An Anatomical and Surgical Study. *Surg. Gynec. & Obst.* to be published.

13 Freedman I. M. Treatment of Angina Pectoris and Congestive Heart Failure by Total Ablation of the Thyroid. V. Importance of Laryngoscopic Examination as a Means of Preventing Bilateral Paralysis of the Vocal Cords. *Arch. Otolaryng.* 10: 383 (March) 1934.

14 Gilligan Dorothy R., Berlin D. D., Volk Marie C., Stern B. and Blumgart H. L. Therapeutic Effect of Total Ablation of Normal Thyroid on Congestive Heart Failure and Angina Pectoris. IX. Postoperative Parathyroid Function. Clinical Observations and Serum Calcium and Phosphorus Studies. *J. Clin. Investigation* 13: 789 1934.

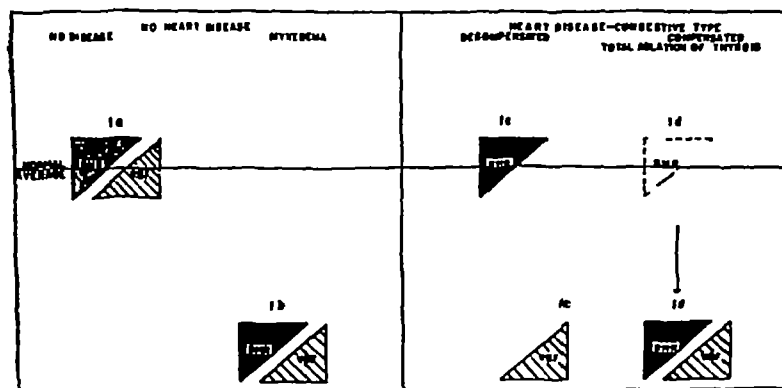
15 Boas C. P. and Shapiro Shepard. Diastolic Hypertension with Increased Basal Metabolic Rate. *J. A. M. A.* 84: 1558 (May 23) 1925. Further Observations on Patients with Hypertension and Increased Basal Metabolic Rate. *Am. Heart J.* 1: 643 (June) 1926. Dautrebande L. Personal communication to the authors. Weinstein Davis, Berlin and Blumgart H. Riesman David. Hypertension in Women. *J. A. M. A.* 73: 330 (Aug. 2) 1919. Crile G. W. The Treatment of Certain Types of Hyperthyroidism. *Tr. Am. A. Study Goster* 1: 1 1932. Rose Edward. Malignant Hypertensive Vascular Disease. Simulating Hyperthyroidism. Clinical Course Following Maximal Subtotal Thyroidectomy. *M. Clin. North America* 16: 261 (July) 1932.

16 Friedman H. F. and Blumgart H. L. Treatment of Chronic Heart Disease by Lowering the Metabolic Rate. The Necessity for Total Ablation of the Thyroid. *J. A. M. A.* 102: 17 (Jan. 6) 1934.

by the velocity of blood flow¹⁷ These considerations are graphically indicated in the accompanying chart, the black triangle representing tissue demands as gaged by the metabolic rate, and the hollow triangles, the blood supply, as indicated by the velocity of blood flow. The normal relation between the basal metabolic rate and the velocity of blood flow is represented by 1a. The relation between tissue needs and blood supply in myxedema is represented by 1b, the metabolic rate being reduced and the velocity of blood flow being correspondingly slowed. While such an individual may have a velocity of blood flow as slow as in a patient with congestive failure, the blood supply corresponds to tissue demands and the patient is therefore compensated. The situation in patients with congestive failure is shown at c in the chart, the metabolic rate being normal and the velocity of blood flow greatly slowed. There is a wide discrepancy between tissue needs and blood supply. In such a patient rest and digitalis result in clinical improvement coincident with a rise in the speed of blood flow to normal. In some patients, however, in spite of all therapeutic measures,

congestive failure. It is realized that the maintenance of velocity of blood flow represents but one factor in the expenditure of cardiac energy¹⁹ The other factors are represented by the cardiac output, by the level of blood pressure and by the heart rate. The latter two factors have only infrequently shown any significant change either at rest or during exercise.

The same considerations underlie the benefits conferred on patients with angina pectoris. The discrepancy between tissue demands and the blood supply in such patients exists in the relation between requirements of the cardiac muscle in performing its work and the available coronary blood supply²⁰ During exercise, the work done by the heart increases, as gaged by the increase in cardiac output and by the rise in blood pressure and heart rate. The coronary flow rises correspondingly to the limit set by its narrowed or undilatable walls. If exercise is continued beyond these limits, myocardial anoxemia develops and angina is precipitated²¹ Our measurements indicate that after thyroidectomy the minute volume output of the heart and the velocity of blood flow is considerably reduced



Relationship between the basal metabolic rate (black areas) and the velocity of blood flow (shaded areas)

the velocity of blood flow remains slow, and the patient remains decompensated. In these individuals in whom the blood supply cannot be increased, the tissue demands can be reduced by reduction of the metabolic rate after total thyroidectomy to the point at which the previously slow and inadequate circulation becomes adequate (d). The patient is thus transferred from a condition which is represented by c to one represented by b.

Our clinical experience in patients with congestive failure, together with measurements of blood flow and of the basal metabolic rate, has been in entire accord with these considerations. Previous studies have shown that there is a general parallelism between the velocity of blood flow and the minute volume output of the heart¹⁸ Further work is in progress in regard to measurements of the minute volume output and the oxygen consumption at rest and during exercise in patients with

and so the work of the heart is greatly lessened. The body is at a lower metabolic level after thyroidectomy, and the heart performs less work at rest. Starting from a lower level of oxygen consumption the heart can withstand a greater increment of work before it reaches the level of oxygen supply set by the coronary vessels. Since the velocity of blood flow is decreased after thyroidectomy, one may assume that the coronary blood flow is also somewhat reduced in the hypothyroid state. The relative reduction in blood flow in the coronary circuit after thyroidectomy is probably not as great as the reduction in cardiac work, according to physiologic observations²² and the physical principles applying to the flow of liquids in narrowed tubes.

Our observations have shown that the hypothyroid state does not confer benefit on patients with angina pectoris by any constant changes in blood pressure or pulse rate at rest or during exercise. Similarly, more than eighty controlled observations in man have shown that the sensitivity to epinephrine administered intravenously is not altered at levels of metabolism at which clinical improvement is striking^{22a}.

SECONDARY CONSEQUENCES AND POSSIBLE UNTOWARD EFFECTS OF ARTI- FICIAL MYXEDEMA

Since removal of the thyroid does not alter the underlying cardiovascular pathologic condition, all patients must continue to receive close medical observation. The management of the cardiac condition is essentially the same as regards medication, except that the optimum metabolic level for a given patient must

17 Blumgart H. L. and Weiss Soma. Studies on the Velocity of Blood Flow. II. The Velocity of Blood Flow in Normal Resting Individuals and a Critique of the Method Used. *J. Clin. Investigation* 4: 15 (April) 1927, III. The Velocity of Blood Flow and Its Relation to Other Aspects of the Circulation in Patients with Rheumatic and Syphilitic Heart Disease. *ibid.* 4: 149 (June) 1927. Blumgart H. L. The Velocity of Blood Flow in Health and Disease. The Velocity of Blood Flow in Man and Its Relation to Other Measurements of the Circulation. *Medicine* 10: 1 (Feb.) 1931. Crile¹⁸

18 Blumgart H. L. and Weiss Soma. Studies on the Velocity of Blood Flow. V. The Physiological and the Pathological Significance of the Velocity of Blood Flow. *J. Clin. Investigation* 4: 199 (June) 1927. VI. The Pulmonary Circulation Time, the Minute Volume Blood Flow Through the Lungs and the Quantity of Blood in the Lungs. *ibid.* 6: 103 (Aug.) 1928. Grollman A. The Cardiac Output of Man in Health and Disease, Springfield Ill. and Baltimore, Charles C. Thomas 1932.

19 Weiss Soma. Circulatory Adjustments in Heart Disease a Concept of Circulatory Failure, *Ann. Int. Med.* 6: 100 (Aug.) 1931.

20 Du Bois, E. F. Total Energy Exchange in Relation to Clinical Medicine, *Bull. New York Acad. Med.* 9: 680 1933. Lev, M. W. and Hamburger, W. W. The Association of Angina Pectoris and Hyperthyroidism. *Am. Heart J.* 3: 672 (Aug.) 1928.

21 Keefe, C. S. and Reanik W. H. Angina Pectoris. A Syndrome Caused by Anoxemia of the Myocardium. *Arch. Int. Med.* 41: 769 (June) 1928. Rothchild M. A. and Kasson M. Production of Anginal Syndrome by Induced General Anoxemia, *Am. Heart J.* 8: 729, 1933.

22 Anrep, G. V. and Segall, H. N. Regulation of the Coronary Circulation. *Heart* 13: 239 (Sept.) 1926.

22a Riseman E. F. Gilligan, D. R., and Blumgart H. L. Treatment of Congestive Heart Failure and Angina Pectoris and Total Ablation of the Normal Thyroid Gland. XVI. The Sensitivity of Man to Epinephrine Injected Intravenously Before and After Total Thyroidectomy, *Arch. Int. Med.*, to be published.

be determined and the amount of thyroid required to maintain this level ascertained. Most patients have been kept at a level between minus 25 and minus 30 per cent by the administration of one-fourth grain of thyroid (Armour) daily. At this level they have been free from the disturbing symptoms of myxedema and their hearts are required to do less work than at the higher preoperative metabolic rate.²³

Since the inception of this investigation we have felt that while the development of the hypothyroid state might benefit patients with heart disease secondary untoward consequences of myxedema might offset some of the benefits of thyroidectomy. These possible secondary consequences have been studied.

The Myxedema Heart—Zondek²⁴ and Fahr²⁵ maintained that cardiac function is often impaired in patients with myxedema due to increase in heart size and diminution in voltage of the electrocardiogram. Sluggish heart action and mild congestive failure were also frequently noted by Ohler and Abramson.²⁶ Means, White and Krantz,²⁷ Christian,²⁸ Willius and Haines,²⁹ and Case,³⁰ however, studied a total of 300 patients with myxedema and concluded that heart function is rarely, if ever, impaired. In thirty-seven of our patients, changes in heart size and electrocardiographic tracings were observed and correlated with basal metabolic rate measurements.³¹ In the presence of increased cardiac size and diminished voltage of the electrocardiogram, signs and symptoms of congestive failure, instead of increasing, disappeared. That the increased cardiac size due to hypothyroidism does not subsequently cause functional impairment is shown by the persistence of clinical improvement in patients operated on from one to one and a half years before. These studies demonstrate clearly that "myxedema heart," in the sense of a causal agent precipitating circulatory failure or angina pectoris does not develop in patients with induced hypothyroidism in whom the basal metabolic rate is maintained at about minus 30 per cent.

Mental Changes—We have found that the mental torpor usually associated with spontaneous myxedema is not present in our subjects maintained at a basal metabolic level between minus 25 and minus 30 per cent. Psychologic tests performed on our patients by the psychologist conducting the investigation Dr. Nathaniel Goldman, have shown no evidence of any unfavorable changes. Most patients state that they are able to think far more clearly than before operation, owing probably to the fact that with the subsidence of congestive failure they compare their postoperative state with the grogginess of advanced circulatory insufficiency. Although speech is somewhat slowed in some patients, mental acuity is not impaired. With meta-

bolic rates of minus 30 per cent or lower, patients not infrequently show emotional irritability and mental slowing, which are promptly alleviated by the administration of small doses of thyroid, such as one-fourth grain (0.016 Gm.) of thyroid daily.

Arteriosclerosis and Blood Cholesterol—It is believed by some observers that, in the presence of myxedema, arteriosclerotic changes advance more rapidly. The supporting evidence for this belief is by no means clear, particularly since spontaneous myxedema tends to occur in older persons who naturally show arteriosclerosis. As observed by Hurxthal³² in spontaneous myxedema, the serum cholesterol concentration has become elevated as the basal metabolic rate lowered in our patients. Clinical observations in our patients have failed to reveal any evidence of progressive arteriosclerosis up to the present.

Urinary Changes—The possibility that a decreased blood flow to the kidneys might result in impaired renal function, as indicated by albuminuria and the appearance of abnormal elements in the urine, has been investigated by Dr. H. A. Derow. Repeated studies over a period of eighteen months have failed to reveal any such changes.

Anemia—The so-called anemia of spontaneous myxedema is a well recognized entity.³³ Many of our patients have shown a decrease of from one half to one million red blood cells per cubic millimeter, with a proportionate decrease in hemoglobin concentration. After reaching these levels, there have been no further progressive changes. These changes have not resulted in any symptoms and probably represent an adjustment by the hematopoietic system to the hypothyroid state. No patient has required thyroid or iron for the treatment of anemia.

Changes in Gastric Secretion—Routine analyses of the gastric contents before and at varying intervals after operation have been performed by Dr. Benjamin Alexander in a series of patients. With the development of the hypothyroid state there has been a definite lowering in the free hydrochloric acid secretion of the stomach, but in no case has anacidity been noted.

CONCLUSION

The beneficial results that have been achieved by complete thyroidectomy in patients with congestive failure and angina pectoris warrant the further application of this procedure in patients who, in spite of all available medical procedures, are incapacitated. The precautions to be exercised in the selection of cases in the preoperative, operative and postoperative management, and in the treatment of the various complications, must be rigidly adhered to if the operative risk is to be reduced to a minimum and the fullest possible benefit is to be conferred on such patients.

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ABSTRACT OF DISCUSSION

DR. SAMUEL A. LEVINE, Boston. I shall summarize the results of thyroidectomy for intractable heart disease performed at the Peter Bent Brigham Hospital. The first two cases were subtotal thyroidectomies performed in 1927 and 1932 respectively. The first total removal of the normal gland for intractable heart disease was performed on Dec. 14, 1932. Postmortem examination in this case nine months later failed

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27 Means J. H., White P. D. and Krantz C. I. The Heart in Myxedema with Special Reference to Dilatation and Angina Pectoris. Boston M. & S. J. 196: 455 (Sept. 2) 1926.

28 Christian, H. A. The Heart and Its Management in Myxedema. Rhode Island M. J. 8: 109 (July) 1925. Myocardial Disturbances Due to Abnormal Thyroid Function and Their Management. Pennsylvania M. J. 32: 70 (Nov.) 1928.

29 Willius F. A. and Haines S. F. The Status of the Heart in Myxedema. Am. Heart J. 1: 67 (Oct.) 1925.

30 Case C. E. An Analysis of Fifty Eight Cases of Myxedema. Clifton M. Bull. 11: 112 1925.

31 Davis David, Weinstein A. A., Roseman J. E. F. and Blumgart, H. L. Treatment of Chronic Heart Disease by Total Ablation of the Thyroid Gland. VII. The Heart in Artificial Myxedema. Am. Heart J. 10: 17 (Oct.) 1934.

32 Hurxthal L. M. Blood Cholesterol in Thyroid Disease. II. Effect of Treatment. Arch. Int. Med. 52: 86 (July) 1933.

33 Means J. H. and Richardson E. P. The Diagnosis and Treatment of Diseases of the Thyroid. In Christian H. A., Oxford Monographs on Diagnosis and Treatment. New York: Oxford University Press, 4: 1929.

to show any remaining thyroid tissue. E. C. Cutler performed this and all subsequent operations here reported at the same hospital. Although the criteria for selection are as yet not clear, one prerequisite we have insisted on before advising this operation is that it must be certain that the patient has been treated adequately and has not improved, and that he is unable to work. There has been little to lose or to look forward to in those selected if left to the ordinary methods of treatment. In this second series I report thirty cases, twenty-three with angina, all having attacks at rest as well as on effort, and seven cases of congestive heart failure, six with mitral stenosis and one nonvalvular. There were two operative mortalities, 6.7 per cent. In the twenty-three cases of angina the results were excellent in eight, good in seven, moderate in three and fair in two. Two patients died within twenty-four hours after the operation, and another a week later of coronary thrombosis. For the seven cases with congestive failure, the results were excellent in four, good in one, moderate in one and no improvement in one. The results need to be reconsidered because the mild myxedema induced carries with it some handicaps, both for the present and for the future, of deleterious processes. Despite this, when it is appreciated that the cases so far selected had a poor prognosis as to life expectancy and comfort, the importance of possible harmful late effects loses much of its significance if increased comfort is obtained. When I first suggested to Dr. Blumgart a generous subtotal thyroidectomy in hopeless chronic cardiac cases it was because of a chance removal of a normal gland followed by an unexpected striking improvement in a patient with stubborn congestive heart failure. The explanation of the improvement when it occurs either in the anginal or in the congestive group is a difficult matter. For the present I would caution against too great optimism and urge that total thyroidectomies be undertaken with great circumspection. Notwithstanding this, I believe this operation will add to our means in the treatment of chronic intractable heart disease.

Dr. J. H. MEANS, Boston. It would be desirable to point out that it is fair to look on this work as the joint contribution of Drs. Blumgart and Levine. These men, since their first joint publication, have worked in separate clinics and that is perhaps well because it means that the amount of material studied has been that much greater. The early operative cases at the Beth Israel Hospital, which I saw, were very convincing and I sent one of my patients there to be operated on. He had chronic pulmonary heart disease with extreme emphysema. The result was so brilliant that I was very much impressed. At the Massachusetts General Hospital we have operated on eleven patients. The mortality has been rather high. Two patients died of postoperative causes and two died within a few months, so that our mortality is four out of eleven, which is much higher than it should be. This was due to bad selection of cases and not to incompetence of our surgeons. I think the internists are responsible for this mortality because of unwise selection of cases. Our cases have all been ones of congestive failure. One patient who had angina had an infarct and had congestive failure as well. We have not had the experience with an uncomplicated case of angina pectoris, of which the authors spoke. I think it is a perfectly logical procedure in angina. It may turn out the most favorable type of case to treat. I feel that we should look on this work with open minds and should watch the progress of these operative cases carefully. We can't say, in less than two years, what the ultimate outcome will be. It may turn out that we have merely postponed the evil day for a year or two. Perhaps in ten years very few of these operations will be done. We shall have to pursue a policy of intelligent, watchful waiting to evaluate properly what seems at the moment to be a very important therapeutic advance.

Dr. R. R. SNOWDEN, Pittsburgh. The material presented, especially the clinical records with the ultimate results in this series of properly selected cases, indicates that this is a bold therapeutic procedure, which is useful if properly controlled. It represents fundamentally the reduction of the demand on the heart to a level that is within the capacity of the heart. If that basic principle is borne in mind, together with other features insisted on by the authors, the procedure can be used with great effectiveness. Perhaps the results are only temporary, but even so, if a year of comfort can be added to the

patient's life, it is very much worth while. I feel that perhaps a definite warning is in order. The rather striking results attending certain cases are such that there may be an epidemic of removal of thyroid for heart disease. Care should be taken that this does not occur. Cases should be very carefully selected. Most important, I believe, is the insistence that the total amount of thyroid material be removed, because a partial thyroidectomy will give only the most transitory beneficial effects. Total thyroidectomy as a surgical procedure has its own distinct technical problems, and therefore it should not be undertaken by any surgeon unless he is familiar with the peculiar difficulties of it. I would suggest very careful selection not only of suitable cases but also of the surgeon.

Dr. WILLIAM B. PORTER, Richmond, Va. The authors have presented data that appear to establish unequivocally the therapeutic value of total ablation of the thyroid gland in aiding the adjustment mechanisms in chronic organic heart disease. The introduction of this procedure must be accepted as a challenge to the physician, for the safe and sane use of so drastic a measure in the symptomatic control of disease is fraught with many pitfalls. One has only to recall the long period elapsing between Withering's accurate description of the therapeutic use of digitalis and the general comprehension by the profession of its indication, proper dosage and limitations. The indications for and limitations of this new procedure have been admirably presented by Drs. Blumgart and Berlin, yet one feels some misgivings about their general application. The selection of patients for total ablation of the thyroid gland must be made from that group of patients who have not regained adequate cardiac reserve following the use of established therapeutic measures and in whom the pathologic lesions in the heart are not of a rapidly progressive nature. What constitutes adequate therapy is largely a matter of individual opinion, and one's opinion is based on one's knowledge and experience in a given field. That the majority of patients referred as suitable candidates for ablation of the thyroid gland have not been adequately treated is demonstrated by the fact that satisfactory clinical improvement has followed admission to the wards for study and treatment. The crux of the whole matter is the differentiation between progressive heart failure due to active pathologic lesions and recurring or irreducible heart failure accompanying advanced stationary lesions. It is my opinion that only in the latter group does one find those patients who may be justifiably expected to respond favorably after reduction of the oxygen requirements. It is reasonable to suggest that ablation of the thyroid gland is a therapeutic measure in cardiovascular disease remain for the present in the hands of experienced and specially trained internists and surgeons.

Dr. W. O. THOMPSON, Chicago. During the administration of solution of pituitary to a patient with exophthalmic goiter, the severity of the disease increased in association with an increase in basal metabolism. The patient had typical anginal attacks before the metabolism rose, and the number and severity of these attacks increased after it rose. It has been observed that when thyrotoxicosis and angina pectoris are present in the same patient, the severity of the angina is greatly reduced when the metabolism is restored to normal by thyroidectomy. It has been noted by several observers that, in patients with myxedema, angina may first appear when the metabolism is raised by the administration of desiccated thyroid. This is related to the observation of Blumgart and his associates that in their patients with angina who have had thyroidectomies the angina can be made to recur by administering thyroid. There appears to be some relationship between angina attacks and the level of thyroid function. There are just one or two other things that should be borne in mind, particularly in view of the large number of thyroidectomies that may be expected for heart disease in the future. I recall the development of certain cardiac symptoms in patients who became myxedematous after having been made better by desiccated thyroid. For example, one patient develops dull precordial pain and frequent attacks of palpitation and tachycardia whenever her metabolism drops to a level of minus 25 per cent or lower, and these signs and symptoms disappear when the metabolism is raised to normal with thyroid. Undoubtedly the heart muscle shares in the general myxedematous condition of tissues, and one of the characteristic manifestations in myxedema is generalized muscle

weakness. The level at which this muscle weakness becomes evident varies greatly. It is certainly much greater at a level of minus 40 per cent than at a level of minus 25 per cent but in some individuals may be very striking at the higher level. In observing a large number of patients who have myxedema in comparatively mild form, with basal metabolic rates of from minus 20 to minus 30 per cent, a history of muscle weakness and most of the characteristic symptoms of myxedema can be elicited by very careful examination. The difference between such patients and patients with rates of minus 40 per cent is merely in the intensity of these signs and symptoms. Thus on the one hand there is apparently definite relief of angina by thyroidectomy and on the other hand, one should bear in mind the myxedematous condition of the heart muscle. In the evaluation of improvement it will be necessary to consider the condition of the patient not immediately after thyroidectomy or two or three months afterward, but a year later because it is well known that the myxedematous condition of tissues develops very slowly.

DR. GEORGE M. CURTIS, Columbus, Ohio. This contribution is impressive for two reasons: first the careful clinical investigation and thought that form its basis and second the results which this group and others have obtained. My associates and I have made six total thyroidectomies for cardiovascular disease. Our series is, in miniature, similar to those which have been reported. We have had no tetany or no recurrent nerve injury. Total thyroidectomy has been accomplished on two patients with malignant hypertension. There ensued a fall in the blood pressure both diastolic and systolic. On the other hand on rehabilitation, the elevated blood pressure returned. There was, perhaps, a fall of 20 points. Both patients are under observation. It is too early to judge of any final effects. Our best result is in the case of a woman who came to us with an elevated basal metabolic rate and an elevated blood iodine. The iodine metabolism of the six patients has been investigated. Their blood iodine was originally increased as it is in patients with hyperthyroidism. This may prove to be of significance. Subsequent to adequate management and bed rest, the blood iodine decreased. Immediately following the total thyroidectomy there ensued a marked, but transient, increase in the blood iodine. There was also a marked loss of iodine in the urine. I would add particularly to this discussion that subsequent to total thyroidectomy in man, about two thirds of the normal blood iodine disappears.

DR. EMANUEL LIBMAN, New York. At a presentation which Dr. Blumgart made in New York some eight months ago, I discussed the possibility of a nerve factor playing a role in the results. Apart from nerve sectioning I had in mind another mechanism. I have made the interesting and therapeutically valuable observation that in cases of subacromial bursitis in which, because of pain, there is difficulty in raising the arm, it often happens that the arm can be fully raised if one presses against the spine (usually at the level of the angle of the lower jaw) for from one to two minutes. Such a result may last for hours, days, weeks or even months. Because of this experience, and some clinical observations on the autonomic nervous system, I thought of the possibility of an influence on the heart, by virtue of irritation of nerves due to manipulation during the removal of the thyroid gland. Dr. Blumgart has meanwhile published studies on this question and finds that there is an early relief of pain in some cases as the result of cutting the nerves. In most cases the pain returned, to disappear again when the basal metabolism was much lowered. It would appear, therefore, that the possible factor to which I drew attention plays no role in the permanent results. As there are various causes of "angina pectoris" it is essential, particularly in therapeutic studies, to determine the cause in each case, as far as possible. The clinical picture may be due to distention or disease of the aortic wall, hypertension and coronary narrowing or closure at the orifices of the coronary arteries or in their course. It may also be due to disturbance of the cardiac nerves, spasm of the arteries and possibly edema of the heart muscle. I have drawn attention to the fact that there are cases of coronary artery disease in which the metabolism is low and the best results are not obtained until thyroid substance is administered. Dr. Thompson has just described a case of this kind. "Angina pectoris" due to coronary artery disease is to my mind part of metabolic disturbances usually called

"gouty." In these disturbances a low basal metabolism is not infrequently encountered. A study of this subject may throw further light on the results of Dr. Blumgart. It would also be of interest to study the water metabolism in the patients who have been subjected to operation. Thyroid activity may increase the discharge of water from the body. Dr. Blumgart's work represents a combination of fundamental physiologic investigations and clinical observations. The next step will be to seek a possible remedy that will eliminate the necessity of an operative procedure.

DRS. EDMUND HORGAN and JAMES ALEXANDER LYON, Washington, D. C. Total ablation of the thyroid is a formidable operation. We feel that we have accomplished similar results, without damaging effects, by doing a much simpler operation. About twelve years ago we observed, on examination of patients with recurrent exophthalmic goiter after a subtotal thyroidectomy, that there was a thrill and bruit over the thyroid arteries just as we observe it in cases of exophthalmic goiter in which operation was not performed. From this observation we got the idea that if the superior and inferior thyroid arteries were divided and ligated when a thyroidectomy was done the patient would not have a recurrence of the hyperthyroidism and it has been our practice to divide all the vessels at the superior poles and to ligate the inferior thyroid arteries in all cases of exophthalmic goiter. This practice we have carried out consistently for a number of years. Recently we made a study of a group of 300 patients from five to ten years after thyroidectomy had been performed on account of hyperthyroidism. In the group there were patients who previously had been operated on two or three times on account of persistent or recurrent hyperthyroidism. Certain patients appeared to have badly damaged hearts at the time of operation and were what is generally termed "thyrocardiacs." We were impressed by noting that the heart had returned to a condition which could be considered normal in all the cases studied except those in which organic heart disease had been present. From this observation we were led to believe that stopping the effects of hyperthyroidism in these cases was not entirely due to removal of the major portion of the thyroid gland but that the division and ligation of the superior and inferior thyroid arteries cut the pathway of nerve stimuli from the sympathetic nervous system to the thyroid and cut down the amount of blood entering the gland. This operative procedure was also shown to lower the basal metabolic rate to lessen the circulatory demands and to lighten the work of the heart. We therefore considered using the procedure of dissociation of the thyroid from the sympathetic nervous system in cases of congestive heart failure and angina pectoris. So far as we know, the procedure had not been carried out previously. We have had an opportunity to perform this operation in two cases. The beneficial results are striking. Whether the cutting of the sympathetic nerves to the thyroid gland by dividing the blood vessels cut any sympathetic fibers to the heart we are not in a position to say.

DR. HERRMANN L. BLUMGART, Boston. I am grateful to the various discussers for the many interesting points brought out, and I wish that time were sufficient to cover the numerous considerations offered for discussion. The history of ideas is always interesting, but this is hardly the time or place to present an outline of the previous work along these lines. Such summaries are available in the first communication on total thyroidectomy for chronic heart disease by Blumgart, Levine and Berlin published in the *Archives of Internal Medicine* in June 1933, and also in the paper by Blumgart, Riseman, Davis and Berlin in the same periodical in August 1933. Some points brought out by the various discussers may be grouped under several headings. One is the importance of removing the normal thyroid gland completely. Subtotal removal of the normal thyroid for nonthyrogenous heart disease was done previously by various investigators. Crile, Riesman, Boas and Shapiro, Rose, Dautrebande and others had performed such operations without obtaining sufficiently favorable results to justify subtotal thyroidectomy as a valid therapeutic measure for the relief of nonthyrogenous disabling heart disease. Dr. Levine's case of Dec. 14, 1933, to which he has just referred, likewise falls in this category. Though he states that a total thyroidectomy was done, his report of the case in the *New England Journal of Medicine* in October 1933 states that some thyroid tissue

was left about the left upper pole. This, therefore, was not a total thyroidectomy. Dr David D. Berlin had previously performed several similar maximal subtotal thyroidectomies (*Arch Int Med*, June 1933). Further discussion of the necessity for complete removal of every vestige of normal thyroid tissue is available in the several communications by Dr David D. Berlin (e.g., *Am J Surg*, July 1933) as well as in the communication by Drs Harry Friedman and H. L. Blumgart in *THE JOURNAL*, Jan 6, 1934. An interesting group of cases consists of those giving clinical evidence of thyrotoxicosis but in which the thyroid is morphologically normal. We have encountered two such cases, which do not of course form part of the group reported here. A case studied by Stricker, in which operation was performed by Leriche, and reported in 1930, likewise is in this category. Also a case observed in 1927 and first reported by Rosenblum and Levine in 1933, five months after the present investigation was begun by us, likewise showed evidences of thyrotoxicosis. The patient had a somewhat elevated metabolic rate and showed a favorable response to iodine medication. I wish that time permitted discussion of Dr Means' remarks. It was after our first failures in subtotal thyroidectomy that I consulted Dr Means and asked whether he thought it was feasible to remove the entire gland without incurring undue hazard. I feel that, were it not for his encouragement as to its practicability, we might not have attempted total ablation of the thyroid. I am in hearty accord with the opinion that the operation should not be undertaken except in a carefully selected group of patients who do not respond favorably to the usual medical procedures. I, too, have grave misgivings as to the uncritical and unskilled application of a procedure such as this, which involves surgical intervention and which in spite of our experience of no operative deaths in the last thirty-five cases must always be considered to entail an inevitable risk.

DIOXYANTHRANOL 1-8 AS A SUBSTITUTE FOR CHRYSAROBIN

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The chemical compound dioxyanthranol 1-8 differs in its structural formula from chrysarobin by the lack of the methyl group. It is formed by reduction from dioxyanthraquinone 1-8, a substance used in industry. Dioxyanthranol 1-8, under the trade name Cignolin, was introduced into dermatology in 1916 as a substitute for chrysarobin by Galewsky¹ and Unna.² The latter carried through elaborate studies of its action on normal and diseased epidermis and showed that the elimination of the methyl group was responsible for the superior activity of the drug, that the 1-8 position of the hydroxyl groups in both chrysarobin and dioxyanthranol is responsible for the antipsoriatic effect, and that the latter is approximately from two to five times

as effective as the former on the same patient. Apparently, owing to manufacturing difficulties, it was withdrawn from the market in 1924 over the protest of Grumach³ and Hauck,⁴ but in 1927, following its further use, Galewsky⁵ reported on ten years' experience with the drug, and Luth⁶ in 1927 endorsed it on seven years' experience. When in 1929 the manufacturers again decided to stop production, Kromayer⁷ came to its defense with a report of 600 cases of psoriasis in which it had been most effectively used, as well as a considerable material including other dermatoses.

Dioxyanthranol 1-8 has sustained in the literature the usual experience of a preliminary, perhaps excessive, enthusiasm, followed by some reaction but with a steady gain in fundamental support. Its use on the continent of Europe is apparently extending and it has the unpublished endorsement of several of the foremost dermatologists of Europe today. Our attention was called to it by Pautrier.⁸ It is significant that no author thus far has found the results with dioxyanthranol disappointing. Bruhns,⁹ who is the least enthusiastic about it, concedes its usefulness. Galewsky,¹⁰ Unna,¹¹ Meierowsky and Stiebel,¹² Bruck,¹³ Kretschmer,¹⁴ Ihle,¹⁵ Brinitzer and Bottstein,¹⁶ Saudeck,¹⁷ Roth,¹⁸ Schaffer,¹⁹ Werler,²⁰ Pinkus,²¹ Veiel,²² Pollard,²³ Ullmann,²⁴ Ludwig,²⁵ Grumach, Hauck, Luth, Kromayer, Nobl²⁶ and Rosenthal²⁷ were greatly impressed with the advantages of this drug in psoriasis. Unna hailed it as the greatest addition to dermatologic therapy after pyrogallol. Meierowsky and Stiebel in an experience of more than 600 cases thought it superior to chrysarobin in the infiltrated forms.

The advantages claimed for dioxyanthranol 1-8 include the following:

1. Definite chemical composition and economical synthesis from an available material.
2. Effectiveness in very low concentrations (from 0.1 to 2 per cent).

3. Grumach, I. Das Cignolin und seine therapeutische Verwendung. *Klin Wchnschr* 4: 1991 (Oct 8) 1925.

4. Hauck, L. Ist die Wiedereinführung des aus dem Handel gezogenen Cignolins Wünschenswert? *München med Wchnschr* 72: 1514 1515 (Sept 4) 1925.

5. Galewsky, E. Zehn Jahre Cignolin und seine therapeutische Verwendung. *Dermat Wchnschr* 82: 869-874 (June 26) 1926.

6. Luth, W. Cignolin bei entzündlichen Dermatosen. *Dermat Wchnschr* 85: 1387-1390 1927.

7. Kromayer, C. Cignolin gegen Chrysarobin. *Dermat Wchnschr* 88: 889-892 1929.

8. Pautrier, J. Personal communication to Dr. J. H. Stokes.

9. Bruhns, H. in discussion on Ledermann. Ueber dermatotherapeutische Ersatzpräparate, and Heller. Ueber medizinische Tonwasserschmelzen und fettlose Salbengrundlagen. *Dermat Wchnschr* 87: 162 1919.

10. Meierowsky and Stiebel. Cignolin ein Ersatzpräparat für Chrysarobin. *München med Wchnschr* 63: 1639 (Nov. 14) 1916.

11. Bruck, C. Ueber die Schuppenflechte im Kriege und ihre Behandlung mit Cignolin. *Dermat Wchnschr* 63: 755-759 1916.

12. Kretschmer, W. Ueber Cignolin. *Wien med Wchnschr* 69: 1811, 1919.

13. Ihle, H. Cignolin, ein deutsches Antipsoriaticum. *Dermat Wchnschr* 64: 170-171, 1917.

14. Brinitzer and Bottstein. Zur Behandlung der Epidermophyten. *Dermat Wchnschr* 65: 994-995 1917.

15. Saudeck, J. Therapeutische Erfahrungen mit Cignolin. *Dermat Wchnschr* 65: 757-761 1917.

16. Roth, H. Ueber Cignolin. *Wien klin Rundschau* 32: 165, 1918.

17. Schaffer, J. Behandlung von Hautkrankheiten mit einfachen Mitteln. *Med. Klinik* 14: 106-108, 1918.

18. Werler, O. Ueber die moderne Behandlung der Schuppenflechte im königlichen Bad Neundorf in besondere mit radioaktiven Schwefelbädern und Cignolin. *brochures from Bad Neundorf* 1918, abstr. in *Dermat Wchnschr* 69: 555 1919.

19. Pinkus, F. Psoriasis. *Med. Klinik* 14: 892, 1918.

20. Veiel, F., cited by Perutz. A. *Handbuch der Haut und Geschlechtskrankheiten*. Berlin: Julius Springer 5: 156 (part 1) 1930.

21. Pollard, R. Ueber Cignolin. *Wien med Wchnschr* 69: 1810 1811 1919.

22. Ullmann, K. Cignolin ein synthetisches Chrysarobin Ersatzmittel in der Hauttherapie. *Wien med Wchnschr* 70: 706-707 1920.

23. Ludwig, H. Zur Anwendung des Cignolins in der dermatologischen Praxis. *Wien med Wchnschr* 70: 2086 1920.

24. Nobl, G. *Handbuch der Haut und Geschlechtskrankheiten*. Berlin, J. Springer 7: 256 (part 1) 1928.

25. Rosenthal, in discussion on Ledermann. *Dermat Wchnschr* 87: 366 1919.

Read before the Section on Dermatology and Syphilology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

From the Department of Dermatology and Syphilology, University of Pennsylvania School of Medicine, Dr. John H. Stokes, director. Contributions from the Abbott Fellowship for Chemotherapeutic Research.

1. Galewsky, E. Ueber Cignolin ein Ersatzpräparat des Chrysarobins. *Dermat Wchnschr* 62: 113-115, 1916. Cignolin ein synthetisches deutsches Chrysarobin, und Lanepes eine neue Salbengrundlage. *Deutsche med Wchnschr* 43: 238-239 1917.

2. Unna, P. G. Cignolin als Heilmittel der Psoriasis. *Dermat Wchnschr* 62: 116-137, 150-153, 175-183 1916. Ueber die Einwirkung von Cignolin Injektionen auf das Hautgewebe. *ibid* 69: 811-819 1919. Pyrogallol Cignolin und der antipsoriatische Effekt. *Wien klin Wchnschr* 35: 387-389 (April 27) 1922.

3 No constitutional symptoms such as renal irritation in these low concentrations

4 Limitation of the dermatitis-inducing action to the area of application without tendency to extension or generalization

5 No production of conjunctivitis, even when used on the face and scalp

6 Comparatively little discoloration of clothes or skin and practically no discoloration of hair in the concentrations employed

These claims for dioxyanthranol in the literature, together with favorable verbal comment from European authorities led us to give the drug a clinical trial the material for which was supplied at our request by Dr G W Razviss. The only references to the drug in the American literature which we have been able to find are those of Ahlswede²⁶ in his textbook on dermatologic treatment, and Beckman^{26a} in his book on Treatment in General Practice. While other American dermatologists have doubtless had some experience with it, the precarious source of supply has probably interfered with its more extended study.

Dioxyanthranol 1-8 is a yellow crystalline powder, insoluble in water but easily soluble in the organic solvents and mixing readily with fat. It can replace chrysarobin in practically all combinations and may be used in ointments, lotions and paints with coal tar solution, anthrasol salicylic acid, resorcin, sulphonated bitumen and ammoniated mercury. Petrolatum, benzene, alcohol, glycerin, chloroform and collodion may be employed in the base. Unna preferred a water-soluble varnish with gelanth. The drug is an effective addition to Dreuw's ointment^{26b} in resistant psoriasis. The color of the preparation is least noticeable in white petrolatum, and this is on the whole, an available and satisfactory ointment base.

The concentrations employed range from 0.1 to 5 per cent, but the safe effective range may be taken as from 0.1 to 1.5 per cent. It is usually advisable to test the patient's tolerance by a low concentration, such as 0.1 per cent, but most of our good results required 0.5 per cent and occasionally 1 per cent. Two per cent ointment has been known to produce an occasional severe dermatitis. That the safety range of the preparation is considerable is evidenced by an experience in the manufacture of the drug in which a chemist, handling a concentrated ether solution, accidentally splashed it on his face and arms. Although within twenty-four hours an intense dermatitis of the eyelids developed on the contact site, there was no conjunctivitis.

RESULTS OBTAINED IN FIFTY CASES OF PSORIASIS

To test the effect of dioxyanthranol 1-8 in this disease, fifty white patients with resistant psoriasis who had been subjected to various forms of treatment were treated with dioxyanthranol 1-8 in concentrations ranging from 0.1 to 1 per cent in a petrolatum base. No preparatory treatment was used, although Kromayer has particularly recommended the vigorous removal of scales to increase the effect. Forty of our patients were observed for more than one month, and twenty-four were observed from three to seven months. The process

was chronic in forty-five and in the acute phase in five patients. The duration of the psoriasis was longer than five years in twenty-five cases and in fifteen it had persisted from ten to twenty years. In nineteen cases the psoriasis was general in distribution, in twenty-nine it involved the scalp, and in six there were lesions on the face. Treatment was carried out in the winter months, when the resistance of psoriasis patients to therapeutic measures is usually at its height. The methods of treatment employed prior to the application of dioxyanthranol 1-8 included the low nitrogen diet, crude coal tar ointment and ultraviolet ray applications, ointments containing ammoniated mercury and salicylic acid, intramuscular autohemotherapy, salicin (Pernet treatment), x-rays, arsenic, chrysarobin, potassium iodide and balneotherapy. Of thirty-three patients treated by this variety of methods, seventeen had sustained a moderate improvement, three had sustained a slight improvement and only two had been cleared. Six patients were unimproved and in five cases there were no data.

In estimating the rapidity of the effect of the new drug, allowance must be made for the fact that the patients were uniformly started on 0.1 per cent, which is definitely insufficient in a number of cases, in order to test their tolerance.

EFFECT OF DIOXYANTHRANOL 1-8 ON PSORIASIS OF THE SCALP

The effect of dioxyanthranol 1-8 on psoriasis of the scalp is separately considered because of the apparently striking effect of this drug in a field in which chrysarobin cannot be used. Of the twenty-nine cases of psoriasis of the scalp, eighteen underwent complete involution, fifteen within five weeks. Seven additional cases achieved from 80 to 95 per cent involution within the same period. Four cases proved relatively resistant in that from 30 to 70 per cent involution was achieved in from one to four months. As a rule, the 0.1 per cent concentration was used and rarely the 0.25 per cent concentration.

EFFECT OF DIOXYANTHRANOL 1-8 ON PSORIASIS OF THE BODY

In treating psoriasis on the body it was rarely necessary to exceed 0.5 per cent concentration, and treatment was usually begun with 0.1 per cent. Complete involution was achieved in twenty-three cases within four months, sixteen of them within five weeks. Ninety per cent involution was achieved in seven cases within three months, five of them within four weeks. Eighty per cent involution was achieved in eight additional cases within four weeks, and seven cases achieved from 40 to 70 per cent involution in from one to four weeks. Only one case remained resistant to dioxyanthranol 1-8, and in this case the body lesions improved 50 per cent in two months but the eczematoid psoriasis of the legs was unaffected.

It should be recalled that the results described were obtained by the ambulatory-dispensary type of patients, in highly resistant psoriasis, with practically none of the attendant inconveniences of hospitalization, strenuous bathing and scrubbing, diet, slavery to the lamp, and so forth. A relapse occurred in seven patients, in two within two and one-half months after the discontinuance of the ointment. It appeared that the use of the ointment should be continued for some time after the disappearance of the last lesion in order to clinch a good result.

²⁶ Ahlswede, Eduard. *Practical Treatment of Skin Diseases with Special Reference to Technique*, New York: P. B. Hoeber, Inc., 1932.

^{26a} Beckman, Harry. *Treatment in General Practice*, ed. 2. Philadelphia: W. B. Saunders Company, 1934, p. 659, cites Cowen, H. W. *Treatment of Psoriasis by Cignolin*, *Lancet* 2: 267 (July 30) 1932.

^{26b} Dreuw's ointment consists of salicylic acid 10 Gm., chrysarobin, 20 Gm., rectified oil of birch tar, 20 cc., green soap 25 cc., and petrolatum, 25 Gm.

TREATMENT OF OTHER DERMATOSES

While psoriasis has thus far been the principal field for dioxyanthranol 1-8, as for chrysarobin, the drug has been successfully employed in cutaneous mycoses, pityriasis rosea, seborrheic eczema, lichen simplex chronicus, lichen planus, alopecia areata, folliculitis, psoriasiform eczema, lupus verrucosus, defluvium capillitii in the young, acne indurata, parapsoriasis, intertriginous and anal eczemas (presumably mycotic), erysipeloid, edema eczematosum (Unna), ulcus cruris impetigo and herpes. In the fungous infections of the skin it has been rated as almost specific by Galewsky, Meierowsky and Stiebel, Bruck, Kretschmer, Brinitzer and Bottstein, Ihle, Saudeck, Schaffer, Bergner, Polland, Ullmann, Ludwig, Piowaty,²⁷ Grumach, Hauck, Luth, Kromayer and Kennedy.²⁸ Meierowsky and Stiebel, Brinitzer and Bottstein, Polland, Piowaty and Galewsky think that the chief domain of this drug is in the superficial mycoses. Ludwig obtained healing of mycotic eczema in from eight to fourteen days with from 0.25 to 1 per cent of dioxyanthranol 1-8. Piowaty in 1920 treated 129 cases of superficial fungous infections with 0.25 per cent dioxyanthranol 1-8 applied two or three times at intervals of from two to three days. He concluded that it was superior to iodine or hydrogen dioxide.

In pityriasis rosea Kromayer rated the effects as remarkable, stating that the 0.1 per cent ointment materially shortened the duration of the usual period of treatment. Ludwig cured his patients in from eight to fourteen days. In alopecia areata Galewsky, Piowaty and Eichholz²⁹ were especially impressed with the results. Eichholz and Piowaty rated it as the most effective drug now available in the treatment of this condition.

In sixty-five cases of sycosis, Bergner³⁰ found that he could obtain good results in the superficial variety but was not so successful in the deeper type. Polzin³¹ rapidly obtained good results in five cases of acne indurata that had resisted the usual forms of treatment. Luth over a period of three years found the drug useful in various inflammatory dermatoses.

Our own experience with the treatment of other dermatoses than psoriasis is at this writing insufficient for a full report. Our impressions of its use in alopecia areata (from 0.1 to 0.5 per cent), dermatophytosis of the hands and feet (from 0.1 to 0.5 per cent), lichen simplex chronicus and seborrheic dermatitis are very satisfactory. The involution in four cases of tinea versicolor was exceedingly rapid, although in one of these cases 0.25 per cent ointment produced a definite general dermatitis.

CONCLUSIONS

1 Dioxyanthranol 1-8, a definite synthetic chemical compound, which may be considered as chrysarobin without the methyl group, is an effective drug and a desirable substitute for chrysarobin in conditions in which chrysarobin has heretofore held the field.

2 It is usable in low concentrations (from 0.1 to 10 per cent), and when thus employed gives rise to

no constitutional symptoms, does not produce extensive dermatitis, produces comparatively little discoloration of the clothing, and may be used on the scalp without serious discoloration of the hair and on the face without producing conjunctivitis.

3 The European literature on this drug is extensive, in general favorable and in such extensive reports as those of Kromayer (600 cases), enthusiastic.

4 Our own experience with it indicates that it produced involution of inveterate psoriasis when a wide variety of other forms of treatment, including that with chrysarobin, had failed. This is especially true of psoriasis of the scalp. In a series of fifty patients unaffected by previous treatment over a long period of time 82 per cent had good results averaging 60 per cent involution or better, within from one week to four months, and 46 per cent were completely cleared within this period.

5 Seven relapses observed indicate that treatment should be prolonged considerably beyond the disappearance of the last lesion for the most lasting effect.

6 Mild dermatitis, mild folliculitis and slight pigmentation are occasionally produced. No albuminuria and no conjunctivitis were observed.

7 Pruritus, associated with psoriasis, was relieved in a number of cases.

8 In fungous infections of the skin the effect of the drug is second to that in psoriasis according to European authors. In alopecia areata, pityriasis rosea, sycosis barbae (superficial), seborrheic processes and a variety of other conditions very favorable results have been reported, but our own material is too small for presentation. We are favorably impressed with its action on the mycoses and alopecia areata.

9 Dioxyanthranol 1-8 is not proposed as a new drug nor one completely free from the objections familiar in the use of chrysarobin. It is none the less, we believe, a superior substitute, which deserves greater popularity now that it can be made readily available in this country.

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ABSTRACT OF DISCUSSION

DR. ROBERT C. JAMIESON, Detroit. A limited experience would tend to show that the observations of the authors with regard to the therapeutic effect of dioxyanthranol 1-8 in psoriasis can be confirmed. Those who used chrysarobin twenty years ago appreciate the drawbacks of that drug, its uncertain action and its instability. At that time a chrysarobin application could be usually depended on to produce a dermatitis with a temporary disappearance of psoriatic lesions. Old or oxidized preparations, however, were inert. After the war it was found to be almost impossible to obtain a chrysarobin that had any action whatever except for a slight staining of the normal skin. Chrysarobin had been, accordingly, almost entirely eliminated from the armamentarium, and as it had been impossible to obtain the European preparation, this new preparation, dioxyanthranol 1-8, was a welcome addition. This drug, of course, is not advocated as a cure for psoriasis, but the results obtained from its use should place it before chrysarobin or neorobin. The lessened staining properties of this preparation also commend its use, and in some cases slight change in color of the hair may be a very desirable result, especially in gray-haired individuals. I would emphasize the advisability of using the drug in very low percentages, as the authors have stated, from 0.1 to 0.25 per cent, until the action on the skin has been determined and the patient's tolerance established. Dr. Shaffer mentioned that he had one case in which a 0.25 per cent ointment produced a severe generalized

²⁷ Piowaty, R. Ueber die Behandlung der Dermatomykosen mit Cignolin, Wien med. Wchnschr. 70: 2035, 1920.

²⁸ Kennedy, D. Behandlung oberflächlichen durch Spalt Spross oder Fadenpilze verursachtes Hautentzündungen mit Cadogel Cignolin Benzol pinselung Dermat. Wchnschr. 83: 1195-1197 (July 25) 1931.

²⁹ Eichholz, E. Experimentelle Versuche über die Anregung des Haarwuchses durch äussere Behandlung. Dermat. Wchnschr. 88: 161 (Feb. 2) 1929.

³⁰ Bergner, Ueber Behandlung der Bartflechte mit Cignolin. Aertl. Rundschau 29: 169-170, 1919.

³¹ Polzin, F. Cignolin bei Akne. Dermat. Wchnschr. 71: 983-986, 1920.

reaction. With regard to treatment of the other dermatoses that the authors have mentioned I feel that further clinical trial will be required to determine whether its efficacy will be greater or less than the medications already in use. That is particularly true with regard to alopecia areata, in which so many remedies are advised and in which almost anything will produce a cure in most cases. As is the case with chrysarobin the dermatitis produced is around the periphery rather than on the site of the lesion. In one of Dr Shaffer's cases the pigmentary reaction was so satisfactory that the ointment was applied to the entire body to produce what the patient desired at Palm Beach. Continuous or intermittent use will depend on the dermal response and I believe that caution should be employed in its use on the scalp of extreme blonds or gray-haired persons until its action has been more definitely determined. I should like to ask the authors whether they have any definite information regarding the oxidation of the drug that is, in its chemical state before it is made up in solution or ointment and if the ointment after its preparation is at all stable or will oxidize as readily as chrysarobin which was used in former years.

DR. MAX E. OBERMAYER, Chicago. When I was at the clinic in Austria we used dioxyanthranol for years for the treatment of psoriasis and more extensively in the treatment of lichenified chronic conditions such as obstinate plaques of lichen simplex or lichen planus hypertrophicus. We always found it desirable to add salicylic acid to the dioxyanthranol ointment, not only for the softening effect but also in order to prevent decomposition of the compound. Besides the clinical use however, dioxyanthranol as a chemical compound is of special interest to me because it touches on a problem on which we have been working at the University of Chicago. Our endeavor has been to isolate the active substances contained in crude coal tar which are responsible for the therapeutic effect in psoriasis. We have learned from our experiences in crude coal tar distillation that freshly distilled tar is light in color but if exposed to the air assumes at once a dark color. The extent of this darkening is directly proportional to the time of the exposure. It therefore appeared reasonable to assume that there are easily oxidized substances contained in crude coal tar. When we on the other hand examined the classes of substances successfully used in psoriasis today we were struck by the fact that most of them while chemically distinct, still present a common property, namely, they are all strongly reducing agents (chrysarobin, dioxyanthranol, anthrasol). From that it appeared reasonable to assume that the active constituents of crude coal tar belong also chemically to the same group. The presence of a reducing agent and of easily oxidized substances in crude coal tar is indicated by the change in color of the fresh distillate on exposure to the air. This led us to the idea that it might be possible to reach our object by substituting certain chemical compounds for crude coal tar and evaluating them clinically. Among the numerous substances that we used experimentally I shall mention two first because they seemed to be the more promising of the lot secondly because their chemical structure is not unlike that of dioxyanthranol. These are catechol, or orthodihydroxy benzene and 8 hydroxyquinoline. All these compounds show one outstanding characteristic, namely that they are strongly reducing substances. We are studying at present the comparative effect of reduced and oxidized forms of the same chemical compounds on patients with psoriasis. When our studies are more complete it may well be found that the pharmacologic action of substances of the dioxyanthranol group is not much different from that of the substances active in crude coal tar.

DR. FRED D. WEIDMAN, Philadelphia. May I ask what the cost of this drug is and whether it is on the market? I should like also to state that I am grateful to have attention called anew to this, particularly in the treatment of dermatophytosis. I have used chrysarobin as third choice for a long time in selected cases. Doubtless many dermatologists will now test this new drug, and if they do and wish to get the closest and fairest comparisons with other forms of treatment they will treat different lesions on the same patient with it and with control drugs, instead of simply depending on memory as to what their past experiences have been. One group of

lesions should be treated, say, by chrysarobin, another by salicylic acid, and another by dioxyanthranol.

DR. LOUIS A. BRUNSTING, Rochester, Minn. This is interesting from the standpoint of the relationship of this drug to the coal tar products in connection with Goeckerman's work in the use of coal tar, together with ultraviolet radiation in the treatment of psoriasis. It is probable that the combination of the ultraviolet rays on the tar produces some chemical change in the tar which Julia Herrick has shown spectroscopically to be similar to that produced in ergosterol by its irradiation. Whether it is purely the oil action is not determined. The work on some of the crude coal tar products that we have been investigating similar to the work of Obermayer and that of Nelson with Osterberg in producing the tar alba has shown that the active principle is no longer contained in that preparation. I might suggest that those who have failures in connection with the use of dioxyanthranol 1-8 by its local application try also the use of the ultraviolet rays particularly through a thin film of the application. If the patient has lesions only on the elbows or on the knees we have found thatunctions of the tar over the trunk together with the ultraviolet rays to the entire body produces a more rapid involution than when treatment is limited only to the affected sites.

DR. GEORGE W. RAIZISS, Philadelphia. I had the pleasure of having prepared under my direction dioxyanthranol, the clinical application of which has been described by the authors. One may be reminded that twenty years ago the late Dr. Schamberg and I prepared a product which we called neorobin. The latter has been obtained by reducing chrysarobin with nascent hydrogen. I should like to congratulate Dr. Beerman and his collaborators on the undertaking of this interesting problem that is the development of a better treatment of psoriasis. The progress in this field has been rather slow. In this country it is only a second sustained attempt in twenty years. Chrysarobin which is essentially $C_{10}H_8O_2$ is an extract from goa powder derived from the araroba tree of Brazil. In the preparation of dioxyanthranol 1-8, which it was proposed to call anthralin almost the same method is used as in the preparation of neorobin. The difference is in the starting material which in the new preparation is dihydroxyanthraquinone 1-8. We again use nascent hydrogen for reduction. The great advantage of this product is in the fact that it is a definite chemical compound. It is easily identified by a melting point and other analytic methods. The purity of this preparation is assured because the starting material can be obtained pure. The authors stated that it is more active in psoriasis and other dermatoses than chrysarobin or neorobin. It seems to be less oxidizable than the last named products.

DR. HERMAN BEERMAN, Philadelphia. I want to preface my remarks by stating that we have not brought a new treatment for psoriasis, rather we have revived the dead. With reference to Dr. Jameson's remarks as to the chemical properties of this compound I was hoping that Dr. Raiziss would go more into detail. However, they were amply discussed by Unna in 1916. As far as the stability is concerned, we have had the drug stored in the clinic for some three or four months in collapsible tubes and have found no particular difference in effect from the older than we have from the newer batches that we received. I am grateful to Dr. Obermayer for his remarks on the chemical functions of these compounds. As far as salicylic acid is concerned, we have refrained from the use of any other compounds in conjunction with this drug mainly to see whether or not the drug itself has any real advantages. With reference to Dr. Weidman's remarks I might state that in his original work Unna used this technic. One side of the body was painted or treated with chrysarobin of a given strength and the other side with cignolin, as it was then called. He found that in some cases the percentages of chrysarobin required were ten times as strong as of cignolin to get the same effect on lesions on the same patient at the same time. As to Dr. Brunsting's remarks about the combined use of ultraviolet rays and this compound, I can say that in alopecia areata we were obliged in some instances to resort to ultraviolet rays following the technic of Goeckerman in psoriasis, with crude coal tar. The results in a few cases treated with the ultraviolet ray combination seemed better.

DISABILITIES OF HAND RESULTING FROM LOSS OF JOINT FUNCTION

SUMNER L. KOCH, M.D.

CHICAGO

In suggesting the subject of disabilities of the hand resulting from loss of joint function I wish to submit a problem for consideration and discussion rather than a report of facts ascertained and results accomplished. To attempt to secure improvement of function in a hand with its joints fixed in flexion or extension has been difficult and often unsuccessful. An important complicating factor in many cases has been injury and fixation of tendons as a result of the original injury or infection. Not uncommonly the inability on the part of the patient to perform active movements and the failure to maintain passive movements have been quite as important factors in contributing to the joint fixation as have the injury or infection. Once joint function has been lost, the problem of restoration has presented so many difficulties that one constantly recurs in his mind to what might have been, and the problem of prevention of joint disability assumes ever increasing importance.

The rapidity with which stiffness can develop at the joints of an immobilized hand is often one of the first lessons that the surgeon learns in the treatment of hand injuries. Too often when a surgeon has immobilized one or several fingers in extension because of a metacarpal or phalangeal fracture he finds to his dismay at the end of twelve or fifteen days that the affected fingers are stiff in extension and that if he attempts gently to flex them they spring back into extension almost like a strip of spring steel. In the same way, if the fingers are kept immobilized for days or weeks in a warm wet dressing with the fingers lying extended, the thumb extended and alongside the hand, the hand and forearm in complete pronation and in slight volar flexion at the wrist joint, the resulting disability, owing in a considerable part to fixation at the joints, is exceedingly difficult to overcome. An almost equally serious disability results if the fingers are allowed to remain indefinitely in the acutely flexed position.

Once joint fixation has taken place, some form of active treatment must be undertaken in order to permit movement. Four methods are available: (1) splinting and physical therapy, (2) manipulation, (3) extra-articular operations, and (4) intra-articular operations.

SPLINTING AND PHYSICAL THERAPY

If immobilization has not been maintained for too long a time and there is not absolute fixation at the joints in question, considerable improvement can often be accomplished by splinting and judiciously applied physical therapy. Many types of splints have been devised to bring fingers fixed in extension into the position of flexion and to draw sharply flexed fingers into extension. In the application of such splints in my own work I have emphasized several principles: the use of elastic tension maintained for long periods, i. e., six, eight or ten hours of the twenty-four, relaxation of tension when it begins to cause pain, and utilization of splints that can be easily applied to the hand and easily removed.

Even a slight degree of tension may very quickly become intensely painful, and unless the tension can be regulated with exactness, and I know of no way of accomplishing this except by the use of elastic tension, either the patient will release the tension completely and so fail to secure improvement or, unless he is unusually stoical and determined to continue with the treatment. If, particularly at the beginning of the treatment, the splint can be completely removed without a great deal of effort, and so permit the patient to use contrast baths and applications of heat and to employ active and passive movement alternately with the application of tension, better cooperation will be obtained and better results secured.

MANIPULATION

The indications for manipulation of stiffened joints under anesthesia have been very accurately described by Jones and Lovett.¹ From my own observation, the attempt to secure movement in stiff joints by manipulation under an anesthetic has resulted too often in increased stiffness rather than in increased mobility. During the manipulation firm fibrous tissue has been torn, hemorrhage and swelling have resulted and attempts to preserve the degree of movement possible under the anesthetic have caused the patient such intense pain that he has insisted on absolute immobilization for the time being. When the swelling and pain have diminished and movement has again become possible, the surgeon has often found that little or nothing has been accomplished and not infrequently that the affected joints have become more firmly fixed than ever.

The occasional cases in which I have found manipulation of value have been those in which, as a result of injury or infection, intra-articular or periarticular adhesions have formed, which have not completely prevented movement but have caused persistent pain by tension on adventitious bands, newly formed connective tissue or even newly formed bone at or near the joint margin. If in such cases the part is moved at the affected joint once or twice through its complete range of motion, one can usually feel and often hear the soft crepitus as the adhesions give way. If the hand and forearm are then immobilized for twenty-four hours, and if active and passive movement is begun promptly afterward, definite improvement in function can be obtained.

I have rarely seen helpful results follow forcible manipulation at the metacarpophalangeal or interphalangeal joints, although Shaw² has stated that, in his opinion, in favorable cases the shortened collateral ligaments of the metacarpophalangeal joints can be freed from their attachment to the head of the metacarpal bone by manipulation and without open operation.

EXTRA-ARTICULAR OPERATIONS

In the small joints of the hand to a much greater extent than in joints surrounded by muscles and tendons, such as the hip and shoulder joints, stability depends on the integrity of the joint capsule, and normal mobility on the flexibility that is associated with persistent use and movement.

Fixation at these joints is seen most commonly in one of two forms—fixation in extension at the metacarpophalangeal joints, and fixation in flexion at the proximal interphalangeal joints. Fixation in extension

From the Department of Surgery, Northwestern University Medical School.
Read before the Section on Orthopedic Surgery at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

¹ Jones, Robert and Lovett, R. W. *Orthopedic Surgery*, ed. 2, New York: William Wood & Co. 1929, chapter 5.
² Shaw. Personal communication to Dr. A. B. Kanavel.

at the interphalangeal joints is fairly common, fixation in flexion at the metacarpophalangeal joints is almost never seen.

Anatomists have carefully described the small joints of the hand and have emphasized the laxness of the proximal attachment of the volar cartilaginous plate which forms the volar portion of the joint capsule of the metacarpophalangeal and interphalangeal joints, the importance of the firm collateral ligaments (fig 1), and the tenuous character of the dorsal portion of the joint capsule, as well as the part played by the extensor tendons in compensating for the lack of a well developed dorsal portion.

With reference to the metacarpophalangeal joints, Professor Blair³ says

The capsular ligament is strengthened on each side by a collateral ligament which radiates fanwise from the tubercle and adjacent depression on the side of the metacarpal head to the side of the base of the proximal phalanx and to the front of the joint capsule.

When the fingers are flexed sideward movements become impossible because of increased tension of the collateral ligaments, which are fixed to the metacarpals nearer the dorsal than the palmar surface of their heads, and are also more stretched in flexion, owing to the greater width of the palmar aspect of the metacarpal articular surface. The metacarpophalangeal joint of the thumb has much less extensive movement than the others—hardly any at all from side to side.

The interphalangeal joints are constructed, as regards to ligaments, in exactly the same fashion as the metacarpophalangeal joints.

The latter statement, however, should be qualified to include the observation that the collateral ligaments at the interphalangeal joints cannot usually be identified so readily as distinct portions of the periarticular framework but blend more definitely with the joint capsule to form an integral part of it.

It is probable that surgeons in their efforts to secure freedom of movement of fingers and hand have not paid sufficient attention to the formation of the joint capsule, to the thick and unyielding character of its volar portion, to the strength and direction of the collateral ligaments, and to the fact that in the movements of flexion and extension at the metacarpophalangeal joints and to a somewhat lesser degree at the interphalangeal joints the base of the distal bone glides forward and backward on the head of the proximal bone. Flexion at the joint, as Blair has stated, renders the collateral ligaments taut, in extension they are relaxed.

Shaw⁴ in 1920 emphasized the fact that if the fingers are kept immobilized in extension, shortening of the collateral ligaments of the metacarpophalangeal and interphalangeal joints occurs and that the shortening of these ligaments constitutes an important factor in the stiffness of the extended fingers and their resistance to movements of flexion. He showed, furthermore, that if the ligaments are carefully detached from their origin on the head of the metacarpal bone a definite degree of restoration of flexion can be obtained, and retained with the help of splinting and physical therapy.

Although various methods of splinting have been devised to mobilize the small joints of the hand with the fingers held stiff in extension, and particularly the metacarpophalangeal joints, no one else, so far as I know, had previously suggested the procedure described

by Shaw.⁴ Doubts have been expressed as to its value, but in a number of cases in which I have performed this operation excellent results have been obtained.

Following Shaw's suggestions I have approached the joint through two vertical incisions approximately 1 inch in length, made one on each side of the joint in question, and with the center of the incision over the prominent tubercle on the dorsolateral aspect of the head of the metacarpal bone. The lateral and oblique fibers of the dorsal aponeurosis, which help to unite adjacent extensor tendons, are divided, and the articular tissue at the side of the joint, underneath the dorsal aponeurosis, pushed to one side so as to expose the proximal attachment of the ligament to the tubercle and to the bone just proximal to and volarward from the tubercle (fig 2). The proximal attachment of the ligament is divided with a small sharp knife, frequently some of the periosteum is cut away as the attachment is divided. Division of a ligament on only one side of the joint has little effect as far as improvement of

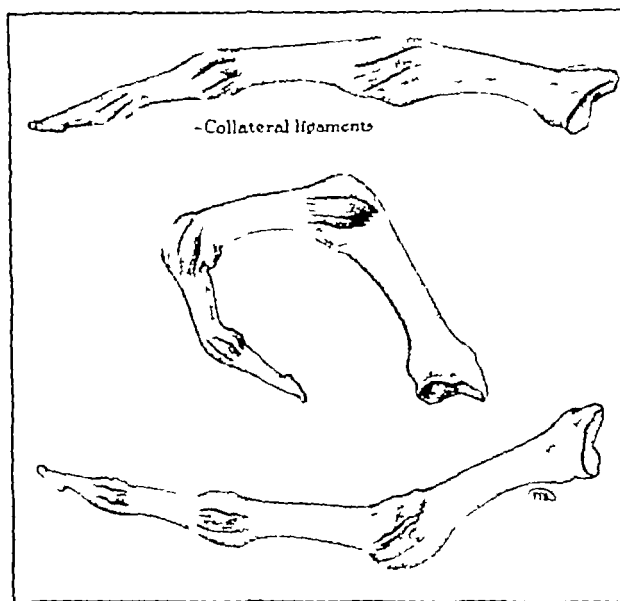


Fig 1—The collateral ligaments of the joints of the fingers

flexion is concerned. As the second ligament is divided, however, definite relaxation takes place, and the proximal phalanx can then be flexed on the metacarpal bone, usually to an angle of 110 degrees or even 100 degrees, i.e., almost to a right angle.

After closure of the incisions with fine interrupted sutures, a light plaster or aluminum splint is applied to hold the fingers in flexion at the metacarpophalangeal

5 A 'transverse posterior capsulorrhaphy' was suggested in 1919 by Wilson and Heyman (Reconstructive Surgery of the Hand J. A. M. A. 73: 1811-1817 [Dec. 13] 1919) to overcome stiffness in extension at the metacarpophalangeal joints. The fibrous capsule of the metacarpophalangeal joint is incised transversely allowing the maximum of palmar flexion at this joint immediately.

In 1924 Heyman (The Mobilization of Stiff Metacarpophalangeal Joints Surg. Gynec. & Obst. 39: 506-507 [Oct.] 1924) again referred to this procedure. The extensor tendon is retracted to one side and the joint capsule is exposed. Attempted manipulation at this stage of the operation will demonstrate that the resistance is felt to be in the capsule of the joint. A sharp tenotome is then used to incise the capsule transversely approximately one half its circumference near its proximal attachment. Care must be taken not to injure the articulating cartilage. The proximal phalanx is then forcibly flexed to 90 degrees causing a gaping wound to appear in the capsule. The joint can then be put through its normal range of motion with little or no resistance.

Although it is probable that in such an operation the collateral ligaments would be divided or ruptured it seems obvious that such an operation is a different procedure from that described by Shaw in that it does not purposefully attack the essential structures involved and in that the joint is unnecessarily opened and exposed.

³ Blair, in Cunningham D. J. Textbook of Anatomy ed 6 New York, William Wood & Co. 1931 pp. 344-345.

⁴ Shaw C. G. Ankylosis of the Metacarpophalangeal Joints M. J. Australia 2: 549-551 (Dec. 18) 1920.

joints. The splint is left in place for eight or nine days, until the sutures can be removed, active movement and physical therapy are then begun.

I have used this procedure in eighteen cases, one of them with involvement of the metacarpophalangeal joints of the four fingers of each hand. In four cases one metacarpophalangeal joint only was involved, in two cases two joints, in two cases three joints, in ten the metacarpophalangeal joints of all four fingers of one hand. In two of these cases the proximal interphalangeal joints of one finger and in two others the proximal interphalangeal joints of two fingers were involved as well. I have not had occasion to use it in connection with the metacarpophalangeal joint of the thumb. In no case did the patient fail to secure a definite degree of improvement (fig. 3).

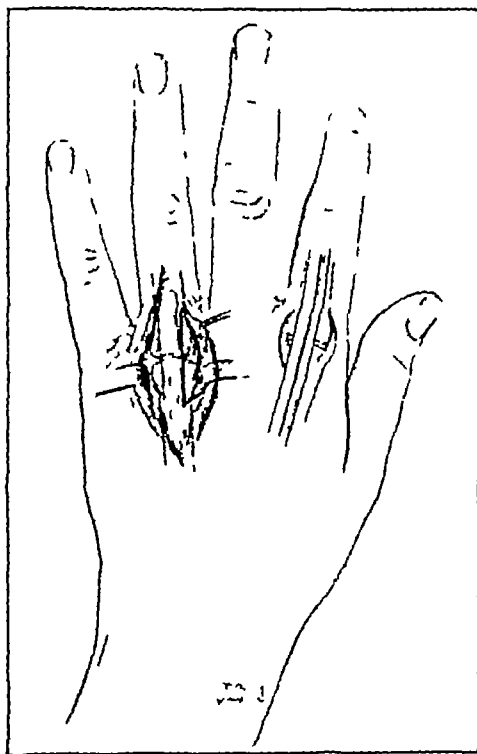


Fig. 2.—Dissection to show the position of the collateral ligaments of the metacarpophalangeal joints and their relation to the joint space.

A second and common type of fixation of the fingers, not infrequently associated with fixation in extension at the metacarpophalangeal joints, is that in which the fingers are fixed in flexion at the interphalangeal joints, and particularly at the proximal interphalangeal joints.⁶ In this type of fixation there are usually complicating factors that make treatment peculiarly difficult. There may first have been an extensive loss of skin and superficial tissue on the volar surface of the hand and fingers, so that a flexion contracture of the superficial tissues has become an important factor in the disability. Secondly, as suggested in the opening paragraph, the flexor tendons may have been injured and become fixed by scar tissue with the result that the fingers are held as in a vise and any efforts to extend them passively are met by an absolutely rigid resistance. Finally the contraction of the joint capsule and the accessory liga-

ments, the result of the original injury or infection, of prolonged fixation in flexion, or of a combination of these factors, plays an important part in the disability. Although one cannot ignore the part played by contraction of the superficial tissues and by tendon fixation, I wish at this time to consider only the rôle of the joint capsule. Perhaps it is sufficient for the moment to say that frequently some method of replacing lost skin and subcutaneous tissue must be combined with the operation on the joints and that often fibrosed and contracted tendons must be freed and lengthened, or must be freed and divided with the idea of inserting a graft at a second operation after the joints have been successfully mobilized.

To Silver⁷ particularly belongs the credit for emphasizing the important role that contraction of the joint capsule plays in this type of contracture and for describing an effective method of treatment—subperiosteal separation of the joint capsule, usually on the side of the convex or condylar segment of the joint.

As compared with forcible correction it affords a means of overcoming contractures not amenable to force, of avoiding the danger of fracture as well as of troublesome reaction from traumatism, and of causing less pain. Over simple capsulotomy it offers the advantage of preserving the continuity of the capsule with the consequent shorter period of fixation and the lesser danger of recontracture. It also has the very decided advantage that in most joints it can be performed subcutaneously, thus making of it a decidedly simple procedure.

The skin is first incised with an ordinary tenotome, well on the side of the joint and close to the joint line, the blade is carried down to the bone and then the capsule alone is split longitudinally from the joint line to its insertion. The elevator is now introduced and the attachment of the capsule is separated.

It must not be expected that the contracture can be fully corrected in all cases after the capsule has been freed. This will depend on how much the other tissues are implicated. When the capsule is the chief factor, however, the moderate resistance in the other tissues can be expected to yield to the gradual method of correction before the periosteum has a chance to readhere.

I have had the opportunity of carrying out Silver's procedure in a few cases, five, to be exact, and believe that when the volar capsule is chiefly at fault such an operation is definitely superior to violent rupture of the capsule by blunt force. I have, however, been impressed with the fact that not infrequently shortening of the collateral ligaments as well as shortening of the volar portion of the joint capsule plays an important part in the fixation in flexion at the proximal interphalangeal joints, just as it does in fixation in extension at the metacarpophalangeal and interphalangeal joints. In such cases unless the shortened collateral ligaments are divided or freed from their proximal attachment relaxation will not be obtained and recurrence of the flexion deformity will take place.

This apparently paradoxical statement will be made clear if one remembers that, at the proximal interphalangeal joints, flexion to an angle of less than 90 degrees can take place under normal conditions. The collateral ligaments (fig. 1), which become taut during the movement of flexion, again relax as the middle phalanx passes through the arc of 90 degrees to form an angle of less than 90 degrees with the proximal phalanx. With prolonged fixation in a position of acute

⁶ It will be remembered that the proximal interphalangeal joint is the only one of the three finger joints at which flexion to an angle less than 90 degrees is possible under normal conditions.

⁷ Silver, D. The Role of the Capsule in Joint Contractures with Especial Reference to Subperiosteal Separation. *J. Bone & Joint Surg.* 9: 96-103 (Jan.) 1927.

flexion the immobile ligaments, particularly if involved in an inflammatory process, undergo contraction and finally play a definite part in the flexion contracture just as does the contracted volar portion of the joint capsule. In such cases, to secure permanent relaxation, one must divide the proximal attachment of the collateral ligaments as well as the proximal attachment of the volar capsule.



Fig 3—Result of application of pedunculated flap suture of median nerve and division of collateral ligaments of the metacarpophalangeal joints in a patient with an electrical burn of the forearm and wrist. A before operation B result one year later after substitution of a pedunculated flap for the scarred skin and subcutaneous tissue and suture of the median nerve C result nine months later following division of the collateral ligaments at the metacarpophalangeal joints (note the degree of flexion possible at the metacarpophalangeal joints)

INTRA-ARTICULAR OPERATIONS

Intra-articular operations to make possible movement at the joints at which ankylosis has taken place as a result of infection or injury have long been well recognized surgical procedures but the attention of surgeons has been focused on the large joints—the hip, the knee and the elbow joints in particular, rather than on the joints of the hand and wrist. There are a number of obvious reasons for this fact. Joints that are surrounded by powerful muscles and tendons derive a definite stability from these supporting structures, and the capsule of such joints can be incised or partially divided with a certain degree of impunity as far as the stability of the joint is concerned. In the fingers, on the contrary, there are practically but two tendons that pass the joints—the flexor tendons on the volar surface and the extensor on the dorsal surface. In these joints, therefore, stability depends largely on an intact joint capsule, and, because of the unavoidable injury of the capsule whenever the joint is adequately exposed or removal of one or both of its articular surfaces becomes necessary, any intra-articular operation is associated with the definite risk of formation of a flail joint or of persistent subluxation.

Moreover, as has already been emphasized, in the fingers the tendons are frequently fixed and often hopelessly injured as a result of the injury or infection that resulted in joint fixation. In such cases any operative attack on the joints must be followed by tenolysis or tendon grafting so as to restore active movement after free passive movement has been made possible. The combined difficulties of these necessary surgical procedures may preclude their employment or make it impracticable to carry them out.

A third reason for the reluctance of surgeons to attempt intra-articular procedures on the small joints

of the hand is the almost complete absence of soft tissue in the neighborhood of joints from which to fashion a flap to turn into a newly formed joint cavity. Whether such a procedure is essential or not if one is to secure a movable joint,⁸ the dicta of Murphy⁹ have impressed themselves so strongly on the surgical profession that, according to MacAusland,¹⁰ "the methods (of performing arthroplasty) in use today have in common the exposing of the joint surfaces, modeling of the bone-ends after the conformation of the normal joint and the interposition of a substance to obstruct effectively bony union."

Still another and probably the most important reason for the concentration of attention on joints other than those of the hand and wrist is the fact that even with complete ankylosis at the wrist or at some of the small joints of the hand a considerable degree of function of the hand is often retained, and the patient adjusts himself so well to the handicap present that any operative procedure to secure improved function seems to him unnecessary or ill advised.

In attempting to secure movement at the wrist joint in cases in which bony fusion has taken place, I have paid particular attention to several details that have seemed to me of importance. These are (1) exposure of the joint by two lateral incisions, one on the radial and one on the ulnar side, so as to give adequate access to the entire joint area with a minimum of traction on and trauma of extensor tendons, (2) removal of sufficient bone to ensure an adequate joint space, which at times means removal of both rows of carpal bones, (3) shaping the contour of the newly formed joint surfaces so that they resemble as nearly as possible those of the normal joint, and (4) the securing of smooth bone margins so as to avoid leaving overhanging edges of

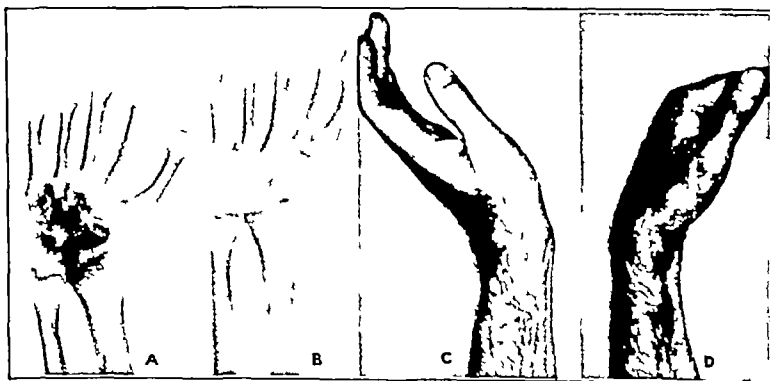


Fig 4—Result of arthroplasty for bony ankylosis at the wrist joint. A before operation B C and D after operation

bone which might predispose to new formation of bone and subsequent interference with freedom of movement.

⁸ "It matters little in experiments on the normal knee and elbow joints of dogs whether arthroplasty is performed by the no-flap pedunculated flap or free flap method. The flaps when used very largely break down and the newly formed joint is about the same both structurally and functionally following the three types of operations (Phemister D B and Miller E M The Method of New Joint Formation in Arthroplasty Surg. Gynec. & Obst. 26 445 [April] 1918).

⁹ Murphy J B Arthroplasty Ann Surg. 57 593-647 1913.

¹⁰ MacAusland W R Mobilization of Ankylosed Joints Surg. Gynec. & Obst. 37 255 309 (Sept.) 1923.

Instead of covering the exposed end of the freshened radius with a covering of fascia, as described and pictured by MacAusland, I have in some cases interposed free flaps of fat between the newly formed joint surfaces, in other cases no tissue whatever has been interposed. In operations on the smaller joints, both pedunculated flaps of fascia and free transplants of fat have been used, in a few cases no soft tissue has been interposed between the freshened bone surfaces.

My cases of intra-articular operations include eleven arthroplasties at the wrist joint in eleven patients (fig 4), two arthroplasties at the metacarpocarpal joint in two patients, eighteen arthroplasties at the metacarpophalangeal joints in eleven patients, twelve arthroplasties at the proximal interphalangeal joints in eight patients (fig 5), and five arthroplasties at the distal interphalangeal joints in five patients.

I should like to be able to say that the results in the entire series have been good, but unfortunately such has not been the case. Of eleven patients on whom arthroplasty at the wrist joint was performed, a bony

at the small joints of the hand if movement is begun promptly after operation, if the patient is intelligent and cooperative, and if postoperative physical therapy, efficiently applied, is combined with and promptly followed by active use of the hand.

SUMMARY

Disabilities of the hand due to loss of joint function are so common and so difficult of correction, once they have developed, that one cannot lay too great stress on their prevention following infection and injury by maintaining the immobilized hand in the position of function and by inaugurating active movement at the affected joints at the earliest possible moment.

If the disability, once it has developed, is confined to a limitation of movement, improvement can frequently be obtained by the efficient use of splints and the application of well directed physical therapy.

Manipulation under an anesthetic is helpful in a few and in well selected cases but, as often carried out, is quite as likely to increase the disability as to lessen it.

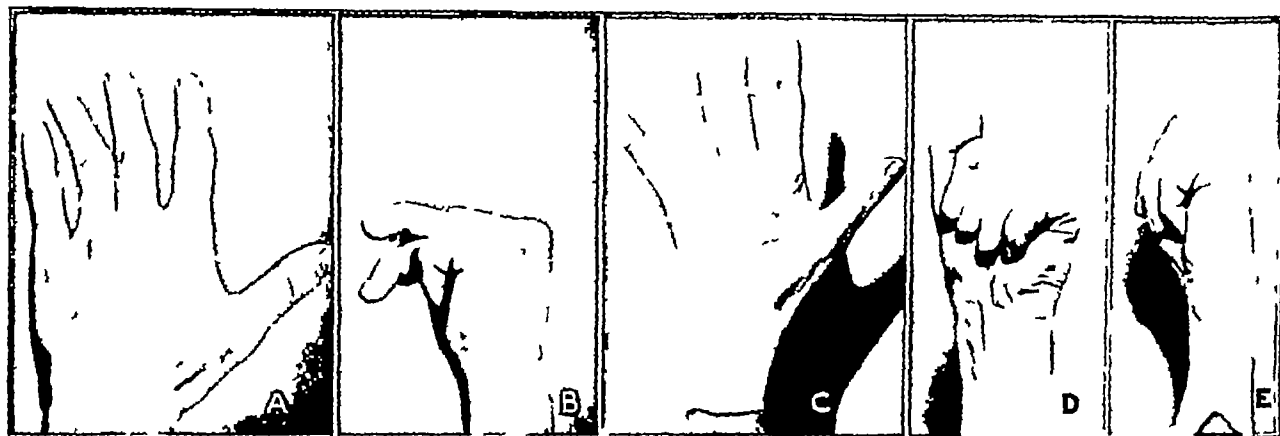


Fig 5—Result of arthroplasty at the proximal interphalangeal joints for bony ankylosis following a saw cut injury of the middle and ring fingers. A and B before operation, C, D and E, result five months after operation.

ankylosis again developed in two, although in a position more favorable for function, one after six years had "slight movement", one after four years "fair movement", four obtained results that can be considered excellent. One patient has been operated on so recently that no statement concerning a result can be made at this time, two patients have dropped out of sight.

The results of thirty-seven arthroplasties at the small joints of the hand in twenty-one different patients have been very similar. In six patients there was a recurrence of the ankylosis, or the range of movement was so slight that the degree of improvement was negligible, in one patient in whom after a severe mangle burn bony ankylosis developed at practically all the small joints of the four fingers, and on whom arthroplasty was carried out at the four metacarpophalangeal joints, the proximal interphalangeal joints of the index, middle and ring fingers and the distal interphalangeal joint of the index, instability resulted, with so great a tendency to the formation of flail joints that a retentive apparatus became necessary, in three patients there was a fair degree of improvement, in eight patients the result could be considered satisfactory. Three patients have dropped out of sight and the late result is unknown.

In spite of these rather discouraging results I feel that much can be accomplished in cases of bony ankylosis by a well performed arthroplasty at the wrist and

If complete fixation has taken place, some form of active surgical treatment must be carried out. Shaw's operation, separation of the collateral ligaments from their proximal attachment, has proved of definite value in cases of fixation in extension at the metacarpophalangeal and interphalangeal joints. Silver's operation, subperiosteal separation of the volar portion of the joint capsule from its proximal attachment, has been of value in selected cases of fixation in flexion at the interphalangeal joints.

If bony ankylosis has developed, arthroplasty comes into consideration. Although the results in my experience have been far from perfect, definite improvement has been secured in a considerable group of cases and I believe that, with greater care in the operative procedure and more persistent efforts to secure active movement following operation, still better results can be attained.

54 East Erie Street

ABSTRACT OF DISCUSSION

DR. WALTER G. STERN, Cleveland: I agree that the mobility of the wrist and fingers must be preserved but I do not feel that the necessary procedures and the ability to preserve motion finally are as easy as the speaker would have us believe. There are many causes for loss of joint motion besides direct trauma and the swellings therefrom or direct inflammatory processes. I have long divided people into "swellers" and "nonswellers."

or if you will into those who are liable to traumatic trophedema and those who are not and I have often found that even trivial injuries to the hand give rise to swelling and stiffness in any or all the joints of the upper extremity. This condition has been well described by German authors as "metatraumatische vasomotorische trophoneurose" and these authors give warning that even seemingly trivial injuries to the phalanges in susceptible individuals may result in trophedema and ankylosis even of the shoulder joint. It is well to bear this condition in mind in disputed medicolegal cases. The most important function to restore especially in working men is the flexion of the fingers and the apposition of the thumb to the grasping function of the hand. Extension of the fingers can often well take care of itself because there is always a certain amount of elastic rebound when the fingers are flexed; if these patients can be given enough active flexion motion to grasp their tools occupational therapy can be begun. After directing three large and well equipped physical therapy departments in three different hospitals I am skeptical of the amount of good that is accomplished by the ordinary routine physical therapy treatments and I am not a great believer in the efficacy of physical therapy unless it is applied as it was applied to the soldiers who were placed in development battalions of the army in the late war. Physical therapy to do any good must be kept up in some form or other for hours a day. I do not believe that by a paraffin bath followed by fifteen minutes of rubbing one can accomplish much in restoring the flexibility of the fingers. That is why I believe such an elastic apparatus as has been shown here is the proper way to proceed. Occupational therapy too must be constantly carried out and the patient must work as many hours a day in flexing and mobilizing his fingers as he would if actually engaged in earning his livelihood.

DR. ARTHUR STEINBLER, Iowa City. I am heartily in accord with the author that the problem is one of early and gradual mobilization. The principle of the splints can be classified as rigid, semirigid and elastic. I am an adherent of the elastic traction and I use the methods of which these are some examples because my experience with this situation has shown me to what degree elastic traction is capable of overcoming contractures by gradually accomplishing adaptation of the tissues. Manipulation is likewise a suitable method. I don't believe in the treatment of joints except under certain circumstances. There comes a time when the purely conservative methods fail because of the irresistible resistance of the capsular structures. The method of Dr. Silver is an excellent one. I have used capsular strippings in a good many cases for the contraction of the fingers not always inflammatory, many of them being rigid. After a time it becomes quite obvious that the contracture has passed the degree at which any amount of lengthening of the lateral ligament will enable one to straighten out the finger. Then it is a question of adapting the skeleton to the shortened tendon. In many cases of arthritic contractions I have found it necessary to resort to the resection of the metacarpal heads—a procedure that is quite gratifying when one considers the original condition. The same applies to a great number of resistant cases of ischemic contracture in which the deep flexor of the thumb must be lengthened without sacrificing the principle of conservatism that acts as a guide in these cases. I have had about sixty cases of ischemic contractures and had to resort to the plastic lengthenings in some instances. One word in regard to arthroplasty. As to the wrist I have had no experience with it. I have performed in all about ninety-three arthroplasties with generally satisfactory results but I am willing to except the arthroplasty of the wrist. Arthroplasty of the fingers has not given uniform results.

DR. L. E. PAPURT, Cleveland. The thing that has always impressed me is the gentleness with which one must touch the hand. When one remembers the multitude of nerves and tendons and joints that are included in a small organ like the hand it can be seen how much damage can be done by even small swellings. I want to ask Dr. Koch regarding the baseball finger with a small fracture or without a fracture. In spite of what is done these patients will get stiff joints. Recently I had a series of three patients, one, a dentist with an injured index finger, another, a violinist with an injured

small finger and a third, a banker, with an injured index finger. The particular joint affected of all three patients was extremely important for use in their professions. It was my opinion that these swellings were due to the intra-articular effusion and hemorrhage causing pressure on the capsule with hyperplasia of the cells of the capsule and extreme thickening. That is seen when capsulotomies or strippings are done. Sometimes a capsule will be four or five times the normal thickness. It was my idea to make a small incision through the capsule of that joint immediately and allow the hemorrhage and effusion to come out. I have done that only once and the patient got along very well. I should like to ask whether Dr. Koch thinks this is a rational way of treating it. I should also like to show this ordinary glove for elastic extension. It is not complicated and may not be used for some of the more severe cases but I get a well fitting glove, apply hooks and put a stiff splint in the back. Slits can be made to put in pieces of whalebone running up to that joint. I have used this successfully for elastic extension. The patient should be instructed to buy a good leather glove that fits his hand snugly.

DR. SUMNER L. S. KOCH, Chicago. I am not sure what Dr. Papurt means by baseball finger. I think of a baseball finger as one suddenly and forcibly flexed at the distal interphalangeal joint with rupture of the extensor tendon.

DR. PAPURT. I didn't mean that. One has these fingers when they get an injury on the end occasionally a small fracture.

DR. KOCH. I have had occasion to operate in one or two such cases. I found that the inability to flex the finger was due to fibrosis about the flexor tendon resulting from the hemorrhage that had taken place at the time of the injury. I do not know, if one saw such a case immediately after the injury whether it would be wise to open the joint and remove the extravasated fluid. I would prefer to immobilize the finger for a brief period and then try to secure active movement as early as possible.

FRACTURE OF BOTH BONES OF THE LEG

TREATMENT BY A MODIFIED BOEHLER METHOD
WITH A NEW APPARATUS

R. A. GRISWOLD, M.D.
LOUISVILLE, KY.

Major fractures of the tibia and fibula represent an increasingly important part of the work of the orthopedic surgeon. The majority of such cases seen today follow traffic accidents. The "bumper" fracture of the knee, so common a few years ago has been replaced by a fracture of both bones below the knee, as the result of changes in automobile design. These fractures are usually badly comminuted and displaced and there is severe damage to the soft tissues. They are often compounded by direct force, and dirt is driven deeply into the wound.

The usual methods of treatment having been shown inadequate to deal with the large number of such cases admitted to the Louisville City Hospital in the last few years it seemed desirable sometime ago to adopt newer procedures. The objectives sought were (1) accurate anatomic reduction and firm fixation to insure the best anatomic and functional result, (2) adequate treatment of compound wounds without sacrifice of or interference with position and (3) ambulatory treatment to decrease hospitalization and to allow the patient to return to his normal activities as soon as possible as

From the Department of Surgery of the Louisville City Hospital and the University of Louisville School of Medicine.
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well as to aid healing by the natural physical therapy of active use. These objectives were obtained by applying skeletal control to both fragments, a procedure used in various forms by Caldwell,¹ West,² Eikenbary and Lecocq,³ Anderson⁴ and others.⁵ Steel pins have been

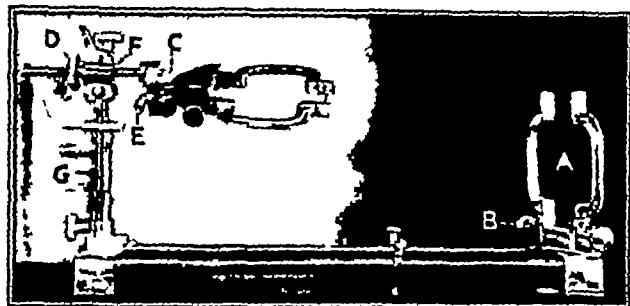


Fig. 1—The apparatus, showing A the vertical caliper which holds the proximal pin or wire. The worm gear, B, closes this caliper to grasp the pin or opens it to tighten the wire. The distal caliper is similarly constructed. The knob, C, controls the worm and rack that supplies lateral angulation to the distal fragments. Traction is obtained through screw D. Rotation is possible at E and F. Flexion or extension of the knee is possible by lowering or raising the jack G. The base telescopes to fit the length of the extremity.

used in preference to wires, since the inherent rigidity of the pin makes it superior for fixation in plaster with the added strain of weight bearing. An apparatus was designed to manipulate these pins and to maintain position during the period of treatment of the soft tissue injuries and the application of plaster. The pins have been firmly incorporated in nonpadded plaster casts to permit immediate ambulatory treatment without danger of displacement of the fragments.

The essentials of the apparatus are (1) a device to hold the upper pin and to align the proximal fragments

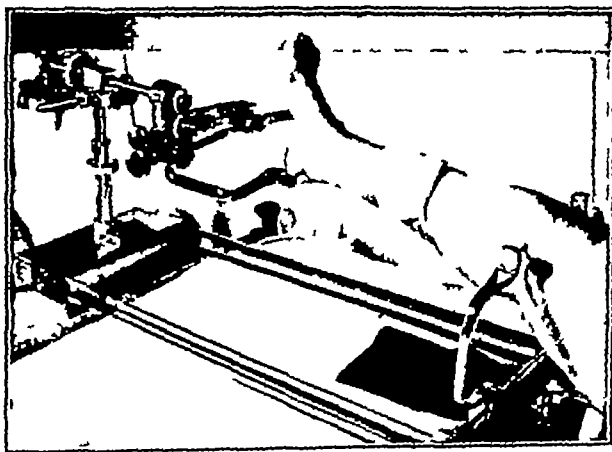


Fig. 2—Patient in the apparatus with fracture reduced and checked by roentgenogram. The pin point compound wound is covered with a light dressing. Cast applied seventy-two hours after fracture.

in the apparatus, and (2) a "mechanical hand" to grasp the distal pin and to apply traction, rotation and angulation to the distal fragment.

- 1 Caldwell, J. A. Personal observation.
- 2 West, W. K. Skeletal Traction in Treatment of Fractures of Shaft of Tibia and Fibula, *J. A. M. A.* 101:2036-2038 (Dec. 23) 1933.
- 3 Eikenbary, C. F., and Lecocq, J. F. *J. Bone & Joint Surg.* 15:643-650 (July) 1933.
- 4 Anderson, Roger. *Surg., Gynec. & Obst.* 58:639-646 (March) 1934.
- 5 These include:
White, J. W. *South M. J.* 25:218-222 (March) 1932.
Carter, R. M. *J. Bone & Joint Surg.* 15:737-742 (July) 1933.
Pitkin, H. C., and Blackfield, H. M. *J. Bone & Joint Surg.* 13:589-594 (July) 1931.
Bowditch, D. M. *Surg., Gynec. & Obst.* 58:893 (April) 1931.
Boehler, Lorenz. *The Treatment of Fractures*, Vienna, Wilhelm Mau drich, 1932.

lateral angulation to the distal fragment. The first rather crude apparatus⁶ satisfied these requirements fairly well but was cumbersome in adjustment, difficult to drape for debridement, and interfered with roentgenologic control. The present apparatus is the result of considerable experience in the use of the method and has eliminated the foregoing disadvantages. It permits the reduction of fractures of the leg with precision comparable to that exhibited by other mechanical arts and is adaptable to use with either pins or wires (fig. 1).

At the proximal end is mounted a vertical caliper (A), which may be closed by a worm gear (B) at the base to grasp the pin or may be opened to tighten a wire. The entire caliper pivots to align the proximal fragment and may be locked in position. The distal caliper is similarly constructed but is placed horizontally. Both calipers are designed to give the maximum amount of room about the extremity for operations, dressings and the application of plaster. Lateral angulation of the distal fragment is provided by a worm and gear rack (C). This rack is the arc of a circle drawn from the center of the pin and permits angulation without lateral motion. This caliper is offset $1\frac{1}{2}$ inches (the average distance from the midline of the tibia to the middle of the body of the os calcis) below the traction screw (D). Rotation is permitted in the axis (E) of the caliper or the axis (F) of the screw, insuring rotation in the line of the tibia with the distal pin in either the os calcis or the tibia. This entire "mechanical hand" may be raised or lowered on the telescoping supporting column (G). Flexion or extension of the knee is thus obtained, controlling the tension of the gastrocnemius group of muscles, which play an important part in supporting the fragments. The base may be adjusted to accommodate legs of different lengths and to permit the use of a short traction screw. Construction is such that there are no removable small parts such as nuts, bolts or thumb screws, and there is no need for the use of wrenches or other tools. Moving parts are protected from plaster and dirt by covers.



Fig. 3—The patient shown in figure 2 fourteen days after fracture. The covered ends of the pins are clearly visible. This patient weighed 220 pounds (100 kg.).

ROUTINE PROCEDURE

1 A local anesthetic is injected into the fracture hematoma and at the pin sites.

2 One-eighth inch steel pins are inserted at the level of the tibial tubercle and through the body of the os calcis. No incisions are made, so that the surrounding skin snugly grasps the pins. Dressings are unnecessary. The os calcis is preferred to the lower tibial fragment as the site for the distal pin, because traction exerted on the heel corrects foot drop and prevents sagging of the fragments by maintaining the tension of the calf muscles.

6 Griswold, R. A. *Surg., Gynec. & Obst.* 58:900-902 (May) 1934.

3 The base of the apparatus is adjusted to the distance between the pins and the pins are inserted in their respective calipers, which are in neutral position

4 The upper calipers are pivoted to bring the proximal fragment into the axis of the apparatus



Fig 4—Condition of bones of patient shown in figures 2 and 3 fourteen days after fracture and ten days after start of ambulatory treatment.

5 The length of the limb is restored by tightening the traction screw

6 The distal fragment is aligned by the worm and rack adjustment

7 Rotary displacement is checked This usually corrects itself if allowed freedom of action and merely requires locking in position

8 The traction is reduced slightly to allow firm contact of the fragments

9 The position is checked by roent-

genograms or the fluoroscope and any necessary residual corrections are made (fig 2)

10 If there is minimal soft tissue damage, a cast is applied from the toes to the upper part of the thigh, firmly incorporating both pins As soon as the plaster has set, the limb is removed from the apparatus, the ends of the pins are covered with corks and plaster, and a walking iron is incorporated (fig 3) In most cases it is wise to leave the extremity in the apparatus for from forty-eight to seventy-two hours before applying the cast This prevents circulatory embarrasment from swelling



Fig 5—Type of cast used for convalescent support

COMPOUND FRACTURES

Compound fractures are treated under spinal or general anesthesia. Pins are inserted and the extremity placed in the apparatus in a routine manner Pinpoint wounds compounded from within out are

treated with an antiseptic and a light dressing Procedure is then carried out as for a simple fracture All other compound wounds seen within eight hours are thoroughly debrided, irrigated with from 4 to 10 liters of physiologic solution of sodium chloride and the skin is closed tightly Wounds more than eight hours old but not grossly infected are debrided and packed open with petrolatum gauze Badly infected wounds are packed but not debrided Reduction is completed by the

apparatus without levering or manipulating the bones in the wound All patients receive prophylactic doses of gas and tetanus antitoxins The leg is left in the apparatus until the condition of the soft parts warrants application of a cast This is usually a week or ten days

AFTER-CARE

Ambulatory treatment with weight bearing is started as soon as the cast is dry Crutches are used at first, to be exchanged for a cane at the end of a week or two Later no external support may be necessary, and the patient can often resume his or her usual occupation (figs 3 and 14) The pins remain in place until the cast is changed at about eight weeks At this time a

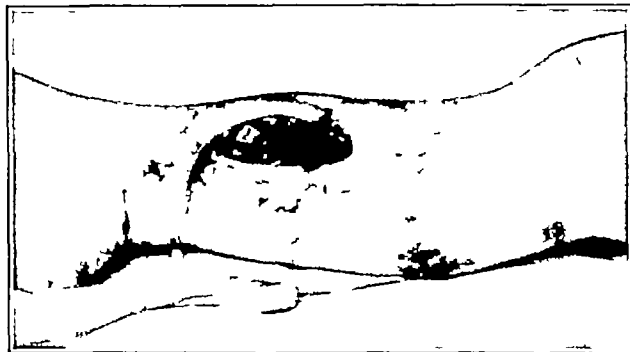


Fig 6—Fracture compounded by direct violence in patient 3½ years old Dirt was driven deeply between the fragments.

new cast is applied as high as the tibial tubercle or the upper thigh, according to the site of fracture and the progress of union This cast takes the place of the usual convalescent brace until unprotected weight bearing is safe (figs 5 and 9)

RESULTS

From July 1, 1933, to June 1, 1934, eighty patients with fracture of the shaft of the tibia with or without fracture of the fibula were admitted to the Louisville City Hospital Eleven died within forty-eight hours of shock and associated injuries, such as fractured skull or crushed chest No deaths occurred later than within forty-eight hours Five were transferred elsewhere

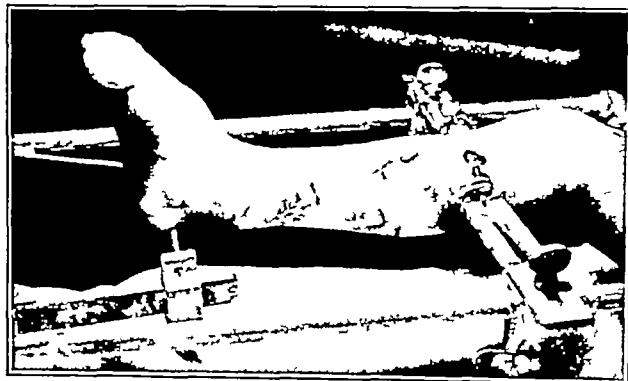


Fig 7—Wound illustrated in figure 6 ten days after débridement and closure showing primary healing Ready for cast and walking iron

after first-aid treatment The remaining sixty-four patients had sixty-seven fractured legs The severity of the injuries seen is illustrated by the fact that the fibula as well as the tibia was fractured in sixty of these and twenty-nine were compound One primary ampu-

tation was carried out for a shotgun fracture with complete destruction of the blood supply. Our reluctance to perform primary amputation perhaps explains the one subsequent amputation and one death from gas infection.

Two of the remaining twenty-eight compound fractures were badly infected on admission and were treated by petrolatum gauze packs. Three pinpoint wounds were not debrided and twenty-three larger wounds were debrided and closed. Of the twenty-six wounds treated by the closed method, eighteen healed by first intention. There were four mild soft tissue infections, and devital-

house staff of the Louisville City Hospital under only moderately strict supervision. The results are, I feel, a tribute to the enthusiasm and diligence of the three assistant residents and the six interns who have rotated on the fracture service during the past year.

CONCLUSIONS

1. Accurate mechanical reduction with skeletal control and fixation of both fragments makes early ambu-



Fig. 8—Condition of bones of patient shown in figures 6 and 7

lized skin flaps sloughed in two cases, all without osteomyelitis. One amputation was necessary for impaired circulation and sepsis after closure. One death occurred thirty-six hours after the accident from gas infection. The last two cases probably represent ill advised

attempts to save badly mangled extremities. Of the sixty-six extremities treated, the apparatus and double-pin technic were considered advisable in forty-three. The remainder, with less severe injuries, were treated by manual reduction, plaster cast and walking iron. Eleven fractures did not show firm union at the end of three months. Eight of these were compound injuries, two badly comminuted fractures of the middle third, and one a spiral oblique fracture of the lower third. Three of these



Fig. 9—Supporting cast applied after removal of first cast and pins seven weeks following fracture

have healed following persistent ambulatory treatment and there is definite roentgenologic and clinical evidence of eventual firm union without operation in the others. Hospitalization, including both simple and compound fractures, has been reduced to an average of less than ten days.

Most of the actual treatment of these cases, such as reduction and debridement, was carried out by the



Fig. 10—Severe compound (automobile bumper) fracture in an arterio sclerotic man aged 54. Debridement and closure with sloughing of skin flap. Ambulatory treatment from fourteenth day following fracture illustrates overextension which resulted in delayed union.

latory treatment possible in fractures of the tibia and fibula.

2. An apparatus is presented to aid in attaining these ends.



Fig. 11—Spiral oblique (torsion) fracture which is easy to reduce but difficult to maintain by conventional methods. Firm dependable fixation with ambulatory treatment obtained by two pins incorporated in cast.

3. Properly performed debridement and primary closure is feasible in fresh compound fractures.

4. The results of this method of treatment in a crowded city hospital service have been acceptable.

ABSTRACT OF DISCUSSION

DR. W. BARNETT OWEN, Louisville, Ky. The first point for consideration is careful selection of cases in which fixed traction is to be applied. It is necessary to apply the fixed apparatus properly, make a careful roentgen study before and after application, and note the reduction. Then, as in all types of fractures, comes the consideration of the maintenance with the least inconvenience and expense to the patient. That is an item of importance because of lack of money. Since this type of cast was adopted, the hospitalization has been reduced 80 per cent, which is quite a saving. The careful debridement and primary

closure in compound fractures is a problem in which uncommon sense must be used. One can get into a great deal of trouble unless one's judgment is very good, and even then will probably get into trouble sometimes. I am enthusiastic about this method of treatment because I think it disables the patient for a very short time and all know the advantage of ambulatory treatment provided the maintenance of the fracture line is observed. No patient is discharged from the hospital if there is any question of any disturbance of blood or nerve supply. Patients are carried on and observed in the clinics and followed up in the social service.

DR J A CALDWELL, Cincinnati. The ideal method of treating any fracture is to reduce it accurately and hold it in position until healing takes place. When great comminution or obliquity of fragments makes it impossible to maintain reduction, some method must be used to hold the fragments from the outside or from the inside. About the simplest way that I know of is to put two pins through the bone above and below the fragments and fasten them to two bars, which extend parallel to the bone, and later incorporate those pins in plaster. That is the method carried on by Dr Griswold. After the fracture has been held that way, if the patient can then be made ambulatory, the time of hospitalization and of disability is reduced because it does away with much softening from inactivity and also keeps up the patient's morale. This method has been used at the Cincinnati General Hospital in thirty seven cases. The results



Fig 12—Reduction obtained in automobile bumper fracture

have been comparable to those Dr Griswold has shown. The apparatus that has been used has been somewhat simpler—the ordinary Thomas splint can be used. Two lugs are clamped to the sides of the splint and the pins are fastened to these and traction is made by pulling on the lower pin. After the leg has been pulled out to proper position and the fragment has been reduced, as shown by the roentgenogram, the lugs are tightened to the bars of the splint and left that way. Rotation can be obtained by putting one lug above and one lug below. With this simple device one can get accurate results in from a week to ten days depending on whether or not the fracture is compound or simple, or swelling has subsided. My associates and I are in the habit of cutting off the pins and letting the patient go home with the pins incorporated. We haven't used ambulatory casts to the extent Dr Griswold has, largely through excessive caution. Since seeing how Dr Griswold carries his work and how the hospitalization of his patients is reduced, it is only a matter of time when we shall adopt his method.

DR MAXWELL HARBIN, Cleveland. Years ago, when the Abbott apparatus was devised for leg lengthening, it occurred to me that it would be a satisfactory type of apparatus for treatment of these fractures. At that time I felt that it was necessary to have two pins above and below the fracture site to control angulation. It is interesting to see Dr Griswold control the anterior-posterior angulation so satisfactorily with only two pins. I am wondering whether that will be universally true. He has a large enough series of cases here to indicate that it is possible. I would question the necessity of the torsion adjustment. It would seem that fragments can be easily aligned to

normal rotation relationship at the original application of the pin. I still believe in the use of some padding of the plaster splints, where there is a rapid turnover of the house staff, particularly in the hospitals since every precaution against the possibility of soft tissue damage should be taken. This is not necessary in the hands of one who carries through the care of these cases alone.



Fig 13—Comminuted fracture with no contact between proximal and distal main fragments. Ambulatory treatment without displacement

DR F G MURPHY, Chicago. I wish to emphasize still further the use of the walking iron in these cases. The stimulation of function does more to produce union and promote union than any other factor, and that includes accurate immobilization. In cases in which apparently there is delayed union, if the stimulation of function is given and walking with a properly fitted cast, many will go on toward union.

DR RALPH G CAROTHERS, Cincinnati. I have used this method a number of times and found it satisfactory. There are two types in which it is applicable. One is the long spiral fracture, which will override with any type of retentive apparatus I have seen except this. In that type of case it is excellent. I think that casts must be made nonpadded because, as these two pins are parallel to each other the bones can act as spokes in a wheel, using the pin as an axle, and if the cast has too much padding in it that is what will occur, with sores on the skin occurring more readily than if the cast is nonpadded, holding the fragments rigidly still. In the compound fracture,



Fig 14—Patient shown in figure 13. Preexisting genu varum maintained

however, I do not close with plaster for several days, and there I think the double pin method is astoundingly good. I have had recently a case of gangrene develop. It was in an arm, not a leg. The same method was used, the same principle. Once this infection had started, I could not have been able to put in pins because I had a swollen member. Having put my pins in I could leave them and I had all sides of that arm to work with. I could split the fascia both fore and back and was able to clean

up the gangrene infection and not get the pinholes infected. The patient went home, a month after the onset. I feel that any other method would have ended disastrously.

Dr. Edson B. Fowler, Evanston, Ill. I want to put in one word of warning on closing these wounds when they are badly comminuted and compounded. Instead of closing, it has been my practice to enlarge the wound and leave it wide open. I am in thorough accord with Sherman of Pittsburgh, who never closes such wounds and who told me that he never had an infection develop.

Dr. R. A. Griswold, Louisville, Ky. In this series, including compound and simple fractures, the period of hospitalization was an average of eight and one-half days per case. That runs about five days for the simple fractures and something between ten days and a little over two weeks for the compound. There has been no trouble with the nonpadded cast so far in the hands of interns. It has been used under mild supervision and it is surprising how little trouble has occurred. There have been fewer pressure sores than from the padded casts. I think Dr. Caldwell's apparatus is the simplest and most effective. On the question of gas gangrene, prophylactic doses of gas and tetanus antitoxin are being used in all compound fractures that are being closed or left open and treated with the ordinary method.

SILICOSIS AND PRIMARY CARCINOMA OF THE BRONCHUS

REPORT OF CASE

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AND

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Pneumoconiosis includes all forms of pulmonary fibrosis occurring as a result of the inhalation of organic or inorganic dust. It is definitely an occupational disease and is rare outside of large industrial and mining districts. The group comprises

- 1 Anthracosis—*inhalation of coal dust*
- 2 Siderosis—*inhalation of iron and steel dust (usually by metal grinders and polishers, nail and file makers, and so on)*
- 3 Chalicosis or silicosis—*inhalation of stone dust (usually by stone workers, such as potters, grinders, plasterers, porcelain makers or quarry workers)*

This report is concerned with chalicosis or silicosis.

Under normal conditions the lung is fairly well protected from ordinary amounts of city dust. This protection is effected by the action of the ciliated epithelium, phagocytes, mucous secretions, and the cells of the bronchial tubes. However, in persons who work in atmospheres heavily laden with dust these protective mechanisms are insufficient and depositions of the particles occur. As a result, destruction of the epithelium takes place and the subsequent desquamation permits the entrance of these particles into the lymph stream, where they are carried to peribronchial and mediastinal nodes, connective tissue structures, perivascular organs and even distant tissues, there producing definite pathologic changes. A person who works for any length of time in dusty trades will develop some fibrosis of the lungs sooner or later, the extent varying according to the susceptibility of the individual. Some workers after years of exposure show no evidence of impairment of health, while others succumb early to pulmonary changes. Insanitary conditions and faulty nutrition are probably factors in the early development of these changes.

SYMPTOMS AND SIGNS

The clinical symptoms depend on the cause, the extent and the duration of the process. Stone dust is likely to produce symptoms earlier than coal dust will, but the patient does not show incapacity until after years of exposure. The earliest symptoms are those of chronic bronchitis. The cough at first is unproductive but later is accompanied by expectorated material, which is stained gray, black or red and which contains the inhaled material. Prolonged coughing leads to pulmonary emphysema with dyspnea and asthmatic symptoms. Wheezing and shortness of breath may constitute the predominant features of these conditions. Microscopic examination of the sputum shows the offending particles lying free in the cells.

The physical signs are those of chronic bronchitis, pulmonary emphysema, fibrosis and bronchiectasis. In the earlier stages only signs of bronchitis are found. Later, respiratory movements become restricted and the patient appears to be in respiratory distress, especially on exertion. Vocal fremitus and the percussion note become impaired only when marked induration and bronchiectatic cavities have developed. In the earlier stages, coarse mucous râles are present, subsequently, bronchovesicular and bronchial breathing with sibilant râles, prolongation of expiration and the characteristic wheezing sounds of the asthmatic patient develop.

DIAGNOSIS

The diagnosis is based on the history of long continued exposure to a dust laden atmosphere and the subsequent development of the symptoms and signs enumerated. Careful, repeated examination of the sputum should be done. Typical cases should show no evidence of the tubercle bacillus. Particles of the causative agent, such as stone, steel, iron and coal, will be found in the sputum. The condition, once it has become well advanced, is not responsive to treatment.

The case to be reported is of particular interest because, in spite of a preliminary diagnosis of advanced tuberculosis, we could find no evidence of this condition and on the basis of the history and physical examination a diagnosis of silicosis was made. The patient's condition was complicated by an overlooked and unsuspected primary carcinoma of the bronchus.

Primary carcinoma of the lungs is said to occur usually in middle life and is more frequent in males. Trauma and irritation from dust inhalation have been cited as causes. The right lung appears to be the seat of the tumor more often than the left. Tuberculosis may be associated with carcinoma, although not often in the same lung. Primary carcinoma is considered rare. The symptoms vary with the location and size of the tumor. A cough is usually early and constant but may be absent in rare instances. It is unproductive, often paroxysmal and distressing. When the growth involves the trachea or large bronchus, the symptoms are aggravated. Expectoration is rarely profuse and consists of a small amount of mucous or mucopurulent material. The sputum may be dark red or brownish, from admixture with blood. Profuse hemoptysis however is rare, although shreds of carcinomatous or sarcomatous tissue are occasionally found in the sputum. Pain varies with the involvement of the pleura or mediastinum and the amount of pressure exerted. Dyspnea is usual and early, but chills and sweats are uncommon. Loss of weight and strength, anemia, cachexia and emaciation occur as the disease advances, probably as

much because of the cough, dyspnea and anorexia as because of the absorption of toxic material. Examination reveals modification of the normal outline, with a bulging or a general enlargement of one side. Occlusion of a large bronchus may lead to collapse or retraction of the lung and to an actual diminution in the size on the side affected. Restriction of respiratory movements is an early and constant sign. Dilatation of the superficial veins of the chest, especially the upper part, is common. As the growth increases in size, the signs of circulatory obstruction become evident.

The aggregation of symptoms pointing to primary carcinoma of the bronchus is known as "Weller's¹ syndrome." In the order of frequency the signs comprising this syndrome are a cough, dyspnea, expectoration, hemoptysis, thoracic pain and pressure manifestations.

Wolf² thinks that scar formation from previous syphilitic infections or other causes may predispose to this condition. He also mentions a tendency of the hard enlarged bronchial glands to break through into the bronchi and considers that soot and dust from these may act as tissue irritants leading to slow continued inflammatory changes.

Adler³ explains the preponderance of cases in the male on a vocational basis. He points out that males are more often engaged in occupations and habits that irritate the bronchi than are women.

Occasionally trauma has occurred prior to the onset of symptoms and may be cited as a possible factor. Pathologists are reluctant to consider trauma as a defi-

cases of primary pulmonary carcinoma were found in 1,900 necropsies.

It was early suggested that the lesions of tuberculosis might give rise to changes in the structure of the lung and its accessory tissues, which might develop into tumors. An analogous process has been described in chronic tuberculous ulcers of the skin, and it was considered reasonable to assume a similar development in the lung. However, the infrequency with which tuberculous processes have been found in carcinomatous lungs in recent reports is striking. Some authors feel that direct trauma, in which bruising of the pulmonary tissues occurs, may be related to neoplasms of the lung. This has not been well substantiated by fact. Cases



Fig 1.—Right lung showing primary carcinoma of bronchus. The roughened nodular carcinomatous infiltration of the mucosa of the main bronchus producing slight stenosis may be noted. The carcinoma in this case started in the main bronchus outside the lung.

Differential Diagnosis

History	Tuberculosis	Silicosis	Primary Carcinoma of the Bronchus
	Exposure to tuberculosis	Exposure to dust	Irritation trauma and so on (negative)
Fibrosis	Gradual	Gradual	Slight
Cough	Productive	Dry hard distressing	Early but not productive
Sweats	Nocturnal	None	None
Weight	Early loss	Late loss	Late loss
Hemoptysis	Early	Late	Late
Dyspnea	Gradual slow	Progressive	Late from obstruction
Fever	Afternoons	None	None
Cavities	Form late	Form late	Do not form

nite cause, but many recent observers feel that this association may be of more importance than has previously been recognized.

The differential diagnosis between silicosis, carcinoma and pulmonary tuberculosis may be summarized as in the accompanying table.

Primary carcinoma of the lung is now found in about 1 per cent of all cases coming to necropsy. Thirty years ago it was observed in not more than 0.2 per cent of necropsy material. This may be due to an actual increase in the number of patients suffering from this disease or to improved methods of study and earlier diagnosis. In a thousand necropsies reported by Klotz and Simpson⁴ for 1910, only two cases were found. From 1910 to 1920 the reported incidence at necropsy was 0.5 per cent. During the last six years, nineteen

in which there appears to be some association between the trauma and the tumor are very rare. The most widely discussed tumor whose development is related to the presence of dust in mines is that occurring among the Schneeberg miners, in whom an unusually high incidence of pulmonary carcinoma is found. In this region the cobalt mines contain iron, bismuth, nickel, zinc, lead and tin in combination with arsenic and sulphur. The ore is radioactive and its complexity offers a field of rich and interesting speculation.

In the last few years we have examined twenty-one cases of silicosis. The majority of the patients died of complicating tuberculosis, which is prevalent among patients with this type of pneumoconiosis. In one of these cases, in which no tuberculosis was present, a malignant tumor had developed in one lung. The presence of carcinoma of the lung in association with silicosis appears to be of such importance as to merit comment and report. At present, silicosis is one of the important occupational diseases of the miners of northern Ontario, and although few die of the pneumoconiosis itself, all are liable to premature incapacitation through tuberculosis, heart disease or pulmonary infections. Observations on the joint existence of cancer and silicosis are too few to permit conclusions.

1 Weller C V Primary Carcinoma of the Larger Bronchi Arch Int. Med 11:314 (March) 1913

2 Wolf Der primäre Lungenkrebs Fortschr d Med 13:765 1895

3 Adler I Primary Malignant Growths of the Lungs and Bronchi New York Longmans Green & Co. 1912

4 Libmann, E Silicosis and Carcinoma of the Lung in Klotz O and Simpson W Anniv vol 2 page 685 (1932)

From our review of the literature it appears to us that 5 per cent of all cancers originate in the lungs. The growth is more common on the right side, probably because the main bronchus is shorter, wider and more vertical on that side than on the left. It is about one-third as common as carcinoma of the stomach. It is becoming increasingly apparent that primary bronchogenic carcinoma is to be considered as a common, rather than a rare, form of tumor.

REPORT OF CASE

History—P. A., a white man, aged 52, married, was referred by the medical department to the chest clinic with a diagnosis of advanced pulmonary tuberculosis. He was first seen by us in May 1933, at which time he complained of a dry hacking cough, loss of weight and dyspnea. He had been a stone cutter for twenty years. His habits were moderate, his living conditions good. He smoked a pipe but not to excess. He had abandoned his work three years before we first saw him but in spite of rest, relaxation, idleness and nourishing food his condition had become worse. The cough was now productive and he had lost 15 pounds (6.8 Kg.) during the past year. He complained of moderate dyspnea but did not have night sweats or hemoptysis.

Examination—The man was emaciated, the ribs were prominent. Chest expansion was poor and limited on both sides. No visible pulsations were noted. Vocal fremitus was somewhat increased on the right side. Many moist rales were heard throughout the chest. At the right apex the breath sounds were cavernous, but there were no definite crepitant rales. The heart showed some evidence of myocarditis but there were no murmurs or enlargement.

The urine was normal. The Wassermann reaction was negative. The sputum was examined repeatedly, but tubercle bacilli were never found. However, pus cells were found in abundance in every specimen of sputum.

Course—Jan. 18, 1934, the patient was admitted to the Newark City Hospital because the dyspnea had become so severe as to require oxygen therapy. January 21 there were signs of pulmonary edema with coughing spells. At this time

No fluid was found in the right pleural cavity. However, numerous old adhesions over the upper lobe, laterally and at the apex, were found.

The left lung was large, with a hyaline-like, almost cartilaginous, thickening of the visceral pleura over the upper lobe. The hilar nodes were anthracotic, with a calcified node 1 cm in size. The lung was a slate gray and showed small nodules distributed chiefly over the upper lobe and upper half of the lower lobe. On cutting, the organ was firm and leathery and



Fig. 4.—Section of lung showing silicosis. Typical silicotic nodules with surrounding fibrosis may be noted.

no cavities could be found. Innumerable small nodules of sandlike bluish gray, slate color were found over the entire parenchyma. In places they were confluent with an acinous-like arrangement.

The upper lobe of the right lung was almost entirely fibrotic. At the apex a cavity about 1.5 cm in diameter with necrotic walls was found. The hilus showed numerous, large, anthracotic lymph nodes, some of them a distinct slate color. Projecting into the lumen of the mass starting just below its bifurcation was an elevated, roughened, nodular, reddish gray area, which occupied a position practically at the opening of the large bronchus. This infiltration extended down the wall of the bronchus for a considerable extent and slightly into the surrounding lung tissue. No large lung tumor was found.

On microscopic examination, the mass in the right main bronchus proved to be a primary carcinoma. The histologic picture was a mixed one, most portions showing an arrangement of cancer cells distinctly squamous in type, classifying the growth as epidermoid carcinoma of the bronchus. In the deeper portions, however, the growth was more anaplastic and undifferentiated and distinct, of the small cell type. Sections from the lung parenchyma showed extensive silicosis, with the formation of typical silicosis nodules with concentric laminations.

CONCLUSIONS

1 One must not make a hasty diagnosis of tuberculosis because a patient has symptoms suggesting pulmonary tuberculosis, without careful study.

2 A careful history in this case would have suggested a diagnosis of silicosis rather than tuberculosis.

3 The similarity of symptoms in the early stages of pulmonary tuberculosis, silicosis and primary carcinoma of the bronchus renders the diagnosis somewhat difficult.

4 Bronchoscopic examination early in this case would have revealed the new growth.



Figure 2



Figure 3

Appearance nine months (fig. 2) and one month (fig. 3) prior to death. In figure 2, extensive silicotic nodules throughout both lungs also extensive atelectasis of upper part of right lung, probably due to stenosis of right main bronchus. In figure 3, almost identical changes.

the sputum was blood streaked. The temperature fluctuated between 99 and 104 F. The patient died in March.

Necropsy—The costal cartilages were excessively soft.

The left pleural cavity contained about a pint of yellowish fluid. Old adhesions were found over the lobe, laterally and at the apex.

5 The necropsy and the pathologic examination were done by the chief county medical examiner Dr. H. S. Martland, to whom we are indebted also for the photomicrographs.

5 Hilus carcinoma is by far the commonest variety. More than 90 per cent of cases fall into this group. The tumor is obviously bronchogenic, commencing in a bronchus and spreading along the bronchial tree and into the lung substance. It may originate in the bronchus outside the lung. The lesion without the bronchus varies from a mere roughening of the mucosa to a complete stenosis.

6 Primary carcinoma of the bronchus in conjunction with silicosis is comparatively rare.

7 All workers whose occupation entails exposure to the dust hazard should have their chest roentgenographed at the start of work, and at periodic intervals thereafter.

COMMENT

There appears to be no report in the literature of cases demonstrating the coexistence of primary carcinoma and silicosis in the lung. The reason for reporting this case is that we are of the opinion that the combination of the two diseases is not uncommon and that its apparent rarity is due to the fact that an insufficient number of cases of silicosis come to necropsy.

These occupational dusts are chemical irritants. In the light of our knowledge of the role of chemical irritants in the causation of cancer, it is not inconsistent to expect silicosis to be followed by carcinoma occasionally.

Clinical Notes, Suggestions and New Instruments

RECTOURETHRAL FISTULA WITH INVOLVEMENT OF PROSTATE AND SEMINAL VESICLE

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Although fistulous tracts involving portions of the urinary apparatus are relatively common, this case report would seem to be of particular interest because of the unusual course of the fistulous tract, its chronicity and rare clinical manifestations, the difficulties presented in arriving at not too certain a preoperative diagnosis, and its satisfactory outcome.

REPORT OF CASE

G R., a man, aged 40, whose wife had never become pregnant and whose family history is irrelevant, at the age of 5 had to be catheterized three or four times a day for retention of urine. This persisted for a period of six months, when a spontaneous discharge of pus through the rectum relieved the urinary retention and thereafter he was able to void voluntarily. He stated that for many years following he experienced no difficulty. He never acquired a venereal infection. He married at the age of 24 and immediately thereafter his present illness began.

At this time and during the next few years, at intervals of about every three or four years, he suffered with attacks of pain and a feeling of fullness and swelling in the rectum, accompanied by hematuria. He was relieved by bladder and rectal irrigations. One attack eight years ago apparently was more severe than the previous ones and, as he did not obtain relief from the treatment that he had received, a friend suggested that he drink whisky. He followed this advice and was surprised to note that his symptoms subsided in the course of a few days after the consumption of only 2 quarts of this palatable remedy. Four years before we saw him he experienced another severe attack of pain with terminal hematuria, but he stated that whisky did not relieve him and, instead, a left epididymitis developed. With this he observed cloudy

urine, which was thick and purulent at the terminal period of urination. Again he was relieved by palliative treatment.

During the next three or four years he was examined in several clinics and by various urologists in the city and with



Fig. 1—Retrograde pyelogram, right side, demonstrating large normal right kidney and absence of left kidney shadow.

eager cooperation received all manner of diagnostic procedures and treatment, with no relief of symptoms.

This brings the history to November 1931, when he came under our observation.

Immediate History and Examination—The patient complained of a sense of fullness in the region of the prostate and



Fig. 2—Recent repetition of intravenous urography again demonstrating nonappearance of opaque solution in left kidney area.

a feeling of discomfort along the left spermatic cord. He experienced painful contracture, deep in the perineum, at the end of the act of urination. There was no urgency or increased frequency of urination. He voided a free stream, the urine

was malodorous and cloudy in the first two glasses, but the terminal spurts were very cloudy, containing many bloody shreds. The left testicle was atrophied. Otherwise the genitalia were normal.

The prostate was somewhat enlarged, firm and sensitive. A sausage-like mass was felt to run transversely across the right prostatic lobe and backward toward the rectum. The right seminal vesicle was thickened, indurated and sensitive. There was much periprostatic infiltration, and a small dimple-



Fig. 3—Urogram of right vas, demonstrating blockage of retrograde opaque medium at approximate position of upper margin of right seminal vesicle.

like intrusion was felt on the anterior rectal wall at the level of the base of the right prostatic lobe.

The voided bladder urine showed a *Bacillus coli* infection and the prostatic smear was loaded with pus.

Cystoscopy revealed an increased prostatic intrusion, a normal appearing bladder mucosa and the absence of a left ureteral orifice. Suspecting the possibility of a left ureter emptying into the urethra or seminal vesicle, intravenous skiodan films were made. These apparently proved the absence of a left kidney and ureter. The function of the right and solitary kidney was normal and its urine was uninfected.

Eliminating upper urinary tract infection, we focused our studies on the urethra and by endoscopy a small gaping orifice was seen on the right side of the posterior urethra between the sphincter and the verumontanum. Many pus flakes were seen discharging from this orifice, and an increased flow of pus could be produced by making pressure on the right lobe of the prostate. Several attempts were made to introduce a small catheter or bougie into this opening, without success. A few cubic centimeters of opaque solution was injected into this opening through an ejaculatory duct cannula, but the solution regurgitated anteriorly and the procedure did not assist us, in conjunction with roentgenograms, to establish the course of the fistulous tract.

A right vasotomy was then performed and a solution of skiodan injected into its lumen with the hope of establishing the patency of the vas, as well as possibly to outline by x-rays the course of the tract. These plates showed the vas to be blocked at about the position of the upper end of the right seminal vesicle.

Urethrograms were likewise of no help. Several proctoscopic examinations were reported negative, and no methylene blue from the urinary tract appeared in the rectum.

After these detailed examinations the patient was kept under strict observation and it was noted that about every two or

three weeks the voided urine would become clear and during these periods he would invariably complain of pain, fulness in the rectum and prostate, general malaise, and fever as high as 103.5 F, accompanied by chills. Suddenly he would void very foul urine, full of pus and blood as well as particles of fecal matter, and at times observe blood in the stools. Immediately following the discharge of this extremely foul material he would feel well again. We noted this phenomenon at least four times in four months.

In view of these symptoms, together with our urethroscopic, roentgen and rectal observations, a diagnosis of the presence of a chronic fistulous tract between the rectum and the posterior urethra, involving the prostate and seminal vesicle, was made and operation was advised.

Operation and Result.—The prostate and seminal vesicles were exposed through the usual perineal incision. The space between the rectum, urethra and bladder, involving the prostate and right seminal vesicle, was occupied by dense, fibrous, inflammatory tissue. This area, which contained at least a portion of the fistulous tract, was removed by sharp dissection as close to the rectum and urethra as safety would permit. The right lobe of the prostate was further incised for drainage. Two large cigaret drains and two small soft rubber tubes were placed deep into the wound, which was then packed with petrolatum gauze. On removal of the Crowell retractor from the urethra a small gush of urine appeared in the wound, suggesting that there either must have been some trauma to the urethra, caused by the retractor or made during our dissection, or that the urine escaped from the urethral end of the fistulous tract. An indwelling catheter was anchored in the bladder through the urethra.

Pathologic examination of tissue removed showed chronic purulent inflammation with no evidence of tuberculosis or a malignant condition.

The postoperative course was normal. The catheter was removed on the seventh day and the patient voided voluntarily. There was some leakage of urine into the wound for a few days, after which it healed firmly.

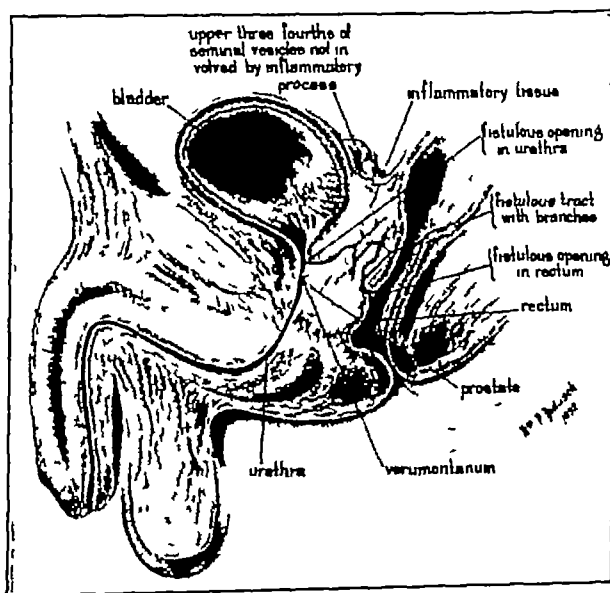


Fig. 4—Apparent course of fistulous tract.

His present condition is satisfactory in all regards. Urinations are normal, with clear urine. His general health is good and his sexual function, although disturbed for a time following the operation, is now greatly improved.

CONCLUSION

1. We believe that, when the patient was a child, an abscess of unknown origin and exact location ruptured into the rectum or urethra, or both, and that a small tortuous fistulous tract communicating with these organs resulted.

2 The occasional temporary closure of the fistulous tract caused retention of infected material within the abscess cavity, and there being no drainage, the urine would appear clear. Absorption produced the systemic and local manifestations that he experienced such as general malaise, fever, chills and pain. As soon as drainage reestablished itself, though the urine became foul containing pus, blood and fecal matter, he invariably felt better.

3 The cure resulted from the complete excision of the area of chronic inflammatory tissue traversed by the fistulous tract.
745 Fifth Avenue.

ACCIDENTAL OVERDOSE OF PHENOLPHTHALEIN IN A CHILD WITHOUT EFFECTS

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W. H. Jr., a boy aged $3\frac{1}{2}$ years of Jersey City, was given for the first time on the night of June 24, 1934, one chocolate laxative tablet containing phenolphthalein. The following morning at 8 o'clock the child got to the household medicine cabinet and, finding the tin that contained the tablets, ate all of the remainder contained in the box. One hour later he was discovered by his mother who noted that his lips and face were smeared with chocolate and that all the tablets were gone. The child had therefore apparently consumed the total contents of the container, altogether forty-eight tablets. Although the child seemed perfectly well the mother gave him an enema, following this the bowels moved at intervals of half an hour, five times in all. She then took the boy to the Jersey City Medical Center, where he was admitted to the pediatric service.

The temperature on admission was 100 F., but the pulse was good. The child vomited several times after admission and had two bowel movements. There was no blood in the stool. The urine was passed in normal amounts and showed no albumin, sugar, casts or blood. No tests were made for phenolphthalein in the urine and stool but the vomitus showed a few pieces of the tablets.

The temperature was normal the following day. There was no further diarrhea or any other abnormality such as a skin eruption or sore mouth to be observed. The child was discharged on the third day. No medication was given while the child was in the hospital. A bland diet had been ordered.

A sample tablet of this laxative was found to contain 2 grains (0.13 Gm.) of phenolphthalein and, as the tin bought by the mother contained forty-eight of such tablets, the amount taken by the child totaled 96 grains (6 Gm.). Judging from reported cases, this is the largest amount of phenolphthalein taken as an overdose.

The child was subsequently observed in the outpatient department of the hospital. One urine specimen was said to have contained blood (examination at a commercial laboratory) but several twenty-four hour specimens examined at the hospital laboratory shortly before this and also later in another laboratory, showed the urine to be normal. Several blood counts, one immediately after discharge and one a week later, showed nothing abnormal. A test for phenolphthalein in the urine and stool one week after the child was discharged from the hospital failed to show the presence of phenolphthalein.

COMMENTS ON LITERATURE

Sollmann¹ believes that the systemic disturbances reported following the use of phenolphthalein are doubtful in nature. Cleaves,² however, reported a fatality in a boy, 10 years old, who had accidentally taken 18 grains (12 Gm.) of phenolphthalein in the form of laxative tablets. In this connection it is interesting to note an article by Vamossy,³ who introduced phenolphthalein as a laxative thirty years ago. After carefully reviewing the clinical history and postmortem examination in the case reported by Cleaves, Vamossy states that the febrile

and hemorrhagic toxic symptoms described had nothing whatever to do with phenolphthalein and that one is dealing with a severe toxic effect due to a cellular poison—bacterial or spoiled foods—that manifested itself coincidentally with the taking of phenolphthalein. Vamossy does not believe that his colleagues will accept a report based on post hoc ergo propter hoc evidence such as was submitted by Cleaves.

In the same article, Vamossy calls attention to the various cases of skin eruptions that have been caused by the use of phenolphthalein. Such eruptions however he believes are very rare and are found in persons who have an allergic hypersensitivity to phenolphthalein.

There are a number of instances reported in which a large overdose of phenolphthalein has caused no alarming symptoms or subsequent ill effects.⁴ There are no doubt still others in which large overdoses were taken accidentally but were not reported because nothing of any importance developed.

The absence of ill effects in my case after an overdose of 96 grains as well as the numerous other instances in which large overdoses had caused no ill results lends support to the view of Vamossy and others who are convinced that phenolphthalein does not produce harmful disturbances in man.

921 Bergen Avenue

GNADOTROPIC AND ESTROGENIC PRINCIPLES IN A MYOMA OF THE UTERUS

DEAN LEWIS, M.D., AND CHARLES F. GESCHICKTER, M.D.
BALTIMORE

In a paper recently published we described a fibro-adenoma of the breast which when assayed, yielded a relatively great amount of estrogenic principle. Because of this finding we were prompted to assay a uterine fibroid to determine whether the estrogenic principle, the follicle-stimulating factor and the luteinizing principle might be found in this type of tumor.

A hysteromectomy was performed on a patient whose history will be given later.

The fibroids were removed, care being exercised that no mucous membrane was included in the tumor. The material was forwarded to Dr. J. H. Morrell of the E. R. Squibb and Sons Laboratory for a bio-assay. Dr. Morrell reported that the tissue contained $4\frac{1}{2}$ rat units of the follicle-stimulating and luteinizing factors per gram of desiccated tissue. The extract of the tissue gave both effects. This material was tested by the same technicians who are standardizing the preparation of the anterior pituitary-like gonadotropic principle from the urine of pregnant women and they reported nothing different from the usual effects. The estrogenic test of this material shows that it contains 4 units per gram of tissue or the equivalent of about 1,800 units per pound.

We can find no record of a bio assay being made on a myoma for these substances. Ammon has shown that the differential diagnosis between large myomas and pregnancy can be made by the Aschheim-Zondek test. He reported twenty-four negative tests in suspected myomas. In twenty-two cases the results of the tests were verified by operation. The urine of these patients did not contain the luteinizing principle. DeFermo has reported the occurrence of the follicle-stimulating factor in the urine of patients with myoma.

The history of the patient from whom the fibroid was removed is as follows. B. P., an obese colored woman, aged 34, began to menstruate when she was 12 years old. The menstrual cycle was of the twenty-eight day type, was regular, and lasted four days. The last period began on Aug. 10, 1934. A hysteromectomy was performed, August 28. The patient com-

4. Brasch, G. Phenolphthalein als Abfuhrmittel nebst Bemerkungen über die Art der Einführung neuer Arzneimittel. *Ztschr. f. Med. Beamte* 19:450, 1906. Elmer, W. P. The Action and Dosage of Phenolphthalein. *M. Rec.* 74:838, 1908. Gillette, H. F. Accidental Overdose of Phenolphthalein. *J. A. M. A.* 51:1782 (Nov. 21) 1908. Kaminsky. Etude sur le purgène moderne 15:354, 1904. Orland, F. Ein Fall von unbeabsichtigter hoher Phenolphthaleindosis bei einem Kinde. *Med. Klin.* 9:257, 1913. Unterberg, E. Beiträge zur abführenden Wirkung des Purgens. *Therap. d. Gegenw.* 4:203 (May) 1902. Vamossy, Z. Ueber ein neues Abfuhrmittel (Purgen). *Therap. d. Gegenw.* 4:201 (May) 1902. Wenhardt, J. Ueber Purgen ein neues Abfuhrmittel. *Heilkunde* 1902 p. 212.

From the Laboratory of Surgical Pathology of the Johns Hopkins Hospital and Medical School.

This report is made with the permission of the medical director of the Jersey City Medical Center.

¹ Sollmann, Torald. *A Manual of Pharmacology*, ed. 4, 1932, pp. 236-237.

² Cleaves, Montague. Poisoning by Ex-lax Tablets. *J. A. M. A.* 99:654 (Aug. 20) 1932.

³ Vamossy, Z. Is Phenolphthalein Harmful? *Orvosi hetil.* 78:792 (Aug. 25) 1934.

plained of pain in the back and lower part of the abdomen, which began about a week before the operation. Examination revealed hypertension. An abdominal tumor could be palpated, which extended from the brim of the pelvis to within three fingerbreadths of the umbilicus. The blood pressure was 155 systolic, 108 diastolic, the weight, 222 pounds (101 Kg.), the Wassermann reaction, 4 plus. The vaginal examination revealed a mucopurulent discharge and a lacerated cervix. The fundus of the uterus contained many myomatous nodules. The patient became pregnant in 1915 and again in 1916. Abortions were induced, one at the third month and again during the fourth month.

The pathologic examination revealed submucous, interstitial and subserous myomas of the uterus, chronic endometritis, chronic bilateral salpingitis, a right parovarian cyst, chronic, left perioophoritis and chronic appendicitis.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE—In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The series of articles will be continued from time to time in these columns.—Ed

THERAPY OF BEDSORES

PROPHYLAXIS

The occurrence of a bedsore is generally a reflection on the quality of the nursing service, excepting in those cases of almost unavoidable bedsores the prevention of which tests the prognostic acumen and the therapeutic resourcefulness of the physician, as the acute decubitus, occurring sometimes even within a few hours of the onset of transverse lesions of the spinal cord (e. g., myelitis), and the subcutaneous bedsore, occurring in the depth of the anal fold in severely toxic patients with profound nutritional disturbance.

Of the two factors in the production of bedsores, the extrinsic and the intrinsic, the former is in all cases except the two types mentioned the most important one. These extrinsic factors are (1) prolonged pressure, (2) maceration and (3) traumatism, all of which must be scrupulously avoided. Even in those cases in which the intrinsic factor of lowered tissue vitality is prominent, extraordinary care in the avoidance of the extrinsic factors is generally all that can be done and is often sufficient.

1. Prolonged pressure on any part of the patient's body, but most especially over bony prominences such as the sacrum, the scapulae, the heel, ankles and elbows must be prevented. Normally, whether awake or asleep, a person rarely rests in one position for any length of time. When, because of disease or of the necessities of treatment, this primitive human instinct is thwarted, three things must be substituted for it: change of posture, distribution of pressure, and maintenance of the best possible circulation over the pressure points.

Frequent change of posture is perhaps the most important of these, not only to forestall bedsores but also to prevent hypostatic pneumonia. As long as the

patient voluntarily changed his posture, the ancient physician was hopeful for him, when he did not, he considered it a bad omen. The nurse would do well to make a record of the fact that "the patient does not change posture" and do this for him. When the requirements of therapy forbid such change of posture, all the other prophylactic factors must be employed with extra zeal.

Minimizing the pressure over the bony prominences, particularly the sacrum, is only second in importance. The best means for this purpose is the water cushion, an almost bed-width square, placed in the middle of the bed with pillows above and below. This should be employed in all especially threatened patients, as in those with transverse myelitis, even before signs of "threatened" bedsores manifest themselves. As a patient with transverse myelitis may develop a bedsore even during a long trip to the hospital, preventive treatment should be practiced during such transportation. The water cushion is filled with water at 95° F. to such tension that, when both hands and arms are used, effort is necessary to press the sides of the cushion together. It is covered with a sheet. If a water cushion is not obtainable, an air mattress serves fairly well. Small air cushions or rubber rings, which should be but moderately inflated and covered smoothly with clean linen, such as a pillow slip, are inferior to the water cushion. "Cotton doughnuts" (cotton rings made of the size required and to fit parts of the body where pressure is likely to produce sores) must be improvised when other means are not available. Not only should the sacrum be cushioned, but the next most threatened part of the body, the heels, should also be kept from the pressure of the bed by means of a circular pad under them. Still better is a large firm pillow placed under the knees, which also maintains flexion of the lower extremity and prevents the painfulness that tends to develop in the limb when it is kept in constant extreme extension. A rubber pillow case should always be employed to protect the pillow. If a rubber pillow case is not available, one may use as a substitute a small blanket roll covered with a piece of muslin. These are easily laundered.

As backache tends to develop whenever a patient must lie on his back day after day, or even more rapidly when the lumbar muscles are completely relaxed, as after anesthesia, the cushion under the sacrum should be placed so as to preserve the "hollow of the back." A person who has lost the lumbar curve of the spine has a "weak back," is likely to suffer from a tendency to backache on slight fatigue, and is prone to develop painful sprains of the sacro-iliac joints from minor jars to the body, all of which might have been prevented by a cushion under the upper part of the sacrum during prolonged sickness.

To improve the circulation in the tissues of the back, the back rub is the most important aid. Every bed patient is entitled to it at least once a day, preferably at bedtime. Patients who are acutely ill should be given at least two back rubs a day, and those who are very ill should receive the back rub still more frequently, as often as the bedding is changed, if the patient is incontinent, and after the back has been washed thoroughly. The back rub is nothing more or less than massage, and a well planned and skilful application of it is, of course, better than planless rubbing, though the latter is better than no rubbing at all. The back is best massaged with the patient lying on one side, the patient being turned toward the nurse,

so that if he is weak one arm may support him while the other does the rubbing. A little 50 per cent alcohol is poured on the hand from time to time and the rubbing is continued until the alcohol has evaporated. The direction of the movements is from the base of the skull downward, and the manipulations consist of a stretching of the tissues away from the spinal column. In any one region, long effleurage strokes may be practiced first and last, with kneading or friction movements in between. These are performed by holding the hand in firm contact with the patient's skin and moving the flesh on the bone. If the patient is stout or the tissues are firm, the one hand may be reinforced by placing the other on it. The movements should be smooth and uniform, not jerky or choppy, and their rhythm slow if sedation is aimed at more rapid if stimulation is desired. The back rub is finished by pouring a little talcum powder or zinc stearate on the hand and rubbing this on the skin.

Alternation of heat and cold is also of value in stimulating the local circulation. As cleanliness is godliness itself in the prevention of bedsores, the back may have to be washed many times a day and each time one should follow the use of the hot water (105 F) by rubbing the back with a dash of cool (50 per cent) alcohol until the skin is dry and red, finishing with talcum powder.

PRESCRIPTION 1—Back Rub Salve

R Zinc stearate	5 00 Gm
Tincture of benzoin	5 00 cc
Scarlet red ointment 5 per cent	0 25 Gm
Hydrous wool fat	30 00 Gm
Liniment of camphor	180 00 cc
Mutton tallow	500 00 Gm

Melt the fats add the camphor liniment, and when the mixture has almost cooled, beat in the tincture of benzoin and the zinc stearate until a creamy mixture is secured.

Label After each cleansing apply a very small amount of this ointment during the back rub if the skin is harsh and excessively dry (to prevent bedsores).

2 Maceration of the skin from sweat, urine, fecal matter or pus must be prevented at all costs, for maceration makes the skin extremely vulnerable. Waterproof material, such as a mackintosh, under the draw sheet, while it may be of value in protecting the mattress, predisposes to maceration of the skin. The most important thing, when the patient has involuntary urination or defecation, is to place under the patient an abundance of absorbent material, such as an oakum pad with a foundation of several thicknesses of newspapers and to change this immediately when it becomes soiled or wet. If the patient is restless, the pad is kept in place by a three cornered piece of muslin put on like a child's diaper. The divided mattress and, in cases of children with involuntary urination, the Bradford frame are valuable aids.

3 Trauma, even a little scratch, may be the determining factor that permits the invasion of the ubiquitous bacteria. Crumbs have an almost malignant tendency to accumulate under the part most threatened with bedsores, hence they must be looked for after every meal and brushed out thoroughly. The draw sheet must be pulled tight and the body clothing kept smooth, for even a wrinkle may cause an abrasion that is followed by a bed sore.

If the skin is harsh and excessively dry, it is well to rub on after each cleansing a very little Hydrous Wool Fat or a back rub salve (prescription 1), much in favor with the bedside nurse. The liberal smearing on of ointments is not permissible, as they tend to cause maceration of the skin.

TREATMENT

Three possible conditions must be distinguished, as they require different therapeutic tactics. A Threatened bed sore. B Unavoidable bed sore. C Ulcer.

A The physician who does not on his daily round examine the back of the very sick patients who are especially predisposed to bedsores is remiss in his duty. The threatening bed sore is indicated by cutaneous erythema that disappears on pressure. If they have not yet been instituted, the prophylactic measures that have been discussed must now be developed to their full

PRESCRIPTION 2—Alum Alcohol

R Alum	30 00 Gm
Water	250 00 cc
Alcohol	250 00 cc
	to make 250 00 cc

Dissolve the alum in the water and add the alcohol.

M Label Apply to part subjected to pressure to prevent bed sore.

extent. In addition, the skin should be (a) hardened if it is soft, or (b) have a protectant applied to it, if it is harsh and dry. Moist compresses or salves are still taboo at this stage.

(a) For hardening, the skin may be painted with 5 per cent solution of Silver Nitrate in Distilled Water. This is also useful when there are small breaks in the skin. A saturated solution of Alum in Diluted Alcohol (prescription 2) should be applied during the back rub several times daily after cleansing.

(b) For protection, a piece of moleskin adhesive plaster serves quite well, provided the skin under its edges is examined daily to make sure that there is no irritation, or else a dressing of Flexible Collodion painted over the surface may keep a harsh, dry skin from cracking.

B The stage of unavoidable bed sore is made evident by the fact that pressure no longer drives the redness from the congested part. Efforts must now be concentrated on minimizing the damage by a strict enforcement of the principles of prophylaxis, with the addition of the tannic acid warm air treatment.

(a) Tannic Acid Warm Air Treatment. A 5 per cent aqueous solution of tannic acid is sprayed on the uncovered area, which is kept dry by turning the patient so that the affected surface is exposed to the warm air under an electric light cradle. If a blister is present, the elevated epidermis is removed aseptically and the raw surface sprayed every hour until a heavy protective coagulum has been formed. (For details of this treatment see Therapy of Burns.)

PRESCRIPTION 3—Thymol Iodide-Ferrous Sulphate

R Thymol iodide	
Exsiccated ferrous sulphate	of each 25 00 Gm

Mix Label Apply liberally to affected surface. As soon as the ferrous sulphate produces a burning sensation blow off the excess of powder leaving only a thin adherent film. Cover with dry absorbent gauze held in place by strips of adhesive plaster. Renew dressing when ever it becomes moist at least once in forty-eight hours for not more than six or eight applications. (To secure dry gangrene.)

(b) Dusting Powder. If it is impossible to place the surface so as to give it the benefit of the warm air treatment, efforts should be concentrated on securing dry gangrene by the liberal use of Thymol Iodide or some other impalpable antiseptic dusting powder. If there is a great tendency to moist gangrene, the drying effect may be greatly increased by use of the thymol iodide-ferrous sulphate powder (prescription 3). When a line of demarcation has formed and the slough loosens, it is gently and aseptically removed by scissors and forceps.

(c) Moist Treatment. This is indicated only in bedsores by the evidence of spreading infection or of

retained pus. Then warm Boric Acid compresses must be used after any fluctuating area that is present has been incised and these continued until the slough has been shed and a clean ulcer secured. Irrigations or dressing with Surgical Solution of Chlorinated Soda (Dakin's solution) hasten the separation of the slough. The continuous bath is, however, the best method of treating this serious complication and should be resorted to whenever the previously suggested measures do not secure a prompt improvement.

C The ulcer resulting after separation of the slough is treated according to the principles of ulcer therapy (q v).

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT

HOWARD A. CARTER, Secretary

BIOLITE INFRARED GENERATORS ACCEPTABLE

The McIntosh Electrical Corporation, Chicago, Illinois, manufactures and offers for sale the following infra-red radiation equipment:

Biolite Infrared Generator, Senior Model including three generating units, 900 watt capacity, automatic timer unit shipping weight 125 pounds.

Biolite Infrared Generator Junior Model including Senior Biolite Infrared Generating Unit 600 watt capacity shipping weight 40 pounds.

Biolite Infrared Generator Home Model including Senior Biolite Infrared Generating Unit 300 watt capacity shipping weight 30 pounds.

In general, the construction of the heating element of these three models is common to all. This heating element is made of a lava support or spool, around which is wound the required amount of resistance wire. Finally, the spool and wire are wrapped with monel metal. The finished heating element is about 2 inches long and about 1 3/4 inches in diameter. The size, however, depends on the rating.

In the Senior Model, three elements are connected parallel and supported on a bracket in such a manner that each element hangs 120 degrees from its neighbor. The entire assembly is connected to a socket so that it can be screwed into the reflector. The reflector of the Senior Model is 12 1/2 inches in diameter, nickel plated inside, and black enamel without. The reflector and heating unit are mounted on a counter balance cross arm so that a good deal of leeway is permitted for the adjustment to the height of the burner. The reflector also swings at the end of the cross arm. The entire unit is mounted on a substantial base equipped with rubber tired casters and the whole unit may be moved conveniently from place to place.



Biolite
Infrared
Generator

The Junior and Home Model Infrared Generators make use of one resistance heating unit, each differing only in capacity. The diameter of the Junior Model Reflector is 11 inches and of the Home Model 9 inches.

One of each type of unit was examined in a laboratory acceptable to the Council. The Senior Model was connected to a 110 volt alternating current circuit and the current required read 7.75 amperes. At a distance of 1 meter from the edge of the reflector, the radiant energy within a circle 1 meter in diameter was explored with a thermopile and galvanometer. A reading on the galvanometer showed that within a circle of 70 cm in diameter the average energy was about 13 per cent more than at the periphery.

When the Junior Model was connected to a 118 volt alternating current circuit, the ammeter read 4.2 amperes. Exploring the radiant energy distribution of a circle 70 cm in diameter, directly in front of the reflector and 1 meter from its edge, revealed that the average energy distribution in the center was 26 per cent more than at the periphery. When the Home Model was connected to a 113 volt alternating current line, the ammeter read 2.7 amperes. Exploring the radiant energy distribution within a circle 70 cm in diameter, directly in front

of the reflector and 1 meter from its edge, revealed that the energy distribution in the center was 15 per cent more than at the periphery. In the opinion of the Council, these units will render satisfactory service in hospital, clinic or office, or wherever heat therapy is indicated. The Council, therefore, voted to include the three Biolite Infrared Generators in its list of accepted devices.

Council on Pharmacy and Chemistry

PRELIMINARY REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING
PRELIMINARY REPORT

PAUL NICHOLAS LEECH, Secretary

DIHYDROXY-ANTHRANOL (ANTHRALIN)

This preliminary report is authorized by the Council at the request of the Section on Dermatology and Syphilology in order that Stokes et al., whose observations are hereinafter discussed, may present their report before a section of the Scientific Assembly.

Dihydroxy-anthranol, submitted by the Abbott Laboratories, has been employed as a substitute for chrysarobin in the treatment of various skin disorders. The same compound was originally introduced into dermatology about 1916 under the trade name "Cignolin." Its formula is $C_{14}H_{10}O_3$ and, structurally, appears as

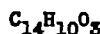
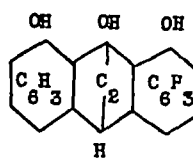


Fig. 1—Dihydroxy anthranol
Cignolin

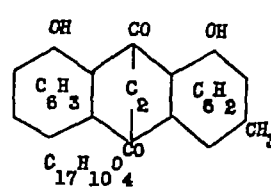


Fig. 2—Chrysophanic acid

Although there is some dispute concerning the formula for chrysarobin, it is fairly certain that it consists in part (at least 30 per cent) of a methyl ester of anthranol of the structure reproduced in figure 2.

It is claimed (Unna) that removal of the methyl group results in greatly decreased toxicity, particularly with regard to constitutional reactions following absorption from the skin (nephrosis, gastro-intestinal irritation, and so on). Its further advantages over chrysarobin lie (1) in the ready manufacture of the product (by reduction of dioxanthraquinone, an easily available substance used in industry), (2) in its definite chemical composition, (3) in lessened liability to production of dermatitis, (4) in its failure to produce conjunctivitis when used about the face or scalp, and (5) in the very slight discoloration produced.

The Abbott Laboratories has suggested the name Anthralin as a nonproprietary designation for dihydroxy-anthranol. The Council voted to accept this nonproprietary designation. Anthralin is a yellowish crystalline powder, practically insoluble in water but readily soluble in the more complex organic and lipid solvents—a feature of distinct advantage in the preparation of ointments, lotions and pastes. Its color is probably least noticeable in petrolatum album, which provides for it an economical and satisfactory ointment base.

Anthralin has been used only for external application in concentrations of from 0.1 per cent to 5 per cent, a very weak preparation always being used at first, however, and the strength being increased according to the tolerance of the patient. Compounds of from 0.5 to 1 per cent have usually been found optimal.

Studies of the effect of the drug in psoriasis, pityriasis rosea, seborrheic dermatitis and mycotic skin infections have been quite extensive. European observers have been particularly exhaustive in their observations in psoriasis. Notable among these many workers are Unna, Galewsky, Meierowsky and Stiebel Bruck, Kretschmer, Ihle, Brinitzer and Böttstern,

Studeck, Roth, Schaffer, Bergner, Pollard, Ullmann, Ludwig, Piowaty, Grumich, Harck Lüth, Krommyer and Kennedy all of whom regard Anthralin as most useful. Certain of these dermatologists consider the drug equally valuable in fungous infections of the skin and at least one (Krommyer) considers it of outstanding value in pityriasis rosea. One hundred and twenty nine cases of superficial fungous infections were reported cured by Piowaty (1920) using 0.25 per cent dihydroxy-anthranol from two to three times daily at intervals of two or three days. Satisfactory though probably not unusual therapeutic results have also been reported in sycosis, alopecia areata, lichen simplex chronicus, lichen planus, lupus verrucosus, desquamium capillitii, ulcus cruris, impetigo herpes, acne indurata, folliculitis and parapsoriasis.

The communication from Beerman, Kulchar Pillsbury and Stokes involves use of the drug in fifty resistant cases of psoriasis of from five to twenty years duration. Of all these cases only two had been completely cleared by various combinations of the following modes of therapy: low nitrogen diet, coal tar ointment, ultraviolet irradiation, ammoniated mercury and salicylic acid ointments, autohemotherapy, x-radiation, arsenic compounds, chrysarobin, potassium iodide, balneotherapy. With dihydroxy anthranol, twenty three cases exhibited complete involution within four months, fifteen showed from 80 to 90 per cent involution within three months, seven demonstrated from 40 to 70 per cent involution in one to four weeks. Only one patient remained resistant, and even in that case, although the lesions on the legs remained unaffected, the body condition cleared 50 per cent. Of twenty-nine cases of psoriasis of the scalp, eighteen underwent complete involution, seven showed 80 to 95 per cent involution and the remaining four from 30 to 70 per cent improvement. The use and effectiveness of Anthralin in disease of the scalp is particularly significant, since chrysarobin, by reason of its conjunctival irritation, can not be so employed.

Although the Council appreciates the vast foreign work that has accumulated regarding dihydroxy-anthranol, it has deferred consideration of Anthralin until such time as more adequate investigations of the nature, properties and pharmacologic and toxic actions of the drug shall have been reported.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION. RAYMOND HERTWIG, Secretary.



- (1) GOLD BOND BRAND WHITE SYRUP
- (2) JACKSON'S SPECIAL BRAND GOLDEN TABLE SYRUP

Distributors—(1) Milburn Johnston Grocer Company, Kensett, Shirley and Searcy, Ark., and Harrison Grocery Company, Monett, Mo., and Harrison and Cotter, Ark. (2) Standard Grocery Company, Indianapolis.

Packer—D B Scully Syrup Company, Chicago.

Description—(1) Table syrup, corn syrup base (85 per cent) with rock candy syrup (15 per cent). The same as White Crystal Table Syrup (85 per cent Corn Syrup 15 per cent Rock Candy Syrup) Flavored with Vanilla and Coumarin. *THE JOURNAL*, April 15, 1933, page 1174.

(2) Table syrup, corn syrup base (85 per cent) with refiners' syrup (15 per cent). The same as Banner Blue Corn Syrup with Cane Flavor, *THE JOURNAL*, March 5, 1932, page 817.

Claims of Manufacturer—Recommended for use as an easily digestible and readily assimilable carbohydrate supplement to milk in infant feeding and as a syrup for cooking, baking and the table.

- (1) BEST EVER BRAND GOLDEN SYRUP
- (2) BEST EVER BRAND CRYSTAL WHITE SYRUP
- (3) GYPSY BOY BRAND GOLDEN SYRUP
- (4) GYPSY BOY BRAND CRYSTAL WHITE SYRUP
- (5) HEART OF AMERICA BRAND GOLDEN SYRUP
- (6) HEART OF AMERICA BRAND CRYSTAL WHITE SYRUP

Distributors—(1) and (2) B E Bridges Company, Goodland, Kan. (3) and (4) Dolan Mercantile Company, Atchison, Kan., and St Joseph Mo., (5) and (6) Christopher Sales Company, Kansas City Mo.

Packer—Bliss Syrup and Preserving Company, Kansas City, Mo.

Description—(1), (3) and (5) Table syrup, corn syrup flavored with refiners' syrup.

(2), (4) and (6) Table syrup, corn syrup sweetened with sucrose syrup and flavored with vanilla.

Manufacture—(1), (3) and (5) The same as Bliss Pancake Brand Golden Syrup (*THE JOURNAL*, Oct. 28, 1933, p. 1393).

(2), (4) and (6) The same as Bliss Pancake Crystal White Brand Syrup (*THE JOURNAL*, Nov. 18, 1933, p. 1635).

Claims of Manufacturer—Recommended for use as an easily digestible and readily assimilable carbohydrate supplement to milk in infant feeding and as a syrup for cooking, baking and the table.

VETA-CRISP LOGS

Manufacturer—Battle Creek Biscuit Company, Battle Creek, Mich.

Description—Milk chocolate coated biscuit prepared from milk chocolate, white flour, sucrose, hydrogenated coconut butter, skim milk, cocoa, malted milk, wheat bran powder, egg yolk powder, sodium chloride, ammonium bicarbonate, and sodium bicarbonate.

Manufacture—Soft wheat flour, powdered skim milk, egg yolk powder, ammonium bicarbonate, sodium bicarbonate and sodium chloride in definite proportions are automatically mixed, pumped on to baking plates and baked in a rotary oven. The finished sheet of cracker is placed on spreaders and the filling, comprising powdered sucrose, hydrogenated coconut butter, skim milk, cocoa, malted milk, bran powder and sodium chloride, is spread on in three layers, and the sheet is cut into bars which are chocolate covered, cooled, inspected, and packed in boxes or small packages wrapped in cellophane.

Analysis (submitted by manufacturer) —	per cent
Moisture	19
Ash	15
Fat (ether extract)	30.7
Protein (N X 6.25)	6.6
Crude fiber	2.3
Carbohydrates other than crude fiber (by difference)	56.4
Theobromine and caffeine (Decker method)	0.60
Lipoid phosphoric acid as P ₂ O ₅	0.034

Calories—53 per gram 151 per ounce.

KRIM-KO'S FIVE-O CHOCOLATE FLAVORED SWEETENED DILUTED SKIM MILK

Bottler and Distributor—J A Schultz and Sons, Big Flats, N Y.

Licenser—Krim-Ko Company, Chicago manufactures the Five-O Chocolate Flavored Drink Base and licenses its use, the name Five-O, and standard advertising under definite contract conditions.

Description—Sterilized chocolate flavored sweetened diluted skim milk containing skim milk, water, sucrose, chocolate and cocoa, tapioca flour, salt and a trace of agar, flavored with imitation vanilla extract. See Krim-Ko's Five-O Chocolate Flavored Sweetened Diluted Skim Milk *THE JOURNAL*, June 23, 1934, page 2105.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 5, 1935

SELENIUM PROBLEM

Selenium is an unusual element, and little is known concerning its distribution and actions. Since Frank traced the cause of an animal disease known locally as "alkali disease" to the vegetation grown on certain definite soil areas, and the U. S. Bureau of Chemistry and Soils subsequently detected selenium in the vegetation of these areas, interest has been definitely aroused. The presence of selenium has been traced from plant to soil and from soil to parent shales. Among the shales known to contain selenium is the Pierre shale, in certain sections of which occur nodules of iron pyrites. One of these nodules was found to contain 205 parts per million of selenium. Williams and Byers¹ examined soils and shales from various regions for selenium content. From the quantitative results obtained, selenium is of much wider distribution in soils and vegetation than has heretofore been suspected. Probably in arid and semiarid areas the presence of selenium is to be expected in every case in which the sulphur content of the soil parent material is high. The derived soils and their vegetation may contain sufficient selenium to render them potentially dangerous, but the mere presence of selenium in soil is not to be considered an indication of an inferior soil. Soils produced in humid areas, according to this report, are not likely to have a pernicious selenium content even though the parent materials are relatively rich in this element.

Knight² has extended these observations in a recent report before the Association of Official Agricultural Chemists. It has been demonstrated, he states, that the toxicity of the vegetation grown on soils containing selenium is proportional to the selenium content. Thus, wheat grown by the Bureau of Plant Industry on artificially selenized soil was toxic to rats and guinea-pigs. The Bureau of Animal Industry demonstrated that the symptoms of "alkali disease" may be produced in pigs

by administering selenium in the form of inorganic compounds. The Bureau of Home Economics has shown that symptoms can be produced in small experimental animals corresponding to those produced by feeding forage grown on selenized soils. Corresponding symptoms are produced by feeding inorganic selenium compounds.

In certain localities the plant growth on seleniferous soil may be sufficiently toxic to produce acute symptoms and fatal results in a brief interval, so that one opportunity to consume such vegetation may prove fatal. In other areas, more chronic symptoms may be produced by consumption of less toxic vegetation. So far as is known at present, the extremely virulent vegetation is produced for the most part on nonarable lands and therefore the effect is confined to grazing animals.

While the investigations are not far advanced, it would appear that quantities of selenium compounds insufficient to produce toxic symptoms do interfere with the growth, development and normal increase of animals consuming them. In all cases the toxic effect is especially injurious to young animals. These facts may prove of immense importance not only in this country but also in other countries, since the semiarid areas of the world constitute the great wheat producing areas. Indeed, it has been demonstrated already that appreciable quantities of selenium are found in grain derived from foreign sources. There is no occasion, however, for undue anxiety. Only a few cases of injury to man as a direct result of poisoning by selenium-bearing vegetation have been definitely determined and in none of these apparently has the result been fatal. The greatest injury so far demonstrated, in fact, has been the reduction of the profit in livestock raising. Here the losses have been so great as to cause the abandonment of farms and ranches, though the source of trouble was often unsuspected or improperly assigned.

The particular selenium compounds have not yet been isolated and identified, but it is known that selenium occurs in the soil in both inorganic and organic forms. In the plant and animal tissues it is present in at least two different types of compounds. In wheat grains it appears to be concentrated for the most part in the gluten of the wheat and in general in the protein portion of seeds. In this form it is essentially insoluble in water. The seleniferous compounds in growing plants, however, may be brought into aqueous solution. In the animal organs the maximum concentration has been found in the liver.

Some conception of the magnitude of the relatively new problem of distribution and toxicity of selenium compounds is now available. Much remains to be done. Knight lists some of the more pressing problems: the isolation, identification and synthesis of the organic selenium compounds developed by plants, determination of the products of these compounds which result from digestion, determination of the question whether sele-

¹ Williams, K. T., and Byers, H. G. Occurrence of Selenium in Pyrites, *Indust. Chem.* 6: 296 (July 15) 1934.

² Knight, H. G. The Selenium Problem: address before the Association of Official Agricultural Chemists, Oct. 30, 1934, Washington, D. C.

num is cumulative in the animal body or whether in the processes of metabolism its course follows that of sulphur, studies aimed at clinical diagnosis of selenium poisoning and the remedial measure to be employed, the disposition of lands injuriously affected by selenium, and the establishment of scientifically sound study of the physiologic and pathogenic effects of organic selenium compounds

RELATIONSHIPS AMONG THE STEROLS, ESTROGENIC SUBSTANCES AND CARCINOGENIC COMPOUNDS

The isolation¹ in crystalline form from pregnancy urine of substances with estrogenic activity and the subsequent elucidation of the structure of these compounds have demonstrated a constitution similar to the sterols and bile acids, to the testis hormone and to certain carcinogenic materials. The existence of these similarities in molecular configuration has led to attempts to obtain evidence for functional relationships in the living animal and has produced unusually interesting results. In general, it appears that the physiologically active members of these groups of substances consist of a phenanthrene molecule with a five membered ring attached to one end of the molecule, and that various polar groups, side chains and double bonds are possibly associated with different types of activity in the various molecules. Certain other products isolated from pregnancy urine have structures which suggest that these compounds may be intermediates in the degradation of the body sterols, principally cholesterol, into the so-called sex hormones.

Knowledge of the constitution of the estrogenic hormones has resulted in attempts to obtain synthetic materials with estrogenic activity. It has actually been possible in one instance to produce a compound in the laboratory which has even greater physiologic activity than the naturally occurring theelin from pregnancy urine. This achievement is significant from an organic chemical standpoint, as it demonstrates how physiologically active compounds can be produced in the laboratory. Fully as important is the doubt these observations throw on the question of the specificity of hormones. The original concept emphasized the extreme specificity of this group of chemical agents, the mere change from the naturally occurring optically active isomer of either thyroxine or epinephrine to the synthetic isomer results in a marked alteration in physiologic effect. Now, however, there appear to be compounds of somewhat differing structures which are capable of producing the whole phenomenon of estrus in mammals and even the feathering changes that can be induced in the male bird by injection of the crystalline compound from pregnancy urine.

As certain of the synthetic carcinogenic substances are known to contain the phenanthrene nucleus, experiments have been conducted to determine whether these compounds possess any estrogenic activity. Most striking is the observation that two of these compounds, 1,2-benzpyrene and 5,6-cyclopenteno-1,2-benzanthracene, are capable of producing a full estrous response by the injection of 100 mg. of either compound. These substances, therefore, exhibit the dual activity of carcinogenesis and estrogenesis. It should be emphasized, however, that the estrogenic power although definite is weak, and that the main pharmacologic actions of these compounds lie in their carcinogenic properties. It is evident, nevertheless, that the dual activity does exist.

Since the condensed carbon ring group of compounds under consideration also includes vitamin D or calciferol, investigations have been conducted on the estrus-producing activity of ergosterol, calciferol and related sterols. It was found that the greatest activity was possessed by neo-ergosterol, 40 per cent of the animals injected with this compound developed full estrus. Calciferol and ergosterol also exhibited estrogenic activity. It was further demonstrated that the estrogenic power of vitamin D appears to be quite apart from its power to raise the content of blood calcium. Here again therefore, is evidence that a single, naturally occurring molecule may possess at least two entirely separate physiologic effects, in this case antirachitic and estrogenic activity. It seems impossible at the present time to conclude that all the compounds which exhibit estrogenic activity are converted in the body of the castrate animal to theelin or theelol. In any event, these results further emphasize the importance of the sterol group in metabolism.

DERMATITIS FROM STOCKING "FINISHES"

Skin eruptions associated with the wearing of certain articles of clothing are not infrequently reported in medical literature. Frequently the cause of dermatitis produced in this way is correctly attributed to one or more of the dyes employed in coloring the fabric. Recently a report has appeared¹ which indicates that in certain cases the inciting agents may be substances employed to "finish" the cloth, that is, to soften the fibers or to give the fabric a "crunchy" texture. The finishes used on men's socks are said usually to consist of sulphonated oils or fats, ordinarily sulphonated castor oil or sulphonated olive oil, either alone or mixed with such products as mineral oils, unsulphonated oils and borax. Sulphonated oils are also employed on wool to "fluff" the material. Women's hosiery may be treated with starches, gums or gelatins or with japan wax, beeswax, paraffin or other waxes to render the fabric water repellent. In addition, inorganic salts such as zinc sulphate, barium sulphate, aluminum sulphate or titanium oxide may be used to diminish the luster.

¹ Extensive reviews of the literature are given by Stormer, Inge and Westphal, *Ergebn. d. Physiol.* **35**: 318, 1933; Marrian, G. F., *Physiol. Rev.* **13**: 185 (April) 1933; Dodds, E. C., *Lancet* **1**: 931 (May 5) 1937; 987 (May 12) 1938; 1048 (May 19) 1934.

¹ Schwartz, Louis, *The Actual Causes of Dermatitis Attributed to Socks*, *Pub. Health Rep.* **49**: 1176 (Oct. 5) 1934.

Schwartz of the United States Public Health Service investigated four cases of dermatitis of the feet and legs attributed to the socks worn by the patients. The condition in one of these patients appeared to have been caused by a dye employed in coloring certain stripes in the rayon hose, the dermatitis followed the lines of the stripes. In the three other cases, not the dye but the finish appeared to be responsible. One patient had worn new unwashed black rayon socks, a fresh pair each day for four days. A fine erythematous rash developed over the areas covered by the socks, this disappeared within a week after the patient stopped wearing the latter on the advice of a physician. Patch tests with pieces of one of these socks produced severe dermatitis. The dye employed in coloring the hose was found to be "direct black," sold in this country to the extent of about 60 million pounds a year. Rayon fabric stained with this dye, but unfinished, was also used for a patch test, this gave no reaction. Another commonly used dye, "Zambesi black," similarly gave no reaction, but the patient proved sensitive to "sulphur black" and to "aniline black." Both these dyes were alkaline, as the finishes commonly used also are alkaline, these were next investigated.

The plant in which the hosiery in question had been made was located. These socks had been treated with a mixture of sulphonated castor oil and borax, with an alkaline preparation called "Sulphoricinol S" (the exact composition of which could not be obtained from the manufacturer) and with olive oil soap. The fabric of the sock contained 12 per cent of oil and enough free alkali to develop a pH of 7.8 in solution. Pieces of unfinished rayon dyed with direct black were immersed respectively in solutions of each of the two finishes and in one of olive oil soap. The pieces of cloth were then used for patch tests. The patient proved markedly sensitive to Sulphoricinol S, moderately sensitive to sulphonated castor oil and borax, and slightly sensitive to olive oil soap. As this indicated that it was the finish and not the dye that caused the dermatitis, the patient was told to wear one of these socks for several days after careful washing with soap and water and rinsing in clear water, dermatitis did not develop.

Schwartz reported two other cases in which it appeared quite probable that the finishes and not the dyes were the inciting agents. Two of the three patients were sensitive to alkali, as the finishes were alkaline, the base present probably caused the dermatitis in these cases directly. This author emphasizes the necessity for careful tests of the several agents used in the dyeing and finishing of clothing that may be involved in causing inflammation of the skin. He points out that it is important, particularly for allergic individuals, to wash off the finish and excess dye from new hosiery before they begin to wear it, manufacturers, he says, should use only minimal amounts of finishing substances, and these should be as nearly neutral in reaction as possible.

These studies demonstrate anew some of the hazards involved in the introduction into industry of new chemical agents for treating materials that come into direct contact with human beings. It is important that manufacturers should realize these hazards and that all new agents of this type should be adequately tested for toxicologic effects before they are adopted for use.

Current Comment

FIELD WORK IN CANCER CONTROL

The field work of the American Society for the Control of Cancer has been developed to spread knowledge and effect increased organization of the known means for combating cancer. The country has been divided into four districts for this work—Southern, Central, Northeastern and Western. The report¹ of the field representatives for these districts from 1931 to 1934 has recently appeared. The nature of the problems confronting the representatives varied considerably in different communities. The general plan of creating active interest in cancer control for a period of several years centering in the state medical society was followed in each instance. The program, stripped to its essentials, is well described by Dr. Cox, the representative for the Southern district. It consists in a cooperative effort on the part of three distinct units: (1) organized cancer clinics, special cancer treatment groups and unattached cancer specialists, (2) fourteen state medical societies together with their component societies, and (3) the lay group for which the American Society for the Control of Cancer is primarily responsible. The objectives toward which these groups are visualized as striving may be expressed as an enlightened lay group presenting itself either periodically or early, while the lesion is local, to a well informed family physician who is able to entertain suspicions, who appreciates his limitations and who will refer his pay and indigent patients to a competent group for diagnosis, prognosis and outline of treatment. The program of education, in its initial aspects, is concentrated on the medical profession. Lectures, symposiums, motion pictures, slides and literature are the best methods of spreading the latest knowledge of cancer control. Lay education is to follow with the adjustment of information to the technical knowledge of the general public. To those measures already outlined are added radio broadcasting, newspaper advertising and posters. Many ramifications are brought to light in the reports. Complications more or less general and some that are peculiar to special regions are also discussed by the representatives. When the high mortality from cancer, much of it preventable, is remembered, the value of this program should be easily manifest.

¹ American Society for the Control of Cancer. Report of Field Representatives, 1931-1934, Oct. 1, 1934.

Association News

THE ATLANTIC CITY SESSION Atlantic City Hotels

The Subcommittee on Hotels of the Local Committee on Arrangements has furnished a list of Atlantic City hotels and rates for rooms, which may be found on advertising page 33 of this issue of *THE JOURNAL* together with an application form that may be used to secure reservations through the Subcommittee on Hotels. The form that is printed in the advertising pages may be clipped and when properly filled in should be sent at once to Dr. William Edgar Darnall, Chairman of the Subcommittee on Hotels of the Local Committee on Arrangements, 16 Central Pier, Atlantic City, N. J.

If those who expect to attend the annual session of the American Medical Association will send in their applications at the earliest possible time, there should be no difficulty encountered in securing satisfactory accommodations. Applicants for reservations are especially requested to include a second and a third choice in order that good accommodations may be assured if the desired reservation cannot be had at the hotel of preference.

Symposium on Asphyxia and Anesthesia

At the Atlantic City session there will be a symposium in the Scientific Exhibit on asphyxia and anesthesia, composed of a group of exhibits on these two subjects. The symposium will be carried out in cooperation with the Society for the Prevention of Asphyxial Deaths which has appointed a special exhibit committee for this meeting and the Section on Anesthesia of the Canadian Medical Association, which will hold a session in conjunction with the Section on Miscellaneous Topics of the American Medical Association.

Application blanks for space in the Scientific Exhibit may be obtained by addressing the Director Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago.

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a Western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45 central standard time. The next three broadcasts will be as follows:

January 10	Diphtheria Must Go	W. W. Bauer, M.D.
January 17	The Good Old Days	W. W. Bauer, M.D.
January 24	Progress Against Arthritis	Irving S. Cutter, M.D.

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15 central standard time. The next three broadcasts will be as follows:

January 8	Research in Abdominal Surgery	Thomas S. Cullen, M.D.*
January 15	Causes of Death in 1933	W. W. Bauer, M.D.
January 22	Health in Winter	W. W. Bauer, M.D.

* Dr. Cullen will speak from the National Broadcasting Company's Studios in Washington, D. C. by special arrangement.

Tremor of Spinal Origin—The simplest forms of tremor to understand are those of spinal origin. The fibrillary contractions of parts of various muscles, such as the first dorsal interosseus or the extensors of the fingers, or deltoid, that are so familiar in progressive muscular atrophy are clearly due to the progressive wasting of groups of anterior horn cells interrupting the rhythmic volley firing of the nerve cells and thus setting up irregular or incoordinate explosions of the clonic impulses resulting in visible contractions. Fibrillary tremors are thus a valuable clinical sign in the differentiation of progressive muscular atrophy of spinal origin from other forms of atrophy, such as the primary myopathies—Harris, Wilfred. Tremor, Ataxy and Spasm. *Lancet* 2:1145 (Nov. 24) 1934.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS REFERENCE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Clinical Meeting—The twelfth meeting of the Fort Smith Clinical Society, sponsored by the staffs of St. Edwards, Mercy and Sparks Memorial hospitals, took place November 22. In addition to clinics the following program was offered:

Dr. Miles F. Foster: Recent Advances in the Treatment of Urinary Infections.
Dr. Hardy H. Smith, Jr.: New Treatment of Gonorrhea in Children.
Dr. Hubert C. Dorsey: Control of Edema in Cardiac Decompensation.
Dr. Frederick H. Krook: Uterine Cancer. Surgery of the Corpus.
Irradiation of the Cervix.
Dr. Pierre P. Redman: Present Status of Immunization Against Communicable Diseases.
Dr. Tracey H. McCauley: McAlester, Okla.: Pneumonia in Childhood.
Dr. George B. Fletcher: Hot Springs National Park. Diagnosis and Treatment of Coarse Tremors.
Dr. Lee Vallette Parmley, Little Rock: Shock and Burns Due to Electricity.

CALIFORNIA

Death of Dr. Martin—Ernest Gale Martin, Ph.D., professor of physiology, Stanford University School of Medicine, since 1916, died Oct. 17, 1934, aged 58. Dr. Martin had taught physiology at Johns Hopkins University, Baltimore, from which he received his advanced degree in 1904, Purdue University, Lafayette, Ind., and Harvard University, Sargent School for Physical Education and Radcliffe College, Boston. He served in the Sanitary Corps of the U. S. Army during the World War, was a member of many scientific societies and was author or joint author of several works on physiology.

COLORADO

Society News—Dr. Guy H. Hopkins addressed the Pueblo County Medical Society, recently, on "Atresia of the Lacrimal Duct in the New-Born."—Speakers before the Medical Society of the City and County of Denver, December 18, were Drs. Ward Darley, Jr., on "Primary Pulmonary Arteriosclerosis Associated with Habitual Ingestion of Large Quantities of Salt," Atha Thomas, "Common Affections of Bursae," and Lyman W. Mason, "Attempts to Correlate the Histology of the Endometrium with Theelin Concentration."—Dr. Edward Delehanty, Denver, addressed the Boulder County Medical Society in Boulder, December 13, his subject was "The General Practitioner as a Psychiatrist."

CONNECTICUT

Personal—A portrait of Leo F. Rettger, Ph.D., professor of bacteriology, Yale University, New Haven, was presented to the department by his friends and former students, December 1, at a meeting of the Connecticut River Valley branch of the Society of American Bacteriologists. *Science* reports the portrait was made by W. S. Cummings of the Yale School of Fine Arts.

Society News—The Yale Medical Society was addressed recently by Dr. Joseph T. Wearn, Cleveland, on direct connections between the small arteries and the heart chambers, Dr. Ulrich Friedemann, formerly of the University of Berlin, recently addressed the society.—Dr. Murray B. Gordon, Brooklyn, addressed the Central Medical Society of Middletown, November 28, on "Endocrine Disturbances in Children."

DELAWARE

Surgical Conferences—November 2 marked the opening of a series of monthly surgical conferences by the Delaware Academy of Medicine, Wilmington, with Dr. George P. Muller, Philadelphia as the first speaker, on "Technical Procedure in Biliary Surgery." December 7, Dr. Damon B. Pfeiffer, Philadelphia, presented "Surgery of Cancer of the Colon" and January 4, Dr. Stanley P. Reimann, Philadelphia, "Tumors of the Breast." Others in the series include the following physicians:

Isidor S. Raydin, Philadelphia, February 7: Preoperative and Postoperative Management of the Handicapped Surgical Patient.
Jacob Parsons Schaeffer, Philadelphia, March 7: Surgical Aspects of the Sympathetic Nervous System.
William Wayne Babcock, Philadelphia, April 4: Operations on the Stomach.
Floyd W. Keene, Philadelphia, May 2: Technical Procedures in Gynecologic Surgery.
John F. Erdmann, New York, June 7: Acute Intestinal Obstruction.

NEW HAMPSHIRE

Hospital Anniversary—The Margaret Pillsbury General Hospital, Concord, recently observed the fiftieth anniversary of its founding. The hospital is said to have been the first general hospital in the state. In 1890, George A. Pillsbury, Minneapolis, gave money for a new brick building, which was named in honor of Mr. Pillsbury's wife.

Society News—The dates of the next annual meeting of the New Hampshire Medical Society, which will be held in Manchester, have been changed to May 7-8. Speakers at a meeting of the Rockingham County Medical Society, Brentwood, Oct. 25, 1934, were Drs. Chester F. McGill, Portsmouth, on "Pyloric Stenosis"; Donald W. Leonard, Exeter, "Use of Motion Pictures in Medicine"; Gilbert L. Haggart, Boston, "Management of Fractures"; and Carleton R. Metcalf, Concord, "Sickness Insurance." Drs. Chester M. Jones and John Rock, Boston, addressed the Hillsborough County Medical Society, Nashua, Oct. 30, 1934, on "Diagnosis and Treatment of Diseases of the Liver" and "Useful Endocrine Preparations in Endocrinology," respectively. Dr. Frederic P. Lord, Hanover, president of the New Hampshire Medical Society, made an address and Dr. Carleton R. Metcalf, Concord, reviewed the subject of sickness insurance. Drs. John J. Boardman, Hanover, and Donald S. King, Boston, addressed the Grafton County Medical Society, Hanover, Oct. 13, 1934, on "Uterine Hemorrhage" and "Newer Developments in the Treatment of Pneumonia," respectively. Dr. Frederic P. Lord, Hanover, president of the state medical society, also made an address.

NEW JERSEY

Influenza Epidemic—Many schools in New Jersey were closed, December 18 and 19, because of an epidemic of influenza that swept through several counties, especially in the southern part of the state, the New York Times reported December 19. The following figures were given for various areas: Collingswood, 400 cases; Pennsauken Township, 500 cases; Ocean City, 223 cases; Burlington Township, 600 cases.

NEW YORK

Refraction for Indigent School Children—The Monroe County Medical Society is carrying out a special plan to provide eye examinations for a group of indigent children who could not obtain attention at hospital outpatient departments. A survey showed that 1,210 children were in need of refractions and that the hospitals would not be able to accommodate them for many months. The medical society, in conference with the public safety and public welfare committees of the city council, agreed to make the examinations for the sum of \$2,420, all to be completed by the end of 1934. Between September 15 and November 1, members of the society had completed 575 refractions. Glasses are to be furnished by the department of public welfare and various lay organizations.

Medical Library Presented to Hospital—A library of about 6,000 volumes and journals with an endowment of \$2,000 was presented to the Arnot-Ogden Hospital, Elmira, by the Elmira Academy of Medicine at a ceremony, November 22. The library was bequeathed to the academy by Dr. Hamilton Dox Wey as a memorial to his father, Dr. William C. Wey, who settled in Elmira in 1849. It was for some time kept in the public library, but when lack of space made this arrangement impossible, the books were placed in storage five years ago. Dr. Arthur W. Booth told the history of the collection and Dr. Ross G. Loop made the presentation, while Dr. George R. Murphy accepted for the hospital. The younger Dr. Wey served as senior physician at the Elmira Reformatory and as a member of the consulting staff of the Arnot-Ogden Hospital. Both father and son served as president of the Medical Society of the State of New York.

New York City

Scholarships for Graduate Study—A limited number of scholarships for qualified graduates in medicine who wish to do graduate study, especially in internal medicine, are available at New York Post-Graduate Medical School, Columbia University. By the terms of the endowment, applicants from Allegheny County, Pennsylvania, will be given preference, other circumstances being equal. Application should be made to the director of the medical school, 303 East Twentieth Street.

Anniversary of Neurological Institute—Ceremonies in celebration of the twenty-fifth anniversary of the founding of the Neurological Institute of New York were held December 20. Speakers included Dr. Joseph Collins, one of the founders. Dr. Willard C. Rappleye, dean, Columbia University College of

Physicians and Surgeons, Dr. Bernard Sachs, past president of the New York Academy of Medicine, and Dean Sage, president of Presbyterian Hospital. A silver tray was presented to Dr. Collins as the sole surviving founder by Dr. Edwin G. Zabriskie on behalf of the institute's staff. The Neurological Institute was opened in December 1909 through the efforts of Dr. Collins and the late Drs. Pearce Bailey and Joseph Fraenkel in an old building with antiquated equipment and eighty-three beds. The present building, with a capacity of 211 beds, was completed in 1929, when the institute became affiliated with the Columbia-Presbyterian Hospital Medical Center. In addition to caring for patients with nervous and mental diseases and training physicians in this specialty, the institute maintains a program of research in various fields.

Dr. Beeuwkes Awarded Medal—Dr. Henry Beeuwkes of the staff of the Rockefeller Foundation recently returned from England, where on November 6 he was awarded the Mary Kingsley medal by the Liverpool School of Tropical Medicine in recognition of scientific accomplishment in research on yellow fever conducted in West Africa. At the ceremony in Liverpool, medals were awarded also to Sir George Buchanan, Sir Rickard Christophers and Sir Malcolm Watson. Dr. Beeuwkes was director of the West African Yellow Fever Commission, which studied yellow fever in Africa for nine years but which has recently been liquidated. He graduated from Johns Hopkins University School of Medicine in 1906 and then served a number of years in the medical corps of the U. S. Army, from which he resigned in 1924. The yellow fever commission was organized by the Rockefeller Foundation in 1925 with an original staff of ten members, under the direction of Dr. Beeuwkes. By the end of 1926 the laboratory was in operation with headquarters in Lagos, Nigeria. The commission from America worked in cooperation with the British government and its colonial officers, both in Nigeria and the Gold Coast. Some of the more important work of the commission includes:

1. The demonstration that the mild and widespread fever of West Africa is identical with the disease in South and Central Africa.
2. The susceptibility of *Macacus rhesus* and *sinicus* to the virus of yellow fever.
3. That the virus can be transmitted by *Aedes aegypti* and by numerous other varieties of mosquitoes.
4. That the cause of the disease is an ultramicroscopic virus.
5. That animals which recover remain permanently immune and their blood protects against the disease.
6. That protection tests based on the foregoing have made it possible to map out the past wide distribution and the limits of the disease in West Africa and have added much to our knowledge of the epidemiology of yellow fever.

Scientists who died from yellow fever acquired in Africa during this period of research include Dr. Hideyo Noguchi, Dr. Adrian Stokes and Dr. W. Alexander Young.

NORTH CAROLINA

Society News—Dr. Joseph B. Greene, Asheville, addressed the Buncombe County Medical Society, Asheville, December 3, on diagnosis and treatment of laryngeal tuberculosis. A symposium on pellagra was presented before the Forsyth County Medical Society, November 13, by Drs. James C. P. Fearrington, William L. Kirby, Romulus L. Carlton and William D. Wylie, Winston-Salem.

Personal—Dr. Nathaniel T. Ennett, Mount Airy, has been appointed health officer of Pitt County, to succeed Dr. Robert S. McGeachey, Greenville, who recently resigned to go to Halifax County. Dr. Sylvia Allen, Charlotte, recently gave a series of lectures at the Women's College of the University of North Carolina, Greensboro, on "Common Problems of Emotional Adjustments in College Students."

PENNSYLVANIA

New State Secretary of Health Appointed—Dr. Martha Edith MacBride-Dexter, Sharon, has been appointed secretary of health in the cabinet of Governor-Elect George Earle and will take office January 15. Dr. MacBride-Dexter was graduated from the Woman's Medical College of Pennsylvania in 1910 and practiced in Grove City and Erie before coming to Sharon in 1919. She is a member of the staff of the C. H. Buhl hospital and served for several years as secretary-reporter of the Mercer County Medical Society.

Philadelphia

Society News—The meeting of the Philadelphia County Medical Society, January 9, was called "Johns Hopkins Hospital Night" with the following speakers: Drs. Dean D. Lewis, professor of surgery at Johns Hopkins University School of Medicine, on "Surgery of Liver and Bile Passages"; Arnold Rice Rich, associate professor of pathology, "Zonal Alterations

of the Liver Cells, with Reference to Hepatic Function", and Warfield T Longcope, professor of medicine, "Hepatic Necrosis and Cirrhosis with Some Reference to Chemical Substances as Occasional Etiologic Factors"

Medicodental Seminars—The Philadelphia County Medical Society and the First District Society of the Pennsylvania State Dental Society are sponsoring a series of lectures composing a symposium on "The Human Face" The lectures, which began January 4 and will continue through March 17, are on the following phases of the subject

January 4 Origin of the Human Face A Study in Evolution and Paleomorphology William K Gregory Ph.D., professor of vertebrate paleontology Columbia University New York

January 11 Ontogenetic Development of the Human Face, Dr Jacob Parsons Schaeffer

January 18, The Face in Its Developmental Career Milo H Hellman D.D.S., professor of dentistry, Columbia University School of Dentistry, New York

January 25 Roles of Heredity and Environment in Facial Development speaker to be announced

February 1 Human Facial Types Facial Expressions Dr Robert Tait McKenzie

February 15 Personality Types as Demonstrated by the Physiognomy speaker to be announced

February 22 Abnormalities of the Facial Development Due to the Endocrines speaker to be announced

March 1 Dynamic Physiognomy Dr Edward Lodholz

March 10 Facial Expressions Relating to Disease Dr George Draper New York

March 17 Facial Changes John V Mershon D.D.S.

In connection with these lectures there will also be afternoon clinics and round table discussions given by both physicians and dentists

Pittsburgh

Special Meeting of County Society—The Allegheny County Medical Society held a special meeting for a consideration of socialized medicine, December 28, at Carnegie Lecture Hall Dr George L Laverty, Harrisburg, chairman of the medical advisory committee to the state emergency relief board discussed 'Pennsylvania's First Year of the Emergency Relief Service' George R Harris, "How Health Insurance Has Worked in England and Germany," and Samuel B Goodstone 'The Proposed Health Insurance Bill of the American Association for Social Security'

TEXAS

Fort Worth Clinics—The semiannual Fort Worth Medical and Surgical Clinics were presented by the Tarrant County Medical Society, November 6 A clinical program of ten minute addresses was carried out during the day and an evening session followed a dinner for visiting physicians At the dinner session, addresses were made by Drs Charles T Stone, Galveston, on "Recent Advances in the Pathogenesis and Treatment of Diabetes Mellitus", Titus H Harris, Galveston, "Relation of Psychiatry to General Medicine," and Charles F Clayton, Fort Worth, "Orthopedics of Tomorrow"

VIRGINIA

Personal—Dr Edward M Holmes Jr, Norfolk, has been appointed assistant state epidemiologist—Rolland J Main, Ph.D., has been named director of the department of physiology at the Medical College of Virginia, Richmond, during the leave of absence of Dr William R Bond—Dr Hunter H McGuire, Winchester, has been appointed a member of the board of visitors of the Medical College of Virginia, Richmond He was graduated from the college in 1897

Academy Members Honored—Four members of the Richmond Academy of Medicine who have been elected presidents of national medical organizations during the past year were guests of honor at a reception, November 27 A greeting was extended from the floor by Dr Stuart McGuire to Drs M Pierce Rucker, president of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons Fred M Hodges, president-elect of the American Roentgen Ray Society J Shelton Horsley, president of the American Association for the Study of Neoplastic Diseases, and Robert C Bryan, president of the American Association of Genito-Urinary Surgeons

WEST VIRGINIA

Personal—Dr John William Moore is the new superintendent of Mountain State Hospital, Charleston—Dr George D Johnson, Huntington, has been appointed superintendent of the Spencer State Hospital, Spencer, to succeed the late Dr John E McQuam

Birthday Party for Dr Jacob Schwinn—The Ohio County Medical Society paid tribute to Dr Jacob Schwinn, Wheeling, at a dinner celebrating his eightieth birthday,

December 10, at the Fort Henry Club Born in Switzerland, Dr Schwinn was educated in Europe and has lived in Wheeling more than fifty years He has served as president of the Ohio County Medical Society and the West Virginia State Medical Association and is at present a member of the staff of the Ohio Valley General Hospital

GENERAL

Examinations in Ophthalmology—The American Board of Ophthalmology will conduct examinations in Philadelphia, June 8, and in New York, June 10 Applications must be filed at least sixty days before date of examination Address communications to Dr William H Wilder, 122 South Michigan Avenue, Chicago

Diploma Missing—Dr Morton J Goodman, Portland, reports that his diploma from the University of Oregon Medical School, issued in June 1929, has been lost The name on the document is either Morton J Goodman or Morton Jacob Goodman Dr Goodman's diploma for his bachelor's degree and his certificate of membership in Alpha Omega Alpha are also missing

Society News—Dr Robert L Payne, Norfolk, Va., was elected president of the Southern Surgical Association at its annual meeting at Sea Island, Ga., December 13 Drs William T Black, Memphis, Tenn., and William P Nicholson Jr, Atlanta, were elected vice presidents and Dr Edward W Alton Ochsner, New Orleans, secretary Next year's meeting will be in Hot Springs, Va.—The twelfth annual meeting of the American Orthopsychiatric Association will be held at the Hotel Pennsylvania New York, February 21-23, under the presidency of Dr George S Stevenson, New York.—The Central Neuropsychiatric Hospital Association will hold a special meeting in Chicago, January 25 This organization is made up of twenty eight sanatoriums in the middle states, Dr Douglas A Johnston, Cincinnati, is secretary

Seaboard Medical Association—Dr Archibald M Burfoot, Fentress, Va., was elected president of the Seaboard Medical Association at the annual meeting in Kinston, N C., December 4-6, he succeeded Dr Paul F Whitaker, Kinston. The 1935 session will be held in Old Point Comfort, Va. The program included a symposium on diseases of the kidney presented by Drs Coy C Carpenter, Wake Forest, N C. Frederick C Rinker and Walter B Martin, Norfolk, Va., DeWitt Klutz, Washington, N C., William B Kinlaw, Rocky Mount, Joseph R Latham, New Bern, and Manfred Call, Richmond. Other speakers were Drs James C Masson, Rochester, Minn., on Use of Living Sutures in the Repair of the More Difficult Abdominal Hernias", Oscar L Miller, Charlotte, N C., "Disability in the Lower Part of the Back," and Marvin Pierce Rucker, Richmond, "Obstetric Shock"

Branch Urologic Meeting—The first meeting of the recently created Southeastern Branch of the American Urological Association was held at the Biltmore Hotel, Atlanta, December 7-8 In addition to remarks on the importance of branch societies by Dr Gilbert J Thomas, Minneapolis, secretary, American Urological Association, the following program was presented

Dr Benjamin S Barringer New York Present Day Methods of

Treating Cancer of the Prostate

Dr George R Livermore Memphis Pain in Cases of Dilated Pelvis

and Ureter

Dr William E Lower Cleveland Problems of Lesions of the Right

Upper Quadrant

Dr Robert H Herbst and Dr Carl Apfelbach Chicago Renal

Hypoplasia

Dr Hugh Cabot Rochester Minn., Treatment of Undescended Testicle

Dr Howard S Jeck New York Nupercaine as a Spinal Anesthetic,

with Special Reference to the Employment of Solutions of High

Dilution

Dr Edwin Beer New York Historical Review of Bladder Tumors

Dr John R Caulk St Louis Bladder Neck Obstructions in Children

Dr William F Braasch Rochester Recent Advancements in the Treat-

ment of Infections Involving the Urinary Tract.

Dr William D Haggard, Nashville, acted as master of

ceremonies at the dinner, Friday evening

CORRECTION

Distinction Between Science and Art—The quotation under this title at the bottom of page 1847 in THE JOURNAL, Dec 15, 1934, was written by the venerable Dr John Brown of Edinburgh, that fact was clearly stated by Dr George Blumer in his paper read before the William Harvey Society, but the quotation marks were inadvertently omitted in THE JOURNAL

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec 8, 1934

The Dangers of Quack Medicines

In spite of repeated exposures and particularly the book on the Composition of Secret Remedies," published by the British Medical Association, the trade flourishes and even reputable journals are full of glaring advertisements of their extraordinary virtues. An important statement on the dangers that may result from this uncontrolled sale has therefore been prepared by the council of the Royal College of Surgeons at the request of the Standing Committee on Scientific Research of the Economic Advisory Council (a body appointed by the government). The council of the Royal College of Surgeons declares that the sale of secret remedies has reached large dimensions and that in the interests of the public it should be placed under some control. Among the objectionable features of the uncontrolled sale are mentioned the following: 1 The remedy may contain some drug that is injurious such as acetanilid (headache powder). 2 More generally the remedy is purely fraudulent, containing nothing of therapeutic value. 3 The claims made are always exaggerated and in general are purely fraudulent. The college points out that some form of control is exercised in many countries. In Germany a large group of preparations can be sold only under medical prescription and cannot be advertised. In France they can be sold only under government approval. In England there is no effective control either of the composition of secret remedies or of the claims made for them. In fact proprietary medicines are definitely excluded from the operation of the Food and Drugs Act.

Recalling that in 1914 a select committee (appointed by the government) advocated the giving of wide powers of control over both the sales and the claims made, to the ministry of health, the council expresses the opinion that the problem can be dealt with adequately only on these lines. Such control should ensure that the article is not injurious, that its description is not fraudulent, that the sale and methods of advertisement are not against the public interest and that no medicine or appliance is advertised as a cure for blindness, Bright's disease, cancer, consumption, diabetes, epilepsy, fits, locomotor ataxia, lupus or paralysis. A bill is at present being considered by the parliamentary committee on food and health the object of which is to prohibit the sale or advertisement of medicines or appliances for the cure of certain conditions, the use of fictitious testimonials and the offer of diagnosis or treatment by correspondence. The representatives of the "patent medicine" trade declined to support any bill on the lines of the select committee's report but it agreed not to oppose a measure such as has now been drafted.

The Health of the School Child

The annual report of the chief medical officer of the board of education for 1933 has just been published. During the year 3,000,000 children passed under definite medical review and subsequently 2,000,000 reinspections were carried out. Of the 1,855,499 children submitted to routine examination 20,579, or 1.1 per thousand were found to be malnourished and requiring treatment, and 23,760 or 1.28 per thousand, were found to be undernourished and requiring observation. The figure for 1932 of 'malnourished' children requiring treatment was 10.7 per thousand and for 1931 was 11.2. The massed return for 1933, compiled from figures submitted by 316 local education authorities indicated that the condition of the school

children throughout England and Wales in 1933 was similar to that in the two preceding years and showed no deterioration. The total number of meals provided in the year 1933-1934 was 68,800,000, an increase of 6,500,000 over 1932-1933, and the number of children who received meals was 414,800, as compared with 399,400 in 1932-1933.

Sir George Newman therefore concludes that the general health and nutrition of the population of England and Wales, taken as a whole was well maintained in 1933, in spite of economic and social difficulties, distressing as these have been. 'There can be no question,' he says, 'that the nutrition of the English people is better today than at any past period of which we have record. But that does not say or mean that present standards of health and nutrition cannot be or should not be improved.' It may be remembered that he came to a similar conclusion in his report on the health of the nation (*THE JOURNAL*, Nov. 3, 1934, p. 1388).

UNEMPLOYMENT AND SCHOOL LEAVING

Referring to the children who have left school (at the age of 14) Sir George Newman says that they have passed out of the reach of the medical services, the school meals and the physical training provided. They may be in need of some of these. 'A state which allows its young people to degenerate, physically or mentally, because of unemployment is incurring a grave responsibility. Perhaps of all the disadvantages of prolonged unemployment in youth the worst are the disappointment and demoralization which ensue on enforced idleness and the more or less complete wreck of aspirations.'

THE VALUE OF DANCING

Sir George Newman emphasizes the importance of dancing as a vital form of bodily exercise which deserves a place in physical education. He regards it as a mode of expressing emotion. 'Children naturally express their pleasure in song and dance, the desire for rhythmic movement is strong in them. More and more the conviction is growing that the combination of music and dance movement (as distinct from physical training) is not only a great art but a valuable means of educating the body, mind and character in one harmonious whole.'

Reform in Midwifery Practice

At a public health congress held in London, Prof. F. J. Browne, director of the obstetric unit at University College Hospital, complained of the lack of cooperation between the medical officers of municipal antenatal clinics and private physicians which meant a gap between diagnosis and treatment. Medical officers at the clinics are not allowed to give treatment, the patient must be referred to her own physician who is often too indifferent or too occupied to give her the treatment she requires. The time has come according to Professor Browne, to bridge this gap by taking midwifery out of the hands of the general practitioner and establishing a service of specialists, thoroughly trained in obstetrics, to work in cooperation with highly trained nurse-midwives. This team would be responsible for the care of the patient during pregnancy and delivery. The general practitioner, he says, is unsuited for the practice of midwifery for the following reasons: 1 Its practice calls for a long specialized training, impossible to give the undergraduate medical student. Nothing less than three years of postgraduate practice in a large maternity hospital will give the necessary skill. 2 In the course of his work the general practitioner is continually in contact with septic wounds and may have to go direct from such a case to a midwifery case, with grave risk of infecting his patient. 3 Midwifery practice is incompatible with the claims of general practice. It occurs at irregular times and interrupts the physician's work, entailing dangerous haste.

The high maternal death rate will be overcome only by a specialist service in which team work will replace the confusion of the present midwifery service

PARIS

(From Our Regular Correspondent)

Dec 10, 1934

Farce of Opium Control

A series of articles in one of the Paris journals by Jean Perrigault shows how difficult it will be to prevent the use of opium by the Chinese, despite the prohibition of its importation. In 1927 the drug habit was prevalent not only all over China but also in the International Settlement and in the French concession of Shanghai, where a half clandestine, half tolerated, sale existed. In May 1934 not a single shop or resort existed in Shanghai where the drug could be obtained, but this did not mean that the 400,000 Chinese in the French concession or the 1,500,000 in the International Settlement could not secure as much as they wished, hence 50 per cent of these Chinese continue to smoke from ten to fifty pipes a day. If they cannot get opium in the International or French settlements where they reside, there is no restriction to buying all they want in the adjacent Chinese portion of Shanghai. The French police have raided the resorts in their concession repeatedly, but to no avail.

In old China an antiopium league has been founded, but this is only a subterfuge for the merchants who sell the drug under the name of "antiopium."

Chiang Kai Shek, who controls China at present has been converted to Protestantism. He is conscientious and able, but the taxes on opium are much needed by the other Chinese generals, hence the difficulty of controlling the sale.

These observations of Perrigault are verified by the report of the last meeting at Geneva of the Commission on Narcotics of the League of Nations. It was found that the volume of legalized commerce in opium and other narcotics continues to decrease progressively. On the other hand, and especially in countries where control is difficult, the quantity due to illegal manufacture is constantly increasing. The condition of affairs in China is getting worse, both as regards the smuggling and illegal importation as well as in the use of narcotics. It is hoped that a new process by which the various derivatives of opium could be obtained from the juice of the poppy without passing through the intermediate opium stage will enable a better control to be made. A report on this subject will be made at a future meeting of the commission.

Congress of Preventive Pediatrics

At the fourth session of the International Association of Preventive Pediatrics, at Lyons, September 27, two subjects were discussed: prophylaxis of malaria and prophylaxis of rickets and spasmophilia. The latter subject was presented in the form of reports by Monrad of Denmark and Rominger of Germany.

Monrad stated that rickets, which is rare in Denmark at present, had decreased in frequency even before the discovery of vitamin D. This was due to hygienic measures of various kinds, especially education of the mothers, all of whom are given instruction in hygiene. Heredity does not play an important part in the etiology. Congenital rickets is nonexistent. The osteoporosis found in premature infants is not due to rickets. In congenital craniotabes there is neither hypophosphatemia nor hypocalcemia. Rickets cannot be regarded as a form of avitaminosis. It is useless to give cod liver oil, viosterol or actinotherapy as a routine during pregnancy or to the new-born. Large doses of viosterol are not without their dangers. Tuberculosis and syphilis also cannot be considered as etiologic factors in rickets. The latter is the result of a

disturbance in the ratio of phosphorus to calcium. The best methods of prophylaxis are general hygiene and avoidance of slowly developing chronic intestinal infections, especially inability to digest fats. Spasmophilia is not frequent and also is a contraindication to the prescribing of viosterol, because it may disturb the phosphorus-calcium ratio.

Rominger, the second speaker, found that, despite some progress, rickets has not disappeared. He believed that prophylaxis is especially necessary in the case of premature infants and twins, in whom the calcium content of the blood and tissues is often deficient. Although rickets could no longer be regarded as hereditary, there is a certain predisposition to it. Breast-fed infants, especially at the period of weaning, must be carefully watched. He believed that the ultraviolet rays should be used during pregnancy, as early as the third month, for six weeks, three treatments a week of short duration. Irradiated foods have not given the results that were hoped for. Cod liver oil is subject to variations in composition and is not always given as regularly as could be wished for. The best prophylactic measure is to give viosterol in small doses, beginning with the fourth month. This is especially true in poor families, in which the nursing's nourishment is not easy to improve. Spasmophilia can be considered as a condition indicating cure of the rickets.

Seckel of Cologne, Germany, did not agree with the last statement, because, in two thirds of the cases of spasmophilia, roentgenography fails to show any evidence of cure of rickets.

Cathala of Paris stated that, in spite of the more common use of cod liver oil and viosterol, many cases of rickets are still seen in the Parisian hospitals.

Woringer of Strasbourg maintained that the best prophylactic measure was heliotherapy, but that pigmentation of the skin should be avoided.

Lesne of Paris has found that prolonged digestive disturbances and lack of sunlight are the principal causes. Inability to digest starchy foods plays a more important part as favoring rickets than that of fats. These digestive disturbances probably act by affecting either the assimilation of calcium or in increasing its elimination, with resultant calcium insufficiency.

A Paris Surgeon 103 Years Old

Three years ago the Academy of Paris celebrated its foundation in 1831, and at the same meeting the fiftieth year of membership of one of its fellows, Dr. Alexander Guéniot. November 16 the doctor celebrated his 103d birthday, still mentally active and engaged in writing his memoirs. On this occasion he recalled having witnessed many of the stirring events in the history of France during the last ninety years. Dr. Guéniot ascribes his longevity to daily walks, a regular mode of life and the fact that he massages his arms and legs twice a day.

Mortality Rate in France

The death rate during the past decade has been higher in France than in neighboring countries. In England it is 12.15 per thousand, in Switzerland 12.27, in Denmark 11.20 and in Holland 9, while that of France is 16.80. The climatic and social conditions not being any more unfavorable in France than in these other countries, one must conclude that hygiene is not as far developed here.

Every effort is being made to establish better hygienic conditions in rural districts. The majority of cities with a population of more than 5,000 now are equipped with sewerage, but there are many smaller centers where no such provision has been made. More than 295 cities, or one fourth of the total number in France, have no sewers. An effort is being made to correct this lamentable state of affairs.

The water supply of a number of cities has also been far from that which the hygienic standard of today demands. The

government has recently appropriated large sums to correct this. If one considers as cities the centers of population having more than 2,000 inhabitants, and if one excludes the department of the Seine, in which Paris is located, the mortality rate is above 10 per thousand. In rural communities, that is, those with less than 2,000 inhabitants, the rate is higher, 17.8 per thousand. This shows that much needs to be done in the rural districts in the form of sewerage, pure water supply and proper food. Sixty per cent of the population of France is engaged in agricultural work, hence the necessity of giving the farmer the benefits of better hygienic conditions.

The best form of preventive medicine and the least costly is hygiene, and this is especially applicable to rural communities.

ROME

(From Our Regular Correspondent)

Oct 30 1934

Discussion of Health Insurance

The second annual reunion of the *Associazione Italiana di medicina legal* was recently held at Montecatini. The medico-legal problems of insurance against disease were discussed. Dr. Bellucci, head physician of the *Cassa Nazionale Malattie degli Addetti al Commercio*, pointed out that the establishment of insurance against disease required the collaboration of jurists, economic-social resources and physicians. At present there are two tendencies in the field. First the administration of care and pecuniary aid to cover the most pressing necessities of life is required in favor of insured sick persons. By the second plan the insured are offered medical services. Between these two extremes there are intermediate stages. Many persons claim that the characteristic differentiation of insurable diseases is nearly impossible, which is not the case if a definite interpretation is given to the two conceptions on incapacity and inability for work. Dr. Diez proposed that the inability to work be considered a disease from the point of view of insurance.

Dr. Cazzaniga spoke on chronic diseases from the point of view of insurance. In regard to professional secrecy in health insurance it was decided that the question presents different angles according to the different relations between physician and patient. The physician in charge of the treatment of a patient is bound to keep medical secrecy but not so the insurance physician. A new intermediate figure between the physician in charge of the case and the insurance physician is the consultant physician who acts also as an overseer and who at present is found in Italy only in some insurance societies.

Congress of Colonial Medicine

The fifth National Congress of Colonial Medicine was recently held at Naples under the chairmanship of Prof. Aldo Castellani. The first topic, hydromineral and physical treatments of tropical diseases, was presented by Dr. Castronuovo of the University of Naples. He reviewed the old traditions related to the African springs from the time of the Romans. He discussed the use of the sun bath, the light bath, electrotherapy, diathermy and roentgen therapy in several tropical diseases.

The second topic, blastomycosis, was presented by Dr. Castellani who classifies blastomycosis into two large groups, cutaneous and internal. Cutaneous blastomycosis can also involve the mucosae and the scalp. He makes the distinction of the principal types—pulmonary, hepatosplenomegalic and cerebrospinal—in the visceral forms. The pulmonary type can simulate pulmonary tuberculosis; the hepatosplenomegalic type might be mistaken for syphilis. Two subtypes are interesting in the cerebrospinal type: the blastomycotic meningitis, the symptoms of which resemble those of cerebrospinal meningitis and the blastomycotic cerebral abscess, which is characterized by the rich content of fungoid cells in the pus. The speaker suspects

the presence of blastomycosis especially in various cutaneous diseases of a pseudofurunculoid type, which are intractable to any treatment and which improve under antiblastomycotic treatment. The pathologic element that characterizes blastomycosis is the large granulomatous nodule. A microscopic examination shows large bright cells with large granules of protoplasm. To make a diagnosis it is necessary to take cultures. In clinical practice a general diagnosis is sufficient to start the treatment. Dr. Castellani discussed the differential diagnosis of blastomycosis, which in temperate climates concerns especially cutaneous verrucous tuberculosis. The decision is based on the biologic and microscopic examinations. In tropical countries there is a danger in mistaking blastomycosis for inguinal granuloma, frambesia and pyogenic dermatitis vegetans. The prognosis for the patient's life is grave in the cutaneous form of blastomycosis. Nevertheless, by early diagnosis and early treatment one often succeeds in saving the patient. Visceral blastomycosis is, as a rule, fatal. The therapeutic measures advised are many, and they are given either by the subcutaneous or by the internal route. The administration of large doses of potassium iodide, even from 20 to 30 Gm daily, is considered even today the best remedy. Dr. Di Guglielmo, clinical physician of Catania spoke on brucellosis. He reported the results of his use of intravenous vaccines by the administration of which he has secured satisfactory results in more than 300 cases. Dr. Caronia spoke also, on the value of intravenous vaccines in therapy of brucellosis.

Dr. Giordano gave a report of his experiments carried on with Dr. Nastasi on exanthematous fever in Tripolitana. He emphasized the role of dogs in the transmission of the disease and the constant negative results of the Weil-Felix test.

The congress, having in mind the growth of colonial medicine, voted for the creation of a chair of colonial pathology in Naples, the center of Italian colonial life.

New Surgical Society

The *Società Italiana di Chirurgia Plastica e Riparatrice* was recently founded in Rome near the surgical clinic of the University of Rome. Drs. Roberto Alessandri and Manna were appointed honorary and acting presidents, respectively. The first congress of the new society will meet in Rome during the seventh week of Lent, Easter week, 1935. The official topic, previously selected, is the History and Development of Plastic Surgery in Italy, with Dr. Manna as official speaker.

Meeting of Supreme Council of Public Health

The members of the Supreme Council of Public Health in Italy recently met at Rome under the chairmanship of Dr. Dante De Biasi, an Italian academician. Dr. Basile, general director of public health, spoke on the public health of the country. The health laws promulgated for the first time in 1888 have done much to improve the sanitary conditions of the country. The regulations of the last few years have resulted in a decrease in the rate of infant mortality, as shown by the figure of 12.3 per hundred for 1932. Syphilis, even now, is important as a cause of death during the first month of life. Because of this fact, the government provided last March for the establishment of centers for free treatment of syphilitic mothers and their infants. The second problem discussed was that of the campaign against malaria. The work of antituberculosis organizations was then estimated. The following data were compiled in 1933: total number of first consultations with examination, 261,216, including a total number of 7,229 tuberculous patients and 143,489 nontuberculous persons. The pulmonary and pleural localization of tuberculosis proved to be more frequent in women than in men. The members of the council also discussed the abolishment of, and restriction in, the use of diacetylmorphine and cocaine.

JAPAN

(From Our Regular Correspondent)

Oct 31, 1934

The International Red Cross Conference

The fifteenth international conference of the Red Cross was held in Tokyo, October 20-29. With the exception of one meeting in Washington, this international conference was the first to be held outside Europe, moreover, this was the first world conference that has ever been held in Japan. From fifty-seven countries among sixty-one member countries, 252 delegates were present. The sixty-one delegates from America and the Philippines formed the largest delegation, and next largest was the Japanese, consisting of thirty-six delegates.

The board of governors and the board of delegates discussed among others the following important matters at the final meeting, October 19: official acceptance by the Soviet Union of the invitation to membership in the League of the Red Cross Societies, acceptance of the financial report of the league, presented by Mr. Ernest J. Swift, and of the budget of 2,500,000 francs for the year 1935, election of Col. Guillaume Favre and Dr. J. Max Olano, as president and vice president, respectively, of the board of delegates, recommendation of the appointment of Prince Tokugawa as president of the fifteenth international conference, a proposal by Marquis Jose Valdez of Spain to name Madrid as the place of the sixteenth conference in 1938, appointment of Mr. Swift to make a summary of all national reports on Red Cross activities.

The financial report made by Mr. Swift showed a net income of 1,366,776.41 francs and a net expenditure of 1,322,009.51 francs, giving an excess of income of 44,766.90 francs for the first half of the year 1934. The estimated expenditure for the last half of 1934 was 1,300,079.06 francs. The proposed budget of 2,500,000 francs for the year 1935 was approved. This smaller budget for the coming year is due to the economy effected by moving the league headquarters.

THE OPENING CEREMONIES

In the presence of Prince Kotohiko Kanin and Premier Okada and other cabinet ministers, the opening session of the conference was held on the 20th in the headquarters of the Japan Red Cross Society and broadcast throughout the empire. Dr. Rene Sand, technical counselor of the league, acted as interpreter, rendering French and German into English, and English into French.

WORLD ACTIVITIES

On the 21st, Mr. Swift reviewed the work of the societies throughout the world during the last year.

The Indian Red Cross now gives special attention to the protection of mothers and children, popular health instruction, tuberculosis work and cooperation with hospitals. Its work for disaster victims has been placed on an organized basis.

The close cooperation of the Turkish society with the government is attested by the fact that its president is the minister of health and social work and that the secretary general of the Red Crescent is a high official of that department. The Red Crescent has been able recently to increase its resources through the sale of special stamps and the organization of a flower day.

The Australia Red Cross has worked mainly in the field of help to disabled ex-soldiers. It makes generous contributions to hospitals and to the public nursing services, which are of special value in territories where people live isolated and far from one another. Special attention has been given by the Junior Red Cross to sufferers from infantile paralysis.

Among the activities in the United States may be mentioned the teaching of first aid, life saving and home hygiene, work for the blind and for ex-soldiers, rural nursing and disaster relief. The number of volunteers enrolled is 70,000 and with

their help the Red Cross has carried on a stupendous piece of work, distributing among those who needed help 18 million bushels of wheat and 844,000 bales of cotton. The operating cost of this immense operation amounted to less than 1 per cent of the value of the goods contributed. The distribution has lasted seventeen months.

In the Philippine Islands the Junior Red Cross during the single year 1933 provided dentistry facilities for 660,000 children. The Red Cross has taken over new responsibilities in connection with lepers.

The Canadian Red Cross is engaged in a unique activity in the form of the seaport nurseries conducted since 1920 and its system of outpost hospitals, which is now considered to have passed the experimental stage. It has this year begun the first aid work on highways, and the number of registered nurses on its rolls for emergency service now number almost 1,000.

In Paraguay the Red Cross has 152 local committees, a membership of more than 16,000 and an annual budget of four million pesos. Besides the relief work, it has undertaken with the help of the Rockefeller Foundation a highly successful campaign against the hookworm.

Of special interest in Great Britain are the information services for hospitals, the hospital library, blood transfusion services, three orthopedic clinics and the rheumatism clinic of the British Red Cross. Its ambulance services include more than 350 vehicles. It supplies first aid detachments to meet the requirements of public meetings and of persons engaged on seasonal work, such as hop picking and herring fishing. It has taken the first step in connection with the air ambulances.

The Norwegian Red Cross maintains a large hospital and a sanatorium. During the last four years, two new hospitals and six new cottage hospitals have been established in addition to the maternity homes and homes for retired nurses. Nurses' training is provided from six different centers. It takes special interest in the health and welfare of seamen in the hospital ship *Viking*.

In Sweden 175 new sections have been established and 35,000 new members enrolled. Its membership represents 2 per cent of the population of the country. It has provided dental treatment for 8,000 school children and meals for 17,000. It maintains 200 ambulances and an air ambulance service.

In Germany it has a membership of 1,360,000, including 267,000 persons trained and organized in first aid detachments. In 1933, assistance was given in more than two million cases. It has 10,000 nurses working in 427 Red Cross institutes of various kinds providing beds for 20,000 patients. It further maintains 2,300 dispensaries, 2,000 creches, day nurseries, kindergartens and soup kitchens.

Cooperation between the Red Cross and the government is provided for in Belgium in the statutes of the national Red Cross Society. Its progress since 1930 is reflected in the ever growing success of the yearly Red Cross Week, which is a national event. Other features are the opening of a second health center, the organization of 500 first aid posts on highways, and an agreement entered into with the railway administration and the shipping authorities to provide for the rapid intervention of the Red Cross in railway and shipping accidents.

The three societies constituting the French Red Cross are performing valuable service in the training of nurses, including the training of nurses for air ambulance work.

Under the direction of an energetic central committee and with the cooperation of numerous local committees, the number of hospital sanatoriums, dispensaries, first aid posts and ambulances in Spain is rapidly increasing. The number of cases handled in the dispensaries is 140,000.

The most modern technic has been introduced in the Italian Red Cross sanatoriums, surgical and orthopedic institutions, preventoriums, malaria stations, school medical services, first aid

posts and motor ambulance services. More than two million home visits are made by visiting nurses each year.

The Red Cross in Hungary employs sixty-two social workers, who have received ten months' special training. Four night shelters have been established and seventy-four homes for the aged.

The principal activities of the society in Austria are first aid, tuberculosis work and maintenance of the dispensaries. Special attention has been given to helping mothers in childbirth and to assisting poor children.

Among the society's activities in Yugoslavia are the nurses' training school and the orphanages and treatment stations. The Junior Red Cross now extends to a very large proportion of the entire school population.

In Czechoslovakia the Red Cross conducts more than 400 institutions of various kinds, including a social service school, a shelter for emigrants, a night shelter at Prague, a club for apprentices, children's homes and health centers. It is associated with the health demonstration called *Vrsovice*.

In Latvia the society derives part of its income from lotteries and from the sale of playing cards. It maintains the Riga Hygiene Museum. It conducts seven sanatoriums, fifty-eight health centers, two nursing schools, a workroom for the manufacture of artificial limbs, a motor ambulance service and a medical supply depot.

In the Soviet Union the Red Cross has five and a half million members. "The Young Friends of the Red Cross," divided into 88,000 groups, comprise 900,000 children between 10 and 16 years of age. The budget for 1934 reaches the imposing total of 145 million rubles. The constituent societies making up the alliance maintain 145 hospitals, 1,000 polyclinics, eighty-five sanatoriums and rest homes, 700 disinfection stations, 200 pharmacies, 500 depots of medical material, 80,000 health posts in industrial institutions, and 100,000 village health centers.

FINAL ACTIVITIES

October 23, it was announced that the empress of Japan had donated 100,000 yen to the international Red Cross committee. The conference practically closed on the 26th, leaving the 27th and 28th for pleasure excursions. The city of Madrid was selected for the sixteenth conference, which will be held in the fall of 1938.

RIO DE JANEIRO

(From Our Regular Correspondent)

Nov 15, 1934

Alterations of the P Wave of the Electrocardiogram

Drs Dante Pazzanes and Roberto Pires of Campos recently presented before the Associação Paulista de Medicina a study of the P wave based on 1,507 electrocardiograms made on 1,105 patients. The speakers reached the following conclusions: A P wave that either lasts more than 0.1 second or is more than 2 mm high in any lead is abnormal. The most frequent abnormality of the auricular wave is its lengthening. Abnormal P waves were found in ninety cases: forty-one in mitral stenosis, thirty-seven in myocarditis, ten in aortic insufficiency, one in asthma and one in tuberculosis. The P wave was normal in 52 per cent of cases of mitral stenosis, it was within normal limits, although slightly altered, in 20 per cent of the cases and there was fibrillation in 28 per cent of the cases. The changes of the P wave can serve as a basis for the prognosis in cases presenting mitral stenosis. An inversion of the P wave in the first lead was found only in a case of situs inversus and in the second lead in three cases of myocarditis. Abnormalities of the P wave are rather frequent in myocarditis. Aortic insufficiency was the cause of the lengthening of the P wave in 10 per cent of the cases. Also other causes were observed less frequently.

Sulphopyretotherapy in Dementia Paralytica

Dr Mario Yahn of São Paulo in a recently published article on sulphopyretotherapy in dementia paralytica reached the following conclusions: Deep intramuscular injections of 3, 10 or 12 cc of an 8 per thousand sulphur solution in oil causes an elevation of the temperature to 104 or 104.9 F. There is a certain relation between the intensity of the local inflammatory phenomena and the rise of the temperature. When the temperature is very high it is associated with chills, labial herpes, intense perspiration, nausea and vomiting. The only inconvenience of sulphur injections is the intense local pain they cause. They are well tolerated by patients suffering with arteriosclerosis, torticollis or hemiplegia as well as by old persons. Sulphopyretotherapy provokes a psychic remission with improvement of the patient's general condition, and gain in weight. In two cases it retarded the appearance of epileptiform attacks. Response to the treatment was observed in 45.5 per cent of the cases, with 22.7 per cent very good remissions and 9.2 per cent of good remissions and 13.6 per cent of fair remissions in the group of patients with the expansive and megalomaniac forms. The remaining 54.5 per cent of the cases included stationary cases and one fatal case. The mental and general condition of this patient was bad and death followed six days after the first series of injections. The cerebrospinal fluid was in general favorably modified by sulphopyretotherapy. The typical features of dementia paralytica in the curve of the colloidal benzoin test not infrequently were lost or at least attenuated. The Wassermann test in the cerebrospinal fluid became less intense after the treatment, but negative results were never obtained. The Wassermann test in the blood did not change except in one case, in which it gave negative results before the treatment and positive results after it. The first injections seemed to activate the syphilis.

A New Polyclinic

A new polyclinic, organized by the board of directors of the Faculdade Fluminense de Medicina with the aid of the government of Rio, was recently inaugurated at Nictheroy, capital of the state, for the care of the poor. The four story building on a suitable site, has ample equipment for diathermy and for ultraviolet and roentgen therapy. The library occupies the entire fourth floor. All the wards are large, with modern equipment of the best type. The polyclinic is divided into the following departments, each of which has its own head and personnel: medical and surgical clinics, obstetrics, gynecology, ophthalmology, otorhinolaryngology, medical and surgical pediatrics and orthopedics, urology, neurology and psychiatrics, dermatology and syphilology, tropical diseases, phthisiology and odontology. There are two amphitheatres, each accommodating 244 persons, projection apparatus and a speaking platform.

Marriages

CHARLES THEODORE HAZZARD to Miss Blim Appell, both of Mount Vernon, N Y, Dec 21 1934

REUBEN H. MINARS, New York, to Miss Regina Schoolnik of Belle Harbor, N Y, Oct. 27, 1934

SAMUEL LOUIS GOLDBERG, Chicago, to Miss Gertrude Beatrice Marks of Detroit, Dec 24, 1934

JAMES E. P. DAVIA to Miss Elsie I. Crabtree, both of Chicago, June 16, 1934

WALLACE P. RITCHIE to Miss Alice R. Otis, both of St Paul, recently

CORRECTION

Not Married—The marriage announcement that appeared in THE JOURNAL, Dec. 22 1934, of Dr Leslie H. Reimers of Chicago to Miss Margie Ebaugh of Akron, Ohio, was erroneous.

Deaths

Gotthelf Carl Huber, since 1914 professor of anatomy and director of the anatomic laboratories, University of Michigan Medical School, Ann Arbor, and since 1927 dean of the graduate school, died, Dec. 26, 1934, in the University Hospital, aged 69. Dr. Huber was born in Hoobly, India, Aug. 30, 1865. He received his medical degree from the University of Michigan Department of Medicine and Surgery, Ann Arbor, in 1887, and later studied in Berlin and Prague. Before 1914 he had served as assistant demonstrator of anatomy, instructor, assistant professor of histology, junior professor of anatomy and professor of histology and embryology and director of the histologic laboratory at his alma mater. For many years he was also professor of histology and embryology at the University of Michigan Homeopathic Medical School and for one year, 1911 to 1912, professor of embryology at the Wistar Institute of Anatomy in Philadelphia. He was a member, past president, secretary and treasurer of the American Association of Anatomists, and a member of the American Association of Pathologists and Bacteriologists and the American Philosophical Society. Dr. Huber was the official reporter of the section on anatomy at the seventeenth International Congress of Medicine in London and was chairman of the medical fellowship board of the National Research Council. During the World War, as a contract surgeon, he carried on extensive investigations on the repair of severed peripheral nerves for the Surgeon General's Office, U. S. Army. For many years Dr. Huber was associate editor of the *American Journal of Anatomy* and managing editor of the *Anatomical Record*. He was the author of textbooks of histology and the editor of "Piersol's Human Anatomy."

John Montgomery Baldy, Devon, Pa., University of Pennsylvania School of Medicine, Philadelphia, 1884, member of the House of Delegates in 1914 and fourth Vice President of the American Medical Association in 1918, past president of the bureau of medical education and licensure, formerly professor of gynecology, University of Pennsylvania Graduate School of Medicine, first commissioner of welfare of Pennsylvania, at various times served on the staffs of the Pennsylvania Hospital, Jewish Hospital, Frederick Douglass Memorial Hospital and St. Agnes' Hospital, Philadelphia, fellow of the American College of Surgeons, aged 74, died, Dec. 13, 1934, of a self-inflicted bullet wound.

Sydney Kuh * Chicago, Universität Heidelberg Medizinische Fakultät, Heidelberg, Baden, Germany, 1890, clinical professor of psychiatry, Rush Medical College, member of the American Neurological Association, past president of the Chicago Neurological Society, senior attending neurologist to the Michael Reese Hospital, attending alienist and chief of staff, Cook County Psychopathic Hospital, consulting alienist, Chicago Lyng-in Hospital, formerly attending alienist to the Scheleth Hospital, now known as the House of Correction Hospital, aged 68, died, Dec. 27, 1934, of coronary thrombosis.

Edson Lowell Bridges * Omaha, Omaha Medical College, 1896, professor emeritus of medicine, University of Nebraska College of Medicine, past president of the Omaha Midwest Clinical Society, served during the World War, on the staff of the Nebraska Methodist Hospital and Deaconess Home, aged 60, died, Dec. 4, 1934, in Honolulu, Hawaii, of cerebral hemorrhage and pneumonia.

Samuel Herman Lippitt * Milwaukee, George Washington University School of Medicine, Washington, D. C., 1915, associate clinical professor of pediatrics, Marquette University School of Medicine, for many years on the staffs of the Mount Sinai Hospital and the Johnstown Emergency Hospital, aged 48, died suddenly, Dec. 7, 1934, of myocarditis.

Arthur Clark Dean * East St. Louis, Ill., Jefferson Medical College of Philadelphia, 1917, member of the South Dakota State Medical Association and the American Academy of Ophthalmology and Oto-Laryngology, fellow of the American College of Surgeons, served during the World War, aged 47, died, Dec. 1, 1934, in St. Mary's Hospital.

John Johnston Singer, Greensburg, Pa., University of Pennsylvania School of Medicine, Philadelphia, 1902, member of the Medical Society of the State of Pennsylvania, the American Roentgen Ray Society and the Radiological Society of North America, on the staff of the Westmoreland Hospital, aged 55, died, Nov. 30, 1934.

Mason Hamilton Brawley * Salisbury, N. C., North Carolina Medical College, Charlotte, 1910, past president of the Rowan County Medical Society, served during the World War, aged 51, on the staff of the Rowan General Hospital where he

died, Nov. 26, 1934, of internal injuries received in a fall down an elevator shaft.

John Hendren Bell * Staunton, Va., University of the South Medical Department, Sewanee, Tenn., 1909, member of the American Psychiatric Association, served during the World War, formerly superintendent of the State Colony for Epileptics and Feeble-minded, aged 51, died, Dec. 9, 1934, of coronary thrombosis.

Hiram Davis Lawhead, Woodland, Calif., Cooper Medical College, San Francisco, 1883, member of the California Medical Association, past president of the Yolo-Colusa-Glenn Society for Medical Improvement, formerly on the staff of the Woodland Clinic Hospital, aged 82, died, Nov. 29, 1934, of coronary occlusion.

Gordon Moncrieff Dean, Baltimore, University of Aberdeen Faculty of Medicine, Scotland, 1927, instructor in urology, Johns Hopkins University School of Medicine, formerly resident urologist at the Johns Hopkins Hospital, aged 34, died, Dec. 16, 1934, in Fort Lauderdale, Fla., of brain abscess.

Chauncey Eugene Tennant * Chehalis, Wash., Denver College of Medicine, 1894, Denver Homeopathic Medical College, 1897, member of the Colorado State Medical Society, member of the Western Surgical Association, fellow of the American College of Surgeons, aged 65, died, Nov. 14, 1934.

Arthur Foote Kilbourne * Rochester, Minn., University of the City of New York Medical Department, 1883, member of the American Psychiatric Association, aged 76, for forty-five years superintendent of the Rochester State Hospital, where he died, Nov. 30, 1934, of carcinoma of the gallbladder.

Enoch T. Dunaway, Amarillo, Texas, University of Louisville (Ky.) School of Medicine, 1893, member of the State Medical Association of Texas, on the staffs of the Northwest Texas Hospital and St. Anthony's Hospital, aged 74, died, Nov. 26, 1934, following an operation for appendicitis.

William Munson Goodwin * Newark, N. J., College of Physicians and Surgeons, Medical Department of Columbia College, 1894, on the staffs of St. Michael's Hospital and the Hospital of St. Barnabas and for Women and Children, aged 64, died, Nov. 21, 1934, of coronary thrombosis.

Lemar Munger Andrews * Warsaw, N. Y., Cleveland University of Medicine and Surgery, 1896, past president and secretary of the Wyoming County Medical Society, on the staff of the Wyoming County Community Hospital, aged 63, died, Oct. 1, 1934, of coronary occlusion.

Stephen D'Irsay, Paris, France, Medical Faculty of the Hungarian Royal University of Sciences Pázmány Peter, Budapest, 1917, formerly associate in the history of medicine, Johns Hopkins University School of Medicine, died, Dec. 1, 1934, in the American Hospital.

Lyman T. Reber, St. Louis, Beaumont Hospital Medical College, St. Louis, 1889, formerly connected with the city health department, aged 74, died, Nov. 15, 1934, of shock and hemorrhage as the result of lacerations of the wrists, self-inflicted, and iodine poisoning.

Watson Frederick La Rue Rodemann, Newark, N. J., Long Island College Hospital, Brooklyn, 1908, also a pharmacist, served during the World War, commissioner of registration for the county of Essex, aged 57, died suddenly, Nov. 16, 1934, of coronary thrombosis.

Marion Josephine Alexander * Louisville, Ky., University of Louisville School of Medicine, 1928, on the staff of the J. N. Norton Memorial Infirmary, clinical assistant in medicine at her alma mater, aged 38, died, Nov. 19, 1934, of acute dilatation of the heart.

Duncan Neil MacLennan, Toronto, Ont., Canada, M.R.C.S., England, and L.R.C.P., London, England, 1896, formerly assistant professor of ophthalmology, University of Toronto Faculty of Medicine, fellow of the American College of Surgeons, died, Oct. 19, 1934.

Frank Alfred Ireton, Bethel, Ohio, Medical College of Ohio, Cincinnati, 1906, formerly member of the school board of Bethel and Newtonsville, county health officer, 1919-1928, aged 55, died, Nov. 17, 1934, in the Bethesda Hospital, Cincinnati, of tuberculosis.

Royal Oscar Brown, Mount Morris, Ill., Rush Medical College, Chicago, 1903, member of the Illinois State Medical Society, president of the Ogle County Medical Society, aged 60, died, Dec. 15, 1934, in the Deaconess Hospital, Freeport, of coronary thrombosis.

Ebenezer Knox Smith, Duluth, Minn., McGill University Faculty of Medicine Montreal, Que., Canada, 1923, member of

the Minnesota State Medical Association, aged 64, died, Oct 4 1934, in the Rochester (Minn.) State Hospital, of hypertension and cerebral infarct

James William Henson ♂ Richmond, Va., Medical College of Virginia, Richmond, 1889, formerly associate professor of surgery at his alma mater, fellow of the American College of Surgeons, on the staff of the Retreat for the Sick, aged 71, died, Nov 28, 1934

George William Kimball, Coulterville, Ill., National Medical University, Chicago, 1896, also a dentist and druggist, formerly village president and president of the board of education, aged 66, died, Nov 19, 1934, of chronic interstitial nephritis

Alberic Hyacinthe Bellerose ♂ Rutland, Vt., School of Medicine and Surgery of Montreal, Que., Canada, 1892, past president of the Rutland County Medical Society, on the staff of the Rutland Hospital, aged 68, died, Dec 11, 1934, of heart disease

Emily G. Whitten Auge ♂ Philadelphia, Woman's Medical College of Pennsylvania, Philadelphia, 1894, fellow of the American College of Surgeons, on the staff of the Woman's Hospital, aged 57, died, Dec. 11, 1934, of heart disease

Stephen Tyler Parsons, Denver, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904, aged 74, died, Nov 15, 1934, in St. Luke's Hospital of bilateral pyonephrosis and diabetes mellitus

Charles Hopkins Rolston, Mount Clinton, Va., University of Virginia Department of Medicine, Charlottesville, 1884, for eight years member of the state legislature, aged 73, died recently, of injuries received in an automobile accident

George Russell King, Ann Arbor, Mich., University of Michigan Medical School, Ann Arbor, 1933, assistant resident neurologist to the University of Michigan Hospital, aged 26, was killed, Nov 23, 1934, in an automobile accident

Herman Trost Baldwin ♂ Newton, Mass., Harvard University Medical School, Boston, 1895, member of the New England Pediatric Society, on the staff of the Newton Hospital, aged 66, died, Nov 25, 1934, in Orlando, Fla.

Robert Bruce Meyer, Ann Arbor, Mich., University of Michigan Medical School, Ann Arbor, 1933, resident dermatologist to the University of Michigan Hospital, aged 26, was killed Nov 23, 1934, in an automobile accident

John Joseph McCabe ♂ Holyoke, Mass., University of the City of New York Medical Department, 1893, on the staff of the Holyoke Hospital, aged 61, died, Nov 13, 1934, of sarcoma of the neck and arthritis of the spine

Roy Gilbert Strong, Medina, Ohio, University of Buffalo School of Medicine, 1901, member of the Ohio State Medical Association, served during the World War, aged 56, was found dead, Dec. 12, 1934, of angina pectoris

Robert Milligan, Ann Arbor, Mich., University of Michigan Medical School, Ann Arbor, 1929, formerly instructor in neurology at his alma mater, aged 30, was found dead, Nov 28, 1934, of a self-inflicted bullet wound

George C. Wingate, Charlotte, N. C., North Carolina Medical College, Charlotte, 1914, member of the Medical Society of the State of North Carolina, aged 52, died, Nov 19, 1934, in the Presbyterian Hospital

Herman Albert Voigt, Baltimore, University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1927, aged 31, died, Nov 12, 1934, in the Mercy Hospital, of bronchopneumonia

Norman Lucca Drake, Little Falls, N. Y., University of the City of New York Medical Department, 1891, member of the Medical Society of the State of New York, aged 64, died, Dec 2, 1934, of angina pectoris

William Robert Cate, Commerce, Texas, Epworth College of Medicine, Oklahoma City, 1909, member of the State Medical Association of Texas, health officer, aged 64, died suddenly, Oct. 18, 1934, of heart disease

Ernest D. Davis, Standardsville, Va., Medical College of Virginia, Richmond, 1889, member of the Medical Society of Virginia, aged 67, died, Dec. 3, 1934, in the University of Virginia Hospital, University

Roderick Edwin Albright ♂ Allentown, Pa., Jefferson Medical College of Philadelphia, 1896, on the staffs of the Sacred Heart and Allentown hospitals, aged 62, died, Nov 23, 1934, of myocarditis

Lindsey William Scott, Willard, Ohio, Eclectic Medical College, Cincinnati 1929, aged 41, on the staff of the Willard Municipal Hospital, where he died, Nov 19, 1934 of splenectasis and hemorrhage

Edgar Sharon Turner, La Follette, Tenn., Lincoln Memorial University Medical Department, Knoxville, 1912, served during the World War, aged 50, died, Nov 18, 1934 of lobar pneumonia

George Glasgo Turfley, Pittsburgh, Cleveland Medical College 1879, member of the Medical Society of the State of Pennsylvania, aged 79, died, Nov 17, 1934, of bronchopneumonia

John Mays Clarke, Redondo Beach, Calif., California Eclectic Medical College, Los Angeles, 1915, formerly mayor of Redondo Beach, aged 67, died, Nov 24, 1934, of heart disease

Ambrose Chandler Bramlett, Oxford, Miss., Hospital College of Medicine, Louisville, Ky., 1887, part owner of a hospital bearing his name, aged 83, died, Dec 7, 1934, of heart disease

Patrick H. Casey, Baltimore, University College of Medicine, Richmond, 1900, aged 58, died in November 1934 at the Georgetown Hospital, Washington, D. C., of cerebral hemorrhage

Henry Snow Morris, Nashville, Tenn., Vanderbilt University School of Medicine, Nashville, 1890, aged 67, died, Nov 17, 1934, of arteriosclerosis and cerebral hemorrhage

Albert Stealy, Charlotte, Mich., Toledo (Ohio) Medical College, 1896, aged 72, died, Nov 5, 1934 in the Carney-Wilcox Hospital, Alma, of cerebral hemorrhage

John Herrington Beynon, Napanoch, N. Y., College of Physicians and Surgeons, Baltimore, 1888, aged 68, died, Oct 20, 1934, in New Orleans, of heart disease

Samuel Mowbrey Hammond, St. Petersburg, Fla., Yale University School of Medicine, New Haven, 1896, aged 64, died Nov 20, 1934, of coronary thrombosis

Walter Scott Sims, Jackson, Miss., Medical College of Alabama, Mobile, 1881, on the staff of the Jackson Infirmary, aged 80, died, Nov 24, 1934, of pneumonia

Franz Grossman, Waterbury, Conn., Independent Medical College, Chicago, 1897, aged 82, died, Oct. 10, 1934, of fracture of the right femur and pneumonia

Heath Ashby Dalton, Hillsville, Va., Medical College of Virginia, Richmond, 1914, aged 45, died, Dec 2, 1934, in a hospital at Staunton, of heart disease

Charles L. Steel, Three Forks, Mont., University of Maryland School of Medicine, Baltimore, 1882, aged 74, died recently, of cerebral hemorrhage

Sidney Prentice Phelps, Malone, N. Y., University of Vermont College of Medicine, Burlington, 1898, aged 61, died, Nov 17, 1934, of heart disease

Charles Lee Bond, Hartsfield, Ga., Georgia College of Eclectic Medicine and Surgery, Atlanta, 1890, aged 68, died in November, of pneumonia

John Albert Sturges, Murrieta, Calif., Rush Medical College, Chicago, 1876, also a druggist, aged 84, died, Nov 23, 1934, of heart disease

John Mack Darden, St. Louis, Barnes Medical College, St. Louis, 1904, formerly police surgeon, aged 53, died, Nov 15, 1934, of heart disease

Edward Green Sewell, Bunkie, La., University of Louisville (Ky.) School of Medicine, 1895, aged 67, died, Oct 13, 1934, of angina pectoris

Job D. Orahoad, Indianapolis, Medical College of Indiana, Indianapolis, 1884, formerly a druggist, aged 79, died, Nov 18, 1934, of myocarditis

Isaac Daniel Alger, Minneapolis, Harvard University Medical School, Boston, 1864, aged 90, died, Nov 9, 1934, of bronchopneumonia

Carey Allen Burke, Los Angeles, Ohio Medical University, Columbus, 1895, aged 65, died, Oct. 7, 1934, of cerebral hemorrhage

Andrew J. Bowen, Portal, Ga., Baltimore University School of Medicine, 1904, aged 55, died recently, of angina pectoris

Marcus L. Clark, Lynnville, Tenn., Vanderbilt University School of Medicine, Nashville, 1879, died, Dec. 2, 1934, of heart disease

Oliver M. Heilig, Millcreek, Ill., Barnes Medical College, Chicago, 1895, aged 65, died, Nov 23, 1934, of carcinoma

J. T. Tichenor, Waterford, Ky., Louisville Medical College, 1893, aged 64, died, Nov 17, 1934, of heart disease

Correspondence

TOTAL ABLATION OF THE THYROID

To the Editor—For a long time I have been interested in the relationship between thyroid activity on the one hand and cardiac insufficiency and angina pectoris on the other, and in discussions of patients at the Peter Bent Brigham Hospital and in published papers I have stressed the idea that myxedema was the acme of what is sought in cardiac therapy, namely, rest with incident decrease of cardiac work. A note of mine on a patient in the winter of 1925 states

A most interesting feature of this patient was the play between her chronic myocarditis and angina pectoris on the one side and her myxedema on the other. In the negative state of myxedema she had relatively few cardiac symptoms.

In another place I have written

It is true that with an existing cardiac lesion which may be either coincidental or caused by thyroid hypofunction, the decreased activity of so many body functions as happens in myxedema serves as a conservative force so far as the circulation is concerned. To put it another way the damaged heart has less work to do so long as thyroid activity is considerably below a normal level [*Rhode Island M. J.* 8:109 (July) 1925]. A lowered metabolic activity from thyroid deficiency may be a conservative process, a form of cardiac rest that is advantageous to the heart [*ibid.*]

Still elsewhere has appeared

Were there not discomforts associated with myxedema an induced myxedema might be considered an ideal measure for the treatment of angina pectoris for the myxedematous patient actually by reason of the myxedema deposits himself much as we advise for the patient with angina pectoris [Christian, H. A. *Monographs on Diagnosis and Treatment Heart Disease*, New York, Oxford University Press 3:279, 1928.]

With this background I have welcomed the brilliant initiative of Drs. Blumgart and Berlin at the Beth Israel Hospital, Boston, and of Drs. Levine and Cutler at the Peter Bent Brigham Hospital, where my own clinic is, which has demonstrated that an artificially induced myxedema will have the same conservative influence on cardiac insufficiency and angina pectoris as had been observed and noted in natural myxedema.

It is well, too, to emphasize that natural myxedema is a disease which among other disturbances has been observed to be accompanied by evidences of myocardial insufficiency and coronary sclerosis with angina pectoris easily activated by too large a dose of thyroid, and so it behooves those in charge of cardiac patients with induced myxedema to be ever cautious to maintain those patients between the Scylla of the effects of cardiac overactivity and the Charybdis of the very real discomforts and disabilities of myxedema, a thing found to be very difficult of accomplishment in natural myxedema and already observed not to be easy in induced myxedema in patients with cardiac insufficiency or angina pectoris.

These several factors enter into the treatment of hypothyroidism with cardiac disturbances to render it a most fascinating problem in therapeutics and one which requires good clinical judgment and keen diagnostic ability to solve whether we are dealing with the problem of angina pectoris in the myxedematous patient, a coincident cardiac insufficiency in myxedema or a true myxedema heart [Christian, H. A. *Monographs on Diagnosis and Treatment Heart Disease*, New York, Oxford University Press 3:283, 1929].

I feel very sure that the care of those cardiac patients with artificially induced myxedema will require no less skill in their management. It is to be remembered that some of the disability of myxedema may require much time for its full development, sufficient time may not, as yet, have elapsed for the patients in whom myxedema has been induced to develop the full effects of the thyroid deficiency, a deficiency that can be replaced only in part by thyroid feeding, since the cardiac disturbance, which has led to the complete surgical removal of thyroid tissue, inevitably will hamper full restitution to a normal level. At best these cardiac patients will have more or less myxedema, if considerable myxedema must exist, then the patient may develop anemia or accumulations of fluid in

serous cavities, or more coronary arteriosclerosis, all of which are seen in natural myxedema and which in themselves burden cardiac function. It is only fair to assume that they may develop such disturbing factors and that these things will limit the applicability and the effectiveness of this new method of treating cardiac disease to a relatively small group of patients. Removing thyroid tissue has no known influence on the pathologic changes in the heart, which have been the fundamental cause of cardiac disability, by nature they are progressive, another hampering influence to the therapeutic effectiveness of thyroid ablation in cardiac disability. All of this must be taken into account in evaluating total ablation of the thyroid in the treatment of cardiac decompensation and of angina pectoris.

HENRY A. CHRISTIAN, M.D., Boston.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

DIAGNOSIS OF CHOLECYSTITIS

To the Editor—A white married woman, aged 26, complains of nausea and vomiting. The attacks recur about every month or six weeks or oftener if she eats meats and fatty or acid foods. She has burning pain in the epigastrium but does not have the severe pain of gallstone colic or an acute pancreatitis. She is free from symptoms between attacks; does her own housework and feels good. She has learned to live on a bland diet consisting largely of bread and milk. She has one living child 5 years of age who has gastro-intestinal attacks followed by a pale yellowishness of the skin which clears up in one or two days. One other child born nine years ago died at six weeks, cause unknown. She had a bilateral salpingectomy and appendectomy four years ago. She has been treated occasionally for anemia for the last five years and the present complaint dates back one year. She is 5 feet 3 inches (160 cm.) tall and weighs 130 pounds (59 kg.). She appears well nourished and there has been no loss of weight. The skin is a pale lemon yellow and the conjunctiva is slightly tinted. The head and chest are essentially normal and there are no heart murmurs. The liver is palpable about one fingerbreadth below the costal margin and is slightly tender over the gallbladder region. There is considerable tenderness in the epigastrium in the midline. The spleen is palpable but not tender about two fingerbreadths below the costal border and smooth. There is a midline scar below the umbilicus. The physical examination is normal otherwise. The Wassermann and Kahn tests are negative and no malarial parasites have been found. The blood count shows 2,600,000 red blood cells with 55 per cent hemoglobin. There is much anisocytosis, hardly any two cells the same size but no poikilocytes or nucleated reds. The white count shows 8,000 cells with 63 per cent polymorphonuclears, 30 per cent small lymphocytes, 4 per cent large lymphocytes, 2 per cent transitionals and 1 per cent eosinophils. Gastric analysis shows 43 points of free hydrochloric acid and 60 points of total acids. On account of the mild jaundice it was thought best to do a gastro-intestinal study instead of a cholecystography. The stomach is rather low for the amount of fat the patient apparently has in the abdomen. The stomach is cow horn shaped, of normal size with no filling defects or notches and did not show any peristalsis while being observed under the fluoroscope. It is freely movable and by palpation a normal duodenal cap was observed but the progress through the duodenum and first part of the jejunum was slower than the average. At this time a shadow appeared in the region of the gallbladder which filled with barium sulphate. It was also present on the films. It is about twice as dense as the average cholecystogram in a normal gallbladder and no stones were visible. The stomach was completely empty in five hours and the head of the meal had reached the transverse colon but the gallbladder shadow remained. However the gallbladder shadow had disappeared by the next morning. I should like to ask as to the most probable diagnosis and the proper management and treatment in such a case. I have considered cholecystitis, chronic hemolytic jaundice and pernicious anemia but the latter two are not consistent with the high hydrochloric acid. Neither can I think that a cholecystitis with or without stones could give rise to an anemia of this grade. If the anemia can be improved would it do the patient any good to remove that gallbladder? Please omit name. M. D. MISSOURI

ANSWER—The symptoms enumerated are quite compatible with chronic cholecystitis with or without stones or hemolytic icterus. As expressed in the question, pernicious anemia must be considered because of the high grade anemia and high color index. However, the presence of free hydrochloric acid speaks against it even though sporadic reports of pernicious anemia with free gastric acidity have appeared in the literature. The digestive disturbances can well fit in with calculous cholecystitis even in the absence of colic. A cholecystogram revealing either a nonfilling gallbladder or negative shadows will be of considerable value. The large shadow resembling a gallbladder, obtained with a barium meal may be a diverticulum of the duodenum.

due to traction by adhesions between the gallbladder and the duodenum or a congenital diverticulum in the third portion of the duodenum, a favorite location. The interesting facts in the relation of the symptoms are the mummified yellow tint slight liver enlargement although the size of the latter is within normal range, and the definite splenic enlargement. It is necessary for proof to do a fragility test on the red blood corpuscles. If there is increased fragility, the diagnosis of hemolytic icterus is definite. The association of the latter with calculous cholecystitis is well known. If this is the case transfusions followed by splenectomy is the cure. The gallbladder disease can be considered later. It is further interesting to consider the possibility of hemolytic icterus in the child as the condition is frequently familial.

FRACTURE OF CERVICAL VERTEBRA

To the Editor—1 A boy, aged 16 with a fracture of the fifth cervical vertebra has slight anterior displacement of the fracture portion. The vertebrae are in good alignment. There was no evidence of nerve injury. He is in a helmet type plaster cast. How long should this cast be left on? What is the after-care when the cast is removed? Should he be permitted to play basketball or other games later? If so how soon? 2 A man aged 78 had a fracture of the bodies of the third fourth and fifth cervical vertebrae. The spines of the third and fourth are displaced markedly posteriorly. He has no displacement of the vertebra however. He had some involvement of the nerves in his arms which has since cleared up. How long should be the period of immobilization? He has the same type of a cast on and is up and about. Please omit name.

M D Wisconsin

ANSWER—1 In cases of fracture of the bodies of the cervical vertebrae, if the alignment is good and there is no evidence of nerve injury, conservative treatment includes complete immobilization, preferably in bed, for from four to six weeks. Immobilization with a plaster cast of the type described is then recommended for a period of at least six more weeks. If the helmet type of plaster cast is worn during this period of six weeks, it is advisable to graduate the patient from this to a collar made of plaster or reinforced cardboard, which can be worn for the final three weeks. Exercises that might include sudden or violent movements of the head are contraindicated for at least six months.

Physical therapy, consisting of heat and massage and carefully supervised exercises, may be recommended and aids in the recovery of strength in the muscles of the neck. Participation in competitive sports of any kind for a period of one year following the injury is unwise. If at the end of that time a roentgenogram shows a satisfactory appearance of the spine at the site of the fracture, if the patient has no disability or discomfort and if the range of motion is normal, restrictions with regard to activity may be withdrawn.

2 Fractures of the cervical spine in elderly persons, even without involvement of the spinal cord or nerve roots may be expected to result in some permanent disability. This may consist of stiffness and pain in the neck and not infrequently, pain along the course of the nerves the roots of which emerge at the site of the fracture. When there are three fractured vertebrae and the patient is 78 years of age immobilization should be continued for a total period of three months.

Some delay in the healing of the fracture in elderly persons can be expected. The end results in fractures of the cervical spine without spinal cord injuries or involvement of the nerve roots, and without dislocation, should be satisfactory. Not infrequently the fractured vertebral bodies fuse together producing slight but painless limitation of motion.

EPINEPHRINE OUTPUT AFTER INSULIN

To the Editor—In an editorial comment in THE JOURNAL June 23, page 2108 there appeared the statement. It was shown that an increase in the output of epinephrine occurred after the administration of insulin. Will you kindly cite the references on which this observation is based as well as any evidence to the contrary? What means were used to demonstrate such an increase? Are there any clinical manifestations following the injection of insulin that may be attributed to this increased secretion of epinephrine? Relevant references concerning clinical or experimental data would be appreciated. Kindly omit name.

M D Philadelphia

ANSWER—That insulin hypoglycemia brings about an increase in the secretion of epinephrine was shown experimentally by Cannon, McIver and Eliss (*Am J Physiol* 69 46 [June] 1924). As the sugar concentration falls after insulin injection a critical point is reached (between 70 and 80 mg per hundred cubic centimeters of sugar in normal cats) at which the discharge of epinephrine is at a maximum. Removal of both suprarenals or removal of one and denervation of the other before giving the insulin results in a progressive drop in blood sugar without augmentation of the epinephrine in the blood. That suprarenal-ectomized animals are very sensitive to insulin has been shown

(*Lewis Compt rend Soc de Biol* 89 1118, 1923. Hallion and Gray *ibid* 92 945 [April 3] 1925. Barnes and others *Proc M I* 31 524 1934). On the other hand, C F and Gerty T Cori (*J Biol Chem* 74 473 [Sept] 1927) concluded from experiments with suprarenal-ectomized mice that the epinephrine is not responsible for mobilization of carbohydrate from the liver during insulin hypoglycemia.

The indicator of suprarenal activity in this study was the denervated heart both stellate ganglions are removed and both vagi sectioned. Under fasting conditions an increase in epinephrine concentration in the blood results in an acceleration of the rate of the denervated heart. The denervated iris has also been used as an indicator of changes in epinephrine concentration (Abe *Arch f exper Path u Pharmacol* 103 73, 1924).

The rapid pulse pallor, sweating and dilatation of the pupils observed in insulin hypoglycemia are indications of sympathetic autonomic activity just as is suprarenal secretory activity. It is difficult to say to what extent the symptoms of insulin hypoglycemia are due to increased secretion of epinephrine or are influenced by it.

REINFECTION WITH TUBERCULOSIS

To the Editor—A number of the staff members of the institution with which I am connected have been interested in a question of some importance in a sanatorium for tuberculosis. Consultation of the literature has given contradictory results. What is the latest authoritative opinion as to the danger of one patient with pulmonary tuberculosis being further infected as the result of prolonged intimate contact (in the same room) with another patient with positive sputum who is careless about covering his mouth when coughing and is not careful in disposing of his sputum? Is there much danger of increased tuberculous infection or secondary infection being carried from one tuberculous patient to another? Please omit name.

M D Colorado

ANSWER—Experimentally, it is possible to contaminate an animal with tubercle bacilli for the first time and obtain a reaction that is not specific. On subsequent reinfection inoculations, a specific reaction does occur. There is almost as much difference between the foci of disease which result from the two inoculations as though one were dealing with two different disease entities.

In the human body the same difference in reactions to first infection and reinfection with tubercle bacilli may be observed through x-ray films, laboratory and clinical examinations, and at the postmortem table. The first infection nearly always results in a very benign lesion. The reinfection type of lesion is benign in some cases but causes nearly all of the illness and death from tuberculosis in the human family. Whether this reinfection is due to exogenous or to endogenous sources of tubercle bacilli is a subject that has been discussed at great length. Most students of this subject are of the opinion that it may be produced by either. The destructiveness of the reinfection with tubercle bacilli is dependent on the presence of allergy. Whether the tubercle bacilli escape from a previously existing focus or whether they are taken into the body through the common portals of entry makes little difference, since both are capable of producing tuberculo-protein, which in the presence of allergy is a deadly poison.

The high percentage of persons living in homes where an open case of tuberculosis exists, who later develop clinical tuberculosis is apparently good evidence that exogenous reinfections are of considerable significance. The more intimate the contact, the more frequent the clinical cases. Barclay (*Am Rev Tuberc* 26 192 [Aug] 1932), for example showed that approximately 27 per cent of the persons who sleep in the same beds as tuberculous patients later develop clinical tuberculosis. Recent studies on conjugal tuberculosis are also convincing. When sufficiently large numbers of consorts of tuberculous patients have been carefully examined with modern diagnostic aids and have been observed over sufficiently long periods, clinical disease develops in an alarmingly high percentage statements to the contrary notwithstanding. Recent reports have shown that approximately from 10 to 50 per cent of such consorts develop demonstrable lesions.

For years patients who had clinical pulmonary tuberculosis have asked the question whether they might develop more tuberculosis through close association with fellow tuberculous patients in sanatoriums. The answer of the medical directors of these institutions was almost invariably to the effect that the person who has tuberculosis cannot get more through exposure. On what evidence such an answer was based is now hard to determine.

Today it is known that over a period of years the multiple reinfection type of tuberculous lesions appears in the same body. In fact, it is a common experience to see the patient with tuberculosis in only one lung at some subsequent time have a lesion appear in the opposite lung. Whether this lesion is from

exogenous or endogenous sources cannot possibly be determined by present methods. Therefore, whatever is said about them in this respect must be largely a matter of opinion.

From the reports of Shaw (*Quart. J. Med.* 2:179 [April] 1933) and others on patients treated by sanatorium routine alone and traced approximately ten years later, one is led to wonder what effect reinfections from fellow patients had on the appearance of new lesions and the ultimate death of such a high percentage. When one realizes that, when artificial pneumothorax is instituted on the side of the only demonstrable lesion, a frequent complication is appearance of the disease in the opposite lung, again one wonders what part reinfections from fellow patients played.

Such students as Ronzoni, Brown, Opie, Harbitz, Webb, Rist (*Bulletin of the International Union Against Tuberculosis* 4:97 [April] 1927) and many others admit that exogenous reinfection occurs. Some are of the opinion that it occurs rarely, others believe that approximately 50 per cent of the cases of clinical tuberculosis are due to bacilli from exogenous sources. Therefore the exposure of one tuberculous patient to another in the same room or ward certainly is not entirely without danger.

BURNING OF HANDS AND FEET

To the Editor—A woman aged 80, unmarried has complained of intense burning of her feet and hands for nearly a year, the condition being exaggerated in warmer weather and after taking warm baths. The area complained of extends upward about 3 inches on the arms and legs, on the two sides alike. Examination reveals a diminution of the sense for sharp and dull over the whole body. Hot and cold are perceived normally. The dorsalis pedis arteries of both feet are normal. The superficial veins of the feet and hands are noticeable but not large. No varicosities of the leg veins have been observed. The color of the skin is normal, and the temperature of the extremities seems to be the same as that of the body even when the paroxysms of burning are present. The general health is good; there are no headaches, dizziness or general aches and pains. The blood pressure is 120 systolic and 60 diastolic, the pulse regular and the temperature normal. The blood count is within normal limits. The urine is normal. The Wassermann reaction was not taken. The weight is 90 pounds (41 kg.) the patient states that this weight has obtained for several years without much fluctuation. The reflexes are normal. Appetite and elimination are good. At times the patient cannot tolerate any hose on the feet, and frequently she goes barefooted. Even at night the weight of a thin sheet causes discomfort. Treatment for the past two months has consisted of warm and cold contrast baths to the extremities, massage with alcohol and fluidextract of ergot 10 drops three times a day. Some relief was noted at first but was only temporary. During the hot weather, benefit was obtained by using cool water to which she added a small quantity of vinegar. Kindly advise as to the possible diagnosis and further treatment in this case. Please omit name.

M D Indiana

ANSWER—The observations in this case would apparently rule out thrombo-angitis obliterans, Raynaud's disease and erythromelalgia. The age is above that at which so-called acroparesthesia usually begins, but this disorder is obscure and may well be the best diagnosis. A gradual occlusion of the finer vessels is probably the basis of the sensory disturbance. In this case it would be well to try vasodilators such as frequent doses of glyceryl trinitrate or rather large doses of theobromine sodiosalicylate. Frequent examinations of the blood and reflexes should be made to rule out a beginning pernicious anemia in which cord changes are developing. A gastric analysis for free hydrochloric acid would be of interest.

SKIN GRAFTING

To the Editor—I have a patient whose thumb was cut off across the proximal phalanx with a rope. I do not wish to sacrifice the length of his thumb to get skin to cover the end so I think I will need to skin graft it. What type of skin grafting would you suggest to leave the least painful scar? Please do not publish my name. M D Texas

ANSWER—Ordinarily with a clean wound immediate grafting of full thickness skin is indicated and usually successful.

In this instance, in which some time has elapsed and granulation tissue has formed, the edges of the skin should be freshened and the granulation tissue pared down to a fibrous healthy bed. A full thickness skin graft may be cut from the inner side of the thigh or from the abdomen, all of the fat being carefully removed and only the skin being left. This graft should be fitted carefully to the defect in the end of the finger and the edges sutured with fine silk to the skin, with no extra skin and no tension. The graft should be covered with fluffed gauze or a sterile rubber sponge to maintain slight pressure over it. The dressings should not be changed for a week ordinarily and then the stitches removed and redressed until thoroughly healed.

In case of failure due to infection or a poor bed of tissue a split skin or Thiersch graft will more easily grow, although it is not so satisfactory.

SPOROTRICHOSIS IN DOGS

To the Editor—A wire haired fox terrier was presented for treatment of an abrasion of the left shoulder which the animal had been scratching almost constantly. During examination a pea sized flattened swelling was noted adjacent to the abrasion but was not regarded as being important. The abrasion healed in a week and the animal had ceased to scratch, but a new crop of small swellings appeared. They were sharply circumscribed deep hard lumps showing no tendency to break down or disappear until about fifteen days old when a few did open discharging a thick dark fluid. The rest gradually receded. During this time, however subsequent series of swellings appeared radiating from the first one following irregular lines along the abdomen, back and especially on the limbs hitherto unaffected, until one hind leg was swollen to twice its normal size. The swellings were cold and painless deeply situated, and each series seemed to be more severe than its preceding series. Local antiseptics and surgical treatment did not seem to help in any way. No organisms could be found in smears and there were no skin parasites present in or around the lesions. Two 10 cc. doses of metaphen were given four days apart by the intravenous route. Each dose was followed by rapid improvement of two days duration after which the swellings again appeared. As I had observed the effect of metaphen on molds during research work, a fungous infection was suspected and daily doses of potassium iodide 25 grains (1.6 Gm.) were administered. The swellings subsided entirely after the fifth day and no more appeared. The administration of potassium iodide was continued for two weeks, after which the animal was to be discharged. The duration of the disease prior to iodide treatment was ten weeks. The owner of the animal insisting on a diagnosis was told that the disease resembled sporotrichosis in man on which he became alarmed about the possibility of his family contracting the disease. Is this likely to occur? Can the animal be discharged as cured with assurance that the disease will not recur? To my knowledge this disease has not been reported in canine pathology but has been reported in horses. I will greatly appreciate any information you can offer.

ALFRED KISSILEFF, V M D Flourtown, Pa

ANSWER—Sporotrichosis of dogs has been reported in France by Cougerot and Caraven but so far has not been recognized in this country. The fox terrier's ailment as described seems to resemble closely sporotrichosis as seen in man, but, while affected dogs may present skin lesions similar to those observed in man, the canine disease according to Hutyla and Marek is usually associated with inflammation of the bones and joints, leading to deformity. Nodules may form internally, causing symptoms of peritonitis. Since sporotrichosis can be transferred from animal to animal or to man by contact with infectious material, it is unfortunate that cultural methods were not employed in an effort to determine definitely whether or not the dog in question had sporotrichosis.

If the disease is sporotrichosis, it is possible that persons in contact with the affected dog may contract the disease. However, infection of human beings by dogs suffering from parasitic skin diseases is a rarity, though ringworm of cats can be transmitted. As for the probability of recurrence, even without reexposure to the original source, one cannot hazard an opinion.

EPIDERMOLYSIS BULLOSA

To the Editor—A girl aged 7 years has had since infancy large slightly raised red indurated, ulcerous, pustular lesions, which tend to heal very slowly and are at times covered by a thin crust. The ulcers are shallow. The lesions are located on the trunk and extremities, particularly on the legs. Usually three or four months is required for their healing. Several lesions were present for two years. Most of the lesions are about the size of a quarter (24 mm.). An injury anywhere to the skin is likely to result in a slowly healing indolent lesion such as described. Ten per cent ammoniated mercury ointment seems to be of some benefit. Lesions did not develop at the sites where a Pirquet test was made or at sites where blood for a Wassermann test and for a white cell count was drawn. The patient at one time lost all her finger nails. The child is mentally alert bright in school and plays actively like other children. The white blood cell count was 15,400. Urinalysis showed nothing abnormal other than a grade I albumin. The Pirquet and Wassermann tests were negative. General physical examination reveals nothing other than is already recited. The patient has red hair. What is the diagnosis of this case the prognosis the etiology of the disease and the treatment? Would autogenous vaccine be of any help here or would the intravenous administration of a substance such as dilute hydrochloric acid to raise the opsonin index, be of value? Would solution of potassium arsenite be of benefit? The lesions are tender to palpation. I will be grateful for any help or suggestions received. If published in THE JOURNAL kindly omit name. M D Illinois

ANSWER—This case is most probably one of epidermolysis bullosa. The lesions usually follow injury, and the changes described most probably resulted from secondary infection of the injured sites. The disease rarely disappears, although in a few instances the activity of the process has diminished at puberty, and the skin becomes more resistant to injury. The condition is usually congenital and hereditary, and its occurrence in different members of a family over several generations has been noted. Congenital absence of elastic tissue, a persistent thymus as a result of a congenital polyglandular syndrome, and a low grade inflammatory state associated with an angioneurosis have been suggested as etiologic factors. No

treatment thus far has had any specific effect on the process. Local protection to prevent injury to the vulnerable sites, with treatment as indicated to the injured areas, and the prevention of subsequent infection are used. Arsenic, calcium and yosterol have been used with indifferent results. It is not likely that autogenous vaccine or intravenous hydrochloric acid will have any special beneficial effect. Solution of potassium arsenite may be cautiously used.

CYSTS OF THE BREAST

To the Editor—A married woman aged 33, mother of two children, consulted me for a growth in the left breast. On examination I found it to be about the size and shape of a hen's egg. Its surface was smooth and of an unusual hardness. It was movable and not attached to the skin. I advised removal of the growth. The patient objected to any operation. The mother of the patient had a growth in her breast at the age of 45 and a radical removal of the breast was performed ten years later. A well advanced carcinoma was present at the time of operation. Being a very poor surgical risk, she died a few hours after the operation. The patient consulted me again in three weeks. The growth had enlarged to the size of an orange. I decided that it was a cyst and asked permission to drain it since she would not consent to its removal. Consent was given and 8 ounces (236 cc.) of a rusty (not amber) colored fluid was aspirated. Of course the cyst soon filled again. With her permission it was opened and packed with sterile gauze. After ten days the gauze was removed but the cyst continued to discharge. In the meantime another cyst developed. I insisted on its removal while it was still small. Consent was not given. The patient consulted a surgeon at Indianapolis who advised her not to have the cysts removed but only drained. He assured her that by this treatment the cysts in time would disappear. I told the patient that the surgeon might be right but that the process was too slow and the results uncertain. The case is now in the hands of another local doctor. What I want to know is whether I was wrong in advising removal of the cysts with a family history of carcinoma in the background. What is the consensus regarding the treatment of such cases? I can quote several living authorities to back my stand.

C. R. ELLERS, M.D., Sheridan, Ind.

ANSWER—Incision and drainage of cysts for cystic disease of the breast is generally not an accepted procedure. The method was used many years ago but has been largely discarded. From the description it is evident that the patient is suffering from cystic disease of the breast. The danger of cystic disease of the breast is that it is frequently complicated by an epithelial neoplasia, the extent of which cannot be determined clinically. It may be that the patient is suffering from purely cystic disease, but it is impossible from clinical examination alone to rule out the presence of Schimmelbusch's disease or even of microscopic cancer. There are numerous examples in which breasts presenting this clinical setting are removed and prove to harbor beginning cancer microscopically. The fact that there has been cancer in another member of the family renders this possibility even more likely. There can be little difference of opinion on the importance of surgical removal, the extent of the operation to depend on the extent of the disease.

SKIN LESIONS IN WORKERS HANDLING ZINC CHLORIDE

To the Editor—Small indolent boils without much inflammation or tenderness form about the hands and wrists of workers handling 65 per cent (?) zinc chloride in an industrial plant. When handling the solid zinc chloride the workers wear heavy rubber gloves. The drops and fumes of the zinc chloride come in contact with the bare skin while some heat or welding process is being used. Apparently no harm is done except when the zinc chloride comes in contact with minute or small scratches or abrasions. Following such accidents the hands are immediately washed and any such areas covered with campho-phenique or some petrolatum ointment. The sores and skin abscesses are very resistant to healing. I should like a fairly simple routine of prevention and one of treatment suggested. The workers apparently cannot prevent the minor scratches and abrasions in their other work and cannot wear protective gloves during the process mentioned. Immediate mercurochrome and flexible collodion to the latter minute injuries has been suggested for prevention besides their present treatment.

J. L. AIRD, M.D., Manhattan Beach, Calif.

ANSWER—Zinc chloride is a powerful caustic and usually produces multiple lesions on the fingers, hands and forearms of workers who come in contact with it. An eschar is produced at the sites of contact. The surrounding skin looks macerated, rubs off easily, and leaves an underlying white and bloodless surface. There is little sign of local inflammation, and the lesions may or may not be painful. The wearing of gloves is the best method of prevention. The use of some one of the protective creams applied to the hands may give partial protection. Treatment of the active lesions consist in removing the slough or eschar and filling the wound with sodium bicarbonate. A warm solution of sodium bicarbonate may also be used for a compress and then the lesion dressed with boric petrolatum, painted with mercurochrome or covered with metaphen in collodion.

IDIOPATHIC PRURITUS

To the Editor—A white man aged 66, complains of crawling, itching sensations between the shoulder blades on the scrotum in the axillae and occasionally on the skin of the head. These began two years ago while he was working at carpentry and living in a railroad boarding house. The skin over the areas is of fine texture with no redness or visible marks of irritation and parasites or eggs were not found. Daily baths and change of underclothes gives relief for a time. He feels all right if he goes to work after the bath but if he relaxes in a chair at this time the itching sensations return in about an hour. He is not sensitive to wood or to pollens. In the winter the skin seems dry and the sensations increase if he goes without bathing for a few days. He uses a strong soap which does not make the trouble any worse. If he works all day he feels all right and will sleep well. However, if he is idle the crawling sensation will become evident and he will become restless and weary. He has had no previous skin diseases or serious illnesses. There is no history of syphilitic infection. He has used a variety of treatments most of which were given for a parasitic infestation. I have been unable to find any evidence of parasites. Please omit name.

M.D. Iowa

ANSWER—No urine report is given, so examination should be made for sugar and the blood sugar level should be determined. In case of abnormal observations in either, the condition should be improved by regulation of the diet. The basal metabolic rate should be found and thyroid administered if needed. Some cases for which no explanation can be found are helped by the external use of some vegetable oil, such as olive oil.

TREATMENT OF SYPHILIS

To the Editor—I would appreciate some information as to how to handle this particular case. A white man, aged 49, contracted syphilis at the age of 22 while with the marines. He was given at that time three courses of mercury rubs during a period of six weeks. He never had a skin eruption or any other symptoms of the disease. He was married at the age of 34 and has six children living and well. The wife also is living and well and neither she nor any of the children has a positive Wassermann reaction. In 1931 he hurt one of the testicles which later gradually became rather large and during the following two years ulcerated three times. When he was seeking medical attention for this the blood Wassermann reaction was 4 plus. Since January of this year he has received two courses of bismuth preparations and two courses of neoarsphenamine. The testicle is practically down to normal size. The problem confronting me is that the Wassermann reaction is still 4 plus on the blood, but since he feels physically and mentally well and his family are all Wassermann negative he does not favor taking any further treatments. What are his chances of later syphilitic manifestations physically or mentally? What type of treatment do you advise? Please omit name.

M.D., Minnesota

ANSWER—This question is answered in detail in *Queries and Minor Notes* in *THE JOURNAL*, Nov. 4, 1933, page 1500.

More specifically, and with reference to this particular case, the inquirer should be certain that, in addition to the gumma of the testis, the patient may not also have cardiovascular or neurosyphilis. The spinal fluid should be tested immediately. If it is positive, treatment must be continued and modified with the idea of attacking the central nervous system involvement. If it is negative and if there are no clinical evidences of cardiovascular syphilis or neurosyphilis, the patient should be treated continuously for a total period of two years with courses of an arsphenamine alternating with courses of a bismuth compound, with approximately six courses of each drug being given. In the absence of involvement of the cardiovascular apparatus or central system, and with this arbitrary amount of treatment, the persistently positive blood Wassermann reaction may be disregarded.

SYPHILITIC AORTITIS

To the Editor—Please outline further types of antisyphilitic remedies to be used for a woman aged 42, with syphilitic aortitis and compensated aortic insufficiency. There are no other evident lesions. She has had full courses of arsphenamine, potassium iodide and sodium bismuth thio-glycollate. The blood Wassermann reaction is still negative with alcoholic antigen 4 plus with cholesterol. The Kahn reaction is 4 plus. Please omit name.

M.D.

ANSWER—As a rule it is unwise to start treatment of an aortitis with one of the arsenicals. The healing effect is so rapid that there is actually local profound change in the walls of the aorta, which, in healing, may result in so much contraction that an actual insufficiency will be caused, a condition spoken of as a therapeutic paradox. In other words, the aortitis responds to the arsenical therapy, but in doing so an even more serious condition is brought on by the rapid healing, an aortic insufficiency. Consequently it is preferable in a case of aortitis to begin with intramuscular injections of a bismuth compound, for example, bismuth salicylate or potassium bismuth tartrate suspensions in oil, 0.1 Gm. intramuscularly once a week for a course of eight or ten injections. Accompanying this one might give 0.5 Gm. of potassium iodide three times a day. If the

patient stands this therapy well it might be possible to start in cautiously with neoarsphenamine, not arsphenamine, at least in the beginning. One should begin with an injection of 0.1 Gm and gradually work up to a maximum of 0.45 Gm in the male and 0.3 Gm in the female, administered once a week. Otherwise there is danger of too rapid healing of the aortitis and the possibility of a paradox ensuing. Under such circumstances the response of an aortitis, if it has not gone too far, to therapy is excellent, and alternating courses of neoarsphenamine and a bismuth compound, each of ten injections, should be given in the form of continuous therapy, i. e., a course of neoarsphenamine followed directly by a course of the bismuth compound and then by another course of neoarsphenamine, and so on until a period of at least two years of treatment has been given. While it may be interesting to make a blood Wassermann test, too much stress should not be laid on that. The factor of giving the patient so much treatment in two years would have far more bearing. Another thing that should be looked into carefully with all cases of cardiovascular syphilis is the possibility of an involvement of the central nervous system. Several different studies that have been recently made on cardiovascular syphilis have stressed the frequency of coincidental involvement of the central nervous system in some form of syphilis.

EMETICS IN LOBAR PNEUMONIA

To the Editor—Some treatises recommend emetics especially powdered ipecac, in children's lobar and lobular pneumonia, on the basis of elimination of the swallowed sputum with consequent prevention of absorption of toxins and perhaps microbes. Please explain if there is scientific ground on this procedure and if so what are the indications, contra indications and by effects? Kindly omit name. M D Brazil

ANSWER—There is no scientific ground for this procedure in either lobar or lobular pneumonia. Consolidated lung can neither be coughed up nor vomited up, and swallowed sputum is safely taken care of by bowel action. It is only in spasmodic croup and possibly also in capillary bronchitis when a spasmodic element is present and coughing is ineffectual in dislodging accumulated mucus that emesis might be permissible to aid in the removal of obstructing material by means of the powerful chest compressions that accompany the vomiting, as well as to favor relaxation of the spasm of the air passages in the depression succeeding the emesis. Marked weakness of the circulation contraindicates the use of emetics for this purpose.

DIATHERMY IN FRACTURES

To the Editor—Will you kindly advise me the present-day opinion on the use of diathermy in the treatment of fractures particularly with regard to its effect on callus formation? O O FEASTER M D St Petersburg Fla

ANSWER—There are competent physicians who feel that diathermy is of real benefit in the treatment of fractures. Investigation has not established that diathermy hastens union or earlier callus formation or increased callus formation. In cases of delayed union, diathermy has been used without appreciable benefit. The administration of heat by diathermy in certain cases of painful, badly swollen fractures has been found of benefit in relieving pain and probably in hastening the relief of the swelling. Owing to the impaired circulation, great caution is necessary to prevent burning. Diathermy seems to be of little value in fractures, except for the relief of the symptoms.

SCOPOLAMINE

To the Editor—I have a friend who was diagnosed as having encephalitis three years ago. At that time he was advised to take one one-hundredth grain (0.6 mg) of scopolamine (hyoscine) hydrobromide three times a day. He has continued this ever since and increased it up to five doses a day. He says he gets very nervous and feels crazy when he fails to take a dose and that a feeling of well being occurs a few minutes after he takes the usual dose. He is anxious to stop this habit and consulted me. Please advise me as to the habit forming quality of this drug the dangers of continued use and suggestions as to a possible cure for the addiction. Please omit name. M D Arkansas.

ANSWER—If scopolamine hydrobromide were habit forming in its qualities, doubtless this would have come to the attention of physicians, since it has been in therapeutic use for many years. Solimann states that scopolamine has advantages over morphine by quieting the reflexes and by avoiding habit formation.

No deleterious effects have been described from its continuous use over periods of years. If this patient has sequelae of encephalitis that are relieved by the administration of this drug, it would seem quite proper to let him continue with it.

Should there be no reason for its continued administration, the drug may be withdrawn in diminishing doses over a period of a week or ten days. Sedative action may be supplied by the use of barbitals and wet packs or warm baths. The nutritional state of the patient and his general physical condition should be brought to its best possible level before withdrawal is begun.

EDEMA AFTER CIRCUMCISION

To the Editor—A man, aged 28 had a circumcision done under local anesthesia. The procedure consisted of injecting about 8 cc. of 1 per cent procaine hydrochloride (epinephrine) solution about the root of the penis and the mucous membrane of the prepuce, followed by a dorsal slit and removal of redundant prepuce. The ventral portion about the incision started to swell up following operation forming a constriction ring proximal to the edematous portion. There has been slight reduction of the baggy edema with relief of the constriction but the edema itself has persisted for six weeks now, in spite of heat applications. There is no infection or ecchymosis. I would welcome suggestions for relief of the edema. Please omit name. M D, Mass.

ANSWER—Probably there has been some interference with the rather scanty blood supply to the skin and subcutaneous tissues in this region. It is probable that within a few weeks more this edematous condition will clear up with no treatment at all. Alternating applications of heat and cold may stimulate the circulation to absorb the edema. If the edema persists after a few more weeks, one might excise the larger part of the edematous area. If there is a redundancy of foreskin with a narrow base, one should endeavor to free any pressure on this constricted portion. It is advisable that one use only 0.5 per cent of procaine hydrochloride with not over 2 minims of epinephrine solution to the ounce for circumcisions.

VACCINATION IN WHOOPING COUGH

To the Editor—A boy aged 6 years had whooping cough in May 1934 and was given four injections of pertussis vaccine as furnished by the state health department. No reaction resulted other than local swelling or redness. August 22 he received the first dose of diphtheria toxoid (alum precipitated) and five days later was ill with an acute respiratory disorder accompanied by fever and a generalized urticarial rash. This cleared in three days. I had understood that the toxoid had little or no protein in it and did not produce the protein reactions common to toxin-antitoxin administration. What is the relationship between the allergic reaction and the previous pertussis inoculation? He has had no other vaccines or serums and gives no history of hypersensitivity. He is scheduled to have a second toxoid inoculation in one month. Should the regular dose be administered and if so is it likely that he will develop serum sickness again? Please omit name. M D New York.

ANSWER—It is quite likely that the pertussis vaccine was made from Bordet bacilli, grown on a culture medium made with blood other than human. As it is quite likely that the one injection of diphtheria toxoid (alum precipitated) will immunize the boy, it would be best not to give him any further injections of it. A potent pertussis vaccine made from Bordet bacilli grown on culture mediums made with fresh, defibrinated human blood is now on the market. Such vaccine does not sensitize.

VIRCHOW'S GLANDS

To the Editor—Where are Virchow's glands?

L. A. CROWELL JR. M D Lincoln N. C.

ANSWER—Virchow's gland or glands is the lymph node or nodes behind the clavicular insertion of the left sternomastoid muscle near the termination of the thoracic duct at the junction of the left subclavian and internal jugular veins. Virchow called attention in 1849 (*Die medizinische Reform*, 1849, p. 248) and earlier to the fact that in carcinoma in the abdomen, secondary growth not infrequently develops in these lymph nodes and that in doubtful cases of abdominal tumors such secondary localization might be of great diagnostic help.

KEITH'S LOW IONIC DIET

To the Editor—A patient of mine has a marked retention of fluid. She is on Keith's low ionic diet. I should like to know whether there is a salt substitute that can be used without harm to this patient. M D

ANSWER—In using Keith's low ionic diet, no salt or a salt substitute is used. The difficulty with vegetable salt for seasoning is the sodium ion present. In connection with this diet, potassium nitrate or potassium chloride may be given and used to season food. Potassium chloride is more palatable, but potassium nitrate is a better diuretic. It can be given in a dosage of from 5 to 10 Gm daily.

FRACTURE OF CLAVICLE IN NEW BORN

To the Editor—Will you kindly tell me the best method to treat a simple fracture of the clavicle in the new born, incident to birth trauma? How long is the usual time required for this type of fracture to heal? Kindly omit name
M D West Virginia

ANSWER—The best method of treating a simple fracture of the clavicle in the new born is to strap the shoulders back by means of figure-of-eight turns that include both shoulders after the axillae have been very carefully padded. The usual time required for healing is between ten and twenty-one days.

RUBEFACIENT OINTMENT

To the Editor—Will you please send me a formula for the preparation of something approximating the composition of the commercial rubefacient ointments? It is necessary for me to have something that is cheap and still acts as a good mild counterirritant for colds, bronchitis and similar disorders. Even camphorated oil is expensive here.

GEORGE H RUE M D Seoul Chosen China

ANSWER—The following rubefacient ointment might meet the requirements

Mustard Ointment

Powdered mustard	16.0 Gm
Water	30.0 cc
Mix and add	
Rosin cerate	60.0 Gm
Oil of turpentine	15.0 cc

Rosin Cerate

Rosin	35.0 Gm
Yellow wax	15.0 Gm
Lard	50.0 Gm

SCLERODERMA OR RAYNAUD'S DISEASE

To the Editor—In connection with the reply to the M D from Ohio published in THE JOURNAL November 17 page 1558 under the title of Scleroderma or Raynaud's Disease may I call your correspondent's attention to the recent report of Leriche and Jung. Le chlorure d'ammonium dans la thérapeutique de la sclérodémie. Presse Méd 41:1041 (July 1) 1933 in which they report the successful treatment of two cases of extensive scleroderma following the use of daily administrations of 3 Gm of ammonium chloride in combination with an acid forming (ketogenic) diet.

The theory underlying the treatment is to increase the elimination of calcium following the physiologic acidosis. This the authors were able to demonstrate by means of calcium determinations on the urine and blood. It was interesting to note that the discontinuance of ammonium chloride and the ketogenic diet and the substitution of parathyroid extract previously used unsuccessfully caused the recurrence of symptoms but a return to the acid diet and the administration of ammonium chloride caused the scleroderma to disappear again.

It did seem that in a case in which the ultimate prognosis is so poor as in that described by the correspondent a trial of this method would be in order. However in addition to the operative measures mentioned in your reply I think the question of a parathyroidectomy should be considered.

GEORGE V KULCHAR M D San Francisco

PARANAVEL COLIC

To the Editor—In THE JOURNAL November 17 page 1562 is a request concerning the nature of paranevel colic so frequently encountered in children. In your discussion little mention is made of one of the most common etiologic factors of this type of pain, i.e. throat infection. Dr Joseph Brennemann of Chicago was one of the first clinicians in this country to call attention to the importance of the abdominal pain of throat infections in children. Following is a bibliography of Dr Brennemann's contributions to our knowledge of this most distressing symptom.

- The Abdominal Pain of Throat Infections. *Am J Dis Child* 22:493 (Nov) 1921
The Clinical Significance of Abdominal Pain in Children, *Surg Gynec & Obst* 34:344 (March) 1922
Throat Infections in Children. *Arch Pediat* 42:145 (March) 1925
The Abdominal Pain of Throat Infections in Children and Appendicitis. *THE JOURNAL*, Dec 24 1927 p 2183

CLARENCE L LYON M D Spokane Wash

INCUBATION PERIOD OF RABIES

To the Editor—The question asked by M D South Carolina (THE JOURNAL December 1 p 1726) is one that arises so frequently that I am venturing a comment. You are correct in regard to the incubation period of rabies in dogs. Also the policy advocated by the state laboratory director of South Carolina as to the ten days observation of biting dogs is correct. The apparent inconsistency referred to by the inquirer is explained by the fact that the saliva of an animal in the incubation stage of rabies does not become infectious until from two to five days before active visible clinical symptoms set in. Therefore the bite (or scratch) of a dog in the incubation stage is noninfectious provided the animal remains free of symptoms for a period of ten days following the date of the bite. In such cases we have found seven days to be a sufficient period of observation of the biting animal.

T F SELLERS M D Atlanta Ga

Chief of Laboratories State of Georgia Department of Public Health

Council on Medical Education
and Hospitals

COMING MEETINGS

ALABAMA Montgomery Jan 7 Sec Dr J N Baker 519 Dexter Ave Montgomery

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY Written (Group B candidates) The examination will be held in various cities throughout the country April 29. Oral (Group A and Group B candidates) New York, June 10 Sec, Dr C Guy Lane 416 Marlborough St, Boston

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written (Group B candidates) The examination will be held in various cities of the United States and Canada March 23. Final oral and clinical examination (Group A and Group B candidates) Atlantic City N J June 10-11. Group B application lists close Feb. 23 and Group A application lists close May 10. Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh

AMERICAN BOARD OF OPHTHALMOLOGY Philadelphia June 8 and New York, June 10. Application must be filed at least sixty days prior to date of examination. Sec Dr William H Wilder 122 S Michigan Blvd, Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY New York June 8 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha

CALIFORNIA Reciprocity San Francisco Jan 16 Regular Los Angeles, Feb 4 Sec Dr Charles B Pinkham 420 State Office Building Sacramento

COLORADO Denver Jan 18 Sec Dr Wm Whitridge Williams 422 State Office Bldg Denver

CONNECTICUT Basic Science New Haven Feb 9 Prerequisite to license examination Address State Board of Healing Arts 1895 Yale Station New Haven

DISTRICT OF COLUMBIA Washington Jan 14-15 Sec Commission on Licensure, Dr W C Fowler 203 District Bldg Washington

ILLINOIS Chicago Jan 22-24 Superintendent of Registration Department of Registration and Education Mr Eugene R Schwartz Springfield

MINNESOTA Minneapolis Jan 15-17 Sec Dr E J Engberg 350 St Peter St St Paul

NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II The examinations will be held in medical centers where there are five or more candidates, Feb 13-15 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia

NEBRASKA Basic Science Omaha Jan 8-9 Dir Bureau of Examining Boards Mrs Clark Perkins State House Lincoln

NEVADA Reciprocity Feb 4 Sec Dr Edward E Hamer Carson City

NEW YORK Albany Buffalo New York and Syracuse Jan 28-31 Chief Professional Examinations Bureau Mr Herbert J Hamilton Room 315 Education Bldg Albany

PENNSYLVANIA Philadelphia Jan 8-12 Dir Bureau of Professional Licensing Mr W M Denison, 400 Education Bldg Harrisburg

SOUTH DAKOTA Pierre Jan 15-16 Dir Division of Medical Licensure Dr Park B Jenkins Pierre

VERMONT BURLINGTON Feb 13-15 Sec Board of Medical Registration Dr W Scott Noy Underhill

WASHINGTON Basic Science Seattle Jan 10-11 Medical Seattle Jan 14-16 Dir Department of Licenses Mr Harry C Huse Olympia

WISCONSIN Madison Jan 8-10 Sec Dr Robert E. Flynn, 401 Main St, LaCrosse

WYOMING Cheyenne Feb 4 Sec Dr W H Hassel Capitol Bldg Cheyenne

Pennsylvania July Examination

Mr W M Denison, director, Bureau of Professional licensing, reports the written examination held by the State Board of Medical Education and Licensure in Philadelphia, July 10-14, 1934. Four hundred and thirty-four candidates were examined, 425 of whom passed and 9 failed. The following schools were represented:

School	PASSED	Year Grad	Number Passed
College of Medical Evangelists		(1934 2)	2
George Washington Univ School of Med	(1932 2)	(1933 6)	8
Georgetown University School of Medicine	(1932)	(1933 12)	13
Howard University College of Medicine	(1897)	(1933 3)	4
Loyola University School of Medicine		(1934 2)	2
Northwestern University Medical School		(1931)	1
Rush Medical College		(1934 3)	3
State University of Iowa College of Medicine		(1932)	1
University of Louisville School of Medicine		(1933)	1
Johns Hopkins University School of Medicine	(1932)	(1933)	2
University of Maryland School of Medicine and College of Physicians and Surgeons	(1933 4)	(1933 1)	4
Boston University School of Medicine		(1931)	1
Harvard University Medical School	(1932 2)	(1933 3)	5
University of Michigan Medical School	(1931)	(1932), (1933 5)	7
Wayne University College of Medicine		(1934 2)	2
St Louis University School of Medicine		(1933 6)	6
Washington University School of Medicine		(1931)	1
University of Nebraska College of Medicine		(1932, 2)	2
Columbia Univ College of Phys and Surgs	(1932)	(1933)	2
Cornell University Medical College		(1932)	1
Long Island College of Medicine		(1933)	1
New York University University and Bellevue Hospital Medical College	(1932)	(1933)	2
University of Buffalo School of Medicine	(1928)	(1933 3)	4
University of Rochester School of Medicine		(1933)	1
Western Reserve University School of Medicine		(1933 3)	3
Hahnemann Med College and Hosp of Philadelphia	(1933 48)		48

Jefferson Medical College of Philadelphia (1930), (1931 2)	87
(1932 23) (1933, 61)	
Temple University School of Medicine (1932 8), (1933 66)	74
University of Pennsylvania School of Medicine (1931, 3)	
(1932 20) (1933 41)	64
University of Pittsburgh School of Medicine (1930), (1933 57)	58
Woman's Medical College of Penna (1931) (1932), (1933 5)	7
McHarry Medical College (1933)	1
Vanderbilt University School of Medicine (1931)	1
University of Texas School of Medicine (1932 2)	2
Medical College of Virginia (1933)	1
Queen's University Faculty of Medicine (1926)	1
McGill University Faculty of Medicine (1933)	1
Université de Montpellier Faculté de Médecine (1932)	1
School	Year Grad
Georgetown University School of Medicine (1933)	1
Howard University College of Medicine (1933)	1
Hahnemann Med College and Hosp of Philadelphia (1933 2)	2
Jefferson Medical College of Philadelphia (1933 2)	2
Temple University School of Medicine (1933)	1
University of Pittsburgh School of Medicine (1933)	1
University of Toronto Faculty of Medicine (1932)	1
School	Year Grad
Georgetown University School of Medicine (1933)	1
Howard University College of Medicine (1933)	1
Hahnemann Med College and Hosp of Philadelphia (1933 2)	2
Jefferson Medical College of Philadelphia (1933 2)	2
Temple University School of Medicine (1933)	1
University of Pittsburgh School of Medicine (1933)	1
University of Toronto Faculty of Medicine (1932)	1

Twenty-six physicians were licensed by reciprocity and 10 physicians were licensed by endorsement from February 28 to August 31. The following schools were represented

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Colorado School of Medicine (1926)		(1926)	Wyoming
Howard University College of Medicine (1932)		(1932)	Missouri
Loyola University School of Medicine (1933)		(1933)	Illinois
Indiana University School of Medicine (1931)		(1931)	Indiana
Johns Hopkins University School of Medicine (1919)		(1931)	Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons (1928)		(1928)	Maryland
Boston University School of Medicine (1906)		(1906)	R Island
Detroit College of Medicine and Surgery (1931)		(1931)	Michigan
University of Michigan Medical School (1920)		(1920)	Michigan
University of Minnesota Medical School (1926)		(1926)	Minnesota
Washington University School of Medicine (1926) (1932) Missouri		(1923)	Montana
Cornell University Medical College (1921)		(1921)	New York
New York University University and Bellevue Hospital Medical College (1931)		(1931)	New Jersey
University of Buffalo School of Medicine (1931)		(1931)	New York
Western Reserve University School of Medicine (1930)		(1930)	Ohio
Hahnemann Medical College and Hosp of Philadelphia (1933)		(1933)	Delaware
Jefferson Medical College of Philadelphia (1931) Connecticut New Jersey Texas		(1930) N Carolina,	
Temple University School of Medicine (1932) N Carolina		(1932) N Carolina	
University of Texas School of Medicine (1929)		(1929)	Texas
Medical College of Virginia (1933) W Virginia		(1933) W Virginia	
School	LICENSED BY ENDORSEMENT	Year Endorsement of	
Tulane University of Louisiana School of Medicine (1931) N B M Ex		(1931) N B M Ex	
University of Michigan Medical School (1933) 2 N B M Ex		(1933) 2 N B M Ex	
Columbia University College of Physicians and Surgeons (1931) (1933) N B M Ex		(1933) N B M Ex	
Univ of Pennsylvania School of Medicine (1930) (1933) 2 N B M Ex		(1933) 2 N B M Ex	
Woman's Medical College of Pennsylvania (1927) N B M Ex		(1927) N B M Ex	
Medical College of Virginia (1933) N B M Ex		(1933) N B M Ex	

Book Notices

The Cyclopedia of Medicine. George Morris Piersol BS MD Editor. In Chief and Edward L. Bortz AB MD Assistant Editor. Chief Associate Editors W. Wayne Babcock AM MD Conrad Berens MD P. Brooke Bland MD Francis L. Lederer BS MD and A. Graeme Mitchell MD Volume XI PRE RIB Fabrikoid Price \$120 per set of 12 vols and Index. Pp 1167 with illustrations Philadelphia F. A. Davis Company 1934

The Cyclopedia of Medicine. George Morris Piersol BS MD Editor. In Chief and Edward L. Bortz AB MD Assistant Editor. Chief Associate Editors W. Wayne Babcock AM MD Conrad Berens MD P. Brooke Bland MD Francis L. Lederer BS MD and A. Graeme Mitchell MD Volume XI RIC TEL Fabrikoid. Price \$120 per set of 12 volumes and Index. Pp 1111 with illustrations Philadelphia F. A. Davis Company 1934

Previous volumes in this series have been reviewed in THE JOURNAL from time to time. Volume ten is devoted largely to a discussion of pregnancy, parturition and the puerperium, to the prostate, to psychoanalysis and psychiatry, and to radiology, concluding with an important discussion of diseases of the rectum. Between these major headings are sections, of course, devoted to other alphabetical subjects falling in these limitations. The contributors include among the obstetricians such names as those of Adair, Barnes, Bland, Cooke, Norris and Bethel Solomons, on the genito urinary side, Hugh Young, Hunt and Caulk, in psychiatry, Bond, White and Ebaugh in proctology, Bacon, Rosser, Friedenwald and Dudley Smith and in radiology, Pfahler and Kirklin. Such names as these attest the high character of this work.

The eleventh volume is of equal quality. The leading headings include rickets, scarlet fever, scurvy, diseases of the skin, of the spinal cord and of the spleen, and the stomach, then come the sympathetic nervous system and syphilis, with all the other alphabetical headings intervening. The volume is printed with a narrow column in large type but the illustrations are hardly so profuse as they might be in an encyclopedic work of this character. The usefulness of an extensive reference work of this character is, of course, well known.

Manipulative Treatment for the Medical Practitioner. By T. Martin MD M.B. Ch.B. Medical Officer in Charge of the Massage Electrotherapeutic and Light Departments University College Hospital London. Cloth Price \$3.75 Pp 133 with 86 illustrations. New York Longmans Green & Company London Edward Arnold & Company 1934

This is evidently the work of a physician who has tried to see the good in manipulative therapy. He tries to understand the underlying pathologic changes in the bone and joints and their contiguous structures. He has indicated some of the dangers that may befall the manipulative therapist. He has made what appears to be an honest effort to evaluate the benefit of this form of therapy. He calls attention to the fact that, unfortunately, bad results of the bone setters never gain so much prominence as the few occasional cures. People are willing to gamble with their health. They like to decry the orthodox doctor and credit the quack with some supernatural powers of healing. He speaks of the wealthy horse dealer who would not entrust one of his valuable horses to any but the best veterinarian but who would entrust the care of his beautiful daughter to a bone setter concerning whom he knew nothing. He considers treatment by manipulation under four headings: (1) reduction of dislocation, (2) forcible breaking of adhesions, (3) soft tissue manipulation and (4) manipulation of joints in which no actual dislocation has occurred but there is a slight defect the nature of which he is unable to describe, or understand. He emphasizes the point that joint manipulation should be undertaken only by specially skilled persons. The chief object of manipulation is to produce tissue relaxation. In the treatment of the soft tissues, one must recognize that two conditions exist: fibrositis and local spasm of muscle, and the success of the treatment can be objectively gaged only by the complete relaxation of the tissues. In the discussion of the choice of cases for manipulative treatment he presumes that all grave organic diseases have been ruled out. The cases in which this treatment is indicated are chiefly those presenting joint or soft tissue involvement, i.e., injuries that call for readjustment of bones or joints. Adhesions must be prevented or, if already present, should be broken down gradually or forcibly under anesthesia. He includes also cases of fibrositis and certain cases of rheumatic joints. Forcible manipulation should not be undertaken while a joint is acutely inflamed, nor is it easy to determine how soon after that the joint may be manipulated. He calls attention to the fact that in arthritis, although there are changes in the joint, the pain is chiefly in the tissues surrounding the joint. The author believes that manipulation should be regarded as a branch of physical medicine.

Jahresringe. Innenansicht eines Menschenlebens. Von Alfred E. Hoche. Paper Price 4.50 marks. Pp 298 with 1 illustration. Munich J. F. Lehmanns Verlag 1934

This is the autobiography of a German professor of psychiatry who has seen much of normal and abnormal life in private practice and before the courts. He has accumulated a fund of experience with which he illustrates and illumines his narrative. As a life history it can be classed among the honest autobiographies, not too much space is given to personal matters and there are interwoven with observations on motives of conduct, a profound and frank discussion of the nature of personality, the life of the spirit, the relations of youth to age, the meaning of life, religion, the balance of happiness and the significance of death. To the oft repeated question 'Which is the most valuable, a biography or an autobiography?' this book adds its support to the claims of the latter. Such a study of the problems of life combined with, and growing out of, the portrayal of the life of an individual could hardly be given in an outside view of a human life. An honest self portrayal of an eventful life when made by a trained and skilful writer is a valuable contribution to literature.

Hygiene for Freshmen By Alfred Worcester A M M D Sc D Henry K Oliver Professor of Hygiene Harvard University Cloth Price \$1.50 Pp 151 Springfield Ill & Baltimore Charles C Thomas 1934

This book presents a series of twelve lectures given by the author as a brief required course in hygiene for Harvard freshmen. The purpose, as stated in the preface, is "to save the student from the possible distraction of note-taking." The subjects of individual lectures range from biology and embryology to glands, mental hygiene, reproduction and immunity. Clearly the author is attempting to provide his students with a background of embryology, anatomy, physiology and immunity. Although highly desirable, this is a more ambitious program than most teachers who are trying to interest college freshmen in the subject of health would wish to undertake in a series of twelve lectures. It is disappointing to find in a book such careless and inaccurate statements as

The comfort of normal salt solutions applied to fresh wounds or to the eyes

The white blood corpuscles have nuclei some of them several. They are formed in the lymphatic glands.

Normally within a few minutes after violent exercise both the heart in action and size returns to normal. [Gordon shows that the heart tends to be diminished in size immediately after strenuous exercise (*Ann J Roentgenol* 14:424 [Nov] 1925 abstr *THE JOURNAL*, Jan 23 1926, p 304)]

It is a question whether they [vitamins] have yet been isolated and their exact composition revealed by the biochemist

The discovery of the insulin cure of diabetes

The pneumococcus is practically always to be found in the mouth

In the World War when vaccination [against typhoid] was compulsory there were very few cases and no deaths

In the chapters on mental hygiene and reproduction, the author gives adequate information for a book of this sort. In his emphasis on masturbation and homosexuality he is led into statements that would be difficult to verify and might be disturbing to the average undergraduate. In general, the lectures contain much interesting and authoritative material, but they go into unnecessary detail on some points, such as the anatomic description of the mammary and sweat glands and the definition of zygote, morula, gastrula, ectoderm, mesoderm and endoderm, while other subjects of more general interest are treated superficially or entirely neglected.

The Etiology and Treatment of Spasmodic Bronchial Asthma. By H Gordon Oliver M.D. With a foreword by W Langdon Brown M.D. F.R.C.P. Regius Professor of Physic Cambridge University Boards Price 3s 6d Pp 48 with 10 charts London H K Lewis & Company Ltd 1934.

There is still too much speculation about the etiology of bronchial asthma. The treatment likewise is complicated and in many cases unsatisfactory. There can be no doubt that asthma is an allergic disease and that pollens and foods play a most important part. The author in a brief monograph reports fifty cases observed in ten years. In all of these the fungus *Monilia* was found in the sputum and the patients were all benefited by iodides and a vaccine. He courageously concludes that all cases of asthma are due to a mycotic infection of the *Monilia* organism. The number of cases, however, is too small and they are too localized to justify such definite conclusions.

Mortality Among Patients with Mental Disease By Benjamin Malzberg Ph.D. New York State Department of Mental Hygiene Albany Cloth Price \$1.50 Pp 234 with illustrations Utica N Y State Hospitals Press 1934

It has long been known that death rates among patients with mental disease are greatly in excess of those of the entire population. Despite all that modern medicine can offer, the death rate of the insane remains relatively high, as evidenced from statistics concerning rates of mortality and causes of death among patients under treatment in the New York civil state hospitals during the three fiscal years July 1, 1928-June 30, 1931. Even when due allowance is made for age differences in the two populations, the death rate of the patients remains in excess in the ratio of almost 5 to 1. The death rates are highest in the organic psychoses and lowest in the functional group. There are marked differences in the relative distribution of the causes of death. In the general population of up-state New York the leading causes of death are, in order, diseases of the heart, cancer, nephritis, cerebral hemorrhage and pneumonia. Among the mental patients the causes of death in order

of frequency were diseases of the heart, pneumonia, dementia paralytica, tuberculosis, diseases of the arteries, nephritis, cerebral hemorrhage and cancer. These and other interesting data are thoroughly discussed in the comprehensive booklet. Attention is also called to various factors responsible not only for the real but also for a spurious excess of the mortality of patients with mental disease over the mortality of the general population. The book will be of great interest to those interested in vital statistics.

Industrial Maladies By Sir Thomas Legge CBE M.D. DPH Filled by S A Henry M.A. M.D. DPH F.R.C.S. Medical Inspector of Factories Cloth Price \$4.25 Pp 234 with 13 illustrations New York & London Oxford University Press, 1934

This volume is in a way a memorial to its author, who died just before its publication. He was eminent as a British authority in the field of industrial disease control. In Great Britain he was recognized as among the leaders in research against industrial disease. He gave the Lowell lectures at Boston and the Cutter lecture in preventive medicine at Harvard in 1929. He lectured also on the history of medicine and on related subjects. The book deals more fully with those phases of industrial medicine which concern its author, although lead poisoning and health welfare conditions in factories receive a great deal of space. A bibliography of the writings of Dr Legge shows a vast amount of work carried on in the years 1893 to 1932.

Benjamin Rush Physician and Citizen 1746-1813 By Nathan G Goodman Cloth Price \$4 Pp 421 with 8 illustrations Philadelphia University of Pennsylvania Press 1934

The name of Benjamin Rush has been commemorated in the United States in many institutions and in many notable works, yet there has thus far been available no full biography and no worthwhile appreciation. Physicians realize that Rush contributed notably to the beginnings of American psychiatry, that he was active in the development of the College of Physicians, that he aided in the development of many movements for reform, and that he was active as a citizen and a political leader. Only recently his writings on focal infection have been reprinted in various places. In this conventional biography the author traces the career of Benjamin Rush chronologically from his early years and medical apprenticeship to studies at Edinburgh, the building of his practice and his growth as an educator and a man of affairs. The volume is made especially interesting by the quotation of personal correspondence and of journalistic and other writings of the times. There is, of course, a most extensive study of the relationship of Rush to the control of the great epidemic of yellow fever. The volume is a fine contribution to the list of notable American medical biographies.

Wege zur Verhütung der Entstehung und Ausbreitung der Krebskrankheit. Von Prof. Dr. Bernh. Fischer-Wasels, Direktor des Senckenbergischen Pathologischen Instituts der Universität Frankfurt a. M. Paper Price 2.70 marks Pp 75 Berlin Julius Springer 1934

The author prefaces his contribution with the statement that his views are theoretical and have not been demonstrated clinically so far as human cancer is concerned. The discussion begins with a good review of the causes of cancer, including general factors, constitutional predisposition and external irritants. The work of Reding and Slosse dealing with alkalosis in cancer is discussed. General intoxication of the organism resulting from tar and arsenic and indole is taken up in detail. In discussing metabolic changes associated with cancer, the author states that it is necessary to avoid fermentation and that one must on the one hand increase the respiration of the organism and on the other hand depress fermentation and production of lactic acid. By eliminating alkalosis he proposes to strengthen the resistance of the body against cancer. Since insulin generally depresses fermentation, the use of this agent is suggested with the belief that, by building glycogen from sugar, tumor growth will be depressed. Based on these theories, a detailed program of prophylaxis and treatment of cancer is suggested. He advises against marriage of individuals with a strong hereditary tendency to cancer. In order to diminish the alkalosis of the body he suggests the inhalation of 5 per cent carbon dioxide but admits that it has not been successful in the treatment of human cancer when a malignant tumor had already become established. On account of these discouraging

results he advises against it but suggests it as a prophylactic measure in individuals who have reached the cancer age. The administration of splenic extract is advised in order to stimulate the reticulo-endothelial system. A detailed dietary regimen is outlined, based on the conception of avoiding alkalosis. It is evident that the author has a genuine and serious interest in the cancer problem and is motivated by a keen desire to alleviate the suffering occasioned by this disease. In this commendable effort, however, he has based a highly impractical therapeutic formula on evidence much of which does not withstand critical analysis. As a review of the theories of causation, this publication has a distinct value, but as an aid in the practical treatment of the disease much time must elapse for laboratory study and clinical investigation to substantiate or refute the theories on which the conclusions are based.

Mothers' Guide When Sickness Comes. By Roger H. Dennett, B.S., M.D. D.Sc. and Edward T. Wilkes, B.S., M.D. Cloth. Price \$2.50. Pp. 400. Garden City, N.Y.: Doubleday, Doran & Company, Inc. 1934.

From time to time in recent years, books have been published that are intended to aid the mother in carrying out the doctor's orders and to help her in the recognition of sickness in the child, so that the services of a physician may be secured as soon as possible. These books are far different from the old-fashioned doctor's book, which encouraged self-treatment and produced much fear of disease. In this book there is an attempt to answer for the mother many questions concerning the child's diet, constipation and bad habits. It is simply written and well arranged. Such subjects as the sickroom, the function of the doctor, good and bad habits, birthmarks and teething are discussed. In addition, diseases and ailments—contagious and non-contagious—are described. The facts given are correct and are presented in a logical, common sense manner. It is to be hoped that the book will fulfil the purpose for which it is written and not contribute to the encouragement of self-medication.

Industrial Toxicology. By Alice Hamilton, M.D. Harper's Medical Monographs. Fabrikoid. Price \$3. Pp. 3+2. New York & London: Harper & Brothers. 1934.

This volume is one of a series of monographs. It concerns particularly those phases of industrial disease in which its author has been especially interested. However, for purposes of completeness there is also a general consideration of industrial poisoning, after which many common poisons are discussed under various headings and classifications. The book is well written and is supplemented by an adequate bibliography and an index. At this time when the diseases of industry are attracting so much attention, it will be found exceedingly useful by many physicians.

What About Alcohol? An Illustrated Outline of Scientific Facts About Alcohol and Alcohol Drinking. By Emil Bogen, M.D. and Lohmann W. S. Hisey. Preface by Haven Emerson, M.D. Cloth. Price \$1.50. Pp. 112. With illustrations. Los Angeles: Angelus Press [for the Scientific Education Association]. 1934.

This volume proposes to provide a simple understanding of the relationship of alcohol to human physiology and health. It is not a volume of propaganda, although the facts about alcohol are in themselves propaganda against its use in many instances. The book is simply illustrated with line drawings that are highly instructive. The book is supplemented with a bibliography and an adequate index.

Out of the Test Tube. By Harry N. Holmes, Ph.D. Cloth. Price \$3. Pp. 373. With 83 illustrations. New York: Ray Long & Richard R. Smith. 1934.

The advances of chemistry have made life much happier and interesting for all of us. The new book by Holmes may take its place beside the already known works of Slosson as a contribution to the popularization of chemical knowledge. The chapters are numerous and short but they cover a great range of topics in the chemical field. The titles of the separate chapters are such attractive statements as "The Importance of Nothing at All," "The Lightest Substance Known," "Brimstone or Cornerstone," "Sugar and Sweetness, and Fats to the Front." While it is not extensively illustrated, a number of line drawings add to the interest afforded by this most interesting book.

Medicolegal

Validity of Regulation Excluding Unvaccinated Children from School.—The board of education of the Fort Worth (Texas) Independent School District passed a regulation excluding unvaccinated children from school. The plaintiffs sought by injunction to compel the board to permit their children to attend school without being vaccinated. The trial court dismissed the action and the plaintiffs appealed to the court of civil appeals of Texas, Fort Worth.

The plaintiffs contended that since the Texas constitution requires the subject of a bill to be expressed in its title, the title of the act creating the Fort Worth Independent School District (Special Acts of 39th Legislature, c. 230) was not sufficiently indicative to permit the insertion in the body of the act of provisions purporting to permit the board to require the vaccination of pupils. The title of this act recites, among other things, that the act gives to the board power "to make rules and regulations for the government and conduct of said schools, and for the protection of those attending said schools." We think the title, said the court of civil appeals, is sufficient to advise the legislature as well as any other person reading it that the body of the act might authorize, as in fact section 36 does authorize, the board to "require the vaccination of pupils and teachers whenever it may become reasonably necessary or proper."

The plaintiff next contended that in Texas vaccination can be required by a board of education only when there is an emergency or threatened epidemic of smallpox and that there was no threatened epidemic at the time the regulation was passed. It is not a question of emergency, said the court, but of whether the action of the board was arbitrary and without facts on which minds could have decided rationally that such rules were reasonably necessary. The court takes judicial notice of the fact that vaccination against smallpox is an efficient and accepted act tending toward immunization. This and other similar discoveries of preventive medicine have inspired those who guard the public health to strive to keep the public from getting sick and the law must lend its hand and keep pace with scientific advance. Even though there was no immediate epidemic in the locality, the Supreme Court thought that the action of the board was not arbitrary and unreasonable, in view of the fact that smallpox may spread from distant points, and the further fact that the school district involved in this case had a large Negro and Mexican population, "which races are generally known to be more difficult to keep free of smallpox for various reasons."

The order of the trial court dismissing the bill was affirmed.—*Booth v. Board of Education of Fort Worth Independent School District (Texas)* 70 S. W. (2d) 350.

Criminal Abortion. Civil Liability of Physician, After-Care Requirement Dependent on Contract.—Where a husband and wife consent to the performance of a criminal abortion on the wife, said the Supreme Court of Idaho, they cannot thereafter maintain a civil action against the operating physician to recover damages for injuries allegedly due to the physician's negligence. Consent to the illegal act constitutes a bar to the recovery of damages. If a physician who performs a criminal abortion contracts to render necessary after-care in his office only, failure on his part to attend the patient at her residence does not constitute negligence.—*Nash v. Meyer (Idaho)*, 31 P. (2d) 273.

Society Proceedings

COMING MEETINGS

American Academy of Orthopedic Surgeons. New York. Jan. 14-16. Dr. Philip Lewin, 104 South Michigan Boulevard, Chicago, Secretary.
American Orthopsychiatric Association. New York. Feb. 21-23. Miss Mary A. Clarke, 50 West 50th Street, New York, Secretary.
Annual Congress on Medical Education and Licensure. Chicago. Feb. 18-19. Dr. William D. Cutter, 535 North Dearborn Street, Chicago, Secretary.
Pacific Coast Surgical Association. Santa Barbara, Calif. Feb. 21-23. Dr. Edgar L. Gilcreest, 384 Post Street, San Francisco, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to fellows of the Association and to individual subscribers to *THE JOURNAL* in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk () are abstracted below.

American Journal of Diseases of Children, Chicago

18:949-1182 (Nov.) 1934

- Osteopetrosis (Marble Bones) in an Infant. Review of Literature and Report of Case. D. J. McCune and C. Bradley. New York—p. 949.
Subacute Peribroncholar Pneumonia. H. S. Reichle and A. R. Moritz. Cleveland—p. 1001.
Carbohydrate Metabolism. II. Role of the Thyroid Gland. J. A. Johnston. Detroit—p. 1015.
Body Build in Infants. IV. Influence of Retarded Growth. II. Bakwin. Ruth Morris Bakwin and Lillian Milgram. New York—p. 1030.
Basal Metabolism of American Born Chinese Girls and of American Girls of Same Age. C. C. Wang. Cincinnati—p. 1041.
*Preliminary Report of the Fels Fund Study of Fetal Activity. L. W. Sontag and R. F. Wallace. Yellow Springs, Ohio—p. 1050.
Factors Influencing Utilization of Calcium and Phosphorus of Cow's Milk. J. H. Hess, H. G. Poncher and Helen Woodward. Chicago—p. 1058.

Osteopetrosis in an Infant—McCune and Bradley review the literature of osteopetrosis. The cases that have been diagnosed and reported up to 1933 are tabulated. They present a case report with metabolic and hematologic data. There is no evidence at present to suggest that osteopetrosis is due to endocrine disturbance, environmental factors, dietary deficiency or chemical poisoning. Although it is possible that there are inconstant associated changes in the calcium and phosphorus metabolism, these alterations, if present, are probably secondary manifestations of a primary disturbance in the formation of bone. The Albers-Schonberg syndrome is a true developmental disease that consists in faulty differentiation of the primitive common forerunner of osteogenic and hematogenic tissue. The ultimate cause of the abnormality is unknown, but it seems to be a property of the parental germ plasma.

Study of Fetal Activity—Sontag and Wallace call attention to the desirability of a more extensive interest in the behavior of the human fetus. A description of the work of the Fels Fund on fetal activity is presented and the following points are emphasized: (1) the relationship of fetal activity to such factors as variations in maternal emotion, maternal ingestion of food, maternal and fetal position and maternal fatigue, (2) the response of the fetus or lack of response to certain stimuli and the ensuing refractory period, (3) the possibility of conditioning the human fetus and (4) the relationship of fetal cardiac rate and prenatal respiratory movements to certain physical and emotional factors in the mother.

American Journal of Ophthalmology, St. Louis

17:995-1098 (Nov.) 1934

- Functional Study of Nerve Elements of Optic Pathway by Means of Recorded Action Currents. G. H. Bishop and S. H. Bartley. St. Louis—p. 995.
*Notes on Allergy. Theory of Sympathetic Ophthalmia. J. S. Friedenwald. Baltimore—p. 1008.
Etiology of Inclusion Blepharitis. P. Thygeson. Iowa City—p. 1019.
Studies on Infectivity of Trachoma. I. Transfer of Conjunctival Infection to Monkeys by Means of Trachomatous Tissues. L. A. Julianelle and R. W. Harrison. St. Louis—p. 1035.
Significance of the Reptilian Spectacle. G. L. Walls. Iowa City—p. 1045.
Influence of Dietary Deficiency on Transmissibility of Trachoma to Monkeys. R. A. Hettler and W. M. James. St. Louis—p. 1048.
Nonpigmented Nevus of Lacrimal Caruncle. E. A. Shumway. Philadelphia—p. 1055.

Allergy Theory of Sympathetic Ophthalmia—Friedenwald investigated whether the histologic observations in sympathetic ophthalmia were compatible with the theory of allergy. The relation of melanin granules to the specific histologic

features of the inflammation in the uveal tracts, retina and skin revealed that allergy to uveal pigment is an adequate explanation of these characteristics. However, allergy to uveal pigment may be present without sympathetic ophthalmia. If the theory of allergy is correct, some additional factor other than allergy is therefore necessary to initiate the disease. A study of the Dalen nodules sometimes found in sympathetic ophthalmia suggests that the additional factor may be a proliferation of the melanophores. The results of some preliminary experiments based on this hypothesis suggest that the additional factor required for the initiation of the inflammatory reaction is a proliferation of the intra ocular melanophores. Based on this hypothesis the author has treated three patients having sympathetic ophthalmia with ultraviolet radiation, exposing their bodies to an erythema dose of the radiation three times a week with careful protection of their eyes and faces. The indicated local treatments and salicylates were, of course, given at the same time. Of the three patients, two were children. Both made complete recoveries. The third patient was an old man with bilateral cataracts and senile dementia, who developed a typical bilateral uveitis following cataract extraction on one eye. He was given the foregoing treatment, the inflammatory reaction became quiet, but both pupils were bound down by dense adhesions, so that his vision was reduced to light projection. Further operations could not be performed because of his mental condition.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

32:437-574 (Oct.) 1934

- Encephalography in Children. A. E. Walker. Chicago—p. 437.
*Calcium Stream as Concerned with Healing of Fractures. J. J. Moore and A. A. de Lorimier. Washington, D. C.—p. 457.
Relation of Shape of Heart to Shape of Chest with Especial Reference to Anteroposterior Dimension and Morphology of Various Normal Heart Types. Contribution to Question of Accuracy of Ordinary Roentgenologic Methods of Heart Management. H. Roessler. Philadelphia—p. 464.
Roentgenologic Evidence of Healing of Jejunal Ulcer. J. Buckstein. New York—p. 487.
Classification of Tumors from Standpoint of Radiosensitivity. A. U. Desjardins. Rochester, Minn.—p. 493.
*Roentgen Therapy of Epitheliomas of Pharynx and Larynx. M. Lenz, C. G. Coakley and A. P. Stout. New York—p. 500.
Malignant Diseases of Thyroid Gland. U. V. Portmann. Cleveland—p. 508.
Primary New Growths Involving the Hand. B. F. Schreiner and W. H. Wehr. Buffalo—p. 516.
*Operation of Thick Walled Roentgen Ray Tubes on Rectified Potentials. L. S. Taylor and C. F. Stoneburner. Washington, D. C.—p. 524.
Distribution of Roentgen Rays Within Human Body. Edith H. Quimby, M. M. Copeland and R. C. Woods. New York—p. 534.
Effects of Crowding on Head Frequency and Length of Life of Planaria Dorocephala That Have Been Exposed to Various Doses of Roentgen Rays. F. G. Meserve and Mary J. Kenney. Evanston, Ill.—p. 552.
Perforation of Bone by a Splinter of Wood. Case Report. C. A. Ryan. Vancouver, B. C.—p. 555.

Calcium Stream and Healing of Fractures—The observations of Moore and de Lorimier emphasize several aspects as to the assimilation and utilization of the osseous inorganic elements. When the diet and additional administrations were such as to allow an acid medium in the intestine (by lactose fermentation) and an alkaline tissue balance there resulted an increase in the urinary excretion of calcium and inorganic phosphorus, and since there was no evidence of osseous depletion (instead a furthering of ossification of callus) there was evidently an increased assimilation of these elements through the intestinal wall. Though the excretions were greater when ammonium chloride was administered, it was found that the blood values for the calcium and inorganic phosphorus were decreased, moreover the ossification of callus was delayed and there was a generalized deossification of the skeleton. The assimilated calcium, in this second situation, then was not utilized—the calcium stream was directed away from the skeleton. The fact that some ossification did occur is not inconsistent with this general idea. It is reasonable to believe that this is due to a relative alkaline balance in the callus or to the added stimuli resulting from reaction to the injury. When sodium bicarbonate was added to the diet, there is evidence that assimilation was hampered, and though the blood calcium was decreased there appeared at least favorable utilization of the osseous elements in the skeleton—that is, in this third situation the "calcium stream," though relatively reduced was directed toward bone. This emphasizes

the fact that for assimilation of calcium and phosphorus the chyme in the small intestine should be acid, but for the utilization of these elements the tissue balance should be alkaline.

Roentgen Therapy of Epitheliomas of Pharynx and Larynx—During 1931 and 1932, Lenz and his associates treated thirty-one verified epitheliomas of the pharynx and larynx by a modification of the Coutard method of roentgen therapy. Fourteen patients have remained clinically well from nine to twenty-four months following cessation of the treatment, in seventeen cases the disease was not arrested. Twenty-four of these cases were considered proper for evaluation of the method of treatment and of the criteria used for prognosticating its success or failure. Of twelve cases classified by microscopic criteria as radiosensitive, nine were arrested by treatment, while none of the ten cases classed as radioresistant were arrested. Two cases in which the criteria were conflicting have been arrested by treatment. The authors believe that their study confirms the experience of others that among the factors militating against successful treatment are (1) extensive infiltrative growth, especially if it is associated with deep infection, and (2) tumor invasion or local nutritional changes of the laryngeal cartilages, because such processes reduce the radioresistance of cartilage and favor chondronecrosis. Tracheotomy did not interfere with the treatment in their cases, whether done before or after the course of roentgen therapy. The results reported are early and may change with time. However, the authors believe that they are sufficiently encouraging to warrant continuation of this method of roentgen irradiation in the treatment of epitheliomas of the pharynx and larynx.

Operation of Thick-Walled X-Ray Tubes on Rectified Potentials—Taylor and Stoneburner find that thick-walled glass, high voltage therapy x-ray tubes do not reach a steady state within the first few minutes of operation on some types of generator. All thin-walled tubes tried thus far quickly reach a steady operation state. Depending on the mode of control of the generator, the roentgen emission of a thick tube may increase or decrease by from 10 to 20 per cent on mechanical or valve tube rectifiers and not reach a steady state until some ten minutes after starting. The change in roentgen emission between the second and tenth minute of operation appears to depend on the electrical regulation of the transformer. Partial cooling of the walls of the tube with strong air blasts delays the attainment of the steady state but does not affect the magnitude of the net change in emission. For some generators the output remains steady if the effective tube current and voltage are maintained constant. A qualitative explanation of the effect is based on the blocking action of the high negative charge on the glass walls when the tube is cold. As the tube warms up this charge is dissipated through the increased electrical conductivity of the glass. The influence of the effect on dosage measurements is discussed. The effect is absent when the tube is operated on nearly constant potential.

Annals of Internal Medicine, Lancaster, Pa

8 521 660 (Nov.) 1934

Clinicopathologic Observations on Infantile Paralysis. Report of One Hundred and Twenty Five Acute Cases with Especial Reference to Therapeutic Use of Convalescent and Adult Blood Transfusions. Possible Relation of Blood Group to Severity of Disease. D. M. Cowie, J. P. Parsons and K. Lowenberg. Ann Arbor Mich.—p. 521.

Virus Diseases of Animals Transmissible to Man. K. F. Meyer. San Francisco—p. 552.

Undulant Fever. J. L. Miller. Chicago—p. 570.

Gonococcal Arthritis. Clinical Study of Sixty Nine Cases. C. S. Keefe and W. K. Myers. Boston—p. 581.

*New Treatment for Various Kinds of Coma. R. Bauer. Vienna, Austria—p. 595.

*Metabolic Stimulants with Particular Reference to Sodium Dinitrophenol. E. L. Bortz. Philadelphia—p. 599.

*Blood Cholesterol and Creatine Excretion in Urine as Aids to Diagnosis and Treatment of Hypothyroidism. J. H. Hess. Chicago—p. 607.

Septicemia. J. A. Kolmer. Philadelphia—p. 612.

The United States Pharmacopoeia XI. Its Relation to Internal Medicine and Scientific Nature of Its Revision. V. E. Simpson. Louisville Ky.—p. 632.

Treatment of Coma—Bauer recommends the intramuscular injection of liver extract in coma following hyperemesis eclampsia, operative procedures, extensive burns, myocarditis

and persistent vomiting, that is, coma due to edema of the liver caused apparently by a breakdown of protein. During the process of increased breakdown of proteins, the liver is unable to get rid of the numerous products of the broken down proteins. Whenever the pyrimidin nucleus cannot be broken down any further, "autonarcosis" of the organism is likely to occur. The sudden dramatic improvement due to injection of liver extract, as seen by Hammerschlag and the author, may well be explained by the assumption that the organism apparently is liberated from the broken down protein products, which have a narcotizing effect, as the result of the increased fermentative liver action. The rapid beneficial effect of injection of liver extract in nonnephritic uremia makes a fermentative, hormone action all the more likely, as most of the patients are not anemic. It may be considered possible that the substances in liver extract which counteract the tendency to coma are not formed in the liver but only stored in it, like the "antipernicious" principle which is formed in the stomach but found in the tissue of the liver.

Metabolic Stimulants and Sodium Dinitrophenol—Bortz states that sodium dinitrophenol 2-4 is capable of causing a notable reduction in weight. If used without regard to a planned diet, that is, a reduction diet of from 700 to 1,000 calories, loss of weight will not be striking, although it will still take place. Used with caution, the drug should prove to be a valuable adjunct in the treatment of persons who find it difficult or impossible to lose weight by the usual established method. Dinitrophenol acts most satisfactorily in patients with the exogenous type of obesity. Those having pituitary or gonadal glandular deficiency often tolerate the drug badly or not at all. In two patients having mild myxedema, a heightening of thyroid activity approaching the thyrotoxic state was observed after three weeks of treatment, in this event, immediate cessation of dinitrophenol therapy is imperative. The drug is not a substitute for thyroid extract. It is exceedingly unfortunate for the public that no law now exists to prevent the indiscriminate dispensing of powerful drugs such as the dinitro compounds. The therapeutic dose of 300 mg. daily administered in three doses of 100 mg. each is but one tenth to one third of that dispensed freely over drug counters today. The author has knowledge of persons who have taken from fifteen to thirty times this quantity and were not under the care of a physician. He urges that sodium dinitrophenol and allied chemical compounds be included in the list of dangerous drugs, the control of the use of which should be governed by the federal Food and Drugs Act. That sodium dinitrophenol, dinitrocresol and other metabolic accelerants are of real value for the reduction of body weight in certain selected patients who find it impossible to reduce by limitation of diet is no doubt true. The author, however, does not unreservedly recommend their use and desires to stress that, when the medical profession arouses itself to its obligation of service to persons requiring or wanting to reduce their body weight and outlines a sensible regimen to this end, the diet sanatoriums and quacks and charlatans will have a diminishing financial return and the general health of the community will be benefited greatly.

Blood Cholesterol and Creatine Excretion in Urine—Hess discusses the value of estimating the blood cholesterol and excretion of creatine in the diagnosis and treatment of thyroid deficient children. The blood cholesterol is high in children with untreated hypothyroidism and is reduced by thyroid medication. The level of blood cholesterol may be used as a guide to the efficacy of thyroid therapy. The metabolism of creatine appears to be influenced definitely by thyroid activity during childhood. During the period from infancy until about puberty, creatinuria is physiologic. Hypofunction of the thyroid causes a decrease or complete cessation of creatine excretion which can be restored to normal values after the administration of thyroid extract. This is accompanied by a corresponding change in the clinical condition of the patient. The creatinuria is a delicate index of the effect of ingested thyroid since it occurs before any definite change is noted in the basal metabolism and blood cholesterol. From a comparison with other diagnostic criteria of hypothyroidism in children, the change in creatine metabolism appears to be an important observation that may be useful in diagnosis and in the control of therapy.

Archives of Internal Medicine, Chicago

54:1 659-810 (Nov.) 1934

- Erythema Arthriticum Epidemicum (Haverhill Fever) L. H. Place Boston and L. F. Sutton Richmond Va.—p. 659
- *Effect of Theobromine on Peripheral Vascular Disease Clinical Observations G. W. Scupham Chicago—p. 685
- *Changes in Central Nervous System Resulting from Convulsions Due to Hyperinsulinism D. M. Grayzel New Haven Conn.—p. 694
- Hepatitis and Cholecystitis in Course of Brucella Infection Report of Case S. R. Mettler and W. J. Kerr San Francisco—p. 702
- Relation of Portals of Entry to Subacute Bacterial Endocarditis H. Weiss New York—p. 710
- Experimental Renal Insufficiency Produced by Partial Nephrectomy III Diets Containing Whole Dried Liver Liver Residue and Liver Extract A. Chanutin University Va.—p. 720
- Therapeutic Effect of Total Ablation of Normal Thyroid on Congestive Heart Failure and Angina Pectoris VIII Relationship Between Serum Cholesterol Values Basal Metabolic Rate and Clinical Aspects of Hypothyroidism D. R. Gilligan M. C. Volk D. Davis and H. L. Blumgart Boston—p. 746
- Rapid Quantitative Method for Examining Urine in Renal Disorders H. Gibbons 3d San Francisco—p. 758
- Nitrogen and Sulphur Metabolism in Bright's Disease V Metabolic Study of Patient with Edema of Unknown Origin C. P. Grabfield Margaret Driscoll and Mildred G. Cray Boston—p. 764
- Arterial Elasticity in Man in Relation to Age as Evaluated by Pulse Wave Velocity Method P. Hallock, Minneapolis—p. 770
- Latent Acute Rheumatic Carditis as Determined at Autopsy Its Occurrence F. Hawking New York—p. 799
- Effects of Vaccines and Bacterial and Parasitic Infections on Eosinophilia in Trichinosis Animals W. W. Spink Boston—p. 805
- Oral and Duodenal Administration of Single Large Doses of Pure Thyroxine Comparison of Calorigenic Effects with Those of Mono sodium Thyroxine and Thyroxine in Alkaline Solution W. O. Thompson Phoebe K. Thompson S. G. Taylor 3d and Lois F. A. Dickie Chicago—p. 818

Epidemic Arthritic Erythema—Place and Sutton give a complete report of the epidemic (named epidemic arthritic erythema) that occurred in January 1926 in a confined area of Haverhill, Mass. The only previous epidemic of a disease similar to this of which they have found a record occurred in May and June 1925, at Chester, Pa. Although the nature of the epidemic was not determined there was a striking similarity of onset, symptoms and course and epidemiologic relation to the milk supply of the two outbreaks. The disease is characterized by an abrupt onset, often with a chill, a rubellaform to morbilliform eruption, often scanty, chiefly on the extremities, with a tendency toward hemorrhage into the lesions and an inflammation of the joints with marked pain and tenderness not infrequently of prolonged duration. The disease occurred as a markedly localized epidemic and was undoubtedly spread through the raw milk supply. The organism *Haverhillia multiformis*, described only once before at Chester as belonging to the *Mycobacteriaceae* in the order of *Actinomycetales*, is believed to be the cause, having been found in the blood stream in eleven of the seventeen cases in which cultures of the blood were taken and in the fluid of the joint in the two cases in which cultures of the fluid were taken. Agglutinins were present in the blood of the infected persons but absent in the controls. Cutaneous reactions to killed suspensions were present in 83 per cent of the patients tested late in convalescence although absent in the controls. Although crippling may be marked for a time, recovery tends to occur in from one to two months, with a small number of patients having persistent joint symptoms. No fatalities occurred.

Effect of Theobromine on Peripheral Vascular Disease—Scupham found that theobromine and its salts, particularly theobromine sodium acetate, act as peripheral vasodilators. They are useful in the treatment of peripheral arteriosclerosis and early cases of thrombo angitis obliterans in which there is a large element of angiospasm. Their use results in subjective improvement in intermittent claudication, and repair of the loss of the integrity of the tissue has been noted. They are not effective in all cases, but the results obtained with them are sufficiently good to make them a valuable adjunct in the treatment of peripheral vascular diseases. Many patients in whom a good response was expected failed to improve. This has been particularly true in cases of diabetic arteriosclerosis and gangrene. In none of these cases has it been evident that theobromine was responsible for improvement that could not be accounted for by proper control of the diabetes and the complicating infection. The mode and location of the action of these drugs can only be surmised. The fact that they are

without effect in purely functional disorders, as in Raynaud's disease, and are most active in disease of the medium sized and smaller arteries, in which an element of angiospasm may exist, suggests that the effect may be a local one, possibly that of reducing the increased irritability of the musculature of the diseased wall of the vessel. This interpretation is in agreement with the views of Sollmann and Pilcher, who stated that caffeine is a vasodilator acting by peripheral inhibition of vasoconstriction. Coronary arteries are of the same class of vessels.

Convulsions Due to Hyperinsulinism and Cerebral Lesions—Grayzel investigated whether or not repeated convulsions for varying periods of time induced artificially in rabbits by the production of hyperinsulinism, would lead to organic lesions in the brain. Animals that have not had convulsions, or only slight ones on a few occasions, show either minimal or no cerebral changes, regardless of the number of injections of insulin they have received. However, even one convulsion, if prolonged and severe enough, may produce definite lesions in the central nervous system. The more prolonged or the more severe the convulsions, the more extensive are the lesions found, provided the animals are permitted to live long enough for the changes to develop. What the exact mechanism is that produces the cerebral lesions in the rabbits cannot be stated definitely, but it seems to the author that during the convulsions some circulatory disturbance takes place with consequent anoxemia of the brain. During the more severe convulsions, these periods of anoxemia are sufficiently prolonged to cause the cerebral changes.

California and Western Medicine, San Francisco

41 289-360 (Nov.) 1934

- Carcinoma of Larynx Observations on Cases Treated by Protracted (Coutard) Roentgen Therapy L. H. Garland, San Francisco—p. 289
- Bacillary Dysentery W. H. Kellogg Berkeley—p. 296
- Ectopic Pregnancy Its Recognition and Treatment J. M. Slemons, Los Angeles—p. 298
- Chronic Arthritis Its Treatment R. L. Cecil New York—p. 300
- Treatment of Fractures By the Bohler Methods R. Kayser San Diego—p. 302
- *Autodesensitization of Allergic Conditions H. A. Johnston Anaheim—p. 307
- Strabismus and Some Other Ocular Troubles of Children R. O. Connor San Francisco—p. 309
- Urology Place of Personal Values Therein E. W. Beach Sacramento—p. 312
- Nummular Eczema E. D. Chipman San Francisco—p. 316
- Muscle and Tendon Injuries in the Shoulder Region R. Soto-Hall and K. O. Haldeman, San Francisco—p. 318
- Botulism Due to Freshly Fermented Food Five Fatal Cases in Japanese Family F. R. Anderson San Jose—p. 321
- Compulsory Health Insurance VIII F. L. Hoffman Philadelphia—p. 323

Autodesensitization of Allergic Conditions—Johnston found that whole blood, withdrawn from the cubital vein and injected at once deeply into the gluteal muscle promptly relieved several patients suffering from eczema especially the moist variety. One severe case of psoriasis of long standing was cleared up in three months. The patients' complaints of pain and soreness following the deep injections of blood and the occasional difficulty in locating the vein led the author gradually into the use of urine. The urine was rendered sterile, or as sterile as possible, before it was used hypodermically or intramuscularly. It was thought to be necessary that, in order to be of value in desensitization, the allergens must not be destroyed or changed, which would probably be the case if heated. Different antiseptics were added to the urine, in turn. The urine, after thorough filtration was allowed to stand for forty-eight hours after the antiseptic was added then cultures were made, and only sterile solutions were used. Graduated doses were given every three or four days, and not more than 9 cc was injected at any one time. Each solution was kept under refrigeration. 50 cc. was prepared at a time and used continuously until finished, when a fresh specimen was procured and 50 cc again prepared. All injections were administered under strict aseptic routine. The cases treated included arthritis, myalgia, neuritis, colitis, asthma, hay fever, urticaria, eczema, rhus poisoning, migraine, rhinitis, psoriasis and pruritus. The best results were obtained in the eczemas. Several cases of myalgia were relieved entirely. No patient with neuritis admitted being helped. One arthritic patient was relieved of a painful colitis while being treated unsuccessfully for arthritis.

Another arthritic patient received no benefit, but a migraine of a duration of years disappeared during the course of treatment. Asthma in children seemed to respond better than that found in adults. Hay fever, urticaria and migraine responded to this treatment in several instances.

Illinois Medical Journal, Chicago

66: 401-500 (Nov.) 1934

- Message to Woman's Auxiliary Age of New Things C S Skaggs East St. Louis—p 413
Function of the State Department of Public Health in Control of Pneumoconiosis F J Jirka Springfield—p 414
Laboratory Methods for Determination of Atmospheric Pollution Causing Pneumoconiosis C O Sappington Chicago—p 417
Health of Workers in Dusty Trades R R Sayers and J J Bloomfield Washington D C—p 421
Clinical Diagnosis of Silicosis J R Head Chicago—p 428
Pathology of Pneumoconiosis R H Jaffe Chicago—p 431
Radiographic Visualization of Fibrosis Produced by Dust Inhalation F Flinn Decatur—p 437
Easier Transfusions for the General Practitioner F J Otis Moline—p 440
Surgical Relief of Painful Deglutition in Laryngeal Tuberculosis L Savitt and S H Soboroff Chicago—p 444
Rationalization in Therapy of Laryngeal Tuberculosis Evaluation of Laryngeal Focus in Pulmonary Tuberculosis I L Lederer and L Z Fishman Chicago—p 448
Nutrition Work in Springfield III Schools G Koehler Springfield—p 454
Principles of Surgical Treatment of the Jaundiced Patient J A Wolfer Chicago—p 461
Rheumatic Heart Disease in School Children R E Logan Galena—p 466
Riedel's Struma C H Tearnan Decatur—p 475
Bilateral Empyema Complicating Bilateral Lobar Pneumonia in Last Trimester of Pregnancy N Flaxman and R Feldman, Chicago—p 478
Cold Sodium Thiosulphate in Treatment of Pulmonary Tuberculosis J J Mendelsohn Chicago and S Klein Aurora—p 480
Treatment of Uterine Fibroids R A Reis J L Baer and E J DeCosta Chicago—p 485
Abnormalities in Position and Form of Vermiform Appendix A P Heineck Chicago—p 488

Journal of Allergy, St. Louis

6: 1-110 (Nov.) 1934

- *Species Nonspecific Antigenic Factor in Mammalian Serums Preliminary Report F A Simon Boston—p 1
*Primary Granulocytopenia Due to Hypersensitivity to Amidopyrine T L Squier and F W Madison Milwaukee—p 9
Review of Phases of Allergy F M Rackemann Boston—p 17
Further Studies in Serum Allergy VI Antigenic Relationship Between Horse Dander and Horse Serum Sensitivity L Tuft, Philadelphia—p 25
Arsphenamine Hypersensitiveness in Guinea Pigs III Experiments Demonstrating (A) Regional Geographic Variability in Susceptibility to Sensitization (B) Chemical Specificity of Hypersensitivity and (C) Variation in Sensitizing Proclivities (Sensitization Index) of Different Brands Marion B Sulzberger New York and F A Simon Boston—p 39
Skin Hypersensitiveness to Extracts of Tobacco Leaf Tobacco Pollen Tobacco Seed and to Other Allergens in Two Hundred Normal Smokers J Harkavy with technical assistance of Margaret L Rosenberg New York—p 56
Skin Reactions to Tobacco and Other Allergens in Normal Men and Women Smokers J Harkavy and A Romanoff New York—p 62
Insulin Allergy Review of Recent Literature and Report of Case Marion T Davidson Birmingham Ala—p 71
Further Studies on Leukopenic Index in Food Allergy W T Vaughan Richmond Va—p 78
Further Experiences with Maximal Dosage Pollen Therapy G T Brown Washington D C—p 86
Rapid Hyposensitization G L Waldbott and M S Ascher Detroit—p 93

Nonspecific Antigenic Factor in Mammalian Serums—Simon found a patient having vasomotor rhinitis highly sensitive to horse serum and equally sensitive to the serums of a variety of different mammals. Local passive transfer of hypersensitivity to these serums was successful. Skin tests to the raw muscle extract of chicken mackerel and codfish and to the serum of the frog and of men who belonged to different blood groups were negative. The identity of the antigenic principle present in the various mammalian serums that gave positive skin tests was apparently demonstrated by desensitization of passively sensitized skin sites. The antigen is not soluble in strong alcohol, it is precipitated by complete saturation with ammonium sulphate but not by one-half saturation. Boiling destroys it to a great extent but not completely. It is not affected by heating to 56 C for one hour. The presence of a species nonspecific antigenic factor in mammalian serums is not

incompatible with the existence of other factors that are species specific. The patient, as a boy, had had some contact with horses, but he stated that he had never had an injection of horse serum, even a dose of the diphtheria toxin antitoxin mixture. He did not remember ever seeing a guinea-pig. The possibility of a common, heterophile antigen was considered. Intradermal tests with serum in concentration greater than 1:1000 may be dangerous. The intradermal test in this case was about 1,000 times more sensitive than the scratch test. The conjunctival test was somewhat less sensitive than the scratch test. A purified horse serum globulin solution contained the antigen but in much lower concentration than normal horse serum. Antiserums made from mammals other than the horse will not necessarily eliminate serum accidents.

Granulocytopenia Due to Hypersensitivity to Amidopyrine—Drugs of the type represented by amidopyrine are recognized as frequently responsible for various manifestations of drug hypersensitivity, and Squier and Madison feel that the granulocytopenia observed after amidopyrine is the result of such a reaction. In support of this hypothesis they have produced granulocytopenia at will on readministration of amidopyrine to persons who have had the acute disease following the use of the drug. Furthermore, in two patients they have obtained positive skin reactions to patch tests with amidopyrine, with depression of the granulocyte count and clinical symptoms identical to those observed on administration of the drug by mouth. They report these two cases in detail.

Journal of General Physiology, New York

18: 143-282 (Nov. 20) 1934 Partial Index

- Preparation of Craded Collodion Membranes of Elford and Their Use in Study of Filtrable Viruses J H Bauer and T P Hughes New York—p 143
Results of Irradiating Saccharomyces with Monochromatic Ultraviolet Light II Influence of Modifying Factors R H Oster Cambridge Mass—p 243
Id. III Absorption of Ultraviolet Energy by Yeast. R H Oster, Cambridge Mass—p 251
Adaptation of Cutaneous Tactile Receptors II H Hoagland Worcester Mass—p 255

Minnesota Medicine, St. Paul

17: 617-682 (Nov.) 1934

- Function of the Roentgenologist in Diagnosis of Abdominal Disease A B Moore, Washington D C—p 620
Cardiac Irregularities P T Bohan Kansas City Mo—p 624
Our Constitution J P Devaney Minneapolis—p 630
Public Interest in Professional Standards H H Peterson St. Paul—p 633
*Disseminated Lupus Erythematosus P A O'Leary, Rochester—p 637
Treatment of Head Injuries J G Love Rochester—p 644
Visual Examination of Urine E N Cook Rochester—p 649
Pathogenesis and Treatment of Obesity M H Hoffman St. Paul—p 652

Disseminated Lupus Erythematosus—In forty seven cases of disseminated lupus erythematosus, O'Leary found twenty-six showing clinical evidence of tuberculosis in one form or another. Tuberculosis was demonstrated in five of the ten cases that came to necropsy. The principal changes in the necropsy material were tuberculosis, endocarditis, infarcts in the spleen, diffuse nephritis and terminal bronchopneumonia. Pleural effusion and ascites from passive congestion were noted quite often. Anemia and leukopenia were present in half the cases. Cultures of the blood were positive in four attempts of twenty four made in fourteen cases. Of the four positive cultures, two were obtained from patients with endocarditis, the third was obtained while the patient was dying. Focal infection was noted in forty cases. The twenty patients having the acute type died, on the average, nine months following the dissemination of the disease whereas eight of the twenty-seven patients with the subacute type died, on an average, four and a half years following dissemination. Seven patients with the subacute type are cured apparently. Treatment of the subacute type consisted of rest in bed, transfusions of small amounts of blood, administration of quinine, plasmochin, small doses of gold sodium thiosulphate and roentgen irradiation of the glandular regions of the body. The evidence suggests that disseminated lupus erythematosus is a toxemia in which tuberculosis plays an insignificant part and that evidence of a specific infectious agent although suggestive, is still lacking.

New York State Journal of Medicine, New York

34: 945-992 (Nov 15) 1934

- Experimental Studies on Radiation I C Wood New York—p 948
The Irritable Colon H W Retan, Syracuse—p 952
Eczema of Infancy and Childhood Neurodermatitis Disseminata (Type II Eczema) Atopy in Eczema S M Peck New York—p 957
Need for Conservatism in Treatment of Benign Uterine Bleeding in Women Less Than Thirty Five Years of Age H F Traut New York—p 965
Practical Discussion of Importance of Medicodental Cooperation I Blum New York—p 970
*Early Recognition of Peripheral Venous Thrombosis M A Rabinowitz and J N Holtzman, Brooklyn—p 973

Peripheral Venous Thrombosis—Rabinowitz and Holtzman believe that fatal pulmonary embolism is most frequently caused by peripheral venous thrombosis of the lower extremities. A certain type of person is apparently constitutionally predisposed to this complication. Allergic factors, as yet insufficiently understood, may play a part in the production of venous thrombosis. Persons confined to bed for any reason whatever should be questioned daily for pain and tested daily for tenderness of veins of the lower extremities, especially during the second week of their stay in bed. Early diagnosis of venous thrombosis of the lower extremities should be followed by prompt and complete immobilization to prevent fatal embolization. The presence of sudden chest symptoms or signs occurring in the predisposed person should lead to immediate investigation for evidences of peripheral thrombosis, and proper precautions should be taken.

Public Health Reports, Washington, D C

40: 1229-1260 (Oct 19) 1934

- Sickness Among Male Industrial Employees During Second Quarter and First Half of 1934 D K Brundage—p 1229
Effectiveness and Economy of County Health Department Practice Brunswick Greensville Health Administration Studies No 1 Description of Study J W Mountain—p 1232

40: 1261-1300 (Oct 26) 1934

- The Chicago Epidemic of Amebic Dysentery in 1933 H N Bundesen—p 1266

40: 1301-1324 (Nov 2) 1934

- The Relation Between Housing and Health R H Britten—p 1301

Puerto Rico J Pub Health & Trop Med, San Juan

10: 1132 (Sept.) 1934

- Studies on Schistosomiasis Mansonii in Puerto Rico III Biologic Studies I The Extramammalian Phases of the Life Cycle. E C Faust, New Orleans and W A Hoffman, San Juan—p 1
Diabetic Acidosis R F Loeb, New York—p 98
Frambesia in Costa Rica A Peña Chavarría and W Rotter San Jose Costa Rica—p 129

Science, New York

80: 435-462 (Nov 16) 1934

- *Transmission of Influenza by Filtrable Virus T Francis Jr New York—p 457
Glutamine in the Tomato Plant. H B Vickery, G W Pucher and H E Clark—p 459
Ovulation in the Domestic Hen D C Warren and H M Scott—p 461

Transmission of Influenza by Filtrable Virus—Francis states that, in the course of the experimental work of inoculating intranasally into ferrets material from three specimens of sputum obtained from the recent epidemic of influenza of Puerto Rico, one of the laboratory workers developed symptoms typical of influenza. Nasal and pharyngeal washings inoculated intranasally induced the disease in a ferret without producing pulmonary consolidation. This strain was also transmissible from animal to animal with bacteria-free material. The results confirm the observations of Smith, Andrewes and Laidlaw on the transfer of a filtrable, transmissible agent from human cases of epidemic influenza to ferrets. The character of the disease in the ferret differs from that described by these authors in that it is more severe and is accompanied by pulmonary consolidation. In these respects the disease in the author's animals appears to resemble more closely the disease produced in ferrets by Shope with swine influenza virus. There has been evidence to suggest the adaptation of the virus to the ferret, for with one Puerto Rican strain distinct pulmonary lesions were first noted in the sixth passage animal. The results of the experi-

ments, both in ferrets and in mice indicate that the agent producing the disease is a filtrable virus. It has been possible to produce the infection with filtrates that are bacteriologically sterile in aerobic and anaerobic cultures. The pulmonary lesions are bacteria free. The microscopic changes of the involved lung resemble those of pulmonary lesions produced by other virus infections, rather than those of bacterial infections. The results are apparently in complete agreement with those obtained by Andrewes, Laidlaw and Smith.

Texas State Journal of Medicine, Fort Worth

30: 365-426 (Oct) 1934

- The Diabetic Child L A Riely, Oklahoma City—p 369
Some Early Manifestations of Tuberculosis in Texas Children R S Norris Sanatorium—p 374
Evaluation of Skin Tests for Tuberculosis in School Health Survey Elva A Wright Houston—p 377
Phrenic Nerve Evulsion in Treatment of Pulmonary Tuberculosis F A Moore Austin—p 379
Dental Disease, Diet the Dentist and the Physician B Swinny San Antonio—p 382
Our Biologic Defenses, or How Nature Cures J W Torbett Marlin—p 386
Comparative and Critical Study of Modern Obstetrics Based on Four Thousand Cases J W Bourland Dallas—p 390
Management of Ureteral Calculi Based on Study of Sixty Cases L W Pollock Temple—p 394
Some Problems in Surgery of Biliary Tract. J R Phillips Houston—p 398
Fibrocystic Disease of Breast T A Pressly, San Antonio—p 402
Radiosensitivity Its Value as Therapeutic and Prognostic Index E V Powell, Temple—p 405
Abscesses of Throat. R E Parrish San Antonio—p 408

30: 427-486 (Nov) 1934

- Evaluation of Cholecystography R G Giles Temple—p 431
Modern Management of Gallbladder Disease A C Scott Jr Temple—p 434
Surgical Management of Obstructive Jaundice J G Burns Cuero—p 438
Medical Treatment of Cholecystitis T Miller Dallas—p 442
Obstructive Lesions of Gastro-Intestinal Tract C B Sanders Dallas—p 445
Chronic Cardiospasm L C McGee Dallas—p 447
Question of Agranulocytic Angina (Neutropenia) in Children Report of Case in Two Year Old Negro Girl H W Newman Austin—p 452
*Mechanics of Absorption in Intestinal Obstruction with Surgical Considerations J K Donaldson and B F Stout, San Antonio—p 455
Ocular Myiasis Report of Second Case. C P Schenck Fort Worth—p 461
Mastoiditis Incidence and Care of Acutely Inflamed Mastoid F B Malone Lubbock—p 464
Interdependence of Practitioner and Clinical Pathologist E M McPeak San Antonio—p 468

Mechanics of Absorption in Intestinal Obstruction—Donaldson and Stout believe that there has been too much disproportion of detail regarding the treatment of intestinal obstruction, with insufficient attention and coordination of fundamentals of toxin production and absorption. They agree with the theory that the usual lethal toxin concerned is produced by intestinal tissue which is suffering from impoverishment of blood supply. Their experimental work indicates that the lymphatic canals of the mesentery are an important potential route for toxin absorption and that the lymphatic canals of the nonstrangulated mesentery are persistent in their patency—remaining patent for days after venous thrombosis and much edema have supervened. Exteriorization of the gangrenous intestine with temporization for a better clinical condition is as a rule poor surgery, because mesenteric lymphatic absorption of toxin continues. Immediate resection should be done. Anastomosis may be postponed until a later date. Peritoneal absorption of toxin occurs in proportion to the toxicity and permeability of intestine in the cavity. Clinical differentiation should be made between arterial and venous mesenteric thrombosis. Venous mesenteric thrombosis is a relatively benign condition as compared to arterial thrombosis, and recovery in man without surgical intervention may occur occasionally after venous thrombosis. The ability of intra-intestinal gas pressure to produce impoverishment of the blood supply of the intestinal wall should never be forgotten. This distention may produce all degrees of toxicity and even death. The laws of toxin production and absorption in complete intestinal obstruction necessitate in most cases the earliest possible relief of the organism from toxin dosage, and all temporization procedures, if used, should be handled with the greatest care.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Tuberculosis, London

28: 153 208 (Oct.) 1934

- Allergy in Chronic Pulmonary Tuberculosis R. C. Wingfield—p. 155
 New Immunizing Vaccine for Prevention and Treatment of Tuberculosis N. Raw—p. 162
 New Method of Treatment for Cases of Pulmonary Tuberculosis Preliminary Report G. Tippet—p. 165
 Treatment of Pulmonary Tuberculosis by Light Therapy A. Eidinow—p. 171
 Treatment of Tuberculous Glands in Children C. P. G. Wakeley—p. 179
 Prophylactic and Remedial Breathing and Physical Exercises C. MacMahon—p. 184
 Hemoptysis in Pulmonary Tuberculosis R. R. Trail—p. 190
 Simple Pneumothorax Apparatus C. H. Budge—p. 194

British Medical Journal, London

2: 845 890 (Nov. 10) 1934

- Toxic Goiter Survey of One Hundred and Twenty Five Cases Treated Surgically J. M. Graham and H. L. Wallace—p. 845
 *An Account of Obstetric Methods at St. Mary Abbots Hospital, Kensington, with Comment on Maternal Mortality G. W. Theobald—p. 850
 Diphtheria Immunization in School W. G. Patterson—p. 855
 Undulant Fever and Contagious Abortion in Northumberland A. I. Messer—p. 856
 Prognosis of Hematemesis Statistical Review T. A. L. Davies and R. W. Nevill—p. 858

Obstetric Methods—Theobald states that a binder during labor is strongly contraindicated. Instead, the woman should sit up or adopt any convenient attitude that allows the fundus to fall forward. In this type of case the head tends to remain well above the pelvic inlet until the cervix is at least half dilated and until after the rupture of the membranes. The width of the pubic bone gives some help in estimating the difficulty of any given labor. In 846 confinements, cesarean section or induction of labor was not resorted to in the treatment of contracted pelvis or of the toxemias of pregnancy. Twelve of thirteen infants were born spontaneously with the occiput in the posterior position. The forceps rate was less than 35 per cent. The morbidity rate (fifteen cases) was, it is believed, the lowest recorded by any hospital in England. Rendering the urine alkaline during the puerperium by administering potassium citrate is of importance in preventing morbidity. A technic for preventing mastitis and breast abscess is given. The value of the prophylactic use of antistreptococcus serum is stressed. The maternal mortality would be lessened if midwives were not allowed to make vaginal examinations. The increasing maternal mortality rate must be attributed to increased operative intervention. If the present policies are continued, a still further increase may be anticipated during this decade. There were sixty-eight stillbirths and neonatal deaths, twenty-six occurred in pregnancies of thirty weeks or less, fourteen infants were dead on admission, one was hydrocephalic and another microcephalic, and six were markedly premature (three being twins). Of the remaining thirteen cases the death of the fetus was due to lack of operative intervention.

East African Medical Journal, Nairobi

11: 209 240 (Oct.) 1934

- Climate and White Settlement in the East African Highlands A. Walter—p. 210
 Hemoglobinuria in Ukamba Native Note on Case C. H. Brennan—p. 226
 Portable Anesthetic Apparatus J. A. Carman—p. 227
 *Some Unusual Forms of Plague. A. W. Williams—p. 229
 Ointment for Use in Treatment of Ulcers C. H. Brennan—p. 233

Unusual Forms of Plague—Williams reports five cases of plague of unusual clinical type. In each case a disease of quite different prognostic and clinical features was simulated, and none could be diagnosed as either bubonic or pneumonic plague. All were seen as inpatients in an area in which bubonic plague is endemic and local outbreaks of pneumonic plague occur from time to time. Buboes were absent in the cases and pulmonary lesions, when present, were not those of pneumonic plague. Three of the five patients were ill for eight days or more and one actually recovered. The assumption is that these

cases were examples of a septicemia of less virulence than is usual in infections with *Pasteurella pestis*. The author believes that cases of this type are more likely to find their way into the hospital than cases of bubonic or pneumonic plague and are likely to be diagnosed wrongly and, if undiagnosed, to be a source of danger to the nursing attendants when the plague bacilli are present in the sputum. The only logical practice seems to be, during an outbreak of plague or in an endemic area, to examine sputum smears for *Pasteurella pestis* not only in cases clinically resembling pneumonic plague but in every case of pneumonia admitted to the hospital. The cases were divided into (1) septicemic plague resembling toxic jaundice of yellow fever type, (2) septicemic plague resembling primary meningitis, (3) plague resembling pneumonia with delayed resolution and recovery, (4) plague resembling lobar pneumonia and (5) a history of fever of a duration of four days, cough with purulent sputum and diarrhea. *Pasteurella pestis* was found in the smears and cultures of all the cases.

Irish Journal of Medical Science, Dublin

No. 108: 543 590 (Oct.) 1934

- Observations on Results of Operative and Spontaneous Deliveries T. M. Healy—p. 543
 The Progress of the Clean Milk Campaign in Dublin J. W. Bigger—p. 551
 Statistical Study of Public Health in County Wexford L. S. Smyth—p. 557
 Colloidal Iodine in Treatment of Pneumonias R. V. Murphy—p. 563

Practitioner, London

133: 553 656 (Nov.) 1934

- On Being Liverish A. F. Hurst—p. 553
 Practical Value of Liver Function Tests C. Newman—p. 562
 Surgical Treatment of Some Biliary and Hepatic Diseases A. E. M. Woolf—p. 571
 Jaundice A. C. Hampson—p. 584
 *New Method of Treating Celiac Disease E. Pritchard—p. 597
 Difficulties in Diagnosis of Diabetes Mellitus O. Leyton—p. 609
 Cisternal Puncture W. M. Feldman—p. 616
 Abdominal Examination in Pregnancy A. E. Chisholm—p. 628
 Medical Problems in General Practice Judicial Functions of the General Medical Council N. C. King—p. 637

Treatment of Celiac Disease—Pritchard is of the opinion that celiac disease is due mainly to improper diet and especially to an insufficient supply of the essential vitamins during early childhood, particularly vitamin B. The line of treatment that he presents is based on the assumption that the primary cause of the disease is an actual defect in the functions of absorption, which may or may not be associated with a general atrophic thinning out of the mucous membrane of the intestine, and also with considerable dilatation of both the large and the small intestine. Fats should not be restricted, for they constitute under normal conditions one of the most favorable sources of roughage and ensure a solid consistency of the stools. If fats are eliminated from the celiac patient's diet, soaps cannot be formed in the intestine and there can be no good basis for a solid stool. The stools should be examined chemically and the presence of any considerable quantity of neutral fat, that is to say, unsplit fat, is a definite indication for the oral administration of some pancreatic preparation. If celiac patients are fed exclusively on a sugar diet for a short time, as is necessitated by the carrying out of the author's system of treatment, frothiness of the stools will disappear entirely. Fruits and vegetables are included, in that these, apart from milk, must serve as the almost exclusive sources of both vitamin and mineral elements. Protein foods are restricted, owing to their liability to undergo decomposition changes in the intestine and thereby increase the offensiveness of the stools and the dangers of intestinal intoxication, which is the chief cause of the serious troubles of celiac disease—the wasting, the nervous symptoms and the relapses. The treatment of celiac disease, if it is to be rational and successful, must take into account the atrophic and atonic condition of the whole of the alimentary tract. Since owing to these disabilities comparatively little food can be absorbed, it is necessary to conserve the limited amount of nutritive material that is capable of reaching the blood stream. For this reason, all unnecessary loss of heat should be avoided by keeping the child warm and well clothed. All wasteful output of energy should be obviated. The amount and type of food employed in the author's method are given.

Archives des Maladies du Cœur, Paris

27: 581-644 (Oct.) 1934

Subpericardiac Infarct of Right Auricle Ruptured into Pericardium
Laiguel Lavastine, A. F. Ithier and S. Bidou — p. 581

Clinical Study of Gallop Rhythm: D. Routier and A. Van Bogert —
p. 588

*Role of Spleen in Water Metabolism: Test of Splenic Retraction After
Salyrgan: J. Fliederaum — p. 601

The Spleen in Water Metabolism—Fliederaum observed twenty patients with enlarged spleens but without hydrops, edema or enlarged livers. They were given 2 cc of salyrgan intravenously in the morning at rest. They were weighed before the injection and four and twenty-four hours afterward. The quantity of water in the blood was determined by the Bang method before and 10, 20, 30, 60, 120 and 240 minutes after the injection. The twenty-four hour secretion of urine was noted for three days preceding the experiment and each day of the experiment. During two hours before and four hours after the injection the hourly volume was determined. The volume of the spleen was determined before and every fifteen minutes during the first hour after the injection of salyrgan. It was then determined every hour for the first three hours and finally twenty-four hours after the injection. The dimensions are indicated in centimeters: (1) the distance between the superior pole found by percussion and the farthest advanced lower point found by palpation, and (2) the distance between the most distant external border and that nearest to the linea alba. As a result of these observations he concludes that usually following injection of salyrgan there is an energetic contraction of the spleen in one or both diameters. At the same time considerable hydration of the blood is produced, increased diuresis results, and there is a considerable loss of weight. These changes authorize the conclusions that (1) the contraction of the spleen after the injection of salyrgan is caused by the expulsion of residual water of the spleen into the general circulation and from there in the urine and extra-renal elimination, (2) the spleen functions as a water reservoir which empties itself after salyrgan injection, and (3) there often exists an increase in the water reserve in the diffuse splenomegalies. There is practical importance to the post-salyrgan splenic retraction. It is useful in the differential diagnosis of splenomegalies of different causes and in the study of different functional systems of the spleen. The absence of such contraction seems to have a certain prognostic importance in that it has been observed in all the cases in which roentgen therapy has been ineffective. Finally, the production of splenic retraction may relieve patients having a large painful spleen.

Journal d'Urologie Méd et Chirurgicale, Paris

38: 193-288 (Sept.) 1934

*Radical Curetting of Posterior Urethra: E. Franceschi — p. 193

Traumatic Lesions of Kidney and Their Treatment: R. Redi — p. 231

*Treatment of Varicocele by New Surgical Method: Z. do Amaral —
p. 249

Curetting of Posterior Urethra—Franceschi has been impressed by the cystoscopic appearance of the urethral crista in cases of posterior urethritis. In some cases it is possible to see inflamed and visible orifices that are catheterizable, and in others it was impossible to see any orifice. In many such cases he has practiced electrical curetting with superficial patting of the crista. Finally it was decided to attempt systematic destruction of the crista in the more serious cases. His purpose is to make certain that the products of massage of the vesicles and prostate are not obstructed at their orifices at the crista. Radical curetting of the posterior urethra consists in destruction by coagulation (1) of all diseased parts cystoscopically visible between the membranous sphincter and the bladder neck, and (2) of the diseased crista. In order to control the good results it is necessary to observe the disappearance of all changes previously noted with restoration of the urethral mucosa to normal, and the disappearance of the swelling of the crista and its replacement on the smooth urethral surface by one or more openings of the canals normally existing at this level and which have been amputated. The treatment outlined is easily given to ambulatory patients.

Treatment of Varicocele—Do Amaral describes an operative treatment for varicocele, which he considers an improvement over earlier methods. It consists in an incision similar to that for inguinal hernia. The aponeurosis is separated as far as the inguinal ring and the cord exposed up to the testicle. The testicle is exteriorized by gentle traction on the cord or by compression of the testicle from below. The varicose veins are found and isolated, care being used to avoid rupture of the anastomoses. The sheath is inverted and fastened in place by two or three catgut sutures. The afferent canal and arteries and the accessory veins are separated from the dilated veins and placed under the oblique and transverse muscles, which are in their turn sutured to the crural ligament with catgut as in inguinal herniotomy. The testicle is replaced with avoidance of a position close to the pubis and without torsion of the cord. The varicose veins may then be removed in the classic manner. The aponeurosis of the oblique is sutured and the skin closed. The author usually uses local anesthesia and occasionally spinal or general anesthesia.

Schweizerische medizinische Wochenschrift, Basel

64: 1001-1020 (Nov. 3) 1934

Tonsillogenic Systemic Disorders: E. Luscher — p. 1001

Significance of Para Articular Bone Foci: F. Rothlisberger — p. 1007

*Extra Uterine Pregnancy in Presence of Intra Uterine Pessary: R. Meyer-Wildisen — p. 1009

*Chloroprivic Azotemia: K. Burowitsch — p. 1010

Abdominal Diagnosis and Blood Picture: Emmi Schinz — p. 1011

*Influence of High Tension High Frequency Currents on Human Blood Pressure: R. F. von Fischer — p. 1013

Extra-Uterine Pregnancy in Presence of Intra-Uterine Pessary—Meyer-Wildisen reports the history of a woman aged 32, the mother of several children who in order to prevent further pregnancies used an intra-uterine pessary. Six months later she had uterine hemorrhages. Because an injury of the uterus or an extra-uterine pregnancy was considered probable, she consented to an operation, at which the uterus was found intact, but the right uterine tube was found to be greatly enlarged and to contain placenta-like tissues. The tube was resected and recovery was uneventful. The author cites other reports from the literature and stresses that intra-uterine pessaries do not always prevent pregnancy. The use of a pessary involves dangers to the woman employing it, and the author thinks that physicians should reject this method.

Chloroprivic Azotemia—Burowitsch calls attention to the fact that in recent times increasing numbers of cases of chloroprivic azotemia have been reported. As a result of the loss of chlorides by diarrhea, vomiting, withdrawal of ascitic fluid or similar conditions, uremic symptoms develop and the examination of the blood discloses a high rest nitrogen content. Opinions on the relationship between this azotemia and hypochloremia are still divided. According to his theory, water and sodium chloride are secreted in the tubules, and urea, uric acid and so on in the glomeruli. A molecular exchange takes place in the glomeruli: an equivalent amount of sodium chloride is reabsorbed again by the glomeruli and water is likewise taken up again, effecting a concentration of the urine in the glomeruli. Thus if the nitrogen excretion is conditioned by the molecular exchange, the quantity of nitrogen in the urine will decrease proportionately to the amount of sodium chloride present in the kidney for this exchange. If the organism loses considerable amounts of sodium chloride the kidney loses corresponding amounts, and consequently the nitrogen elimination is curtailed and azotemia develops.

High Frequency Currents and Blood Pressure—Von Fischer says that the influence of high frequency currents is considered by some as merely suggestive, while others consider them highly efficacious. When they were introduced by d'Arsonval (1897) it was pointed out that they influenced the vasomotor system and reduced the blood pressure. The author studied the influence of high tension high frequency currents on the blood pressure of thirty-three persons by means of an apparatus with a tension of 220,000 volts and a frequency of from 800,000 to 1,000,000. In summarizing, he states that a single irradiation generally reduced the maximal pressure and had only a slight effect on the minimal pressure. The reduction of the maximal pressure was absolutely and relatively higher the higher the initial pressure had been. In case of

repeated applications, the results were similar to those of the first one. Regular repetitions of the treatment produced a lasting effect, which as a rule became manifest in a stabilization of the maximal pressure at a lower level. In case of abnormally low initial pressure, an increase may be effected in the maximal pressure.

Progresos de la Clínica, Madrid

42 697 768 (Sept.) 1934

- Diabetes in Its Sanitary and Social Aspects E Carrasco Cadenas —p 697
 Etiopathogenesis of Chronic Rheumatism Classification of Its Varieties P Garrido de Salamanca —p 707
 *Cholesterol, Ergosterol and Vascular Sclerosis A Gordonoff —p 721
 Pulmonary Tuberculosis in Heart Diseases L del Barrio Moreno —p 732
 Lobe of Right Azygos Vein Anatomy Roentgenography Frequency and Pathology I González Rubio and A de Calvo y Nieto —p 735
 *Alterations of Leukocytic Formula Caused by Tuberculin Test. V Navarro Marco and A Luis Cíezar —p 740
 Nitrophenine (Alpha Dinitrophenol [1 2 4]) in Obesity Dupuy —p 744

Cholesterol, Ergosterol and Vascular Sclerosis—Gordonoff says that through the administration of cholesterol to rabbits, along with their feedings, an experimental arteriosclerosis is produced with lesions that are anatomically and functionally the same as those observed in human arteriosclerosis. If, instead of cholesterol, ergosterol is given to the rabbits, arteriosclerosis also develops as long as the animals are exposed to direct sunshine for a sufficient length of time. The skin of man is a depot of ergosterol, which becomes activated by the influence of ultraviolet radiation. Ergosterol, as soon as it is activated by the ultraviolet radiation, enters the circulation and, under certain conditions especially related to the reaction of the blood pressure with hyperpressure may be assimilated by the vascular system to produce arteriosclerosis. The author believes that there is a causal relation between the metabolism of the sterols and the development of human vascular sclerosis. He calls attention to the fact that male and female sex hormones are sterols, that there is a close relation ship between the female hormones, the corpus luteum and cholesterol, and that senile sclerosis is in physiologic antagonism to the sex hormones in youth. He believes that the mentioned facts seem to indicate the possibility of treating sclerosis by means of sex hormones in the near future.

Alterations of Leukocytes by Tuberculin Test—Navarro Marco and Luis Cíezar made determinations of the leukocytic formula immediately after the injection of Koch old tuberculin and half an hour after the injection in a group of tuberculous and nontuberculous persons. The authors conclude that the intradermal tuberculin test is followed by changes of the blood formula in half of the number of cases of the whole group. The most marked variations consist in a diminution of the lymphocytes or an increase of the eosinophils. Both variations are more frequent in tuberculous than in nontuberculous persons. The diminution of the lymphocytes is most marked between the ages of 18 and 26. The increase of eosinophils is most marked between the ages of 12 and 18. In both cases, sex has no influence on the variation.

Semana Médica, Buenos Aires

41: 1073 1148 (Oct. 11) 1934 Partial Index

- *Roentgen Characteristics of Hypertrophy of Thymus M Acuña and María T Vallino —p 1073
 Prognosis of Myocardial Infarction T Padilla and P Cossio —p 1080
 Laryngeal Herpes Zoster J de la Cruz Correa —p 1083
 Pathogenesis of Gynecomastia C Patiño Mayer A R Rossi and D Bocca —p 1088
 Basal Metabolism in Pulmonary Tuberculosis R A Izzo P Lanz and A Casanegra —p 1092
 Ischio-Acetabular Fracture Subluxation of Head of Femur and Fracture of Ischiopubic Ramus Case V di Franco —p 1098
 Sclero-Atrophic Encephalitis (Diffuse Sclerosis) R Carrillo —p 1114
 Fractures of Proximal Epiphysis of Humerus T Gioia —p 1132

Roentgen Characteristics of Hypertrophy of Thymus—Acuña and Vallino report two cases of hypertrophy of the thymus in nurslings. They say that in order to give a correct interpretation to mediastinal roentgen shadows it is advisable to make (1) the roentgenograms in the frontal view with the infant upright and during inspiration (2) the profile roent-

genograms with the infant in the lateral view, so as to obtain the shadows of both the anterior and the posterior aspects of the mediastinum, and (3) a roentgenoscopy with the infant in different positions. By using this technic it is possible to avoid diagnostic errors due to insufficient or defective technics. The roentgen aspects of the mediastinal shadows, however, are multiple, because of the individual variations of the gland. The most certain criterion for the diagnosis is the response of the condition to roentgen therapy, since the application of roentgen irradiation rapidly exerts a beneficial action on the enlarged thymus, as proved by the clinical improvement and by the regression of the thymus, visible in the roentgenograms. The results of the therapeutic test by themselves, however, cannot be considered of an absolute diagnostic value, but only when they confirm those of the clinical and roentgenologic examinations. The authors conclude by saying that one should be cautious in making a diagnosis of hypertrophy of the thymus in nurslings and that the diagnosis should be based on the results of the clinical and roentgenologic examinations confirmed by those of the therapeutic test.

Beiträge zur klinischen Chirurgie, Berlin

100 337-448 (Oct. 3) 1934

- *Stone Free Stasis Gallbladder Considered from Surgical Point of View R Schrader —p 337
 Failures and Hazards of Filatow's Circular Pedicled Plastic I Lindenbaum —p 359
 Roentgenologic Studies of Old Urethral Tears with Contrast Mediums E Stoeter —p 369
 Unilateral Removal of Large Intestine H Gerber —p 399
 Diagnostic Cancer Tests. M Bing and G Marangos —p 417

Stone-Free Stasis Gallbladder—The concept of stasis gallbladder implies, according to Schrader, an increased inflow of bile and retardation of the outflow. This study has for its aim the determination of the clinical significance of the stasis gallbladder and its ability to produce symptoms. In 140 cholecystectomies performed at the Göttingen clinic, 115 gallbladders contained stones while twenty-five were stone free. Before removal of the gallbladder, it was aspirated and the bile was submitted to the culture method of study, as well as to sedimentation and microscopic examination. The author describes three types of sediments: (1) granular crystalline bilirubin mucus, (2) drop-like brown-green partly stratified sediment and (3) a calcium microlith made up of calcium and protein resulting from damage to the liver. None of these could be said to be specific for a stone free stasis gallbladder. The histologic method of study consisted of removing a longitudinal strip of the wall of the gallbladder from the fundus down to the cystic duct. Acute cholecystitis was not found in a single instance. A frequent alteration consisted of accumulations of lymphocytes and of plasma cells in the mucosa, and of extravasated eosinophil leukocytes and edema together with young connective tissue in the submucosa. These alterations extended into the muscular and the fibrous layers. The lymphocytes always predominated. Suppurative processes, abscesses of the wall characteristic of acute cholecystitis, were never observed. A striking alteration was observed in the lymph vessels of the serosa and subserosa—an ascending lymphangitis. According to the author, this lymphangitis was not the result of a subsiding acute cholecystitis, since the bile in every instance was found to be sterile and free from leukocytes. These gallbladders were thin walled and did not exhibit any evidence of healed suppurative processes such as scars. The clinical picture corresponded to the histologic picture. There was no fever or icterus. A slight tenderness in the area of the gallbladder and a sense of pressure in the epigastrium were usually present. Because of the constant alterations found in twenty out of the twenty-five gallbladders examined, such as scars, inflammation and edema, it is not necessary to invoke stasis as the cause of colic. In this material there were no instances of a functionally dyskinetic stasis gallbladder as described by Westphal. Of the five cases that presented no pathologic alterations, colic persisted in two after removal of the gallbladder. Adhesions about a normal gallbladder or a narrow cystic duct do not constitute an indication for its removal. Evidence of ascending lymphangitis, adhesions about the neck, or enlarged lymph nodes in the area of the cystic duct make removal of the gallbladder advisable.

Deutsche medizinische Wochenschrift, Leipzig

00:1619 1662 (Oct 26) 1934 Partial Index

- Electrical Functions in Skin During Colds T Munk —p 1619
- Endo Urethral Diathermy Operation in Hypertrophy of Prostate II Wildegans —p 1624
- Operation and Carbohydrate Metabolism II Fuss —p 1627
- Löffler's or Clauberg's Culture Mediums for Bacteriologic Diagnosis of Diphtheria Bacilli? B Kemkes —p 1631
- *How Does Mucin Act on the Stomach? Mahlo and Mulli —p 1632
- *Early Diagnosis of Syphilis II T Schreus —p 1633

Action of Mucin in Stomach—Mahlo and Mulli maintain that, in addition to the protective action against thermic and mechanical influences, the gastric mucus also has certain colloid chemical functions. The most important of these the capacity to absorb acid and to release it again by diffusion, is still in dispute. In order to gain a better insight into the acid-combining capacity of the mucus the authors purified mucus by electro dialysis, that is, they removed all carbonates, phosphates and organic compounds of low molecular nature. The mucin obtained in this manner has not lost its binding capacity for hydrochloric acid. The authors state that the adsorptive action is also chemical, for the ionization of the mucin increases together with the hydrogen ion concentration. This was demonstrated in conduction measurements which revealed also that mucin and electrolytes influence each other. They found that in the acid medium the gastric mucin does not influence the ferments or absorb them. In water mucin swells into a viscous mass, and in an acid medium the viscosity values are higher than in the neutral medium. This observation contradicts that of another investigator, but the authors think that this is explained by the fact that gastric mucus contains a number of electrolytes, which influence the viscosity, and that the mucin they used had been purified by electro dialysis. In further studies they investigated whether there is a relationship between the quantity of hydrochloric acid and of mucus in the stomach and found that the production of mucin increases as the digestion advances. They propose a theory explaining how the mucin, the hydrochloric acid and the ferments act in the process of digestion. They conclude that the mucin has a number of protective and regulatory functions in the action of the hydrochloric acid and of the ferments which are independent of nervous modifications.

Early Diagnosis of Syphilis—Schreus emphasizes that in the early diagnosis of syphilis the clinical manifestations do not play the important part that is frequently ascribed to them. In spite of the fact that the experienced observer can diagnose a syphilitic infection with a considerable degree of certainty from the typical clinical signs these are not sufficient for a definite diagnosis and alone, do not justify antisymphilitic treatment. It is necessary to demonstrate the spirochetes because disturbances of a nonsymphilitic character may present quite similar symptoms, and the diagnosis of syphilis is of such vital importance for the patient that it cannot be made with too much care. The author stresses that it is a grave mistake to institute arsphenamine therapy merely because a suspected lesion is present and then to diagnose it as syphilitic if it heals in the course of the arsphenamine treatment because a harmless pyoderma, a progonital herpes or simple balanitis may be diagnosed as syphilitic and subsequent clarification of the case is impossible. The author thinks that, if the demonstration of spirochetes should prove impossible, it would be less harmful to wait for the serologic reactions to become positive. In evaluating the three methods of demonstration of the spirochetes of syphilis (demonstration in the dark field the staining method and animal experimentation) he points out that the latter has no practical significance and that the staining method has considerable shortcomings, at any rate as far as the general practitioner is concerned. He considers the dark field method the most suitable one. He describes the preparation of the specimens and the differentiation of *Spirochaeta pallida* from other spirochetes. In discussing the serologic tests the author emphasizes that the weakly positive outcome of the one or the other reaction is not sufficient proof for a definite diagnosis. Cases in which infection is suspected make a prolonged serologic control necessary.

Klinische Wochenschrift, Berlin

13:1449 1488 (Oct 13) 1934 Partial Index

- Fate of Hemoglobin in Organism K Bingold —p 1451
- *Mechanism of Normal and Increased Blood Pressure T Korschegg —p 1452
- Loss of Chlorides from Organs of Rats Following Injection of Histamine and Withdrawal of Gastric Juice K A Winter —p 1454
- *Manifestations of Fluorescence in Cerebrospinal Fluid F Plaut K Bossert and M Bulow —p 1455
- Hypochloremia During Childhood H Seckel —p 1457
- Sympathetic Peptic (Hormonic) and Toxic Gastritis in Experiment II Hanke —p 1461

Mechanism of Blood Pressure—Korschegg points out that the different theories of the development of arterial hypertension avoid a consideration of the suprarenals in spite of the fact that it is well known that the suprarenals are absolutely necessary for the maintenance of the normal pressure. It has been the author's aim for several years to find a hormone basis of the blood pressure. His studies have convinced him that the largest portion of epinephrine that is demonstrated in the suprarenals is not present in them under physiologic conditions but is artificially produced by the chemical method used for its extraction. However further studies revealed that the suprarenals contain a substance with vasoconstrictive properties and it was assumed that the substance is a lipid combined epinephrine. It is readily possible to split epinephrine off from this substance, though its efficacy is greatly reduced by this process. On the other hand, it was demonstrated on vascular tissue that the addition of lipid to epinephrine greatly increases its efficacy. The author further demonstrated the presence of this substance in the blood and showed on surviving intestine from a rabbit that the alcoholic blood extract has a tonicizing effect. In later experiments he succeeded in perfecting a colorimetric method for the quantitative determination of an oxidized form of the epinephrine that is split off from the lipid combined vasoconstrictive substance. This method revealed that the values are largely equivalent in normal blood pressure but much higher in hypertension, and it was even possible to determine within certain limits the degree of the hypertension.

Fluorescence in Cerebrospinal Fluid—Plaut and his collaborators found that small quantities of urobilin, which do not fluoresce in aqueous solutions, show a vivid green fluorescence when added to cerebrospinal fluid. The intensity of fluorescence of urobilin produced by the cerebrospinal fluid is of the same intensity as that produced by zinc salt solution, and normal and pathologic cerebrospinal fluids produce the same effect. The action is not dependent on the minerals contained in the cerebrospinal fluid but rather on the colloidal constituents, particularly the colloids belonging to the globulin-free fraction.

13:1489 1520 (Oct 20) 1934 Partial Index

- New Methods in Short Wave Therapy J Kowarschik —p 1493
- Relations of Vitamin A and Its Previtaminic Forms to Hepatic Injuries and to Resistance Against Infections E Schneider and E Widmann —p 1497
- *Cerebral Changes Following Injection of Soap Solutions into Uterus S Kornyei —p 1502
- Severe Visual Disturbances During Pregnancy Caused by Lesion of Chiasm G Ferémy —p 1505
- Thyrotropic Substances in Human Urine B Giedosz —p 1507
- Cleft Hands and Cleft Feet with Oligodactylia A W Kellner —p 1507
- *Variety of Babinski's Great Toe Phenomenon H Stefan —p 1509

Cerebral Changes Following Injection of Soap Solutions into Uterus—Kornyei relates the history of a woman aged 40, who lost consciousness following injection of soap solution into the uterus. Later there developed general tonic spasms with recurrent clonic spasms. Death followed about twenty hours after the woman had introduced the soap suds for the purpose of inducing an abortion. The necropsy disclosed no signs indicating an air embolism in the right side of the heart. Microscopic examination of the brain revealed numerous pale areas and absence of inflammatory changes. The pathologic changes correspond to an extensive impairment of the cerebral cortex as it is observed in severe disturbances caused by vas-

cular changes Since there was no possibility for a paradoxical embolism, the acute appearance and the persistence of a cerebral anemia can be explained by the assumption of a change in the blood caused by an admixture of soap This indicates for the treatment the necessity of the transfusion of a large amount of blood However, even this measure may be expected to be successful only when it is done soon after the injection of a soap solution Since the changes observed in this case have been observed also in other disturbances of pregnancy, which concur with convulsions (eclampsia, uremia), they cannot be considered proof of a criminal abortion

Variety of Babinski's Great Toe Phenomenon—Stefan points out that Babinski's great toe reflex is an abnormal cutaneous reflex and indicates the interruption of the pyramidal tract at some point An extensive literature shows that the reflexogenic zone for the hyperextension of the great toe is not limited to the region of the sole of the foot Babinski elicited the reflex by stimulating the lateral edge of the foot, while other authors showed that it could be elicited by the stimulation of other regions Gerhartz in his studies on spastic reflexes differentiated two groups, those due to cortical disturbances and those due to pyramidal disorders Later Gerhartz described an isolated reflex in spastic conditions, was able to show in postmortem examinations that the pertaining reflex center is in the cerebral cortex on the contralateral side of the body, and was convinced that this was a cortical spastic reflex The author is able to corroborate these statements at least in part He states that the isolated cortical spastic reflex described by Gerhartz may appear isolated but also in other forms He thinks that it is not entirely clear as yet whether the reflex is purely cortical He is inclined to believe that this great toe phenomenon is likewise a variation of the Babinski reflex, the reflex zone of which is localized in the adductor region on the inner side of the thigh Another form of elicibility of Babinski's great toe phenomenon is the symptom of Weil-Edelmann It had been pointed out by Edelmann in former years that Babinski's phenomenon may be elicited if the leg that is extended at the knee joint is being bent at the hip joint The author observed the Weil-Edelmann sign, in addition to Kernig's symptom, in a case of tuberculous meningitis The significance of the Weil-Edelmann sign in meningeal inflammations has been pointed out also by other investigators It may be elicited during the beginning stages of meningitic processes and occasionally even when Kernig's phenomenon is absent

Medizinische Klinik, Berlin

30 1413 1444 (Oct 26) 1934 Partial Index

Development Estimation and Treatment of Pulmonary Emphysema R Herbst.—p 1413

Smoking Habit Nicotine Addiction and Symptoms of Abstinence H Schoenemann.—p 1417

*Ménier's Syndrome of Allergic Origin E Urbach and J Wilder.—p 1420

Intravenous Continuous Drop Infusion in Nurslings E Hacker.—p 1422

Alimentary Galactosuria in Pulmonary Diseases Z Brull.—p 1422

Ménier's Syndrome of Allergic Origin—Urbach and Wilder describe a case of Ménier-like vertigo The disturbance was accompanied by frequent lapses into unconsciousness, attacks of urticaria, Quincke's edema, vomiting, mucous enteritis and paresthesias It developed following an injection of horse serum Experiments demonstrated that the symptoms could be suppressed by a milk diet or by medication with type specific peptone preparations, whereas the ingestion of pork elicited the attacks again The authors think that an allergic origin of the Ménier syndrome is not frequent but that it should be assumed when other allergic disorders exist at the same time and when exclusion and exposure demonstrate a direct connection with the allergen They point out that in the treatment of severe forms of nutritive allergy, particularly in those which are accompanied by symptoms of the central nervous system of the gastro-intestinal tract and of the respiratory tract, the doses of type specific peptone preparation that are taken before a meal must be considerably larger than those which are required if only cutaneous allergic symptoms develop

Münchener medizinische Wochenschrift, Munich

81: 1603 1640 (Oct 19) 1934 Partial Index

Treatment of Trigeminal Neuralgia O Dyes.—p 1603

Treatment of Fractures of Base of Skull Hesse.—p 1605

*Emaciation of Cerebral Origin H Stefan.—p 1608

Treatment of Sprue-Tetany with Irradiated Ergosterol Preparation W Rieder.—p 1610

Resorption and Elimination of Curcumin N Henning and O Kunzel.—p 1611

Percutaneous Salicyl Therapy in Rheumatic Disorders Sauerwald.—p 1612

Fractures of Bodies of Cervical Vertebra During Swimming and During Gymnastic Exercises H Hellner.—p 1615

*Development of Cicatricial Carcinoma Following Use of Protective Bandage of Insulating Tape W Büngeler.—p 1619

Spirochetal Sepsis and Etiology of Hepatosplenomegalies K Lušický and A Žuk.—p 1621

Emaciation of Cerebral Origin—Stefan describes cases of cerebral emaciation that developed after encephalitis after manganese poisoning or in dementia paralytica He calls attention to the rarity of this disorder and to certain interesting secondary manifestations, reviews the literature and discusses the microscopic changes He believes that the condition may be the result of severe damage to sympathetic centers in the interbrain but that the exact localization is as yet impossible

Cicatricial Carcinoma—Büngeler relates the history of a man, aged 43, who, while welding a copper tube, sustained a burn the size of a half dollar (30 mm) on the dorsal side of the right wrist joint The patient did not ask medical aid for the treatment of this burn but merely covered it with oil and several hours later washed it and applied a dry bandage The wound healed slowly in about four weeks but repeatedly opened again at the edges and bled slightly Since adhesive tape was not available, he applied black insulating tape directly onto the scar of the burn Gradually there developed at the edge of the wound a small nodule The patient was in the habit of bandaging it securely He removed the insulating tape after working hours and removed the black color of the skin by means of benzine About four months after the burn he consulted a physician The growth, the size of a bean, was removed and the wound healed within ten days The physician sent it in for histologic examination, which disclosed a squamous-cell epithelioma The histologic picture resembled greatly that of an experimental tar carcinoma Since the insulating tape contains a certain amount of tar, the author assumes that the use of this tape was the cause of the rapid development of the growth By cleaning and thus defatting the skin with benzine, the patient produced unwittingly all the requirements for the development of an experimental tar carcinoma

81 1641 1678 (Oct. 26) 1934 Partial Index

Treatment of Diabetic Gangrene from Point of View of Internist H Baur.—p 1641

Surgical Considerations in Treatment of Diabetic Gangrene E Seifert.—p 1645

*New Possibilities of Practical Diagnosis of Anemia (Results of Erythrocytometry) H E Bock.—p 1646

Experiences with New Meinicke Clarification Reaction in Cerebrospinal Fluid E Christiani.—p 1660

*Does Presence of Diphtheria Bacilli in Nose and Auditory Meatus Involve Danger of Infection for Surroundings of Bacillary Carriers? T Hunermann.—p 1661

Erythrocytometry in Anemia—Bock calls attention to the so-called diffraction micrometry introduced by Piiper for the measurement of erythrocytes and describes observations he made with a simplified apparatus in patients with pernicious anemia, hepatic disturbances, gastric carcinoma and certain forms of achylia, and also in those who have had severe hemorrhages and in cases of macrocytosis of the bone marrow Erythrocytometry is helpful in the diagnosis and in the treatment of pernicious anemia The mean diameter of erythrocytes in all cases of untreated pernicious anemia is in excess of 8 microns, the mean being 8.35 microns In addition to the enlargement of the diameter, there is a definite broadening and a certain vagueness of the diffraction pictures as manifestation of anisocytosis and poikilocytosis This anisomegalocytosis differentiates pernicious anemia diffractometrically from other forms of anemia Piiper's diffraction micrometry is also a simple, most reliable and highly sensitive method for supervising the therapy Remission obtained by liver therapy is indicated by a progressive reduction in the diameter and by

a decrease in the anisopoikilocytosis. The aim of the treatment has not been accomplished unless complete normalization of the diffraction picture has been effected. Intensive liver therapy must be continued until the diameter has been reduced below 775 microns. Relapses become manifest in renewed enlargement of the mean diameter. Erythrocytometric studies in liver diseases convinced the author that enlargement of the mean diameter to macrocytic values of more than 765 microns indicates parenchymal impairment. The macrocytosis of liver disease has a mean diameter of 795 microns. In spite of the fact that in certain syphilitic liver disturbances diameters may be measured that correspond to those of pernicious anemia it is nevertheless possible to differentiate them by erythrocytometry from untreated cases of pernicious anemia. Anisocytosis, which becomes manifest in the width of the spectral rings, is unusually rare, and poikilocytosis, which manifests itself in the vagueness of the colored corona, is entirely absent in hepatic disease. In anemia that develops in carcinoma of the stomach, there exists, in approximately one half of the cases, an anisomacrocytosis of between 765 microns and 83 microns (mean diameter 794 microns) as soon as the hemoglobin content goes below 60 per cent. This type of macrocytosis has significance in the diagnosis of gastric carcinoma. Gastric achylia that exist for several years may cause macrocytosis. After severe hemorrhages there may exist in anisomacrocytosis with approximately the same median diameter as that of "gastric macrocytosis." This phenomenon is of only short duration, but its existence indicates that blood transfusion is advisable. The macrocytoses of the bone marrow are as yet of but slight diagnostic significance, they are found in systemic diseases of the hematopoietic apparatus and in cases with metastases of the bone marrow.

Diphtheria Bacilli in Nose or Auditory Meatus—Hünemann states that diphtheria bacilli, which frequently are virulent, may generally be demonstrated in the nasal secretion of patients with atrophic rhinitis, ozena or dry mucous membranes with crust formation. The same observation may be made on patients with chronic eczema of the auditory meatus. However, clinical observations indicate that these patients do not present a source of infection for their surroundings, and thus it is not necessary to submit them to the same strict regulations that are applied to those diphtheria bacillus carriers who recently have suffered from acute diphtheria.

Wiener klinische Wochenschrift, Vienna

47 1281 1312 (Oct. 26) 1934 Partial Index

New Methods of Prognostic Diagnosis of Tuberculosis During Childhood
F. von Groer—p. 1281

*Studies on Fat Content of Blood and Pathogenesis of Obesity (Lipotrin Resistance) W. Raab—p. 1284

Polypous Nonulcerated Gastric Tuberculosis J. C. Knoßach and R. Pape—p. 1288

*Primary Oliguria E. Lauda—p. 1290

Treatment of Asthma L. Hollós—p. 1294

Fat Content of Blood and Pathogenesis of Obesity—Raab summarizes his studies on the fat content of the blood of obese persons as follows: 1 The fat content of the blood of obese persons (while the stomach is empty) shows no marked deviation from the norm. 2 The alimentary lipemic curve, following an oil tolerance test increases in the majority of obese persons slightly less than in normal persons. 3 The considerable reduction or complete abolition of the oil tolerance curve, which is noticeable in normal persons following the administration of the blood-fat-reducing hypophyseal hormone (lipotrin), is in obese persons either entirely absent or hardly at all noticeable. 4 Since in the animal experiment the lipotrin effect is absent after the surgical as well as after the pharmacologic exclusion of the diencephalic metabolic center (tuber cinereum), it seems justifiable to assume that a lack of the lipotrin action (determined on the basis of the oil tolerance curve) indicates a reduced reactivity of the diencephalic "fat center" in human obesity. Moreover, it is known that insufficient collaboration of the hypophyseodiencephalic system leads to the formation of deposits of fat in the periphery. 5 In cases of postencephalitic obesity, in diencephalic tumors and so on, the absence of the lipotrin effect is more or less self evident, in cases in which there exist no signs of an organic lesion of

the tuber cinereum, the lack of the lipotrin action may be interpreted as being caused by a lack of reactivity on the part of the "fat center." 6 The resistance to lipotrin in many cases of obesity and the lack of an action in lipotrin, which would mobilize the fat in the peripheral depots, explain the failure of hypophyseal hormone therapy in obesity.

Primary Oliguria—Lauda reports the history of a patient with primary oliguria, which seems to contradict the usual classification of oliguria. On a normal diet, the patient exhibited oliguria. During various periods of the metabolic experiment, on elimination and retention of additional quantities of sodium chloride or of water, he showed a widely differing behavior. At times there was normal or even supernormal sodium chloride elimination and normal water concentration, at other times the addition of salt was excreted normally, but there was a maximal retention of water, then again there was a disturbance that became manifest in retention of sodium chloride. It was demonstrated again and again that the outcome of the water test depended on the phase of the sodium chloride metabolism. Repeated tests revealed that the patient had a primary oliguria caused by sodium chloride retention. The author emphasizes that, if tests are made on such patients without knowledge of the preceding dietetic period the examiner may obtain at first one and then another result. Thus it would be possible to diagnose the same condition sometimes as constitutional renal oliguria and at other times as oliguria caused by water retention. The author thinks that in the so-called combination forms with sodium chloride and water retention it may be suspected that the dominating sodium chloride retention has not been correctly recognized. There is definite proof only for the existence of oliguria caused by oligodipsia and for oliguria caused by sodium chloride retention. The latter type may be subdivided into three groups: those in which sodium chloride is retained in large quantities so that edemas develop, those which lead to hydrolipomatosis or to sodium chloride-water obesity respectively, and finally those, like the reported case in which there exists only a certain torpidity in the reactivity of the tissues or of a certain center toward a greater sodium chloride content and in which there exists a temporary sodium chloride retention with consecutive oliguria. In regard to the question of the localization of this disturbance, the author cites Jungmann, who assumed a regulatory disturbance in the interbrain, particularly the hypophysis. In the reported case this localization is likely, because of the presence of hypophyseal symptoms.

Zentralblatt für Gynäkologie, Leipzig

58: 2529 2592 (Oct. 27) 1934

Two Pelves Contracted by Osteodystrophia and Significance of Osteodystrophia Fibrosa in Gynecology P. Esch—p. 2530

*Elephantiasis and Pregnancy A. Bauereisen—p. 2539

*Genesis of Toxicoses of Pregnancy Particularly of Hyperemesis K. von Oettingen—p. 2545

Local Puerperal Disturbances and Circulatory System E. M. Kaplan and F. I. Wittenstein—p. 2550

Rare Birth Injury in Pelvic Presentation R. Pohl—p. 2554

Care of Umbilical Cord in the New Born S. Strehlo—p. 2556

Elephantiasis and Pregnancy—Bauereisen says that there are two types of elephantiasis: the tropical form caused by *Filaria sanguinis* Bancrofti and the form occurring in the temperate zone, the etiology of which has not been cleared up as yet. Elephantiasis most frequently involves the lower extremities, but it has been known to involve the arm in case of carcinoma of the breast, and another site of predilection is the external genitalia. The author observed a case of verrucous elephantiasis of the abdomen, which is rather rare. He describes this case. He describes the histories of two women, referred to him for interruption of the pregnancy. He is convinced that elephantiasis does not necessitate an interruption of pregnancy, for the elephantiasic swellings may be influenced favorably by conservative measures. He found that a vegetarian, salt-free diet with restriction of the fluid intake is especially helpful. If the lymphatic stasis becomes exacerbated by a complicating puerperal thrombosis, it appears that pregnancy, delivery and puerperium help to loosen the tissues and improve the circulation. Surgical measures, which were tried in these cases, were of slight value. He maintains that the elephantiasic swellings of the external genitalia which may

make the birth of the fetal head difficult, are no indication for interruption of the pregnancy, because delivery by cesarean section involves almost no danger. He emphasizes that conservative measures should always be tried first. Elevation of the diseased members, massage, diathermy, hot baths, injection of a lysine or of pepsin preparations, mustard poultices, hormone preparations and particularly a vegetarian and salt-free diet may be tried successively or in combination. In severe cases surgical methods will have to be resorted to. He doubts the efficacy of the silk thread method of Handley. The Lanz-Kondoleon operation gives better results. Other surgeons have recommended the implantation of tissues that contain lymph vessels to stimulate the formation of new lymph vessels, but so far without success. Others have recommended throttling of the blood supply by ligation of the main artery. This, however, may lead to gangrene and should be resorted to only if amputation could not be avoided in any event.

Genesis of Hyperemesis of Pregnancy—Von Oettingen advances evidence to the effect that psychic elements are not the primary factors in the pathogenesis of the hyperemesis of pregnancy, but that the primary moment is always an organic element. He admits that the manifestations of these organic disturbances may become exacerbated by psychic factors. He considers waste products of metabolism produced in greater quantity during pregnancy by the organs of the pregnant woman and by the fetus, the primary eliciting agent. A toxicosis develops when the combining capacity of the serum, from overtaking, is no longer adequate and if simultaneously or subsequently it impairs the function of the excreting organs.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

78: 5013 5112 (Nov. 3) 1934

Regenerative Gastritis or Ventricular Carcinoma H. T. Deelman — p. 5016

*Peripheral Nerve Lesions After Carbon Monoxide Poisoning W. Kat — p. 5022

Medicine and Doctrine of Heredity P. J. Waardenburg — p. 5032

Osteitis Deformans and Psychosis J. Lobstein — p. 5051

Osteitis Deformans in Unusual Localization J. E. Schulte — p. 5054

Peripheral Nerve Lesions After Carbon Monoxide Poisoning—Kat refers to three cases of peripheral nerve lesions complicating carbon monoxide poisoning. The patients presented deep infiltrations of a cartilaginous consistency in the muscles. Two of them presented marked trophic disturbances. The main theories with regard to this lesion are those assuming (1) a toxic action on the nerve trunks, (2) an asphyxia of the nerve tissue, (3) a toxic action on the blood vessels causing stasis and hemorrhage, and (4) mechanical lesions of the nerves by the abnormal position of the extremities during coma. The author attributes great importance to the infiltrations in the muscular tissue as an explanation of the pathogenesis. In his opinion, hemorrhage and reactive edema of muscles occur as a result of vascular intoxication to which a mechanical factor is added, the nerve lesions are caused by pressure on the nerve trunks or the plexuses in these extremely hard infiltrations. Under this assumption which might be called a primarily toxic, secondarily mechanical theory, the muscular infiltrations are to be regarded as an indispensable condition for the causation of the nerve lesions.

Bibliotek for Læger, Copenhagen

126 429-480 (Oct.) 1934

Roentgen Examination of Gastric Mucous Membrane E. de F. Licht — p. 429

*Gastroduodenitis T. Andersen — p. 447

Gastroduodenitis—Andersen concludes from his investigations that manifest hemorrhage in patients suffering from gastroduodenitis does not afford evidence of a complicating ulcer. Apart from the cases of pyloric stenosis definite roentgenologic signs of ulcer do not justify the clinical distinction of patients having such roentgenologic changes from patients who lack the roentgenologic changes but otherwise present the same clinical picture. He would group these cases together under the designation of gastroduodenitis. He states that a retention of six hours is without significance in the diagnosis of gastroduodenitis with or without ulcer; a retention of only twelve hours has a practical value in the clinic.

Hospitalstidende, Copenhagen

77: 1133 1144 (Oct. 16) 1934

*Acute Idiopathic Hematoporphyria Case H. E. Nielsen — p. 1133
Diastase Content in Cerebrospinal Fluid O. J. Nielsen — p. 1139

Acute Idiopathic Hematoporphyria—Nielsen's case, in a man aged 35 and previously healthy, resembled an acute intoxication in many respects. There was sudden onset of violent colic-like pain, accompanied by pronounced constipation. After two weeks psychic disturbances appeared, lasting about three weeks. During this time paresis of both upper extremities developed and hematoporphyrin was confirmed in the urine. The patient gradually improved. Considerable atrophy of the musculature of the upper extremities was still present on examination a month after discharge.

77: 1173 1200 (Oct. 30) 1934

*Investigation on Physiology of Cancer Cells A. Fischer — p. 1173
Investigation on Capillary Resistance III. No Likelihood of C. Avitaminosis as Etiologic Factor in Gastric Ulcer P. Schultze — p. 1190
Can Positive Seroreaction in Syphilis Disappear Without Treatment? H. Boas — p. 1197

Physiology of Cancer Cells—Fischer says that tumor cells carry in them the germ of their self destruction. They are so labile that influences which do not affect normal cells cause the tumor cells to react with cell division. On the other hand, they are in a state of chronic destruction incessantly leading to physiologic regeneration. A cancer tumor may really be regarded as tissue in a condition of continuous proliferation through the constant forming of new multiple wounds. Where in the cells the cause of their lability and short lifetime is to be sought is still unknown.

Norsk Magasin for Lægevidenskapen, Oslo

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Establishment of New Blood Type Characteristic—Andresen found an immune receptor, temporarily designated as X, in about 94 per cent of the persons examined. There is, he says, no relation between the presence of the X receptor and the receptors of the ABO and MN systems. The agglutinin anti-X is apparently formed on injection of human blood corpuscles into rabbits but purification of the agglutinin is not so easily accomplished as that of anti-M and anti-N agglutinins. Although the agglutinin is perhaps often present, it cannot be assumed to disturb the M and N determination, since it is easily removed and appears only in weak concentrations in comparison to the anti-M and anti-N reagents applied in the practice.

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EPIDEMIOLOGY OF LEAD POISONING

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The use of lead is so widespread throughout all civilized countries that lead poisoning continues to be a matter of concern to the physician and the public health official. As new processes are evolved in industry and new materials devised for general consumption, so does lead poisoning continue to appear under new and sometimes strange circumstances. For centuries the origins of lead poisoning, its nature, its varied forms, the action of lead in the body, the treatment and the prevention of lead poisoning have all occupied the men of science and the men of industry and the last word has not yet been spoken.

Lead poisoning may well be thought of as a counterpart of syphilis not only in the variety of its effects on the human system but in the manner in which it may be dormant and unsuspected in the tissues for years, apparently innocuous, until some alteration in the metabolic processes liberates it with unimpaired venom. Like syphilis, it is a contributing cause of many a death for which it does not receive its rightful share of the blame.

Lead may gain entrance to the body through the respiratory system by inhalation, through the gastrointestinal system by ingestion, and through the skin. It is doubtful whether skin absorption of inorganic lead compounds ever takes place except when the skin is damaged by inflammation or wound. While cases have been reported due to the application of lead-containing medication to ulcerated or damaged skin, this form of entry is of little practical interest. Organic lead compounds, such as tetra-ethyl lead, will penetrate the skin and their employment is guarded by carefully devised precautions.

Recently Fairhall and Heim¹ published the results of their study of lead weighted silk fabrics and found no evidence of absorption even when the fabric was worn next to the skin and under extreme conditions of activity and perspiration.

Inhalation and ingestion are the two routes by which lead gets into the system and the first is the more important. Most of the industrial exposure arises from dust and fumes that are breathed into the lungs and upper respiratory tract, where absorption and excretion involve entry into the systemic circulation. Lead that

is ingested may be excreted unchanged and, even if absorbed, may be carried to the liver and excreted in the bile.² In the main, industrial poisoning is due to inhalation and nonindustrial poisoning to ingestion, though there are, of course, exceptions.

Water supplies conducted through lead pipes have been an important source of community poisoning. In a study of 102 lead-conducted water supplies in New England, 24 per cent of 253 individuals examined were found to be lead poisoned. This study indicated that the greater the carbon dioxide content of the water, the more readily lead was carried into solution. The authors of this investigation concluded that the daily ingestion of 0.1 mg of lead over a period of eight and one-fourth years caused poisoning.³ In the Bulletin of the United States Public Health Service for July 28, 1932, the statement is made that "No water to be used for drinking purposes should contain the equivalent of one-half part lead per million water." An English study showed that the infant mortality in an area exposed to lead-contaminated water fell from 134 to 56 when the water was treated to prevent the lead going into solution.⁴ Epidemics of lead poisoning from water supplies have been reported from England,⁵ France,⁶ Germany,⁷ and other countries.

Numerous instances have been reported both in this country and in England of lead poisoning due to home fermenting and distilling of wines, beers, ciders and similar beverages in utensils glazed with a lead compound. As with water, the acid content of these beverages causes the trouble, the resultant chemical action liberates the lead from the glaze and it goes into solution in the beverage.⁸

Other interesting and important epidemics of poisoning have occurred from time to time to bear witness to the ubiquity of lead and to the strangeness of the circumstances under which it may manifest itself. A series of cases of lead poisoning was reported from Austria in 1931. Lead was used to counterbalance a grinding wheel in a flour mill, with the result that the flour was impregnated with fine particles of metallic lead, poisoning a number of people.⁹ The use of snuff has been identified with lead poisoning, the source of the lead being the metallic foil in which the snuff is wrapped.¹⁰

² Aub J C, Fairhall L T and others. *Medicine* 4: 1 (Feb May) 1925.

³ Wright W, Sappington C O and Rantoul E J. *Indust Hyg* 10: 234 (Sept) 1928.

⁴ Milligan Ernest. *Brit M J* 2: 222 (Aug 1) 1931. Ingleson. *Action of Water on Lead*. Technical Paper No. 4. Water Pollution Research Dept. Sc. Ind. Res. London. His Majesty's Stationery Office 1934.

⁵ University of Aberdeen Report. *Lancet* December 1933.

⁶ Thouvenet cited in *Chronic Poisoning from Water in Lead Pipes*. Paris letter J A M A 97: 654 (Aug 29) 1931.

⁷ Kruse and Fischer. *Bull Hyg* 6: 74 (Jan) 1931.

⁸ Wilcox R L. *Brit. M J* 2: 222 (Aug 1) 1931. Wright Sappington and Rantoul.

⁹ Berger, W., Studeny O and Rosegger F. *Wien klin Wchnschr* 45: 586 (May 6) 1932.

¹⁰ Bech A A. *Bull Hyg* (abstr.) 8: 679 (Oct.) 1933.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

¹ Fairhall L T and Heim J W. *J Indust Hyg* 14: 317 (Nov) 1932.

One of the strangest occurrences was lead poisoning in a number of Baltimore families caused by the use of discarded storage battery cases for fuel.¹¹ There were forty cases with several of severe encephalopathy among the children. A similar instance in Nashville, Tenn., involved five families and fourteen children.¹²

One of the most interesting of all the chapters on lead poisoning is that dealing with ocular neuritis among children. In 1897 Dr Lockhart Gibson of Queensland, Australia, published a paper on this subject, referring to two previous reports in 1892.¹³ Dr Gibson followed up this subject for forty years, reporting cases and endeavoring to trace the source of infection. The general conclusion was that the Queensland cases were due to lead paint on verandas and railings where the children played.¹⁴ Recently similar cases have been described in this country.¹⁵ In Japan, the use of lead-containing toilet powders has caused widespread lead poisoning in both infants and mothers.¹⁶

It is not possible to describe or even to enumerate, in a paper of this length, all the varied industrial processes in which lead is used and the circumstances wherein lead poisoning may arise. Their number is legion.

Unfortunately, also, there is but little statistical information on the mortality from lead poisoning and none with respect to morbidity. In no year since 1920 have there been as many as 150 cases of death from lead poisoning reported in the registration area of the United States. In 1930 there were 101 cases, in 1931, 111. Half of the 1930 patients were painters.¹⁷ These reports are based on death certificates, and there is no doubt that many cases of lead poisoning are reported as nephritis or other organic diseases, with no mention of the underlying cause. The Joint Occupation Study¹⁸ (a life insurance undertaking) showed, for house painters, on the basis of 61,000 life years, 249 actual deaths from all causes, which was 22 per cent in excess of the expected. This excess was reckoned on the basis of ordinary policyholders, corrected for age groups and sex. Aside from this meager information, there is little worth recording.

The following summary refers to the main classification of industries and processes in which lead is a hazard.

1 Lead mining when lead is in the form of soluble carbonates or other soluble salts. It is doubtful whether any appreciable amount of lead poisoning occurs when the ore is galena (lead sulphide).

2 Lead smelting and refining

3 Handling and fabrication of metallic lead

(a) Manufacturing of lead articles of all kinds (poisoning due to formation of lead oxide on surface of metallic lead)

(b) Handling metallic lead in hot processes, lead burning, soldering, lead tempering, plumbing

(c) Brass and other founding in which lead is used

(d) Buffing and polishing metallic surfaces in which lead is an ingredient

4 Manufacture of lead salts and compounds, especially lead oxide by Dutch method, Carter method, and other methods, lead pigments, organic lead compounds

5 Manufacturing processes in which lead compounds are used. These are extremely numerous, among the important ones are the storage battery industry, paint industry, glass industry, rubber compounding and chemical industry

6 Application and removal of lead-containing paints, enamels and glazes. Painting spray painting vitreous enameling, pottery dipping, sandpapering, scraping and chipping painted surfaces, flame cutting of painted metal, tree spraying with lead containing insecticides

7 Typographic trades: type founding, electrotyping, stereotyping

It may be said that in those industries in which lead plays a major part the hazard is fairly well controlled, and it is exceptional nowadays to see cases of acute poisoning with colic and wrist drop in the smelters and establishments where lead oxide, paints and storage batteries are manufactured. There is still in these industries a considerable amount of mild lead poisoning much of which escapes diagnosis because it is mild. Individual carelessness and breaks in the discipline of supervision do occur, and familiarity breeds contempt in the dangerous trades as elsewhere. Much credit, however, is due the lead industries for the perfection of a technique of prevention and supervision, which is, in the main, effective. When one comes across an outbreak of lead poisoning it is usually in an establishment in which a lead process is but one step in the plan of manufacture, as it is under such circumstances that the hazard is apt to be underestimated or ignored. Moreover, it is not uncommon to see lead poisoning among industrial workers not engaged in handling lead but who, through negligence, are exposed to dust or fumes from lead processes not properly isolated or otherwise protected.

Some time ago I had occasion to visit a plant where one process consisted in soldering brass strips. These strips were assembled by girls working at long tables and passed to the man at one end of the table, who did the soldering. The prevailing air currents carried the fumes from the lead pot along the table, affecting the girls, while the solderer escaped any ill effect. Some of these lead poisoning cases will cause the medical Sherlock Holmes to exert his best faculties in detecting the source of contamination. A notable example was contributed by Dr Leathers of Nashville, Tenn.¹⁹ In this instance, in the vitreous enameling of domestic heaters, a lead-free pigment was used. A number of acute cases of lead poisoning developed, including individuals not associated with the enameling process. It finally developed that there was lead in the glass frit used in making the enamel. As this had not been realized, no precautions were taken. Numerous cases of lead poisoning have been reported due to cutting metal coated with lead paint, with the oxyacetylene flame, especially in the holds of naval vessels and similar confined spaces. Here again the poisoning was not limited to the men actually doing the cutting.²⁰

A great deal of effort has been expended in endeavoring to ascertain the amount of lead present in the atmosphere under varying conditions and the minimum dosage that will cause lead poisoning. Bloomfield²¹ reported that in a number of industrial establishments he found 0.10 mg of lead to 10 cubic meters of air,

11 Williams, Huntington, Schulze, W. H., Rothschild, H. B., Brown, A. S. and Smith, F. R., Jr. *Lead Poisoning from the Burning of Battery Casings*. J. A. M. A. **100**: 1485 (May 13) 1933.

12 Crutcher, J. S., Jr. *Tennessee M. A.* **26**: 20 (Jan.) 1933.

13 Gibson, J. L. *Australian M. Gaz.* Oct. 20 1897. M. J. Australia **2**: 201 (Sept. 8) 1917 and **1**: April 1, 1922.

14 Gibson, J. L. *British J. Ophth.* **15**: 637 (Nov.) 1931.

15 Vogt, E. C. *Röntgenologic Diagnosis of Lead Poisoning in Infants and Children*. J. A. M. A. **98**: 125 (Jan. 9) 1932. McKhann, C. F.

Lead Poisoning in Children. Am. J. Dis. Child. **32**: 386 (Sept.) 1926.

16 Kato, Katsunji. *Lead Meningitis in Infants*. Am. J. Dis. Child. **44**: 569 (Sept.) 1932.

17 Hoffman. *Lead Poisoning Legislation and Statistics*. Newark. N. J. Prudential Press 1933.

18 Joint Occupation Study 1928 (Actuarial Society of American and Association of Life Insurance Medical Directors).

19 Leathers, W. S. and Morgan, H. J. *The Study of Lead Poisoning in an Enameling Plant*. J. A. M. A. **89**: 1107 (Oct. 1) 1927.

20 Stitt, U. S. *Navy M. Bull.* April 1912. Brown, E. W. J. *Indust. Hyg.* **1**: 113 (March) 1926.

21 Bloomfield, J. J. and Isbell, H. S. *J. Indust. Hyg.* **15**: 144 (May) 1933.

in automobile repair shops 0.13 mg, and in street air, 0.09 mg to 10 cubic meters. Greenburg²² has reported that 1.45 mg of lead daily for two and one-half years has caused poisoning. Teleky²³ states that 1 mg of lead daily for several months and Legge and Goadby²⁴ state that 2 mg daily for several years will cause lead poisoning. While these figures may seem to vary considerably, it is true that lead in the form of vapor is more dangerous than as dust, and the circumstances under which the foregoing estimates were determined were not identical. Certainly it may be concluded that a daily dosage of from 1.5 to 2 mg is distinctly hazardous and eventually will cause poisoning in most, if not all, individuals. In this connection it should be noted that when lead is in a molten condition fumes will be given off, the higher the temperature, the more fumes, also oxide will form on the surface and get into the air as dust.

CONCLUSION

It may be stated that lead poisoning is very prevalent though most of it is mild. However, both mild and occasionally severe cases are commonly not recognized. Many cases are diagnosed as chronic appendicitis and even as gallbladder disease, with all too frequent surgical intervention. In connection with industrial hygiene studies, insurance company records show that, with respect to illnesses of more than seven days' duration among wage earners, respiratory diseases greatly outnumber gastro-intestinal diseases. When the ratio is inverted and one is confronted with a situation wherein the gastro-intestinal cases outnumber the respiratory cases, the possibility of lead poisoning should always be considered.

THE BIOCHEMICAL BEHAVIOR OF LEAD IN THE BODY

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BOSTON

In the last ten years, a great deal of work has appeared bearing on the biochemistry of lead. To combine this new knowledge with that summarized in a previous publication¹ is my purpose in this article.

In regard to absorption there is little important new evidence. The experience in industry confirms what has been found in the laboratory¹—that lead which is inhaled is far more toxic than lead which is swallowed. Of course, it is likewise generally conceded that ingested lead is a hazard.

The form in which lead is transported in the blood stream is of practical as well as scientific interest, as it has a bearing in guiding intelligent therapy. The prevailing opinion had long been that lead was carried as an albuminate, but Fairhall's equilibrium experiments,¹ as well as our blood studies with Reznikoff,¹ convinced us that lead was precipitated in the bones as the very insoluble tertiary lead phosphate and carried in the blood as the more soluble di-lead phosphate. To

this view Brooks² agreed but Maxwell and Bischoff³ and recently Kehoe and Thamann⁴ have objected, largely on the basis that lead in the blood stream reacts more with red blood cells than does the phosphate. Maxwell and Bischoff³ have produced some evidence that lead, when injected intravenously, is carried as a diphosphoglycerate, while Jowett⁵ thinks that it forms a complex inorganic phosphate with calcium and chlorine. In a chemical system as complicated as blood plasma, an equilibrium of several such chemical compounds is not unreasonable. Any of these compounds might remain ionized and dispersed in the presence of plasma proteins. But whether it is transported as an inorganic or organic phosphate, it is obvious that lead in the blood stream can exert deleterious effects on body cells.

Of course, some absorbed lead is probably excreted (partly in the urine but mostly in the feces) without ever having been stored. There is a growing accumulation of data obtained by different chemical techniques that indicate a small daily lead excretion in the urine in the vast majority of the people in this country and elsewhere.⁶ The average result of these observations indicates a urinary excretion of lead of from 0.05 to 0.1 mg daily in individuals with no unusual lead exposure. This urinary excretion represents lead that has been actually absorbed, but a large percentage of the lead found in the feces has probably never even been absorbed. Because of such repeated observations it must now be agreed that a qualitative demonstration of small quantities of lead in the excreta does not necessarily signify abnormal exposure. According to Barth,⁷ a very small amount of lead may even be gradually accumulated in normal bones during advancing years (from 0.02 mg found in infancy to 0.1 mg per 3 Gm of bone ash in the aged).

If larger quantities of lead are inhaled, swallowed or injected, excretion does not maintain an equilibrium and lead becomes stored. But the extent of possible storage can be ascertained best when a known quantity of lead is injected intravenously. Millet,⁸ Kehoe and Thamann,⁹ and Aub and Smithwick¹⁰ have shown that but little of this is excreted promptly. For example, the average of six of our cases studied for forty-six days during the injection period, showed that only 69 mg of lead was excreted in both the urine and the feces, although 473 mg of lead as colloidal phosphate was injected intravenously.

2 Brooks John. The Interaction of a Finely Divided Lead Suspension with Blood Serum. Ringer Solution and Aqueous Phosphate Solution. *Biochem J.* 21: 766, 1927.

3 Maxwell L. C., and Bischoff Fritz. The Reaction of Lead with the Constituents of the Erythrocytes. *J. Pharmacol. & Exper. Therap.* 37: 413 (Dec.) 1929.

4 Kehoe R. A. and Thamann Frederick. The Behavior of Lead in the Animal Organism. III. Colloidal Lead Compounds. *J. Lab. & Clin. Med.* 19: 178 (Nov.) 1933.

5 Jowett Maurice. The Reaction of Lead Compounds with Serum and Serum Models. *Biochem J.* 26: 2108, 1932.

6 Badham C. and Taylor H. B. Lead Poisoning extract from the Report of the Director-General of Public Health, New South Wales for the year ended 31st December 1925. Kehoe R. A. Edgar Graham Thamann Frederick, and Sanders Lester. The Excretion of Lead by Normal Persons. *J. A. M. A.* 87: 2081 (Dec. 18) 1926. Fretwurst F. and Hertz, A. Quantitative Determination of Lead in Feces and Urine and Its Significance in the Diagnosis of Lead Poisoning. *Arch. f. Hyg.* 104: 215, 1930. Litzner S. and Weyrauch F. Untersuchungen über den Bleigehalt des Blutes und Harns sowie seine Beziehungen zum Auftreten klinischer Krankheitserscheinungen sowie seine diagnostische Bedeutung. *Arch. f. Gewerbepath. u. Gewerbehyg.* 4: 74, 1932. Kehoe Robert Thamann Frederick and Cholak Jacob. On the Normal Absorption and Excretion of Lead. I. Lead Absorption and Excretion in Primitive Life. *J. Indust. Hyg.* 15: 257 (Sept.) 1933.

7 Barth E. Investigation of the Lead Content of Human Bones. *Vierteljahrssch. Anat.* 281: 146, 1931.

8 Millet H. The Excretion of Lead in Urine. *J. Biol. Chem.* 83: 265 (Aug.) 1929.

9 Kehoe R. A., and Thamann Frederick. The Behavior of Lead in the Animal Organism. II. Tetraethyl Lead. *Am. J. Hyg.* 13: 478 (March) 1931. footnote 4.

10 Aub J. C. and Smithwick, R. H. Lead Treatment of Cancer. *New England J. Med.* 208: 310 (Feb. 9) 1933.

22 Greenburg L. Schaye A. A. and Shlonsky H. *Pub. Health Rep.* 44: 1666 (July 12) 1929.

23 Teleky L. *Arch. f. Gewerbepath. u. Gewerbehyg.* 5: 132, 137, 1933.

24 Legge and Goadby. *Lead Poisoning and Lead Absorption*. London: Edward Arnold. New York: Longmans Green & Co. 1912.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

1 Aub J. C. Fairhall L. T. Minot Anne S. and Reznikoff Paul. *Lead Poisoning*. Medicine Monographs. Baltimore: Williams & Wilkins Company. 7, 1926.

Once lead is absorbed, there is a characteristic distribution in tissues, which is approximately the same for inorganic,¹¹ organic⁹ or colloidal lead,¹² no matter what the route of absorption. It is distributed throughout the viscera, but to the greatest extent in the liver, spleen and kidneys immediately following absorption. After a very few days, however, it gradually collects almost entirely in the bones. It is interesting that even a relatively stable organic compound such as tetra-ethyl lead should behave like other lead compounds (Kehoe) in spite of its great solubility in body lipoids.

The crux of the whole problem of lead poisoning, just as for other heavy metals such as radium¹³ or mercury,¹⁴ lies in the great avidity with which the bones take up these metals. Circulating lead may cause tissue damage, but lead stored in the bones produces no deleterious effects except probable caries in the teeth. The problem of treating lead poisoning is the problem of controlling the deposit and excretion of lead from this skeletal storehouse.

It was the original contention of Aub and Anne Minot¹ that the direction of the lead stream is similar to that of the calcium stream—that, when calcium is being deposited in the bones, circulating lead is also deposited in the bones, and, when calcium is being pulled from the bones, some stored lead is also liberated.¹

This relationship has been extensively investigated by most laborious metabolic observations. The patients received daily the same diet, similarly prepared throughout their low calcium periods of observation. Their total excretions were collected in three-day periods and analyzed for lead by Fairhall's method. The rate of the lead stream could thus be followed. But the magnitude of this lead stream, it must be remembered, is apt to be relatively small. An adult dying of chronic lead poisoning probably has not more than 1 Gm of lead stored in the entire

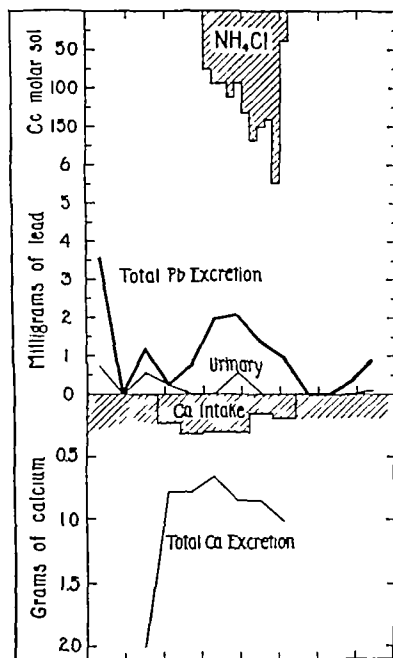


Chart 1—The first value indicates the lead excretion as acute lead colic was subsiding during high calcium medication. Later the sustained increase in lead excretion which accompanies a low calcium diet plus ammonium chloride is well shown. The chart shows that the increased excretion is largely fecal.

body, and nearly all of this is in the skeleton. After removal from exposure, such stored lead is normally but slowly excreted. The charts of a few of our unpub-

lished observations are reproduced here to indicate the size of this excretion in cases of lead poisoning while the patients were hospitalized on a rigid, constant, metabolic regimen.^{14a} The first value, determined in chart 1, indicates the rate of lead excretion during the subsidence of an acute lead colic. This chart shows how closely that rate of excretion is again approached during deleading and indicates that the rate of excretion is of a very different order from that ascribed to food and the "normal" lead contacts of daily life. In contrast to this, chart 2 indicates that lead may be pulled from the bones two years after every known exposure has ceased. The large excretion during this first course of deleading indicated that the patient had had a considerable previous exposure and storage.

In these two observations the effect of medication is obvious when superimposed on a diet already low in calcium. But the increase of lead excretion is not invariable. We have had one patient, maintained through a long period on a low calcium diet, in whom the lead excretion was not further increased by adding ammonium chloride, even though the calcium excretion was somewhat accentuated. But the usual result is that increased excretion of bone calcium is accompanied by stored lead.

In our experience, any method that increases calcium excretion also increases the lead excretion. No deleterious effects have resulted since we have learned to apply medication in amounts gradually increased over a period of a week or ten days.

The value of these therapeutic suggestions can best be gleaned from the experience of others, and recent reports in the literature in this regard have been predominantly favorable.

The clinical value of high calcium therapy to quiet the toxic episodes of lead intoxication¹⁵ has been confirmed by Badham and Taylor,⁶ Belknap,¹⁶ Wiegeldt,¹⁷

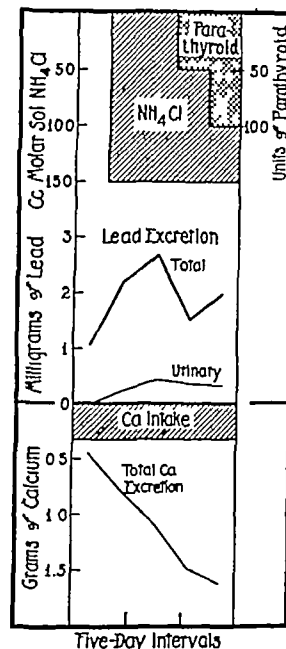


Chart 2—Lead excretion in a young man removed from all industrial lead exposure for eight months. He had a toxic amblyopia but had received no previous treatment for lead poisoning. The first period indicates the excretion during low calcium diet alone with subsequent addition of ammonium chloride and parathyroid extract-Collip. The recorded units of parathyroid extract were the old units (five times stronger than in the new 1934 nomenclature).

11 Aub, Fairhall, Minot and Reznikoff.¹ Weyrauch, F. Distribution of Lead in the Organism After Intravenous Injections. *Ztschr f d ges exper Med* 75:706 (1931). Behrens, Behrend and Baumann. *Anny Zur Pharmakologie des Bleis*. In: *Mitteilung Ztschr f d ges exper Med* 92:16 (1933).

12 Bell, W. B. Some Aspects of the Cancer Problem. New York: William Wood & Co. 1930.

13 Gettler, A. O. and Norris, Charles. Poisoning from Drinking Radium Water. *J A M A* 100:400 (Feb 11) 1933.

14 Young, A. G., Taylor, F. H. L. and Merritt, H. H. The Distribution and Excretion of Mercury. *Arch Dermat & Syph* 21:539 (April) 1930.

14a The upper blocks in all charts represent medication expressed in cubic centimeters of molar solution given daily by mouth. The base line of the remainder of the charts is the middle horizontal line marked 0. The chart extends both above and below this line—the farther from this middle base line the higher the value. Above this middle base line is shown the lead excretion expressed as lead excreted by three-day periods. The lighter line is the urinary excretion; the heavier line the total excretion in both urine and feces. Below the middle base line the charts extend downward and indicate the calcium metabolism. The calcium intake is hatched below the base line. When fenced in it indicates a low calcium intake averaging 100 mg of calcium daily. The areas that have no enclosing block lines indicate a diet ample in calcium. The calcium excretion represents the total calcium in both urine and feces by three-day periods.

15 Aub and Smithwick.¹⁰ Bauer, Walter, Salter, W. T. and Aub, J. C. Studies of Calcium and Phosphorus Metabolism. Xa. The Use of Calcium Chloride to Relieve Peristaltic Pain. *J A M A* 96:1216 (April 11) 1931.

16 Belknap, E. L. Lead Poisoning. The Diagnosis and Treatment of Its Most Common Toxic Episode. *Lead Colic Wisconsin M J* 28:346 (Aug.) 1929.

17 Wiegeldt cited by Teleky, L. *Moderne Therapie der Bleivergiftung*. München med Wchnschr 78:354 (Feb 27) 1931.

Leschke¹⁸ and Koyranskiy,¹⁹ and by many in personal communications. It is the type of therapy that can readily be judged by its striking clinical effects. Nothing more dramatic in treatment can be desired than the rapid subsidence of lead colic following the slow intravenous injection of 10 cc of a 20 per cent solution of calcium gluconate. Reduction of lead excretion by a high calcium diet has been confirmed by Litzner, Weyrauch and Barth.²⁰

Increase of the excretions of heavy metals by the liberation of calcium stores has also been extensively studied, and our results were confirmed in one particular or another by many authors. Litzner, Weyrauch and Barth²⁰ confirmed the influence of sodium bicarbonate but were unable to confirm the effect of acidosis. They determined lead excretion only in the urine, and it has been our experience that most of the increased lead excretion appears in the feces. Certainly, urinary lead alone is not an adequate test for total lead excretion. The other publications have shown that acid-producing substances,²¹ parathyroid extract,²² and large doses of viosterol²³ increase the rate of excretion of lead, radium²⁴ and mercury.²⁴ In five cases of lead colic studied with Dr. Marion Ropes, we could determine no influence on lead excretion from daily injections of 1 cc of sodium thiosulphate. This agrees with the negative results on animals of Curtis and Young.²⁵ Shelling²⁶ has also shown by growth curves in rats that phosphate may be important in regulating the deposit of lead. This may well be the case also in children, in whom the normal diet tends to be high in calcium but relatively inadequate in phosphorus. In adults, however, the average diet is low in calcium and the phosphate intake is more than adequate, so that the calcium intake is the easy one to control.

It thus appears that the overwhelming evidence of the past ten years confirms the view that the lead stream and the calcium stream run in the same direction whether these substances are being deposited in the bones or liberated into the blood and into the excreta. To understand this mechanism thoroughly one must turn to the metabolism of bone. It has been demonstrated²⁷ that bone can be considered roughly divisible into two functional elements. The hard cortical bone

acts as the body's support. The trabeculae, scattered through the marrow, particularly at the epiphyses, act as the readily available supply of calcium for body needs. It is this relatively small lace-like trabecular structure, with its large blood supply, which is depleted when calcium is demanded by the body—or refilled when calcium is stored.²⁷ The hard cortex, which constitutes most of the bone with its relatively small blood supply, probably metabolizes at a fairly constant rate. In the trabeculae, lead is stored in relatively high concentration. This we²⁸ showed by analyses some years ago, and it has recently been dramatically confirmed by Behrens and Baumann²⁹ by means of their beautiful pictures of radioactive deposits. It is largely the salts in these trabeculae that are liberated in time of calcium need.

However, it is essential to realize that probably not all the calcium and lead that is liberated from this bone is excreted. There is x-ray evidence to indicate that it may circulate and be redeposited in bone, especially in childhood, for the roentgenograms of Vogt³⁰ show that

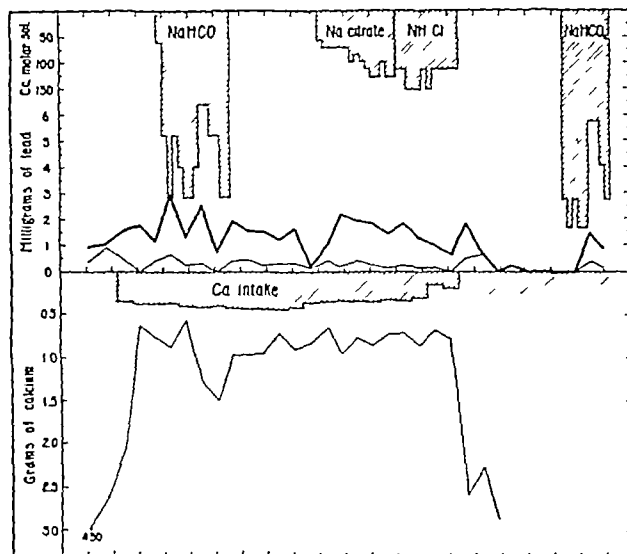


Chart 3.—Lead excretion determined for three and one-half months in a patient whose acute symptoms of lead poisoning subsided before the observation was started.

the lead gets repeatedly dissolved and redeposited along the epiphyseal line of growth. It is because of this great avidity of growing bone for salts, as well as the difficulties precipitated by calcium deficiencies, that deleading therapy seems an unwise and unsuccessful procedure in children.

The present problem of treating lead poisoning lies not in the methods, for efficient methods exist. The problem that remains to be decided is: Should deleading be undertaken or avoided? If rapid deleading is to be avoided, it is necessary simply to give a large calcium intake in the diet. This lowers the body's demand on calcium stores, so that calcium is even stored, and the only excretion of bone calcium (and lead) comes from the normal metabolism of the bones. Obviously, this is the method that should be used during any toxic lead episode.

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But should deleading be undertaken after the episode has subsided? To help in this decision, one must remember that

1 Lead is stored in relatively large quantities in the area of bone readily available for liberation

2 The liberation of this store is an obvious factor in the onset of toxic lead episodes during metabolic upsets

3 This liberated lead may not be excreted but may circulate and be redeposited (No one knows the extent of this possibility)

Therefore, in favor of deleading is the possibility of reducing, under controlled conditions, the lead contamination in the bone trabeculae and then replenishing the trabeculae with uncontaminated calcium. Against deleading is the consideration that it may be desirable to avoid the liberation of lead, which can be kept largely stored in the bones during good health. From the theoretical point of view, deleading seems advantageous in order to avoid sudden liberation of this lead in time of metabolic stress. From the practical point of view the answer is dependent on which procedure will advance most promptly to a recovery of health. In my experience, following the ordinary toxic lead episode, a vigorous course of deleading is usually followed by a prompt recovery to normal health—a recovery that is more rapid and much more complete than when a continued deposit of lead stores is maintained. In lead palsies, I have the impression that thorough deleading approximately halves the period of disability. This opinion, formed from many observations, may possibly be altered, but the biochemical knowledge on which this treatment is based seems to be thoroughly established not only for lead but also for several other related heavy metals.

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NORMAL ABSORPTION AND EXCRETION OF LEAD

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A recent series of articles in another journal has detailed the methods and the major results of our studies of lead absorption and lead poisoning during the past ten years.¹ So far as they are concerned with normal lead absorption and excretion, the results may be summarized briefly as follows: 1 Two groups of native Mexican Indians, whose mode of life and environment were devoid of opportunities for contact with the lead-containing products of highly organized and industrialized populations, were found to have lead in their blood and to excrete lead in their feces and urine, as a consequence of the occurrence of lead in the soil and hence in vegetation and animal products employed as food

2 Various groups of healthy children and adults in the United States, with no occupational exposure, were shown to have lead in their tissues and in their excreta, chiefly because of regular ingestion of lead with their foods. 3 The rate of lead excretion among Americans is higher than that observed in people living under simpler and more natural conditions (native Mexicans), in correspondence with the higher lead content of certain American foodstuffs. 4 Evidence was obtained that the ingestion of these "normal" amounts of lead does not result in steady accumulation of lead in the body. Apparently an equilibrium is reached after a time, so that a substantially constant concentration of lead remains in the tissues, and lead output becomes equivalent to lead intake.

TABLE 1—Distribution of Analytic Results Obtained on Nine Normal Subjects

Milligrams of Lead	24 Hour Samples of Food	24 Hour Samples of Feces
0-0.00	424	510*
0.10-0.10	421	500
0.20-0.20	171	303
0.30-0.30	64	149
0.40-0.40	40	87
0.50-0.50	17	30
0.60-0.60	8	14
0.70-0.70	5	7
0.80-0.80	3	6
0.90-0.90	2	2
1.00-1.40	14	10
1.50-1.90	1	
2.00+	6†	2†
Total	1170	1631
Mean	0.176‡	0.193‡
Probable error of mean	±0.004	±0.003
Standard deviation	±0.180	±0.169

Of this number only sixty failed to show lead

† Eliminated in calculation of mean

‡ Calculated on a wider distribution of results

TABLE 2—Means and Their Probable Errors of Observations on Nine Normal Subjects

Subjects	Lead in Urine		Lead in Feces	
	Mg per Liter	Mg per 24 Hours	Mg per Gm. Ash	Mg per 24 Hours
J. H.	0.017 ± 0.001	0.027	0.027 ± 0.001	0.15 ± 0.01
S. J.	0.020 ± 0.002	0.021	0.040 ± 0.002	0.21 ± 0.01
C. H. no. 1	0.020 ± 0.001	0.020	0.080 ± 0.003	0.23 ± 0.01
C. H. no. 2	0.029 ± 0.002	0.028	0.123 ± 0.006	0.31 ± 0.02
J. McS. no. 1	0.026 ± 0.001	0.032	0.064 ± 0.004	0.28 ± 0.01
J. McS. no. 2	0.022 ± 0.001	0.020	0.057 ± 0.003	0.19 ± 0.01
J. A. B.	0.020 ± 0.002	0.020	0.061 ± 0.003	0.19 ± 0.01
H. G. R.	0.015 ± 0.001	0.014	0.069 ± 0.003	0.16 ± 0.01
L. S.	0.024 ± 0.001	0.020	0.053 ± 0.002	0.18 ± 0.01
E. O.	0.014 ± 0.001	0.014	0.040 ± 0.002	0.16 ± 0.01

In the course of the work from which these conclusions were derived, certain healthy young men with negative occupational histories were kept under observation for months, during which their lead intake with food and drink (exclusive of water) was measured by analyzing duplicate twenty-four hour food samples and their daily lead output in feces and urine was determined. Nine such subjects have now been included in our observations. The results have yielded a consistent picture of normal lead ingestion and normal lead excretion, as measured by the analytic methods that we have described.^{1a} The results are grouped in tables 1 and 2 in such a manner as to bring out the facts that we wish to introduce as points of departure for the further observations to be described.

From the Kettering Laboratory of Applied Physiology in the University of Cincinnati

Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934

1 (a) Kehoe, R. A., Thamann, Frederick, and Cholak, Jacob. On the Normal Absorption and Excretion of Lead. I. Lead Absorption and Excretion in Primitive Life. II. Lead Absorption and Lead Excretion in Modern American Life. III. The Sources of Normal Lead Absorption. IV. Lead Absorption and Excretion in Infants and Children. J. Indust. Hyg. 15: 257-305 (Sept.) 1933. (b) Lead Absorption and Excretion in Certain Lead Trades. *ibid.* 15: 306-319 (Sept.) 1933. (c) Lead Absorption and Excretion in Relation to the Diagnosis of Lead Poisoning. *ibid.* 15: 320-339 (Sept.) 1933

NORMAL LEAD INGESTION AND ITS RELATION TO
NORMAL FECAL LEAD EXCRETION

In table 1 all the observations on twenty-four hour food and fecal samples are listed according to the frequency of their occurrence, together with the calculated mean values, their probable errors and their deviations

TABLE 3—Distribution of Results on Medical Students According to Milligrams of Lead per Sample of Feces

Milligrams of Lead per Sample of Feces*	By Chemical Method			By Spectrographic Method
	On Portion Analyzed	On Entire Sample	After Correction for Loss†	
0-0.01	21	21	0	21
0.01-0.09	11	7	0	7
0.10-0.14	13	15	8	11
0.15-0.19	9	7	10	10
0.20-0.24	7	9	6	10
0.25-0.29	5	5	10	7
0.30-0.34	2	3	5	7
0.35-0.39	3	1	3	1
0.40-0.44		3	2	2
0.45-0.49			2	3
0.50+	1	1	2	5
Totals	72‡	72‡	65	75
Mean	0.14	0.15	0.23	0.24
Probable error of mean	±0.01	±0.01	±0.01	±0.01
Standard deviation	±0.11	±0.13	±0.12	±0.14

A tenth of each sample was used for the spectrographic determination. The amount of lead in the entire sample was calculated from the amount found in the nine tenths used for the chemical analysis.

† After exclusion of negative results the lead found in each sample was calculated to represent the entire sample and then corrected for the average loss per sample inherent in the chemical method (0.07) as found by dealing with known amounts of lead.

‡ There were no negative results.

§ Three samples were lost in process of analysis.

TABLE 4—Distribution of Results on Medical Students According to Milligrams of Lead per Gram of Ash in Feces

Milligrams of Lead per Gm. of Ash	By Chemical Method	By Spectrographic Method
0-0.02	33	4
0.03-0.05	20	20
0.06-0.08	12	30
0.09-0.11	2	8
0.12-0.14	4	2
0.15-0.17		
0.18-0.20	1	1
0.21-0.24		1
Totals	72	70
Mean	0.045	0.069
Probable error of mean	±0.003	±0.003
Standard deviation	±0.038	±0.034

Three samples lost in process of analysis.

From the similarity of the frequencies and the lack of differentiation of the means for the two sets of samples, the approximate equivalence of lead ingestion and alimentary lead output is apparent. Such difference as exists between the two means, though not statistically significant, suggests that more lead is excreted with the feces than is ingested with the food. From these observations alone we should be justified in suspecting what we have found to be true on other evidence—that the bulk of normal lead is ingested with the food and is passed through the alimentary tract unabsorbed. Doubtless, however, a portion of the ingested lead is absorbed, while some is excreted from the tissues into the alimentary tract, as it is into the urine.

THE MAGNITUDE OF NORMAL LEAD EXCRETION IN
THE URINE AND FECES, AS DETERMINED
BY CHEMICAL ANALYSIS

Table 2 gives the calculated means and their probable errors for eight of the nine subjects, as to the quantities of lead found per liter and for each twenty-four hour

period in the urine, and per gram of ash and for each twenty-four hour period in the feces. (One of the subjects was followed for too short a period to provide statistically satisfactory data.) The respective mean values for the group are in such close agreement (with the exception of those concerned with fecal lead in milligrams per gram of ash²) as to demonstrate a remarkable similarity in the subjects with respect to their lead absorption and excretion.

THE MAGNITUDE OF NORMAL LEAD EXCRETION IN
RELATION TO ANALYTIC METHODS

It is obvious that the accuracy of these figures must depend on the adequacy of the analytic methods. Comparison of these values with those given by other workers must take into account the variable sensitivity of the divergent analytic methods used. All chemical methods that are based on the separation of lead by its insoluble salts from other metals have a common quality in that with proper handling they yield low results. Each method has its own inherent loss, and if such loss is uniform and of known magnitude, each will

TABLE 5—Distribution of Results on Medical Students According to Milligrams of Lead per Liter of Urine

Milligrams of Lead per Liter of Urine	By Chemical Method	By Chemical Method as Corrected for Loss*	By Spectrographic Method
0-0.009	45		3
0.01-0.019	12		12
0.02-0.029	7	10	11
0.03-0.039		10	21
0.04-0.049	0	10	11
0.05-0.059		1	4
0.06-0.069		3	5
0.07-0.079		2	7
0.08-0.089			2
0.09-0.099			
0.10+	2†	2†	3†
Totals	77	47	77
Mean	0.012	0.029	0.038
Probable error of mean	±0.001	±0.001	±0.002
Standard deviation	±0.011	±0.013	±0.020

* After exclusion of thirty negative results each result was corrected by the addition of 0.07 (the inherent loss per sample associated with the chemical method) and the amount per liter was calculated.

† Excluded in calculation of mean.

TABLE 6—Distribution of Results on Medical Students According to Milligrams of Lead per Hundred Cubic Centimeters of Blood

Milligrams of Lead per 100 Cc. of Blood	By Spectrographic Method
0-0.01	1
0.02-0.03	15
0.04-0.05	25
0.06-0.07	21
0.08-0.09	5
0.10-0.11	3
0.12-0.13	1
Total	71
Mean	0.058
Probable error of mean	±0.002
Standard deviation	±0.021

provide data that can be correlated with those given by other standardized methods.

With these considerations in mind we recently employed a spectrographic method to check the uniformity and the magnitude of the loss associated with the routine use of our chemical method. The spectro-

2 The high variability of the individual mean values for lead in milligrams per gram of ash in the feces is sufficient proof that this relationship has little physiologic meaning. It may be employed as a rough expression of the relationship between quantity of lead and size of fecal sample.

graphic method, described elsewhere,³ has been shown to have an accuracy of ± 25 per cent as applied to amounts of lead ranging from 0.00002 to 0.0004 mg (Such amounts within the arc correspond to concentrations of from 0.01 to 0.20 mg of lead per liter of urine.) Parallel estimation of known amounts of lead by the two methods has shown a uniform loss on the part of the chemical method amounting to approximately 0.07 mg per sample. Both methods were employed in carrying out the following study:

NORMAL LEAD IN THE URINE AND FECES, AS DETERMINED BY PARALLEL SPECTROGRAPHIC AND CHEMICAL ANALYSES. NORMAL LEAD IN THE BLOOD

A newly matriculated class of medical students assembled from widely distributed parts of the United States were interviewed and examined. Blood samples (50 cc) were taken, and 3-liter to 4-liter samples of urine and a single fecal evacuation (representing in general a twenty-four hour sample) were obtained. Each sample of urine and feces was examined by both methods.

The data are shown in tables 3, 4 and 5. The results of the chemical analyses are in close agreement with those of the prolonged individual studies recorded in tables 1 and 2. The spectrographic results are significantly higher. That the discrepancy between the two sets of observations was uniform is shown in tables 3 and 5, in that the distribution of results and the calculated mean values for the two are practically identical when each positive chemical result is corrected for loss by the addition of 0.07 mg. (The negative results given by the chemical method could not be dealt with for the obvious reason that they may have contained no lead or any amount up to 0.07 mg.)

The lead content of the blood samples was determined by the spectrographic method alone. The results are grouped according to the frequency of their occurrence in table 6.

ABSOLUTE VALUES FOR NORMAL LEAD INGESTION AND LEAD EXCRETION

The demonstration of the occurrence of a uniform loss of 0.07 mg per sample in our chemical method provides a basis for establishing the actual level of normal lead excretion in the American population, through the correction of results obtained by our chemical method alone. Applying this correction directly to the mean values recorded in table 1, the mean lead content of twenty-four hour samples of food becomes approximately 0.25 mg, and the mean daily fecal output comes to about 0.26 mg. The urinary results in table 2 cannot be corrected directly, but the addition of 0.07 mg to the amounts found per sample and the recalculation of the quantities per liter and per twenty-four hour period result in mean values ranging from 0.06 to 0.08 mg per liter and from 0.05 to 0.10 mg per twenty-four hours. Individual twenty-four hour samples of normal feces may contain 1 mg of lead or even more, while a normal sample of urine may show as much as 0.20 mg per liter rarely and 0.10 mg per liter not uncommonly. Such results, whether due to extremes in physiologic variation or to chance contamination of samples, illustrate the danger associated with the interpretation of any single analytic result. In fact, the differentiation

of a normal individual from one who has been exposed recently to abnormal amounts of lead requires at least the examination of samples of both urine and feces. An additional factor of safety in judgment is provided by an analysis of the blood.

SUMMARY AND CONCLUSIONS

1 The chemical methods for the determination of lead in human excreta and blood which we have used and described yield uniformly low values.

2 Comparison of parallel lead determinations made by spectrographic and chemical methods shows the inherent loss of our chemical method to average 0.07 mg per sample.

3 On the basis of the spectrographic method, or on that of the chemical method corrected for a standard loss of 0.07 mg of lead per sample, the mean lead excretion of a group of medical students amounted to 0.24 mg for each twenty-four hours in the feces and to 0.04 mg per liter in the urine.

4 The mean quantity of lead in the blood of the same group of subjects was 0.06 mg per hundred cubic centimeters, as determined spectrographically.

5 The mean daily lead content of the feces of a group of nine normal subjects as determined by chemical analysis over a period of months amounted to $0.193 \text{ mg} \pm 0.003 \text{ mg}$. Allowing for an average loss of 0.07 mg of lead per sample in analysis, the mean amount of fecal lead excreted daily was approximately 0.26 mg.

6 The mean urinary lead excretion of these individuals determined by chemical analysis ranged from 0.014 mg to 0.029 mg per liter, and from 0.014 to 0.032 mg for each twenty-four hours. After correction for loss, the actual means ranged from 0.06 to 0.08 mg per liter and from 0.05 to 0.10 mg for each twenty-four hours.

7 The source of the lead intake was found largely in the food. Its mean daily lead content as based on chemical analysis was $0.176 \text{ mg} \pm 0.004 \text{ mg}$. When corrected for chemical loss, the mean daily lead intake was approximately 0.25 mg, an amount slightly but not significantly less than the lead output in the feces.

[EDITORIAL NOTE.—The three preceding papers, together with the three papers by Drs. Jones, Belknap and Gray, to appear next week, constitute a symposium on lead poisoning. The discussion will follow the papers to be published in the next issue.]

Paralysis Agitans—It is only twenty-two years ago that the corpus striatum was shown by Kinnier Wilson to be the site of degenerative lesions associated with rigidity and tremor. Paralysis agitans or Parkinson's disease has been known for over a hundred years since his original description in 1817, but it is only of late years that Ramsay Hunt and others have assigned the site of its lesion in the pallidum region of the lenticular nucleus. This has not yet been so conclusively proved as in Wilson's disease, or progressive lenticular degeneration. Wilson demonstrated chronic degeneration in the putamen in several cases of this disease, which may be familial. These cases do not resemble Parkinson's disease at all closely, though the tremors and rigidity recall this disease. Characteristic signs are the spastic smile with mouth fixed open, the meaningless laughter, mental hebetude, and especially the associated atrophic cirrhosis of the liver. Allied to this disease is torsion spasm—a rare form of irregular slow spastic movements of head, trunk, and limbs. This disease differs from athetosis, a sequel of infantile hemiplegia or diplegia, in that in the latter the torsion spasms affect the limbs only.—Harris, Wilfred. Tremor, Ataxy and Spasm. *Lancet* 2:1145 (Nov. 24) 1934.

3 Cholak, Jacob. The Quantitative Spectrographic Determination of Lead in Urine. *J. Am. Chem. Soc.* to be published.

TUMORS OF THE FRONTAL LOBE

CLINICAL OBSERVATIONS IN A SERIES
VERIFIED MICROSCOPICALLY

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This study is the result of an analysis of the clinical observations in a series of 314 cases of tumor of the frontal lobe encountered at the Mayo Clinic up to Jan 1, 1933, in which the tumor was verified microscopically. In a previous paper by Voris, Kernohan and Adson,¹ this series was analyzed from the standpoint of the anatomic site, pathologic classification and operability of the tumors. Various anatomic groups were established, for example, that in which the tumor was confined to the frontal lobe, comprising 122 tumors, that in which the tumor was primary in the frontal lobe but invaded other parts of the brain, comprising 152 tumors, and, finally, that in which the tumor originated elsewhere but invaded the frontal lobe secondarily, comprising forty tumors.

In summarizing and tabulating the principal clinical studies in this paper, we will give the relative frequency of occurrence of these growths and will emphasize the predominant symptoms. Special attention will be paid to certain signs and symptoms that universally have been considered to be diagnostic of lesions of the frontal lobe. In addition, the relation of age and sex of the patient to the pathologic type of the tumor will be noted.

Since careful analysis has failed to reveal any significant difference in the clinical manifestations in the anatomic groups previously mentioned, we are presenting the results of analysis of the entire series, thus avoiding the confusion of a separate presentation for each group. However, for purposes of comparison, we have analyzed separately forty-nine of the 122 cases in which the tumor was confined to the frontal lobe, in these forty-nine cases we had information from operation or necropsy as to the exact extent of the tumor. This group of forty-nine cases has still further been divided into three subgroups, depending on the areas, according to Campbell's classification (quoted by Tilney and Riley²) which were involved by the tumor. These subgroups are that in which prefrontal and frontal areas (silent cortex) were involved, comprising thirty-three tumors, that in which premotor and motor areas only (electrically excitable cortex) were involved, comprising three tumors, and that in which some combination of these areas was involved, comprising thirteen tumors. The presentation of the observations in these forty-nine cases in which the region of involvement was definitely known will be made in some of the tables side by side with the observations for the entire series, thus affording opportunity for direct comparison.

In regard to the relation between age and sex of patients in this series and pathologic type of tumor, by far the greatest number of patients, 241, or 77 per cent, were in the fourth, fifth or sixth decades of life. Gibbs,³ in reviewing 262 cases of tumor of the frontal lobe at Cushing's clinic, found that only 65 per cent of his patients were in these decades of life. On the other hand 29 per cent of his patients were more than 60 years old compared to about 4 per cent of ours. There is no very significant difference in the age incidence for any of these types of tumor, although a slightly greater number of patients with endothelioma than of those with glioma were in these three decades of life. There were more men than women in this series, approximately in the ratio of three to two. However, of patients with various types of glioma there were nearly twice as many men as women, whereas of those with endothelioma the sexes were about equally divided (table 1).

When the various types of tumor were arranged according to duration of symptoms from the onset of the initial symptom to the time the patient came to the clinic for attention, it was of particular interest to find that almost half (45 per cent) of the patients with spongioblastoma multiforme in this series had had symptoms referable to an intracranial lesion for more than a year, this was quite contrary to the usually accepted view. Again, taking patients with various types of glioma as a group (194), it will be noted that exactly 50 per cent (ninety-seven) of them had had symptoms of tumor for one year or more before coming to the clinic (table 2).

It should be emphasized that these figures for duration of symptoms are from the onset of the initial symptom that was referable to an intracranial lesion, to the time at which the patient sought relief at the clinic. We believe that such figures, particularly for the group of tumors in question, are valuable for correlation with the microscopic evidences of malignancy and with the so-called survival periods, which have been published by Cushing⁴ and others, that give the average survival periods for the different pathologic groups irrespective of the situation of the tumor, these usually include the survival period after the operation or treatment with roentgen rays.

The duration of life compatible with intracranial tumor depends on at least three factors. The first factor is the life cycle or rapidity of growth of the neoplasm. This is important not only because of the simple time element concerned in growth but also because the intracranial contents can better adjust themselves to slow increase in pressure, hence, slow-growing tumors may exist for a long time and reach relatively great size before giving rise to acute symptoms. The second factor is the situation of the tumor, and this also may be of the greatest importance, for example, a fibrous astrocytoma in the midbrain may, while still of very small size, produce death by blocking the aqueduct of Sylvius and producing internal hydrocephalus. Again, tumors of the brain stem must soon result fatally because of the importance to life of the bulbar or diencephalic centers that become involved early in these cases. On the other hand, tumors may reach great size before causing serious symptoms, especially if situated

From the Sections on Neurology and Neurologic Surgery the Mayo Clinic.

Read before the Section on Nervous and Mental Diseases at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

¹ Voris H C, Kernohan J W, and Adson A W. Tumors of the Frontal Lobe. An Anatomic and Pathologic Study. Arch. Neurol. & Psychiat. to be published.

² Tilney, Frederick, and Riley, H A. The Form and Function of the Central Nervous System. ed 2. New York: Paul B Hoeber, 1923. p. 976.

³ Gibbs F A. Frequency with Which Tumors in Various Parts of the Brain Produce Certain Symptoms. Arch. Neurol. & Psychiat. 28: 969-989 (Nov.) 1932. Frequency with Which Tumors in Various Parts of the Brain Produce Headache. ibid. 31: 152-153 (Jan.) 1934.

⁴ Cushing Harvey. Studies in Intracranial Physiology and Surgery. New York: Oxford University Press, 1925. pp. 104-142.

above the tentorium. Finally, the third factor is the treatment that is given, namely, the type and extent of surgical procedure and the dose of radiation.

In this paper the factor of treatment is not discussed, since our object is to present clinical observations. Further, in a series of tumors confined to the frontal lobe the factor of situation of the neoplasm, although important, is perhaps less so than it would be for tumors in any other part of the brain. Only rarely do tumors of the frontal lobe produce obstructive hydro-

TABLE 1—*Relationship of Age and Sex to Type of Tumor in 314 Cases of Verified Tumors of the Frontal Lobe*

Type of Tumor	Males	Fe- males	Age Years										Total
			1 to 10	11 to 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 70	70+			
Oligodendroblastoma	11	8	1	1	1	5	8	3					19
Spongiosoblastoma mul- tiforme	75	38	3	4	20	30	31	21	4				113
Astrocytoma	18	10	1	3	12	10	1	1					23
Gliomas rarer type	23	11	5	2	4	10	0	4					4
Endotheliomas	50	53	2	3	11	38	27	21	6	1			109
Other tumors	8	9				6	3	2					11
Total	191	123	12	10	39	101	88	52	11	1			314
Per cent*	61	39	4	3	12	32	28	17	4	0.3			

* Percentage not carried out to decimal places except in instances in which it is less than 1 per cent.

cephalus (tumors in the median line may do so by occlusion of the foramen of Monro, but this is relatively rare), and moreover this portion of the brain contains a relatively large area of so-called silent cortex. For these reasons we believe that this series of cases gives a good picture of the average duration of symptoms associated with various types of glioma.

The initial complaint is a matter of interest, as often it may be the only symptom for a considerable period of time. In 112 of 312 cases the initial complaint was some type of convulsive seizure. Grand mal was by far the most prevalent type and it occurred as the initial

TABLE 2—*Relation of Type of Tumors to Duration of Symptoms in 312 Cases of Verified Tumor of the Frontal Lobe*

Type of Tumor	Duration of Symptoms					Cases	Total
	1 to 6 Months	6 to 12 Months	1 to 2 Years	2 to 5 Years	5+ Years		
Oligodendroblastoma	5	4	1	5	4	19	10
Spongiosoblastoma multiforme	40	22	10	24	11	113	113
Astrocytoma	7	3	1	6	11	28	23
Glioma rarer type	11	5	7	7	4	34	34
Endotheliomas	5	12	31	31	28	107	109
Other tumors	4		3	3	1	11	11
Total	72	46	59	70	59	312*	312
Per cent	23	15	19	24	19		

* In two cases in the series the tumor was found accidentally at necropsy and proved to be an endothelioma confined to the frontal lobe. As these growths had given no objective signs or symptoms they are omitted from the table.

complaint in seventy-five cases, or about 25 per cent of all cases in the series. It was the initial complaint in approximately a fifth of the cases in which the tumor was confined to the prefrontal-frontal area (silent cortex.) Jacksonian fits occurred in twenty-nine cases and petit mal in eight as the initial complaint. Headache was the next most common initial complaint, occurring in eighty-five cases, or 27 per cent of the cases in the series. Mental change of some type was the next most common initial complaint, occurring in thirty-one cases, or 10 per cent of the cases in the series.

Although failing vision was the initial complaint in only twenty-five cases, 8 per cent of those in this series,

it was the initial complaint in 13 per cent of the cases in which the tumor was confined to the prefrontal-frontal area, the large number of basofrontal endotheliomas (eleven) in the latter group accounts for this increased frequency. The only other initial complaints occurring with greater frequency than in 3 per cent of all cases in this series are those of hemiparesis, which occurred in thirteen cases, and of extracranial swelling, which occurred in ten. The initial complaint in the remaining cases was as follows: general debility in five cases, dizziness in five, syncope in four, loss of sense of smell in four, paresthesia in four, drowsiness in three, aphasia in three, ataxia in three, vomiting in two, and stiff neck, insomnia and uncinate fits in one each.

When one comes to consider the various complaints from which each patient suffered, one finds a little different picture. Headache was the most common complaint in all groups except those in which the tumor was confined to the premotor or motor areas or to a

TABLE 3—*Various Complaints in 314 Cases of Verified Tumors of the Frontal Lobe*

Complaint	Forty Nine Cases in Which Tumor Was Confined to Area				Total
	Total Cases	Pre-frontal	Premotor	Prefrontal Premotor	
Headache	261 (83%)	27 (82%)	2	19	33
Convulsive attacks	218 (69%)	18 (55%)	4	14	36
Grand mal	123 (39%)	14 (42%)	1	9	24
Right sided tumors	41 (33%)	5	0	2	7
Left sided tumors	56 (46%)	6	1	6	12
Bilateral tumors	26 (21%)	3	0	2	5
Jacksonian fits	67 (21%)	2	3	2	7
Petit mal	28 (9%)	2	0	3	5
Mental change	193 (63%)	21 (64%)	0	10	31
Nausea and vomiting	161 (51%)	19 (56%)	1	0	20
Visual disturbances	136 (43%)	22 (67%)	0	4	26
Hemiparesis	111 (35%)	3 (9%)	2	4	9
Total	314	33	3	13	49

combination of prefrontal and premotor areas, in the first instance some form of convulsion outranked headache in frequency and, in the second, both convulsive attacks and mental change outranked headache. Headache was present in 83 per cent of cases in the entire series and in about the same percentage of cases in which the tumor was confined to the prefrontal-frontal areas (table 3).

Convulsive attacks ranked next in frequency, occurring in 69 per cent of all cases and in 55 per cent of cases in which the tumor was confined to the prefrontal-frontal area. In the latter group, however, they stand next to last in order of frequency, being outranked by mental change, by visual disturbances, and by nausea and vomiting. It should be stated that the total for all forms of epileptiform attack is somewhat misleading, as some cases are counted twice since they presented various combinations of grand mal, focal convulsions and petit mal. Thus, in cases in which the tumor was known to involve premotor or motor areas or some combination of these areas with frontal and prefrontal areas, the total of the various forms of epileptiform

attack exceeds the total number of crises in the group. Grand mal alone was present in about 40 per cent of all crises in the series. Parker,⁵ in a previous study at the clinic of convulsions in brain tumor found that 52 per cent of a series of fifty patients with tumor of the frontal lobe suffered from convulsive attacks. The side involved by the tumor among patients suffering from grand mal is of interest. In the entire series 123 patients suffered from attacks of grand mal before coming to the clinic, 46 per cent of these had left-sided tumors, 33 per cent right-sided tumors, and 21 per cent bilateral tumors. Of the 314 tumors, 40 per cent were on the left side, 36 per cent on the right and 24 per cent were bilateral. Thus, there is a slight, but not very significant, preponderance of involvement of the left side among patients suffering from generalized convulsions. Jacksonian attacks or focal convulsions were less prevalent than grand mal, except in the three cases in which the tumor was known to be confined to the premotor-motor area. All three of these patients had jacksonian attacks of the contralateral side and one had grand mal in addition. Petit mal occurred still less frequently.

Mental change was the next most frequent complaint. These mental phenomena will be discussed in connection with the results in examinations of patients in the series. It should be emphasized that the figures in table 3 represent those crises in which some type of mental change was complained of either by the patient or by those accompanying him at the time he first came to the clinic. Sixty-three per cent of all cases presented this complaint, as did about the same percentage of those in which the tumor was known to be confined to the prefrontal-frontal area.

Nausea and vomiting ranked next in importance in the entire series, being far outranked by headache (as Frazier and Gardner⁶ found) with which it is usually bracketed in discussions of the symptoms of brain tumor. Nausea and vomiting were present in 50 per cent of all cases and in 58 per cent of those in which the tumor was known to be confined to the prefrontal-frontal area. Gibbs³ analyzed his cases for projectile vomiting and found it present in 10 per cent of the cases of tumor of the frontal lobe. Like Kolodny,⁷ we found projectile vomiting rare, and when it had been present it had usually occurred on only one or two occasions and had been associated with more frequent vomiting of the usual type.

Visual disturbance, of some sort, was present in 43 per cent of all cases and in 67 per cent of those in which the tumor was known to involve only the prefrontal-frontal area. Again the large number of basofrontal endotheliomas in this group probably accounts in part for this increase in the latter figure over that for the entire series. For example, eleven of the thirty-three patients with prefrontal-frontal tumors had basofrontal endotheliomas (all with visual disturbance), these being left out of account, half of the rest still had some visual complaint.

The subject of weakness or paralysis of the contralateral side of the face, or of the extremities will be discussed under observations at examination. On

admission to the clinic, 35 per cent of the patients in the entire series complained of some weakness of the contralateral side of the face or extremities, but a similar complaint was made in only 9 per cent of cases in which the growth was known to involve the prefrontal-frontal area alone.

The most frequent change found at examination of patients in the series, exclusive of mental changes was some degree of choking of the optic disks, from 1 diopter to a maximum of 7 or 8 diopters. It occurred in 62 per cent of all cases and in 79 per cent of those in which the neoplasm was confined to the prefrontal and frontal areas alone. Gibbs, in his large series, tabulated only cases in which choking of disks

TABLE 4—Results of Examination in 314 Cases of Verified Tumor of the Frontal Lobe

Manifestations at Examination	Total Cases	Forty Nine Cases in Which Tumor Was Confined to Area				Total
		Pre-frontal	Pre-motor	Pre-motor Pre-motor	Pre-motor Pre-motor	
Choked disks	105 (32%)	26 (79%)	0	6	32	32
Reflex disturbances	181 (58%)	15 (43%)	3	9	27	27
Hemiparesis	133 (42%)	6	3	6	15	15
Paresis of seventh cranial nerve	190 (61%)	7	2	6	15	15
Field defects	99 (32%)	16 (48%)	0	3	19	19
Cerebellar signs	99 (32%)	10 (30%)	1	4	15	15
Total cases of aphasia	91 (29%)	5 (15%)	1	5	11	11
Right sided tumors	17 (5%)	0	0	1	1	1
Left sided tumors	80 (26%)	4	1	4	9	9
Bilateral tumors	15 (5%)	1	0	0	1	1
External ocular palsies	65 (21%)	9 (27%)	0	2	11	11
Sphincter disturbances	62 (20%)	7 (21%)	0	3	10	10
Sensory disturbances	48 (15%)	1	0	1	2	2
Special signs	47 (15%)	2	0	3	5	5
Nystagmus	40 (13%)	4	1	2	7	7
Total	314	33	3	13	49	49

amounted to 4 diopters or more, the total of such cases was 28 per cent of his series, a surprisingly high figure considering the high degree of choking of the disk (table 4).

Reflex disturbances on the contralateral side, either increase in tendon reflexes or decrease in cutaneous reflexes, or the presence of such pathologic reflexes as Hoffmann's, Babinski's or Rossolimo's, were the next most important changes from the standpoint of frequency. They were present in 58 per cent of cases of the entire series and in 45 per cent of those in which the tumor was known to involve only the prefrontal-frontal area. As might be expected, such reflex disturbances were present in about three-fourths of the cases in which tumors were confined, in part at least, to the premotor or motor areas.

It is of interest to contrast the figures for some degree of weakness of the contralateral extremities with those for contralateral central weakness of the facial

⁵ Parker H. L. Epileptiform Convulsions. The Incidence of Attacks in Cases of Intracranial Tumor. Arch. Neurol. & Psychiat. 23: 1032-1041 (May) 1930.

⁶ Frazier C. H. and Gardner W. J. The Mechanism and Symptoms of Increased Intracranial Pressure Due to Encapsulated and Infiltrating Tumors of the Cerebral Hemisphere. The Intracranial Pressure in Health and Disease. Baltimore: Williams and Wilkins Company 1929. pp. 386-396.

⁷ Kolodny Anatole. Symptomatology of Tumor of the Frontal Lobe. Arch. Neurol. & Psychiat. 21: 1107-1127 (May) 1929.

muscles, since Sachs⁸ and others have emphasized this as an important diagnostic sign in tumor of the frontal lobe. There is no significant difference between the two in cases in which the tumor was known to be confined to the prefrontal and frontal areas. For the whole series, hemiparesis ranks slightly higher in order of frequency. In a few cases of the series there was homolateral weakness of the extremities. Kernohan and Woltman⁹ have discussed the homolateral pyramidal signs in brain tumor and given the probable anatomic explanation.

Perimetric field defects were present in 32 per cent of cases in the entire series and in almost half those in which the growth was confined to the prefrontal-frontal area. Two factors must be taken into account with these figures. 1 Many patients are not able to cooperate sufficiently for perimetric examination, so doubtless the figures all are too low. This criticism may be applied, of course, to any of the changes listed, although to a much greater extent to field defects than to such conditions as choked disks, reflex disturbances, palsies and so forth, which can be elicited with little or no cooperation on the part of the patient. 2 The number of basofrontal tumors present again increases the figures for tumors confined to the prefrontal-frontal area. Thus, if such basofrontal tumors are left out of account, six of the twenty-two patients, or 27 per cent, suffered from some type of perimetric field defect, a radically different figure from that just given.

Under the heading cerebellar signs, we have included the manifestations of ataxia and incoordination and adiadokinesis of the homolateral extremities. One or more of these signs was present in 32 per cent of all cases and in about the same percentage of those in which the tumor was confined to the prefrontal-frontal area. Hare¹⁰ reviewed a series of fifty cases of tumor of the frontal lobe with reference to cerebellar signs, and he found that 10 per cent presented marked cerebellar signs and 40 per cent showed few or vague signs. The lesion was bilateral or in the median line in three of the cases with marked cerebellar signs and probably in a similar situation in the other two. Gordon¹¹ recently reported five cases of unilateral tumor of the frontal lobe with cerebellar manifestations. In a previous paper, Voris, Kernohan and Adson referred to the probable anatomic explanation of the cerebellar phenomena of tumors of the frontal lobe and pointed out the importance, in this regard, of the thalamo-frontal sensory connections, described by Poliak.¹² A certain small proportion (probably about 10 per cent) of tumors of the frontal lobe are very difficult to distinguish clinically from lesions of the posterior fossa and probably they will always require the aid of ventriculography in arriving at a final diagnosis.

Disturbance in speech of some degree was present in 29 per cent of cases in the entire series and in 15 per cent of those in which the neoplasm was confined to the prefrontal-frontal area. Of the ninety-one cases presenting some disturbance in speech, in 65 per cent the tumor was on the left side, in 19 per cent on the right side, and in 16 per cent it was bilateral. Aside

from the possibility of contralateral pressure on the motor speech centers or on their efferent fiber tracts, the question naturally arises in what proportion of the seventeen cases of aphasia with right-sided tumors the patients were left handed. Unfortunately, our records are not adequate on this point. An additional possibility is present, namely, that, in some cases in which persons are right handed but have a hereditary tendency toward left-handedness, the motor speech centers may be situated on the right side in spite of the dominance of the left hand center.

External ocular palsies, usually of the external rectus muscle but occasionally of muscles innervated by the oculomotor or trochlear nerves, were present in about a fifth of the cases in the entire series and in a little more than a fourth of those in which the tumor was confined to the prefrontal-frontal area. Sphincteric disturbances, often considered a part of the classic picture of tumor of the frontal lobe, were present in 20 per cent of all cases, and sensory disturbances on the contralateral side of the body in 15 per cent. Only one case, in which the growth was confined to the prefrontal-frontal areas, presented sensory disturbances.

Under the heading of special signs we have included such conditions as reflex or so-called forced grasping, apraxia, deviation of the head or eye, and perseveration or retardation of motor movements. Adie and Critchley,¹³ in 1927, collected from the literature twenty-two cases of forced grasping and groping associated with lesions of the frontal lobe and added three cases of their own. Since that time, the phenomenon has received considerable attention from physiologists. Fulton and others¹⁴ have produced it experimentally by producing lesions of the contralateral premotor area (area 6 of Brodmann). Kennard and Fulton¹⁵ recently concluded from similar experiments with primates that spasticity and reflex grasping associated with Babinski and Rossolimo signs pointed to a lesion of the premotor area or of its projection system. The relative parts played by lesions of the premotor and motor cortex in producing spasticity seen clinically in man has not entirely been settled. The signs referred to appeared singly or in combination in 15 per cent of the cases in the entire series, in 6 per cent of those in which the tumor was confined to the prefrontal-frontal area, and in 19 per cent of those in which the premotor or motor areas were to some extent involved.

Nystagmus may be considered a cerebellar or vestibular sign. However, an electrically excitable center for ocular movements is known to exist in the posterior part of the middle frontal convolution. Fox¹⁶ has studied the disorders of optic nystagmus in lesions of the frontal lobe and concludes that, when disorders are present, they are elicited when visual objects are moving in a direction toward the side of the lesion. At any rate, we have listed nystagmus as a separate manifestation. It occurred in 13 per cent of all cases and in practically the same percentage of those in which the growth involved only the prefrontal and frontal areas.

The mental phenomena encountered in cases of intracranial tumor, particularly in those of tumor of the

8 Sachs Ernest. Lesions of the Frontal Lobe. A Review of Forty Five Cases. *Arch. Neurol. & Psychiat.* 24: 735-742 (Oct.) 1930.

9 Kernohan J. W., and Woltman, H. W. Incisura of the Crus Due to Contralateral Brain Tumor. *Arch. Neurol. & Psychiat.* 21: 274-287 (Feb.) 1929.

10 Hare C. C. The Frequency and Significance of Cerebellar Symptoms in Tumors of the Frontal Lobes. *Bull. Neurol. Inst. New York* 1: 532-562 (Nov.) 1931.

11 Gordon Alfred. Frontal Lobe Lesions with Cerebellar Manifestations. *J. Nerv. & Ment. Dis.* 79: 411-422 (April) 1934.

12 Poliak S. The Main Afferent Fiber Systems of the Cerebral Cortex in Primates. *Univ. California Pub. in Anat.* 2: 370 1932.

13 Adie W. J. and Critchley Macdonald. Forced Grasping and Groping. *Brain* 50: 142-170 (June) 1927.

14 Fulton J. F., Jacobsen C. F. and Kennard Margaret A. A Note Concerning the Relation of the Frontal Lobes to Posture and Forced Grasping in Monkeys. *Brain* 55: 524-536 (Dec.) 1932.

15 Kennard Margaret A. and Fulton J. F. The Localizing Significance of Spasticity, Reflex Grasping and the Signs of Babinski and Rossolimo. *Brain* 56: 213-225 (July) 1933.

16 Fox, J. C. Disorders of Optic Nystagmus Due to Cerebral Tumors. *Arch. Neurol. & Psychiat.* 28: 1007-1029 (Nov.) 1932.

frontal lobe, have always attracted a great deal of interest. The literature on the subject is rather voluminous and is difficult to review critically because of the different terminologies and points of view of the various writers and because, in many of the larger series reported cases have been collected from the literature, making, it seems to us, for a great deal of

TABLE 5—Mental Changes in 314 Cases of Verified Tumor of the Frontal Lobe

Symptoms	Total Cases	Forty Nine Cases in Which Tumor Was Confined to Area			Total
		Pre-frontal	Pre-motor	Pre-motor	
Total cases with mental changes	210 (70%)	22 (67%)	0	10	32
Right sided tumors*	74 (34%)	6	0	3	9
Left sided tumors	87 (40%)	8	0	6	14
Bilateral tumors	49 (26%)	8	0	1	9
Indifference to environment	181 (85%)	19 (87%)	0	8	27
Memory loss	158 (75%)	16 (73%)	0	5	21
Personality change (change in character)	126 (60%)	11 (52%)	0	5	16
Drowsy stuporous comatose	102 (48%)	10 (45%)	0	0	10
Disorientation (time and place)	48 (23%)	4 (18%)	0	0	4
Witzelsucht euphoria, puerility	34 (16%)	2 (9%)	0	0	2
Depression states	24 (11%)	4 (18%)	0	2	6
Delirium states	16 (8%)	3 (14%)	0	1	4
Total	314	83	3	13	49

error both as to anatomic localization of the tumor and as to interpretation of the mental phenomena.

Some of the more important papers are those of Baruk,¹⁷ Giannelli,¹⁸ Muller,¹⁹ Schuster²⁰ and Vincent.²¹ The monograph of Baruk is one of the most valuable. After a clear exposition of the difficulty of coordinating cases from the literature and of attempts to base psychic disturbances on localization, he divided the mental symptoms of tumors of the frontal lobe into three classes (1) mental impairment, (2) changes of character and emotion, and (3) changes of spatial orientation. He reported only ten personal cases of tumor of the frontal lobe in which mental symptoms were present. Giannelli reported six personal cases, all presenting mental changes, and collected 165 cases from the literature with mental symptoms in 69 per cent. Schuster made an elaborate report of 147 cases of tumor of the frontal lobe with mental symptoms, all his cases, however, were from the literature, thus laying his report open to the criticism previously mentioned.

Our records have primarily been made from the standpoint of clinical neurology and not from that of psychiatry. This insures that the figures given in most

cases represent well marked phenomena and in all probability they are too low. This, too, may account for the relatively higher percentage of such phenomena as loss of memory and indifference to environment, contrasted with more imponderable phenomena such as disorders of humor or character. With these reservations table 5 is presented.

In addition to the 198 patients with a complaint of mental change, the results of examination indicated that twenty-one more presented objective evidence of mental abnormality. Thus 219 patients, or 70 per cent, exhibited some mental abnormality, as did the same percentage of those with tumors in the prefrontal-frontal area. Thus mental abnormality was the most common manifestation except in the small group in which the areas involved were known. It equals choked disks in frequency (table 4) but was exceeded by the latter in cases in which prefrontal and frontal areas were involved, it was not found at all in the cases in which the premotor and motor areas were involved (table 5). Considerable attention has been paid in the literature to the question of the dominance of the left frontal lobe in the psychic life of the individual, and a good deal of conflicting clinical evidence has been presented. Taking the series as a whole, lesions associated with mental changes were on the left side in 40 per cent of the cases, on the right side in 34 per cent, and bilateral in 26 per cent. These figures correspond almost exactly to the percentages previously given for the situation of tumors of the entire series, namely, left side 40 per cent, right side 36 per cent, and bilateral 24 per cent. The total figures are greater than those previously reported by one of us,²² who found that 40 per cent of 116 patients with tumor of the frontal lobe showed mental signs.

Indifference to environment was the most frequent mental symptom (table 5). Next in order of frequency was loss of memory and, following that, some type of change in personality or in character. We would especially call attention to the question of orientation as to time and place. Marie and Behague²³ considered disorientation in space to be a definite syndrome associated with lesions of the frontal lobe. We have not found it so, the total for all groups for dis-

TABLE 6—Roentgenographic Evidence of Tumor in 314 Cases

	Total	Direct Evidence*	Indirect Evidence†
All tumors	314	39 (12%)	65 (21%)
Endotheliomas	109	31 (28%)	82 (75%)
Oligodendrogliomas and oligodendroblastomas	25	4 (16%)	10 (40%)

* Direct evidence includes proliferation or erosion or both of bone over an underlying tumor, or visualization of calcium deposits in a tumor.

† Indirect evidence includes evidences of increased intracranial pressure such as thinning or pressure erosion of the bones of the calvarium and erosion of the sella turcica and of the clinoid processes.

orientation in time and place were the same, so that we have not listed them separately. In addition, we found few patients showing one phase of disorientation without the other. The phenomenon of disorientation was encountered in only 15 per cent of cases in the entire series and in a slightly smaller proportion of cases in which the tumor involved only the prefrontal and frontal areas. Changes in character and in emotion,

22 Moersch F P. *Psychic Manifestations in Cases of Brain Tumors*, *Am. J. Psychiat.* 4: 705-724 (April) 1925.

23 Marie Pierre and Behague P. *Syndrôme de désorientation dans l'espace consécutif aux lésions profondes du lobe frontal*. *Rev. neurol.* 35: 314 (Jan.) 1919.

17 Baruk, H. *Les troubles mentaux dans les tumeurs cérébrales. Étude clinique pathogénique, traitement*. Paris: Gaston Doin et Cie 1926.

18 Giannelli A N. *Gli effetti diretti ed indiretti dei neoplasmi encefalici sulle funzioni mentali*. *Polichinico (sez. med.)* 4: 301-371 (July 15) 1897.

19 Muller Edward. *Ueber psychische Störungen bei Geschwulsten und Verletzungen des Stirnhirns*. *Deutsche Zeitschr. f. Nervenheilk.* 21: 178-208 (March 27) 1902.

20 Schuster P. *Psychische Störungen bei Hirntumoren. Klinische und statistische Betrachtungen*. Stuttgart: F. Enke 1902.

21 Vincent Clovis. *Diagnostic des tumeurs comprimant le lobe frontal*. *Rev. neurol.* 1: 801-884 (June) 1928.

such as witzelsucht, euphoria, moria and puerility, were even less frequent, occurring in 11 per cent of all cases but in only 6 per cent of those in which the growth was known to be confined to the prefrontal-frontal area

The conclusion is inevitable, we believe, that, whereas spatial disorientation or changes in character or in emotion may be valuable diagnostic signs when present, their absence is small assurance that a lesion of the frontal lobe does not exist

With increasing technical skill in making roentgenograms of the skull and with increasing knowledge of their interpretation, the roentgenologic examination of the head has become more and more important in the diagnosis of intracranial lesions. For this reason it is of interest to tabulate the results of roentgen examinations in this series of tumors. Table 6 gives the roentgenographic evidence, both direct and indirect, for the entire series. In addition, it is given for the two groups of tumors, endotheliomas, and oligodendrogliomas and oligodendroblastomas, for which it is traditionally the most useful. In the entire series, there was roentgenographic evidence pointing to the presence of an intracranial tumor in 124 cases, or about 40 per cent. The ratio of direct to indirect evidence was a little less than 1 to 2

Of the 109 patients with endothelioma, sixty-three or 58 per cent gave roentgenographic evidence of an intracranial lesion, with a practically equal division between the direct and indirect classes of evidence. Of the twenty-eight patients with oligodendroglioma or oligodendroblastoma, fourteen gave roentgenographic evidence of the lesion, ten indirect and four direct. It should be noted that for these two classes of tumor roentgenographic evidence of an intracranial lesion was given in 62 per cent of the 124 cases in the entire series and in 90 per cent of the thirty-nine cases with direct evidence of such a lesion

SUMMARY

The clinical observations have been tabulated for a series of 314 cases of tumors of the frontal lobe microscopically verified, these cases had previously been classified as to anatomic site and pathologic classification of the lesion. The age and sex of the patients are given for each pathologic type of tumor. The duration of symptoms before patients came to the clinic is considered in relation to the type of tumor present

The initial complaint in each patient's history is considered in relation to the various anatomic groups of tumors, as also are the principal complaints from the standpoint of frequency, which the patients made when registering at the clinic. The same consideration is given to the principal observations made at examination, including roentgenographic signs. Special attention has been paid to mental phenomena. The side of the brain involved by the tumor has been considered in relation to the occurrence of grand mal, aphasia and mental change

ABSTRACT OF DISCUSSION

DR. ALFRED W. ADSON, Rochester, Minn. In reviewing with Dr. Voris this series of tumors of the frontal lobe in which increased intracranial pressure and changes in mental and psychic reactions were not accompanied by motor sensory or reflex disturbances, I have looked for symptoms that might indicate the lobe involved. Unfortunately the description of the psychic changes was not always recorded. I have been sufficiently impressed by the phenomenon that right-handed patients with tumors in the right frontal lobe are euphoric, are agreeable and lack fear whereas right-handed patients with

tumors in the left frontal lobe are morose, surly and obstinate, to consider it worth while recording such symptoms. I have not had occasion to observe whether the converse is true for left-handed patients. All psychic changes are altered when the intracranial pressure increases to the extent that coma results

DR. F. J. GERTY, Chicago. The authors found that there was some evidence of mental symptoms in 70 per cent of the patients with frontal lobe tumors. The study has been primarily a neurologic one. It would be of interest to know whether uniform psychiatric examinations were made in any considerable number of the cases presented here. Eight evidences of mental disturbance were shown. The most frequently encountered symptom was emotional indifference or the indifference of a patient to his condition or his environment. Intracranial pressure phenomena and other somatic disease may present symptoms of this kind. The next mental symptom noted was loss of memory. It would make some difference what sort of memory defect was present. A destructive retrograde amnesia, such as is found in dementia, would need to be distinguished from the failure of memory, because the patient was in an unfavorable condition to recall accurately past conditions. Personality and character change was the next symptom in order of frequency. These patients are under a toxic, organic type of stress. Two possibilities are to be considered with regard to symptoms of this type. First, organic stresses may bring out or exaggerate personality tendencies that are already present in the individual. Second, and it seems to me more important, clouding of consciousness renders the patient more a creature of his automatic reactions and he is dependent on suggestions either from within or from without. The drowsy states and disorientation were next listed. They probably have a similar explanation, the degree of clouding of consciousness and the indifference to environment being greater in both disorientation and in drowsy states. My own experience would indicate that spatial and temporal disorientation usually go together as the authors have found. Disorientation probably does occur more commonly than it is discovered. However, the patient's condition with regard to orientation varies from time to time with the intensity of his symptoms, and it also varies with the conditions under which he is examined. For instance, darkness and confusion changes in environment tend to cause disorientation. Delirious states are listed separately. Euphoria was noted in thirty-four instances and depressed states in twenty-four. Taking all of the mental symptoms described as a group I am of the belief that they indicate the fairly natural mental responses to discomfort, impaired sensation and clouding of consciousness. The latter may be partially protective. The relation of orientation to special areas of the brain is very doubtful. Disorientation must still be regarded as a general effect. Certain psychogenic effects must be allowed for

DR. LLOYD H. ZIEGLER, Albany, N. Y. The apparent discrepancy between the authors' observations and those of others regarding the length of the clinical course produced by the malignant glioblastoma group is not easy to explain. It may be related to certain disabilities of observation that arise when the frontal lobes are the victims of a destructive lesion. Isolated symptoms, such as nystagmus or pyramidal tract signs, are not easy to interpret. Drs. Woltman and Kernohan have demonstrated that a neoplasm may push the brain in such a way as to produce pyramidal tract signs on the side of the lesion. Symptoms and signs may be produced by edema adjacent to the lesion also by occlusion of blood vessels affecting brain areas at some distance from the site of the neoplasm. While patients with frontal tumors present outstanding difficulties to psychiatric study, further detailed observations over longer periods of time would doubtless clarify much that is obscure. Sometimes the symptomatology changes profoundly after from 100 to 200 cc. of 50 per cent dextrose has been administered intravenously. How many of the symptoms are on the basis of delirium due to brain swelling and the absorption of destroyed brain products, and how many on the basis of fundamental failure in brain support, is not clear

DR. ADRIAN VERBRUGGHE, Chicago. From the tables it is obvious that there are many similar signs in both cerebellar and frontal lobe tumors and it seems to me that this difficulty in decision offers one of the chief indications for ventriculog-

raphy as often this is the only means of accurate diagnosis in these cases. Occasionally in frontal lobe tumors the syndrome of Foster Kennedy develops and here one may find an elevation of one optic disk and a primary optic atrophy of the other. In these cases the tumor will be found in the frontal lobe on the side of the primary optic atrophy. If for some reason a ventriculogram cannot be made, it may be wise to place the patient in a face down position for a few moments and tap the ventricles. If bilateral internal hydrocephalus is found, of course the tumor is cerebellar, at least in a vast majority of cases, but in an exceptional few it may be found on the third ventricle. However, if one dilated ventricle is found and the other ventricle is collapsed, the tumor will be found on the side of the collapsed ventricle. The length of the history is not always a guide to the type of tumor to be found, as it is known that patients present themselves with a short history which has lasted not more than three weeks or a month, and at operation a meningioma is found and a tumor that has obviously been growing for years. The shortness of the history in these cases may perhaps be explained by the sudden failure of the venous circulation around the tumor, with a resulting fairly well localized cerebral edema.

DR H. C. VORTS, Rochester, Minn. I thank every one for their part in the discussion, and particularly Dr. Gerty for discussing so thoroughly the mental disorders, which we hardly had time to cover adequately in the presentation. In respect to Dr. Verbrugghen's remarks about the syndrome of Foster Kennedy, we haven't made as yet a separate analysis of the thirty-three basofrontal tumors in the group, feeling that they warranted separate consideration at a later date. However, they were included in the entire series because we hoped to present, as far as possible, an adequate picture of the observations for the entire group of frontal lobe tumors.

THE TREATMENT OF PERMANENT PARALYSIS OF THE DELTOID MUSCLE

S. L. HAAS, M.D.
SAN FRANCISCO

Permanent paralysis of the deltoid muscle causes a crippling, disabling deformity of the arm with the resultant loss of power of abduction of the involved extremity. When conservative treatment, extending over a period of one year, has failed there remain several methods of surgical treatment by which, if successful, varying degrees of function may be restored to the paralyzed member. The results of neurotization and nerve transference with anastomosis are of doubtful value.

There are two methods, namely, arthrodesis and muscle transposition, that have established their practicability, as evidenced by a number of successful results. Each of these methods has its advantages and disadvantages. In favor of arthrodesis is the greater likelihood of success and the greater strength and power of the functional force at the shoulder, at the expense of mobility. In favor of muscle transposition is the possibility of greater range of motion at the shoulder but with less power than in an arthrodesis. After a successful muscle operation there may be almost normal range of motion, while in an arthrodesis it is usually limited to 90 degrees and many useful movements cannot be performed, such as putting the hand in the pocket, back of the head, or to the opposite side of the body.

With an arthrodesis there is a greater likelihood of fracture in falling or when an abnormal strain is put on the already atrophied bone. Scoliosis may be produced or exaggerated by an arthrodesis. In bilateral paralysis a bilateral arthrodesis would be rather cumbersome and leave the patient still more amenable to injury. In cases in which it may be necessary to ankylose the elbow joint on the same side, it would be preferable to have a movable shoulder joint with greater range of motion.

When there is associated paralysis of the other extremities that preclude the possibility of hard work, a movable joint is better than a stiff joint. Also in the female, for cosmetic reasons, a muscle transposition is advisable rather than an arthrodesis, as in the latter the arm often projects out from the side and there is a flaring out of the scapula.

Under 8 years of age an arthrodesis is not successful, while a transplanted muscle operation may give a good result. If muscle transplantation fails, arthrodesis may be resorted to subsequently if desired.

The available muscles at the shoulder joint to take the place of the paralyzed deltoid muscles are the trapezius, triceps, biceps, coracobrachialis, pectoralis major, teres major, latissimus dorsi and latissimus dorsi.

It is rather strange that so little is mentioned in textbooks on orthopedic surgery about muscle transposition for deltoid paralysis, in view of the fact that there are numerous articles reporting successful results. Of the earlier reports Hoffa¹ in 1902 released the insertion of the trapezius muscle and transposed it into the deltoid with a satisfactory result. A number of others, including Gersuny, Kiliani and Lewis, have also utilized the trapezius. It is interesting to note that Kiliani² in 1910 recognized that the coexisting dislocation should be corrected at the same time. His method of operation consisted of severing the capsule on the humerus three fourths of the distance about the circumference and sewing it to the periosteum of the humerus $2\frac{1}{2}$ inches down the shaft. He then sutured the long head of the biceps in a double loop to hold the head up to the glenoid, using a principle similar to the one employed by Nicola in the treatment of habitual dislocation of the shoulder. Kiliani finally mobilized the insertion of the trapezius and sutured it to the raised up piece of the deltoid muscle. Lewis³ in 1910 reported the results of a similar operation on a patient with paralysis of the deltoid.

Hildebrandt, Sachs, Samter, Shepelman and others, with their individual modifications, have transferred the origin of the pectoralis major to the acromion and clavicle and obtained about 90 degrees of motion. Hildebrandt's⁴ work in 1906 laid the foundation for this method when he transferred the entire origin of the pectoralis to the clavicle and acromion process and obtained about 90 degrees of abduction.

Sloman, Schmidt, Stoeffel and Ober have used the triceps either alone or in conjunction with another muscle to take up the function of the paralyzed deltoid. Sloman⁵ in 1915 transferred the origin of the long

From Shriners Hospital for Crippled Children.
Read before the Section on Orthopedic Surgery at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

1 Hoffa, A. *Orthopaedische Chirurgie*, ed. 6, 2, 11, 1902.
2 Kiliani, O. G. T. *An Operation for Paralytic Shoulder Joint Due to Infantile Paralysis*. *Ann. Surg.* 51, 79, 1910.
3 Lewis, D. D. *Trapezius Transplantation in the Treatment of Deltoid Paralysis*. *J. A. M. A.* 55, 2211 (Dec. 24), 1910.
4 Hildebrandt, A. *Ueber eine neue Methode der Muskeltransplantation*. *Arch. f. klin. Chir.* 78, 75, 1906.
5 Sloman, *Ueber die Behandlung der Deltoidenlähmung*. *Ztschr. f. orthop. Chir.* 35, 1916.

head of the triceps to the acromion process. Recently Ober⁶ has reported successful results from transference of the origin of the long head of the triceps and short head of the biceps to the acromion process.

Riedel⁷ has transposed the entire teres major, leaving its nerve and blood supply intact. The origin of the muscle is anchored to the spine of the scapula, while the insertion is sutured to the humerus near the insertion of the deltoid muscle. The pectoralis minor and

levator anguli scapulae have been utilized in conjunction with other muscle with increased function of the arm.

Lange,⁸ Bradford,⁹ Essers and others attached the trapezius to the humerus with so-called silk tendons and report satisfactory restoration of function.

Fascia lata has been used to prolong the trapezius so that it can be attached more securely to the humerus. Payr¹⁰ in 1913 attached a strip of fascia to the trapezius and then sutured the free end of the fascia to the long head of the biceps. Gallie and Le Mesurier¹¹ in 1921



Fig. 1 (N. A.)—Range of motion of left arm before operation.

interwove strips of fascia lata into the trapezius muscle and then attached the free ends to the humerus, obtaining satisfactory results. Hesse¹² resected the trapezius with the periosteum from the clavicle and, after abducting the arm, inserted the periosteum into the deltoid tubercle of the humerus. This, in conjunction with the pectoralis major transplant, gave an excellent result. Stoffel¹³ freed the insertion of the trapezius from the clavicle and the spine of the scapula and sutured a piece of fascia lata about the raised up end. He then anchored the free end of the fascia lata to the humerus at the deltoid eminence. Mayer¹⁴ in 1927 presented a somewhat similar operation whereby he sutured a piece of fascia lata to the raised up trapezius muscle and, after passing the fascia strip through a ditch prepared in the spine of the scapula, inserted the free

end of the fascia into the humerus near the insertion of the deltoid.

In deciding on which one of these operations is the most suitable for a complete paralysis of the deltoid, a number of factors must be taken into consideration. In the first place the muscle to be transferred must be strong enough to carry on the function of the muscle for which it is to be substituted. Naturally the decision as to which one is preferable, either alone or in combination, depends on the strength of the available muscles, the operative adaptability, and the most advantageous pull on the arm. The trapezius is more likely to be spared in paralysis of the arm and to possess the necessary strength than the other muscles. It also occupies a more advantageous position for a direct pull in the frontal plane of abduction. The pectoral muscle may be efficient but its transference is not so easy and its pull not so efficient, unless the whole muscle is shifted, which, in the female, may be disfiguring. The triceps alone is not sufficient unless the short head of the biceps or the pectoral is used to assist it.

It is believed, taking all factors into consideration, that the trapezius muscle is the most acceptable muscle for substitution for the paralyzed deltoid muscle. In the series of operations to be reported, the Stoeffel-Mayer type of operation has been used with various modifications to prevent or correct dislocation of the shoulder joint.

METHOD OF OPERATION

An incision beginning well out on the spine of the scapula follows along the spine to the acromion process and then to the outer third of the clavicle. The insertion of the trapezius is freed from the spine of the scapula and clavicle, care being taken not to include the supraspinatus muscle. The trapezius is then mobilized so that it forms a tongue-like mass, care being exercised to protect its main nerve and blood supply. A sufficiently long and wide strip of fascia lata, removed from the thigh, is now sutured to the raised up trapezius muscle with heavy braided silk. A ditch is cut out



Fig. 2 (N. A.)—Result five years after trapezius fascia transposition. Five months after original operation it was necessary to free the adhered new formed tendon and surround it with a fat graft.

of the spine of the scapula just back of the acromion process and the free end of the fascia lata is passed through this ditch and over the apex of the shoulder in the subcutaneous fat to an incision that is made over the lower part of the paralyzed deltoid muscle. Through this second incision a rectangular piece of bone is removed from the humerus near the deltoid

6 Ober, Frank R. An Operation to Relieve Paralysis of the Deltoid Muscle. J. A. M. A. 99: 2182 (Dec. 24) 1932.

7 Riedel, G. Zur Frage der Muskeltransplantation bei Deltoides lähmung. Ergebn. d. Chir. u. Orthop. 21: 489 1928.

8 Lange, R. Die Sehnenbeipflanzung. Ergebn. d. Chir. u. Orthop. 8: 24 1911.

9 Bradford, The Operative Treatment of Paralysis of the Shoulder Following Anterior Poliomyelitis. Am. J. Orthop. Surg. 8: 20 1910.

10 Payr, Ergebn. d. Chir. u. Orthop. 25: 514 1928 (quoted).

11 Gallie, W. E. and Le Mesurier, A. B. The Use of Living Sutures in Operative Surgery. Canad. M. A. J. 11: 504 (July) 1921.

12 Hesse, E. Zur Frage der Operationen Behandlung der Lähmungen des Deltoid Muskels. Nack. cited by Hildebrand. Lexner. Zentralbl. f. d. ges. Chir. 27: 62 1924.

13 Stoffel, Ergebn. d. Chir. u. Orthop. 21: 489 1928 (quoted).

14 Mayer, Leo. Transplantation of the Trapezius for Paralysis of the Abductors of the Arm. J. Bone & Joint Surg. 9: 412-420 (July) 1927.

eminence and the free end of the fascia is brought down to this opening in the cortex, through which it is passed and then sutured to the surrounding periosteum.

The results following this type of operation were at first quite good, but after a lapse of time there was a decrease in the range of motion. It was found that as the fascia passed through the ditch prepared in the acromion process it often became adherent to the bone,



Fig 3 (C. R. aged 5 years)—Range of motion of right arm before operation. This patient obtained a full range of abduction after a trapezius fascia transposition. She then relapsed to the original condition.

thus accounting for loss of function. It was necessary when this occurred to reoperate to free the fascia strip and surround it with free fat graft. These reoperations¹⁵ presented an opportunity to study the union of fascia with muscle and, as reported in a previous paper, a direct union takes place and the fascia lata takes on a tendon-like appearance. In the more recent operations the ditch in the spine of the scapula has been dispensed with and the fascia is brought over the acromion process as a flat band, anchored in several places to the deltoid muscle, or passed under the perimysium. The distal end is then passed under a raised up spicule of bone near the deltoid eminence and sutured to the surrounding periosteum. The low insertion is of considerable advantage because of the added leverage obtained on the humerus.

It was also noticed that the muscle fascia operation, which worked at first quite well, later lost a great deal of its power, owing to a shift of fascia transplant. When these failures were studied it was found that a

causative factor for the shift in line of pull was usually a luxation of the humerus from the glenoid fossa. A careful check of the more recent cases shows that there is often an associated luxation of the shoulder in paralysis of the deltoid. This is to be expected when one figures that the strong deltoid muscle capping the shoulder joint helps to keep the humerus in its normal apposition to the glenoid.

If there has been a failure of adequate protection by a brace there is further stretching of the capsule, which predisposes for a dislocation. It may not be amiss to call attention to the fact that an abduction brace, when applied so as to hold the arm in the frontal plane of the body, has the pernicious effect of forcing the head of the humerus out of the glenoid cavity. It is therefore important in the conservative treatment by braces or plaster, or for protection after the operation, to see that the arm is directed a little anteriorly to the frontal plane of the body.

This frequent coexisting luxation whenever present demands treatment either before or at the time of the muscle operation. The Kiliani-Nicola, Henderson or Kirchner-Fowler types of operation are adaptable for the paralytic type of dislocation. The Kiliani-Nicola operation has been found to be preferable, as it is relatively easy to perform and can be done at the same time as the muscle fascia operation.

Before the fascia transplant is anchored to the humerus, the long head of the biceps is exposed by dissecting through the atrophied deltoid muscle. By modifying the original operation of Kiliani-Nicola, the biceps tendon is cut in two and the proximal piece is passed through the humerus medial to the greater tuberosity in dislocations to the medial side, while in the lateral or posterior displacements it is passed lateral to the tuberosity. In so doing the operator obtains a corrective pull on the head of the humerus toward the glenoid cavity.

Since it has been recognized that the dislocation of the shoulder joint is a hindering factor, either primarily or secondarily, its correction naturally improves function. As mentioned previously, the luxation changes the line of pull and prevents a strong fixation of the head in the glenoid. The importance of this fixation of the head of the humerus has been emphasized by Mayer, who showed that the first 90 degrees of motion after a trapezius-fascia transference



Fig 4 (C. R. April 28, 1934)—Full range of abduction after second operation consisting of a transposition of the long head of the biceps to the acromion and Kiliani-Nicola operation for dislocation of the shoulder.

¹⁵ Haas, S. L. Free Fascial Grafts. Their Union with Muscle. California & West Med. 32:387 (June) 1930. The Union of Grafts of Live and Preserved Fascia with Muscle. Arch Surg 23:571 (Oct) 1931.

is a fixed rotation of the humerus and scapula. Any subsequent abduction is a free motion between the scapula and the humerus, due to the pull of the biceps, coracobrachialis or pectoralis major. This is the reverse of the normal movement of the upper extremity in abduction. In some of the patients following the oper-

TABLE 1—*Functional Results Obtained from Operation Trapezius Fascia Transposition*

	Good 12	Fairly Good 6	Fair 7	Failure 5
Good	110 to 180 degrees of abduction			
Fairly good	90 to 110 degrees of abduction			
Fair	45 to 70 degrees of abduction			
Failure	Less than 45 degrees of abduction			

ation, the mechanism of motion is found to be similar to the normal movements of abduction.

ANALYSIS OF THE RESULTS

There were thirty-two patients with deltoid paralysis who were treated with muscle transposition operations. The trapezius with a fascial prolongation was employed in thirty, the pectoralis major in one and the teres major in one. The triceps and biceps were used in two cases to supplement the trapezius muscle. In two cases there was a bilateral abductor arm paralysis. In one of these cases a muscle transposition was performed on one side and an arthrodesis on the opposite side, while in the other a muscle transposition was performed on both sides.

In the operation using the pectoralis major a fair functional result was obtained. This result could be improved on by transposing the muscle toward the acromion process.

TABLE 2—*Strength of Accessory Muscles at the Time of Operation*

Good 9	Fairly Good 10	Fair 5	Poor 6
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In the biceps-triceps transposition the result was very good.

There were three patients in whom a primary arthrodesis at the shoulder joint was performed with the usual function for an arthrodesis.

The results of the thirty operations in which a trapezius-fascia transposition was performed are given in the tables.

In more than half the cases of this series, a satisfactory functional result was obtained.

In comparing the number of good results as shown in table 1 with those showing good strength of the accessory muscles as shown in table 2, it will be noticed that there is a direct relationship between the strength of the transposed and accessory muscles and the functional result obtained by operation. The stronger the transposed muscle and accessory muscle, the better the result.

The Kiliani-Nicola type of operation was used in twelve of the seventeen cases. In these seventeen cases the muscle study showed that the strength of the accessory muscles was weak in thirteen. In other words, there is a greater tendency to dislocation when the associated muscles are weak.

In more than half of the cases either a good result or a fairly good result was obtained, even though the muscles were weak in a majority of the cases. This increased function obtained even with the weak muscles must be attributed to the added fixation obtained by the operation. The mechanism of the trapezius muscle fascia transposition is, in the major part, a movable arthrodesis, hence the necessity of a good fixation at the shoulder joint.

There were eight patients with a combination of shoulder and elbow paralysis. In three the results were good and in five fair (table 5). Considering the extensive paralysis, these results offer a fair degree of encouragement for a successful result in an apparently hopeless extremity.

The trapezius muscle was strong in almost two thirds of the cases. This is twice the total of the other three muscles and establishes it as the muscle most preferable for transference in deltoid paralysis.

SUMMARY

The stronger the trapezius and the accessory muscles, the greater is the possibility of a successful outcome for the operation.

TABLE 3—*Type of Operation for Associated Dislocation*

Kiliani Nicola 12	Henderson 8	Kirschner Fowler 1	Combined Fascia and Bone Graft 1
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It was found that a long period of protection by an abduction brace, and muscle training extending over a period of from six to twelve months, was important. In the earlier treatment, when the brace was dispensed with too soon, an apparently successful result was followed by a gradual loss of function.

In cases of partial failure from a trapezius transplant, some other muscle, such as a triceps, teres major or part of the pectoralis major, may be transposed to give the necessary added power.

It is important to treat the frequently associated dislocation of the head of the humerus previous to or at the time of the original operation. In children, the Kiliani-Nicola type of operation is satisfactory.

In a number of cases of this series only a partial result at best could be expected, as there was not sufficient muscle power to warrant either a muscle operation

TABLE 4—*Results Obtained in Operations Requiring Correction of Dislocation*

	Strong Muscle	Weak Muscle
Good result	3	4
Fairly good result	1	6
Fair result	0	8

or an arthrodesis. It was thought worth while, however, to attempt to restore some function to these absolutely helpless extremities and, although perfect results have not been secured in these cases, sufficient function has been obtained to justify the operation.

It is to be noticed that in a number of the cases there was also complete loss of function at the elbow joint and partial disturbance in the wrist and finger motion. In spite of these additional handicaps, which also demanded operative treatment, a number of the extremities have been restored to a fair degree of usefulness.

The average age of the patients at the time of operation was 9 years. The youngest patient operated on was 6 years of age and the oldest 14 years of age. The average duration of the disease before the operation was four years. All but a few of the patients recently operated on have been under observation from one to six years.

TABLE 5—*Combination of Paralysis at the Shoulder and Elbow Joints. Functional Result from Operation*

Good	Fairly Good	Fair	Failure
3	0	5	0

In girls and those patients with severe paralysis of other extremities, and for most patients in general who will lead a more or less sedentary life, a muscle transplantation is preferable to an arthrodesis because of the better cosmetic results, the greater range of motion, and the less likelihood of subsequent injury to the patient. In case of failure from a muscle operation one can still resort to an arthrodesis.

CONCLUSION

Transplantation of the trapezius muscle, with a fascia lata prolongation into the humerus is a rational procedure for treatment of paralysis of the deltoid muscle.

It is important to treat the coexisting dislocation at the shoulder joint at the time of the original operation or subsequently, should it develop.

The stronger the accessory muscles, as the pectoralis major, biceps, coracobrachialis and scapula muscle, the better the result. However, in a number of patients without the prerequisite strength of the muscle and in

TABLE 6—*Strength of Muscles Available for Transplantation in Thirty-Two Cases*

	Strong	Medium	Weak
Trapezius	20	10	2
Pectoralis major	0	14	12
Triceps	6	11	10
Biceps	2	13	17

addition an associated paralysis of the elbow joint some gratifying results were obtained in apparently hopeless extremities.

A long period of postoperative physical therapy and protection from strain, up to a year if necessary, is important in obtaining the maximum effect of the operation.

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ABSTRACT OF DISCUSSION

DR. JAMES A. DICKSON, Cleveland. Dr. Haas made a thorough analysis of his cases before and after operation and he has a series sufficiently large to make his conclusions a valuable contribution. Many have been prone to accept the arthrodesis of the shoulder as being sufficient in some of these cases. Dr. Haas has demonstrated the advantage of the possibilities of tendon and muscle transference. I believe the importance he has laid on the stabilization of or the luxation of the shoulder joint by the Nicola procedure cannot be too strongly emphasized because the underlying principle is of the greatest importance in this work. In my own work I have not used the trapezius except in cases in which there is a good biceps and triceps. I have found that the Ober operation with fixation to the acromion has given me the most satisfactory results. Dr. Haas has demonstrated the advantage of making use of the trapezius and has stimulated me to use this method more often.

DR. A. H. BRFWSTER, Boston. I should like to compliment Dr. Haas on the results he has shown and relate our experience in the Children's Hospital in Boston. Quite a number of times we have attempted trapezius transplants, putting fascia underneath the trapezius, running the fascia band through another tube of fascia, but the results have not been anything like Dr. Haas's. I think, as he said, the accessory muscles must be good and that is one of the most important conditions. On examining a number of the trapezius transplants that regain power, one will find often that a weakened deltoid has been helped by the transplant and is doing part of the work. Going on to the transplantation of the triceps and biceps, we have found the biceps, the short heads of the biceps, if good or normal is almost in itself sufficient to raise the shoulder and put it through normal function. We have combined the Nicola operation with that of Dr. Ober and we have found, as Dr. Haas has, that it is necessary to take care of the subluxation of the shoulder joint. I believe that a combination of these operations, when the biceps and the triceps are weak, is often very satisfactory.

DR. ROBERT D. SCHROCK, Omaha. When Dr. Haas's paper is published those who read it critically will have as much pleasure in it as we have had in seeing the beautiful demonstration of its effectiveness. The chief point to me was the careful discernment, detailed analysis of the individual case from the standpoint of muscle power before the determination of the procedure to be done and also the vocational adaptability of this individual during the years to come.

DR. WALTER A. HOYT, Akron, Ohio. It is unfortunate that every one couldn't have read this paper first because it is a real contribution. I am sure that all are going to enjoy reading it. Orthopedic surgeons have been going through with the shoulder very much what they did with the foot for so many years—transplantation done promiscuously, without any real reason or careful determination of the muscle power and of course, with many bad results. It was not until some method of stabilization of the foot was developed that transplantation became successful. To me, the most important part of Dr. Haas's paper is the stabilization, the so-called movable stabilization of the head of the humerus. If that is true (and I think the pictures show that the head remains stable during the motions) it seems to me that, rather than wait until one sees whether there is a luxation after the transplantation is done, it should be performed as a routine procedure with the transplantation because in many of the cases Dr. Haas reported a secondary operation was required. I should like to ask Dr. Haas what position he puts the shoulders in. I had an experience a year ago in doing an operation in a case of Sprengel's disease, of having a paralysis of the whole arm develop much the same as in the case reported by Whitman and in one other by Dr. Roy Abbott. In those cases there was no trauma that could account for the amount of paralysis. I wonder whether in some of these cases one might find the same thing taking place in the fixation. It would be rather difficult to recognize because of the already marked amount of paralysis. Maybe that accounts for some of the bad results.

DR. SYLVAN L. HAAS, San Francisco. All of these patients had been treated conservatively for at least a period of a year, and most of them for two years, without showing any sign of return in the paralyzed deltoid so I don't think the operation has had any effect on the deltoid muscle. It has increased the fixation of the humerus to the glenoid. In answer to the questions of the position the arm is generally placed at 110 degrees of abduction either in plaster or in a brace. The most important point to realize is that one must not take away this protection too soon. I started physical therapy at the end of seventeen days. At first I used to keep the arm up for three months but found, as may have been noticed in one boy shown, that they often relapse and lose what was gained. By continuing with the protection for almost a year and watching carefully, one gets much better final results. The transposed muscle must regain strength just like a muscle that is paralyzed after poliomyelitis. The longer the time of fixation, the better the result. It not only increases the strength of the muscle but it gives better fixation in the glenoid.

THE SURGICAL TREATMENT OF
ULCERATIVE COLITISRICHARD B. CATTELL, MD
BOSTON

The treatment of ulcerative colitis is primarily a medical problem and fortunately most patients with this disease respond reasonably well to a carefully regulated medical management. In some patients these conservative measures are insufficient to control or arrest the disease, and surgical treatment is indicated and necessary for relief. As the result of recent interest and study of ulcerative colitis there have been many reports dealing with the etiology, diagnosis and medical management of these cases, so that at present the disease is suspected earlier in its course and its presence is proved by proctoscopic examination and the barium enema. There have been fewer reports dealing with the surgical treatment of the intractable cases. It is my purpose in this discussion to present a group of these patients treated at the Lahey Clinic by ileostomy and by partial and complete colectomy and to outline indications for operation and the results of this operative treatment.

The surgical treatment of ulcerative colitis aims first to put the infected colon at rest by diverting the intestinal contents on the abdominal wall. This in theory permits the greatest degree of healing possible, since the ulcerative surfaces are not constantly traumatized and irritated by feces. Secondly, it permits removal of the infected bowel and eradication of the complications associated with the disease. A third purpose should be mentioned—that of irrigation of the involved bowel by establishment of a fistula above the infectious process. In my opinion this is not of great value, since all that can be accomplished by this means can be obtained by irrigations through the rectum.

It is impossible in this paper on the surgical treatment to discuss the clinical course and the diagnosis of ulcerative colitis, but there are certain aspects that must be considered for a proper application of surgical therapy. The disease varies within wide limits in its severity. While it may be mild with few symptoms, it frequently runs a chronic course with acute exacerbations and recurrences. The ulcerative process usually begins low in the large intestine in the rectum or rectosigmoid but tends to extend to the colon so that all of the large intestine becomes involved. In relatively few patients does the process remain localized for a considerable period. The infection is not limited to the mucous membrane but tends to involve all of the wall, so that in addition to the large areas of mucosal ulceration the muscular wall becomes markedly thickened and the serosa is found to be edematous and injected. In this severe and chronic form the secondary complications of the disease are frequent.

There are a number of complications that may occur in ulcerative colitis. Acute and subacute perforations may occur in the acute fulminating form of the disease. These occur in the deep, punched out ulcers and usually result in a fatal peritonitis. Operative treatment in these cases is of no benefit in the form of either simple peritoneal drainage or closure of the perforation. These

patients too are in such poor condition that neither a localized nor a spreading peritonitis can be withstood. Perforation in the chronic cases, on the other hand, usually leads to localized abscess formation within the peritoneal cavity or abdominal wall or results in fistulas between adjacent loops of intestine, or fistulas between the colon and the bladder, vagina or perineum. Surgical treatment in this group offers a definite chance of relief, since resection can be carried out following permanent ileostomy. Polypoid degeneration of the remaining mucosa is another complication encountered. It occurred in five of our patients at the clinic and was reported in 10 per cent of the series studied by Bargen and Comfort. These polypi may encroach on the remaining lumen of the bowel so that drainage of the mucus, pus and blood from the infected area is ineffective. Malignant degeneration of these polypi has been reported but was not encountered in our patients. The development of partial or complete obstruction in the colon is a not infrequent finding and offers a definite surgical indication. The recurrent ulceration and inflammation of the colon and rectal wall is followed by partial healing with accompanying fibrosis, so that a marked narrowing of the lumen occurs and has in two of our patients produced complete obliteration of the lumen at one or more points. In four patients the stricture formation in the rectum was so extensive that a digital examination beyond the anal sphincter was impossible. The last serious complication of surgical significance is the recurrence of symptoms associated with general malaise, fever and local bowel symptoms. In these patients, who are apt to be entirely incapacitated during recurrences, surgical treatment seems indicated.

From a consideration of these complications, we feel that surgical treatment is at times indicated in the long standing recurrent cases of ulcerative colitis. We do not believe that the indication for surgery in the acute cases can be so clearly defined. Every one dealing with this problem has seen patients in the first attack of ulcerative colitis go progressively downhill with a fatal termination in spite of medical measures. On the other hand, some of these acute cases respond reasonably well without surgical intervention. This leaves one rather in a quandary as to the selection of cases of this type for ileostomy. I can simply state that it is our practice at present to place these patients on medical management, and if they do not show a satisfactory response after from two to three weeks' treatment, a transverse ileostomy is carried out. It must be recognized that surgical intervention in these acute cases is very serious and a high operative mortality must be accepted.

In the chronic cases, the proctoscopic examination and the barium enema will reveal the extent of the process and will suggest the degree of function that can be expected in the involved bowel. When the haustral markings are absent in the roentgenographic examination and the colon appears rigid and of the "lead pipe" type, when digital and proctoscopic examinations indicate marked destruction of the rectum, we feel that permanent drainage above the involved portion is indicated. This brings up the consideration of ileostomy or colostomy as a permanent drainage in these cases. Early in our experience we performed ileostomy with the idea of utilizing it as a temporary measure in order to permit healing of the infected bowel while at rest. After we had observed patients for considerable periods of time after ileostomy, it was found that the colon showed

little evidence of sufficient healing without stricture formation to permit reestablishment of the intestinal tract. We feel very strongly that in those patients with ulcerative colitis in whom an ileostomy is considered it must be accepted as a permanent drainage, and we have in no case felt justified in reestablishing the intestinal continuity. Certainly in adult patients the catch phrase "once an ileostomy always an ileostomy" can be said to express the situation.

The necessity for colostomy in the treatment of carcinoma of the rectum is now accepted, since it is well recognized that a patient with colostomy can manage it without serious difficulties. It has been repeatedly stated in the literature that a permanent ileostomy creates a deplorable situation because of difficulty in the control of the liquid discharge of feces. We have learned that ileostomy can be handled with only moderately more difficulty than can a colostomy. Certainly ileostomy can be tolerated by most patients for indefinite periods of time without impairment of health if the disease itself can be arrested. A dietary deficiency state, similar to pellagra, has been reported but is rare. In the acute cases it is very important to realize that a large amount of fluid is lost following ileostomy, together with substances of food value but especially the chlorides may be depleted. The level of the blood chlorides must be followed carefully following operation, and it is necessary to give large amounts of dextrose and saline solution to compensate for this loss. It is quite probable that some of the postoperative deaths result from depletion of the chlorides and starvation. It has been our observation that the function of fluid absorption in the colon can be partially compensated for by fluid absorption in the terminal ileum. We have been impressed by the fact that patients with ileostomy who have subsequently had complete colectomy tend to have semisolid movements from the ileostomy, whereas patients with ileostomy with the colon still present shows less tendency to fluid absorption by the ileum. Three of our patients with ileostomy who have had complete colectomy manage their ileostomies and are able to carry on a normal activity (fig 1). Each wears a colostomy belt both day and night, and they find it necessary to empty it three or four times a day but not during the night. In these patients irritation of the abdominal wall at the site of the ileostomy has been intermittently present, but at all times under control and not interfering with wearing of a colostomy apparatus. The fact that ileostomy can be managed in these patients while carrying on an active life justifies its performance in those patients who cannot be relieved by medical measures. It would be misrepresenting the facts to state that ileostomy is not a serious inconvenience, and I do not wish to imply that it is not, but it should be pointed out that this difficulty has been greatly exaggerated in previous reports.

The technic of ileostomy is relatively simple. It must completely divert the intestinal content so that the tube ileostomy is not satisfactory. We prefer a right rectus incision and make no attempt to utilize the muscles of the abdominal wall for any possible sphincteric action. Under local or spinal anesthesia the terminal ileum is identified without exploration of the abdomen and with as little handling of the intestine as possible. The point is selected 4 inches from the ileocecal valve and the ileum divided transversely between clamps, care being taken not to interfere with the blood supply of

the mesentery of the distal ileum. The two ends are then drawn out together and the layers of the abdominal wall closed loosely about them. The intestine is not sutured to peritoneum, fascia or skin, but it is held in place by the clamps with dry gauze next to the skin to aid in the formation of adhesions. The rent in the mesentery is anchored to the peritoneum in order to prevent any prolapse of either segment. The clamps hold the bowel in position until firmly anchored by adhesions. In patients with severe toxemia the catheter is immediately sewed into the proximal segment, but in the less severe cases drainage is delayed for twenty-four hours. We have on occasion approximated the proximal and distal loops in the form of a Mikulicz spur, so that later reestablishment of the intestinal tract could be obtained extraperitoneally. This we now feel is not indicated, since there is no prospect that the condition of the colon will permit it. In case ileostomy is done definitely as the first stage of colectomy, the distal ileum may be inverted and dropped into the abdomen as suggested by Rankin, but this should not be

done unless it has been shown by the barium enema that no obstruction is present within the colon.

In the past, appendicostomy has been utilized by a number of surgeons in the treatment of ulcerative colitis. This has been employed for the sole purpose of providing a means of irrigation of the bowel without diverting the intestinal content. While it is still being employed in certain clinics, it has for the most part been discarded either for medical management or for

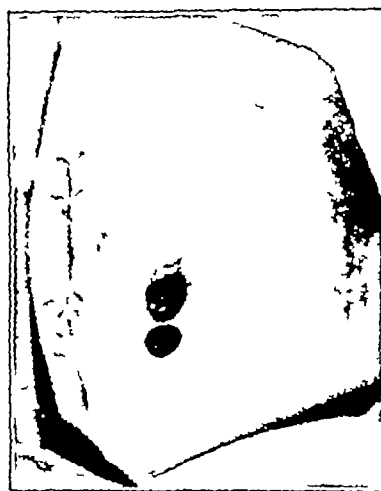


Fig 1—Usual double-barreled transverse ileostomy performed two years previously. This ileostomy was placed just to the left and below the umbilicus to facilitate complete colectomy. The recent incision on the right was made when the first stage of complete colectomy was performed. There is an absence of skin digestion and no tendency to prolapse of either proximal or distal ileum.

more radical surgical procedures. Cecostomy, on the other hand, offers more definite advantages, particularly in those cases in which the disease is limited to the lower bowel. When employed, it would seem best to deliver the entire cecum outside the abdominal wall rather than to employ a tube cecostomy. We have not used either of these operations with one exception, so they will not be discussed further. Colostomy, on the other hand, done well above the involved portion of the bowel in patients in whom the disease is limited to the sigmoid or rectum, has been of value in our hands. In two cases in which the disease was limited to the sigmoid and rectum we made a loop colostomy in the left colon. Further observations showed that the disease extended above the colostomy, so that the entire large intestine later became involved. However, in two other cases colostomy was done in normal bowel and was followed by the abdominoperineal resection of all the bowel below the colostomy. In neither of these cases has the disease recurred in the remaining colon. I feel that valuable

information is offered from a consideration of these four cases. The progress of the disease proximally was not arrested in either case of colostomy in which the involved bowel was left in place, whereas both patients who had complete removal of the involved bowel after colostomy have remained well. In the first two cases the disease progressed within a few months above the colostomy, so that it seemed important to carry out the resection within a few weeks of the preliminary drainage.

Partial colectomy or segmental resection of the colon is of value in few cases. These must be selected with great care, based on careful sigmoidoscopic examination and a barium enema, confirmed by careful examination of the entire colon at the time of operation. It must be appreciated that it is very difficult to be certain of the limitation of involvement either by direct visuali-



Fig. 2—Specimen consisting of cecum, ascending colon and half of the transverse colon. The ulcerative colitis was known to have been present for twenty-one years; appendicostomy having been performed by Dr. Lahey in 1912. Contraction, ulceration, polyposis and deformity of the colon are evident.

zation of the colon or by palpation. The more conservative procedure of partial colectomy seems justified at times, but it must be realized that the disease may progress to involve the remaining colon. The technic of partial colectomy is identical to that for carcinoma except that little of the mesentery need be included in the resection. I feel that the modified Mikulicz type of resection should be employed in all colon resections for this disease, and that if the rectum is to be excised it should be done by a two stage abdominoperineal resection in order to avoid the complication of peritonitis.

Because of the usual pathologic changes in the chronic cases of ulcerative colitis when the entire large intestine is involved, complete colectomy will more often be necessary and applicable than partial colectomy. Complete

colectomy is unquestionably a formidable procedure and should be done only in those cases in which relief cannot be obtained by any other means. The technic of complete colectomy will be presented in another communication. It should be done only after a long trial of transverse ileostomy. It should be carried out in two or three stages in addition to the ileostomy. The terminal ileum, cecum and ascending colon and a portion of the transverse colon proximal to the middle colic artery can be resected at the first stage in the more serious cases, followed by the removal of the transverse colon, the descending colon at a second stage, and the abdominoperineal resection of the remaining segment at a third stage. In better risk patients, all of the colon from the cecum to the sigmoid (fig. 5) can be resected, followed by a second stage abdominoperineal resection. Because of the tendency to stricture and abscess formation in the bowel, my associates and I implant the distal loop of the colon in the abdominal wall to provide drainage and to avoid peritonitis. This does not add greatly to the difficulty of carrying out the next stage. While it would be easier technically to attempt to close the distal segment and leave it within the abdomen, this would seem to be unwarranted because of the dangers involved. I feel that the operations should be separated by an interval of at least two months in order to permit the improvement that follows the resection of a portion of the infected bowel.

At the Lahey Clinic, sixty-three patients with ulcerative colitis have been treated. In this group there was a relatively high proportion of serious and complicated cases. Surgical treatment has been carried out in twenty-one cases (one third of the total group) while the remainder have been carried on medical treatment alone. This represents more radical therapy than in other reported series. Ileostomy has been performed fourteen times, and in all these cases the disease involved the entire large intestine. In eight cases the ileostomy was performed for the severe toxemia that was present. In six it was performed as a preliminary to complete colectomy. There were five postoperative deaths following ileostomy, all of which occurred in the acute cases in which there was a severe toxemia. One was the result of a coronary thrombosis. One resulted from an acute perforation of the colon, and the remaining three patients died as a result of the severity of the disease plus some degree of operative shock.

In the six patients in whom ileostomy was done as a preliminary to complete colectomy, one patient died five months later. This patient had had the disease for twenty-three years, and complete colectomy was considered to be the only possible treatment to relieve her condition. At the onset of the disease an appendicostomy had been done, which had been open intermittently for several years. After a two months trial of medical treatment, a colostomy of the transverse colon was done, since the disease appeared to be limited to the lower part of the bowel according to the roentgen and operative observations. It is quite likely, however, that it had already extended above this point, since the right colon was shown to be involved shortly after, and ileostomy was performed to be followed by complete colectomy. A first stage right colectomy was carried out two months later, and she improved somewhat for a few weeks (fig. 2). She then began to fail rather rapidly with the progress of the disease and died.

three months after the first stage colectomy from multiple chronic perforations and fistulas with peritonitis. A second patient has had a remission of the disease for three years following ileostomy and has been free from attacks of chills, fever or malaise. Complete colectomy has since been considered for this patient, but as he continues in remission it has been indefinitely delayed. One patient has had the ileostomy done too recently to permit a decision in regard to complete colectomy. Two patients have had a complete colectomy in two



Fig 3—Abdominoperineal resection of the sigmoid and rectum for ulcerative colitis of two years duration. The disease in this case was strictly limited to the lower sigmoid, rectosigmoid and rectum. This illustration, taken one month after the first stage operation, shows the permanent proximal colostomy in the left upper quadrant with the implanted distal end above the pubis. There has been no return of symptoms in the twenty-two months since abdominoperineal resection.

stages, and one has had one in three stages. All have been well for approximately one year. Each has been able to resume a normal activity, in one acute intestinal obstruction developed four months after colectomy, which was relieved by the division of an obstructing band.

In six cases the involved portion of the bowel was limited, and partial or segmental resection was carried out. In two cases the rectum alone was involved for a distance

of 6 inches (15 cm) with marked ulceration and thickening associated with perineal fistula, rectovaginal fistula and multiple fissures of the perianal skin. Abdominoperineal resection was carried out in two stages in each of these cases, several inches of normal bowel being removed above the involved portion (fig 3). A third patient had involvement of the descending colon, sigmoid and rectum, with obstruction of the sigmoid presenting a defect in the barium enema suggestive of a malignant lesion. A Mikulicz resection was then carried out, the spur between the two loops being left intact in the hope that the process below might subside. In this case the remainder of the colon had become involved, and we felt that ileostomy and complete colectomy were now indicated. These four cases were mentioned earlier in the paper in connection with colostomy. Two patients had the process limited to the colon, the first involving the transverse colon, producing partial obstruction, multiple fistulas of the wall and polypoid formation. A Mikulicz resection of the entire transverse colon was carried out, the cecum being joined to the descending colon. The second patient had involvement of the right colon and had complete right colectomy after the same technic. Both of these patients had subsequent closure of the temporary colostomy, but the abdominal wound broke down, at least temporarily, and subsequently closed spontaneously. The following case report illustrates the value of a segmental resection in ulcerative colitis.

CASE 1—M O, an unmarried woman, aged 39, seen in August 1932, had noticed two years previously that her mouth was sore and shortly afterward a persistent diarrhea had developed. Mucus and blood were passed with severe pain on defecation. Nine months after the onset of diarrhea, arthritis

developed in the knees, shoulders, hands, neck and spine. Tonsillectomy was performed in October 1931 with relief of the sore mouth and some improvement of the arthritis. Previous to our examination she had been confined to bed for five weeks. She had lost a total of 50 pounds (22.7 Kg) from a normal weight of 150 pounds (68 Kg). Recently she had been having small defecations every fifteen minutes and had frequent spells of nausea and vomiting.

On examination the patient was pale and emaciated and appeared acutely ill. The tonsils were absent and the teeth were in good condition. The anterior cervical glands were palpable. The heart was not enlarged and there was a loud blowing systolic murmur heard to the left of the sternum. The pulse rate was 110 with a regular rhythm, and the blood pressure 100 systolic, 70 diastolic. There was tenderness in the left lower part of the abdomen, where the outline of the sigmoid could be made out. The rectum was indurated, contracted and tender. Mucus and pus were found on proctoscopic examination with the typical changes of ulcerative colitis. The barium enema showed the sigmoid to be narrow and spastic, with failure to fill out at any time, while the remainder of the colon beyond this point filled out satisfactorily. She was admitted to the hospital, Aug 24, 1932, her temperature remained over 102 F and the tenesmus and diarrhea were not diminished. Operation was carried out, August 29, because of the severity of the condition and contraction of the sigmoid and rectum. On exploration the process seemed limited to the sigmoid and rectum, so that the descending colon was divided 3 inches above this point, the proximal end being brought out as the end colostomy and the distal end implanted above the pubis as described by Lahey for resection of carcinoma of the rectum (fig 3). A wound infection developed but gradually improved and the patient was discharged from the hospital one month later. At this time she was afebrile and had normal movements by colostomy every three days. The rectal discharge continued, but the tenesmus was much less troublesome. Six weeks after operation she had gained 20 pounds (9 Kg) and felt better than she had at any time since the onset of the disease. Proctoscopy was not possible because of contraction of the rectal lumen to the caliber of one finger. No pus was evident, although digital examination caused free bleeding. Abdominoperineal resection was carried out, November 12, approximately six weeks after colostomy. She was discharged twenty days later in good condition. She has been well without any recurrence of fever for eighteen months. She does not find it necessary to wear a colostomy bag. Inspection and proctoscopic examination of the colostomy shows normal mucosa.



Fig 4 (case 2)—The cecum, ascending colon and hepatic flexure. The total segment is 5 inches in length less than half of normal. The cecum is perforated forming an abscess in the abdominal wall. All normal markings of the colon were absent with replacement of the mucosa by ulcers and scar tissue.

From experience in these cases I feel that in rare instances the disease may be limited to a portion of the intestine where resection of all the involved portion has been possible. Within a short time it seems that these patients have a reasonable prospect of continuing well without spread of the disease. From a consideration of the cases of ileostomy, it will be noted that only one patient has been free from return following this procedure alone. Complete colectomy offers the surest method of complete relief in these serious intractable cases. If properly carried out, it can be done with a low operative mortality. While

the time interval after colectomy has not been long enough to judge whether these patients will remain permanently well, I feel that this procedure offers definite relief in the intractable and complicated cases. The following case report is typical of those treated by complete colectomy.

CASE 2—Mrs. M. S., aged 25, who came under observation in December 1930, for three months had had a severe diarrhea with from eight to twelve loose movements daily containing mucus, pus and blood. She complained of nausea, occasional emesis, fever and loss of weight. She presented the picture of an acute toxemia with prostration. Sigmoidoscopic examination was negative except for the presence of mucus and blood, with a normal appearance of the mucosa of the lower part of the bowel. A barium enema showed a variation in the haustral markings in the cecum and ascending colon and this portion of the bowel was spastic and irregular, while the remainder of the colon filled and emptied normally. The stools were negative for *Endamoeba histolytica* and *Bacillus tuberculosis*. The Craig test was negative.

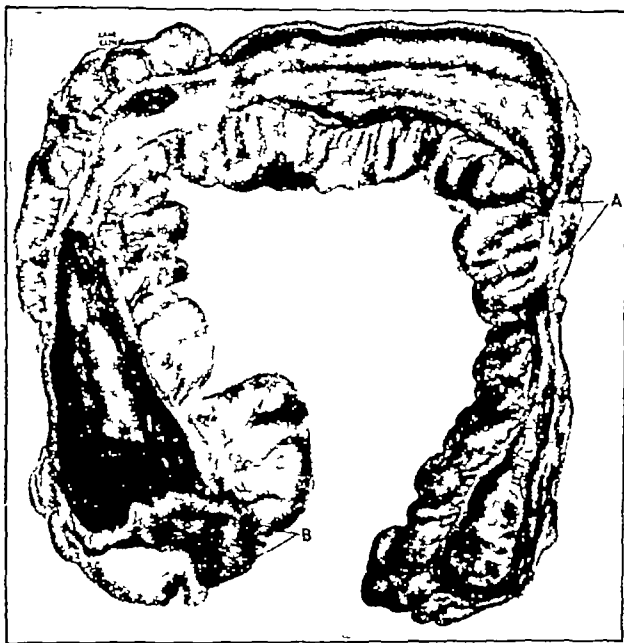


Fig. 5—The colon removed in a severe case of ulcerative colitis four years following ileostomy. Marked stricture formation is evident at the hepatic flexure and in the descending colon. At one point even a small probe could not be passed through the lumen. The remainder of the large intestine including the sigmoid, rectosigmoid and rectum were removed by abdominoperineal resection two months later. A blind ends B ileum.

After two weeks of medical treatment her condition was unimproved, and she continued to have a 'septic type' of fever. A transverse ileostomy was done in January 1931, the ileum being brought out on the left side, as it was hoped that a segmental resection of the right colon would relieve the condition (fig. 1). Following ileostomy there was a striking reduction in the fever and the patient made satisfactory improvement and was able to leave the hospital three weeks after ileostomy with a normal temperature.

She was seen at frequent intervals, and during the following year she was fairly well, but at no time was she free from diarrhea, and in addition she had recurrences of chills and fever every two or three months. Eighteen months after ileostomy she first showed involvement of the rectum and sigmoid by proctoscopic examination. During the next six months she was totally incapacitated because of the recurrence of all symptoms and abdominal and pelvic pain. A tender mass developed in the right lower quadrant, a rectovaginal fistula was discovered and there was marked pelvic tenderness on bimanual examination. An infectious arthritis developed in

the left ankle. Colectomy was advised at this time, two years after ileostomy.

In February 1933 the cecum, ascending colon and hepatic flexure were resected (fig. 4). The cecum was markedly thickened, contracted and bound down by adhesions, and a chronic perforation into the abdominal wall with abscess was encountered. This total segment measured but 5 inches (127 cm.) in length. She made a good recovery and in two months had gained 19 pounds (8.6 Kg.). Her appetite was good, there was little discharge from the rectum, and she was able to work about the house.

The second stage colectomy was carried out in May the transverse descending colon and sigmoid being removed. At this time a pelvic abscess was encountered, so that the removal of the rectum was considered inadvisable. During the next two months she gained an additional 11 pounds (5 Kg.) and had few residual symptoms. Because of the rectovaginal fistula and contracted and infected rectal segment, it was felt that the remainder of the bowel should be removed to guard against further recurrence.

An abdominal perineal resection and a blood transfusion were performed in July. This was followed by marked shock and a stormy convalescence for the first few days but she was able to leave the hospital in reasonably good condition sixteen days after operation.

Since the complete colectomy she has been well without recurrence of fever. Her appetite is good and her weight is the same as before the onset of the disease. She is able to carry on a normal activity, doing all her work for a family of five. She wears a colostomy bag constantly, and there has been little evidence of skin irritation. The only disagreeable feature reported by the patient is the noisy escape of gas at times from the ileostomy, over which she has no control.

CONCLUSIONS

Surgical treatment is of value in ulcerative colitis, particularly in the chronic cases complicated by fistulas, intestinal obstruction and recurrences of the acute exacerbations of the disease. In these cases the colon has little possibility of carrying out its function and serves as a constant source of infection.

Transverse ileostomy may result in a remission. When performed, it must be considered permanent. It is of greatest value in the chronic cases but may be necessary in the acute cases.

Complete colectomy may be necessary for relief and can be done with a low operative mortality if performed in divided operations. It has been carried out in three patients, who have remained well for one year.

Partial colectomy can be done in selected cases if the involvement is definitely limited to one segment of the colon. It was performed in six patients in this series.

Ileostomy and colectomy are not suggested to replace the medical treatment of ulcerative colitis but are presented as an aid in the management of the intractable and complicated cases.

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ABSTRACT OF DISCUSSION

DR. F. R. PETERSON, Iowa City. It must be admitted that, except for certain acute complications, the treatment of this disease in the beginning is medical and usually remains such. Eventually, for some, a partial or complete colectomy offers the only chance for a cure. However, other surgical measures less radical must first be done to assist medical management and must always precede a colectomy. It is concerning the latter group that I wish to say a few words, the facts as presented here not being meant to be conclusive but worthy of consideration. The statements are based on the results of

thirty cases over a period of fifteen years. During each half of this period six ileostomies were done. During the last four years fifteen appendicostomies or cecostomies, if the appendix had previously been removed, have been performed and this procedure has now essentially replaced ileostomy in the clinic with which I am connected. The reasons are that first of all only two of the twelve patients who had ileostomies are now living, second, those with ileostomies are relatively more dissatisfied with their existence, third of the fifteen patients with a tube in cecum only one has died and this from an unrelated cause. The results include acute as well as chronic and recurrent cases. For example, medical treatment failed in one case and an ileostomy was done nine months ago. Since then the patient has gained 30 pounds (13.6 kg), the anemia has been overcome and she now has one bowel movement daily. The procedure consists of insertion into the cecal lumen of a rubber catheter, size 12 or 14 F. As soon as healing is adequate in from three to four days, the colon is irrigated daily or twice daily, depending on the reaction with a liter of 1 per cent sodium chloride solution. When this can be used without reaction, 1.25 per cent and finally 1.5 per cent solution is used if tolerated. Irrigation of the colon is not new. What effect the hypertonic salt solution has is not known. It is not presumed that this will cure ulcerative colitis although one of this group is now clinically well, and the others are markedly improved. If a complete colectomy is later advised of course an ileostomy must precede it, but until then the low mortality, the comfort of the patient and the satisfactory results have caused us to continue this procedure.

DR. ALFRED A. STRAUSS, Chicago. I agree with Dr. Cattell's statements and method. I also agree with his preoperative and postoperative methods. There are a few points to be emphasized in the relationship of the internist to the surgeon in this disease. Since 1917 I have done thirty-two colectomies, with five deaths. In only four was the rectum removed after complete colectomy. Of these deaths three were from pneumonia, one from embolus and one from a lung abscess four months after operation. In addition to these I have done eight ileostomies. Six of the patients remained well without further intervention. Two are only fairly well and probably colectomy will have to be done. In 1917 and 1918 I did five complete colectomies in a one stage operation with one death. One of these patients, whose normal weight was 152 pounds (69 kg), weighed only 58 pounds (26 kg) at the time of the operation. An ileostomy had to be performed with the patient in bed after six or eight blood transfusions. The patient is perfectly well. Of the thirty-two patients, ten have been well since 1918. Four are only fairly well. Contrast these results with fifty-two additional cases that I have seen from the various medical services at Michael Reese and Mount Sinai hospitals. All of the fifty-two patients, whom I saw in consultation died within a few days or shortly thereafter without surgical help, as a result of the severity of the disease. This shows clearly the helplessness of the medical man in combating this disease by medical means. In eleven cases in which ileostomy was done it proved to be of no value. The patients died in spite of multiple blood transfusions. Six of these were performed in bed, the patients being moribund. They are not fit surgical subjects even for so small a procedure as an ileostomy under local anesthesia. Many of these patients died of acute hemorrhage. I do not mean bloody stools, I mean acute hemorrhage. No matter what is done for these patients, they bleed to death because the ulceration gets into a large artery in the colon. Two patients remained perfectly well after the ileostomy was closed. The question arose as to whether this was a chronic idiopathic ulcerative colitis. The ileostomies were done very early. These are the only two cases I know of in adults that it was possible to close and the patients remained well. In one child, aged 8 years, I performed an ileostomy and closed it two years later. She is well now, three years after the closure of the ileostomy. I believe that it is a lymph-borne infection, which infects the entire colon. This is demonstrated by the lymphatic gland involvement and by the marked infection not only of the mucosa but of the submucosa and muscularis. The best medical treatment is an early ileostomy. The internist, then, may do whatever he wishes in administering serums and vaccines.

CONTUSIONS OF THE HEART

CLAUDE S. BECK, M.D.

CLEVELAND

Most wounds of the heart are of the penetrating variety, i.e., they are produced by stabs or bullets that penetrate the heart.¹ However, there is another type of cardiac trauma not produced by penetration of the body and it is this nonpenetrating type of trauma that I shall discuss. In the past, surprisingly little consideration has been given to this subject. The literature on this subject consists almost entirely of anatomic descriptions of hearts that had ruptured following compression or contusion of the body. Only a few discussions on the clinical manifestations of cardiac contusion could be found, and it would seem that the surgical aspects of the subject have been almost entirely neglected.

One is accustomed to look on the heart as an organ that almost always escapes any of the ordinary injuries to which the rest of the body is subjected. The thoracic cage affords what is usually considered to be practically a perfect protection to the heart. No such immunity to injury is extended to the liver, spleen, kidneys, brain and other organs of the body. It is remarkable that this belief has developed, because the heart, lying against the sternum anteriorly, is vulnerable to any sudden impact over the sternum and, buttressed against the bodies of the thoracic vertebrae posteriorly, is vulnerable to compression forces applied to the chest. There can be little doubt that the heart is the recipient of many injuries. Most of these probably produce no functional disturbances and these are not recognized. Indeed, injuries that do produce functional disturbances are not recognized in the vast majority of instances.

The attitude of the profession toward cardiac contusions was expressed by THE JOURNAL as recently as Nov. 4, 1933. In that issue was published a query from a physician in Lincoln, Neb., as follows:^{2a}

A man, aged 57, was accidentally struck over the precordium by a golf ball. He was in a state of shock for fifteen minutes and gradually recovered so that he was able to attend to his business the following two days. On the night of the third day there was an attack of angina pectoris, with electrocardiographic evidence of cardiac infarctions. Prior to the chest injury there had been no symptoms of coronary disease. Is it likely that there was a traumatic myocarditis? Can you refer me to some literature bearing on this subject?

The answer was as follows:

Mild infections may predispose to a coronary thrombosis, as mild infection of the upper respiratory tract, mild cystitis or some minor ailment, and it is conceivable that the slight accident might have had some bearing on the coronary thrombosis. It is much more likely, however, that it was simply a coincidence.

Traumatic myocarditis is one of those indefinite terms that is best not used at all, and there is no literature of scientific value on the subject.

My interpretation of this incident differs from that quoted. I believe that the blow over the precordium by the golf ball bruised the heart. In spite of the infer-

From the Department of Surgery the Lakeside Hospital and the Western Reserve University School of Medicine.
Read before the Section on Surgery General and Abdominal at the Eighty-Fifth Annual Session of the American Medical Association Cleveland, June 13, 1934.
1. Since this report has been made I have heard of so many probable cases of cardiac contusion that considerable doubt is thrown on the truth of this sentence.
2a. Relation of Myocarditis and Coronary Thrombosis to Trauma. Queries and Minor Notes J. A. M. A. 101: 1503 (Nov. 4) 1933.

ence that the injury was a slight one, the force with which a golf ball can strike may be more than slight. However, it would seem that the force necessary to bruise the heart need not be severe. The ribs and sternum need not be broken and, indeed, the thoracic wall need show little or no evidence of trauma. The shock that developed after the accident could be explained on the basis of impaired function from the contusion. Also anginal pain is not uncommon in cardiac contusions, and the electrocardiogram produced by a myocardial contusion may be similar to that of a myocardial infarct.

I can give no further specific data in this case to support the diagnosis of myocardial contusion. Because the clinical manifestations of a myocardial infarct and a myocardial contusion may be similar, the differentiation becomes difficult, sometimes impossible. It would seem that the only essential differential point may be the trauma. Because trauma is so frequently irrelevant in the history of any medical lesion, one does not have much hesitation in considering trauma as a coincidence in the case of a cardiac lesion. A contusion of the heart would seem to be an excessively rare lesion, almost every one with whom I have discussed the subject never heard of it. Coronary disease, on the other hand, is a common lesion. To what degree cardiac contusions have been neglected clinically I can show by a statistical review of the literature.



Fig 1—The precordium is caved in. The heart is flattened out between this depressed area and the vertebrae. The patient has been a chronic cardiac invalid since the accident which occurred at the age of 4 years.

When the heart receives a contusion, one of three possible courses is taken. 1 The heart ruptures. 2 The heart fails without rupture. 3 Recovery takes place. The statistical study was made by Dr Ernest F Bright, who also collaborated with me in an experimental study of cardiac contusions.² The cases that were taken for this analysis consisted of the nonpenetrating forms of trauma to the heart. Cases that were complicated by rupture of a cardiac valve were excluded from our analysis. We excluded also cases that showed disease of the coronary arteries and in which there might have been some doubt as to the rôle of the trauma. Cases of heart strain were also excluded.

There were 152 instances of rupture into one or more of the cardiac chambers. The diagnosis in these cases was established by necropsy.

There were eleven instances of myocardial failure without rupture. The diagnosis in these cases was established by necropsy.

There were twelve instances of myocardial contusion in which recovery took place. The diagnosis in these cases with one exception (the case of Mansell Moullin, in which operation was done) was made by clinical manifestations.

According to these statistics it would appear that out of 175 patients with nonpenetrating wounds of the heart 152, or 87 per cent, died from rupture, eleven, or 6 per cent, died from myocardial failure and twelve, or 7 per cent, recovered. Obviously these proportions do not represent the correct relative incidence of these types of cases. There can be no doubt that 93 per cent of such cases are not fatal. The error is in the number of cases in which recovery occurs in which only a clinical diagnosis can be made. It would seem that clinicians hesitate to make the diagnosis of a cardiac contusion. They would like to have proof for such a diagnosis and there may be no proof. Contusions or nonpenetrating wounds of the heart rarely destroy life. The heart can tolerate an enormous amount of trauma and recover. On this point Dr Bright and I feel that we can speak with some authority.

We exposed the heart in a series of twenty-five experiments and applied contusive injuries to the myocardium. An area of the right or left ventricle was struck a number of blows with a metal instrument. The amount of trauma applied seemed to be excessive. The myocardium became swollen from hemorrhage and it looked as though softening and rupture would surely follow. These contusions were tolerated remarkably well in twenty of the twenty-five experiments. The immediate response was a tachycardia, occasionally, however, the pulse rate was decreased after the trauma was applied. The electrocardiogram showed changes similar to those obtained in coronary disease. The alterations affected chiefly the Q wave and the T wave, but the electrocardiogram usually returned to normal within three months. A hemorrhagic effusion not infrequently developed in the pericardial cavity. Usually the heart showed some dilatation after the trauma was applied. The cardiac sounds had a peculiar "tick tick" quality and tachycardia usually persisted for three weeks. Usually adhesions developed between the heart and the pericardium, and these adhesions may be interpreted as an attempt by nature to seal over the area of contusion and to protect the heart from rupture. The causes of death in the five experiments were rupture of the heart, ventricular fibrillation and cardiac failure from tachycardia. Rupture occurred in one experiment, and this was in response to an excessively severe trauma at the time the trauma was being applied. Ventricular fibrillation occurred in two experiments. This developed at the time the trauma was being applied, and at autopsy hemorrhage was found in the interventricular septum. Myocardial failure occurred in two experiments. In both of these experiments the heart rate was very rapid. Death occurred a few hours after the experiment in one and on the following day in the other. In none of these experiments did an aneurysm of the myocardium develop, but the experiments were terminated three months after the trauma was inflicted.

² Bright, E. F. and Beck, C. S. Nonpenetrating Wounds of the Heart. A Clinical and Experimental Study. *Am Heart J* to be published. We are indebted to Dr J. A. Groh for his assistance in the analysis of the German literature on this subject.

I cannot say whether an aneurysm would have developed if a longer period of time had been given.

One can conclude from these experiments that the heart can tolerate an excessive amount of trauma, that recovery is the rule rather than the exception, and that if death occurs it is caused by ventricular fibrillation, rupture or myocardial failure coming on after a tachycardia. Rupture is a rare complication of a cardiac contusion, nevertheless, the literature consists almost entirely of these rare cases of rupture. The vast majority

of the largest group of cases, cases in which recovery takes place, go by unrecognized.

On the basis of this analysis of cases I can give in outline form the mechanism by which non-penetrating wounds of the heart have been produced.

1 By a direct blow over the precordium producing fracture of the sternum and ribs, the broken ends of which are driven into the heart. A cavity of the heart may be penetrated, death taking place immediately, or



Fig 2—Anteroposterior view of heart which is enlarged. The deepest part of the depressed area is slightly more radiopaque than other parts of the heart.

the myocardium may be bruised. Delayed rupture may occur, cardiac failure may occur without rupture, an aneurysm may develop, recovery may take place.

2 By contusion or compression of the heart between the sternum anteriorly and the vertebrae posteriorly. This space is occupied almost entirely by the heart and any decrease in it directly affects the heart. The ribs and sternum may or may not be fractured. Rupture may take place without fracture of the thoracic wall.

3 By the application of indirect forces, such as by the sudden compression of the legs and abdomen. An extraordinary case was recorded by Kellert³ in which a man was engulfed to his waist in a sand bank. The heart and pericardium were ruptured. Dr Bright and I carried out an experimental study of this mechanism.⁴

4 By laceration of the thoracic viscera, such as may be sustained in a fall from a high building.

5 Concussion of the heart, a questionable type of injury so far as the heart is concerned. There are cases of vagus stimulation with stoppage of the heart in the literature.

The mechanism by which rupture of the heart takes place in nonpenetrating forms of trauma is as follows:

1 By bursting the heart when it is compressed between the vertebrae and the sternum, much as a toy balloon can be ruptured in one's hand. One would expect that a trauma of this nature would be more destructive if it should be applied at the end of diastole or at the beginning of systole, when the heart is filled with blood. One would also expect this trauma to be more destructive if it should be applied from the base of the heart toward the apex, so that the blood cannot escape as the heart is compressed.

2 By breaking the myocardium. Myocardium is of a friable nature. It can be broken. Even though the heart should be emptied of blood, the ventricular wall could be cracked or broken.

³ Kellert Ellis Traumatic Rupture of the Heart. Report of a Case with Uninjured Chest Wall. *J. Lab. & Clin. Med.* 2:726 (July) 1917.
⁴ Beck, C. S. and Bright E. F. Changes in the Heart and Pericardium Brought About by Compression of the Legs and Abdomen. *J. Thoracic Surg.* 2:616 (Aug) 1933.

3 By contusion with subsequent softening. Our analysis of the cases showed that, if the patient survived the first nine hours, the probability of surviving the first week was better than the probability of surviving the second week. One would expect the greatest amount of softening of the myocardium to be present during the second week, and this point should be given special consideration in the treatment of these cases, so that such blowouts of the heart may be avoided.

4 By increasing the intracardiac pressure, as by the application of a compression force to the legs and abdomen in individuals in whom the heart has a decreased resistance to dilating forces.

REPORT OF CASES

Following is a brief summary of three cases in which I made a diagnosis of cardiac contusion.

CASE 1—A man, aged 68, a physician, admitted to the Lakeside Hospital in 1932, had been kicked on the chest by a colt at the age of 4 years. The sternum and ribs were caved in. He was unconscious for several days after the accident. He was kept in bed for six months, and when he left his bed he was unable to carry on the usual activities of a child his age. Throughout his life he could not run and play as did other children his age. The slightest exertion produced dyspnea and palpitation of the heart. He always had to restrict his activities. In 1929 cardiac decompensation developed, and since that time he has had to spend most of his time in bed. The deformity of the chest is shown in figure 1. The depression of the precordium was 6 cm in depth and on the periphery was 12 to 18 cm across. Roentgenograms showed the transverse diameter of the heart to be markedly increased and the distance between the sternum and the vertebrae to be greatly reduced (figs 2 and 3). Under the fluoroscope we found nothing that could be interpreted as an aneurysm. The electrocardiogram showed slurring of the QRS complex in all leads, slight depression of ST in leads I and II, slight elevation of ST in lead III, T in leads I and II upright, and T in lead III inverted. The electrocardiogram was interpreted by Dr Harold Feil as showing auricular fibrillation and myocardial damage. Obviously the heart was damaged in this accident. It is difficult to see how it could have escaped injury. That it was injured is indicated by the disturbance in function following the trauma. The heart appears as though flattened out between the vertebrae posteriorly and the depression anteriorly.

The question arises as to whether this flattening of the heart was a factor in disturbing its function and if so should this deformity have been corrected by operation. I am of the opinion that a deformity of this nature should have been corrected by operation done

at an early period after the accident before the fractures united. It is indeed remarkable that such mechanical disturbances to the circulation are so reluctantly brought into the surgical category. Mechanical deformities of other parts of the body are treated by mechanical methods, that is, by operation. Indeed, the mechanical deformities affecting the cerebrospinal fluid pathway, the gastro-intestinal tract, the biliary and urinary tracts comprise a large part of present-day surgery. But

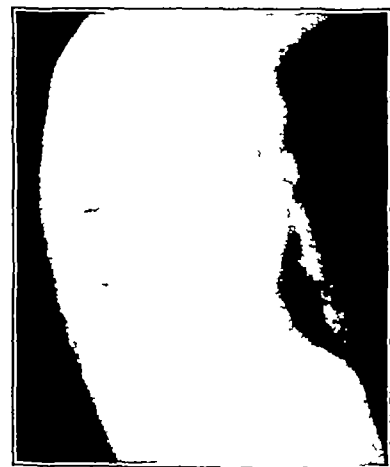


Fig 3—Lateral view showing the heart lying between the depressed area of the precordium and the vertebrae.

mechanical disturbances to the heart as yet can scarcely claim a place in surgery. This development necessarily will take place and the time will come when exploratory pericardiotomy will not be an uncommon operation. The term "exploratory pericardiotomy" is greeted by physicians of today with a feeling of spontaneous disfavor.

CASE 2—This patient also was a physician. The diagnosis of a myocardial contusion may be open to some question in this case, but the symptoms referable to the heart clearly dated to a serious accident while the patient was serving in the army in France. These symptoms now consist of attacks of cardiac asthma brought on by exercise. Except for these attacks, the examination is essentially negative. The patient is now 59 years old. He was in perfect health until the night of his accident, which occurred Nov 22, 1918. He was riding on a motorcycle, all lights were out and he ran headlong into a heavily armored truck. Presumably the patient was thrown forward against the truck. Immediately he became dyspneic, he was carried to a hospital, he was unable to lie on his back because of severe pain in the chest. He was kept in bed until January 1. During this period he was subject to severe attacks of dyspnea and pain. These attacks persist to the present time. They are not so severe as they were years ago, but the patient brought on an attack by exercise so that I could observe it. After it

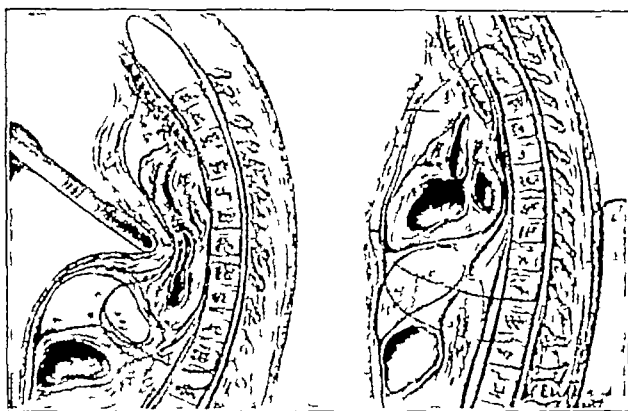


Fig 4—The heart is compressed between the vertebrae posteriorly and the sternum anteriorly. This form of accident is not uncommon and may be referred to as the steering wheel injury.

came on it was a most awful spectacle. I thought the man might die as he labored for breath. The pulmonary aspects of the attack were more pronounced than the circulatory manifestations. The electrocardiogram taken during the attack showed nothing remarkable. Fluoroscopic examination of the heart was negative.

In this case, I believe, a contusion of the myocardium cannot be excluded as the cardiac abnormality which brought on the symptoms after the accident was sustained. The evidence to support the diagnosis of cardiac contusion in this case is meager. It is based on two facts. The patient was in excellent health and never had any cardiac symptoms prior to the accident. The second fact is that circulatory collapse developed immediately after this severe injury to the chest, and the symptoms that followed were those of cardiac asthma. Cardiac asthma develops in a variety of cardiac lesions and it is probable that a contusive type of injury could produce cardiac asthma.

In case 3 I feel secure in making the diagnosis because it was confirmed at necropsy.

CASE 3—A man aged 49 was injured by driving his car into the cement buttress of a bridge. He was thrown forward with his chest against the steering wheel (fig 4). He extricated himself from the wreck, got out and walked around the

car. He wanted to continue his journey but was persuaded to go to a hotel. He sustained fractures of several ribs. These were strapped and against his wishes the patient was placed in a hospital by Dr. Kenneth D. Smith of Marion, Ohio. He said he felt all right except for some pain from the fractures. On the third day after the accident, Dr. John S. Hattery of Mansfield was called to see him. At that time the patient had a rapid pulse and seemed to be seriously ill. I saw him on the fourth day. He showed a tinge of cyanosis, slight dyspnea, and a pulse rate of 136 per minute. Frequent premature ventricular contractions were present. The electrocardiogram showed evidence of myocardial injury (fig 5). The cardiac sounds were reduced in intensity and showed a peculiar "tuck-tuck" quality. These sounds were similar to the sounds in our experimental cardiac contusions and this peculiar quality helped me make the diagnosis of a cardiac contusion. The fourth, fifth and sixth ribs on the left were fractured. The sternum was slightly depressed and had a transverse fracture line in its lower third. There was no evidence of hemothorax, pneumothorax, pneumonia, or abdominal complication. I made the diagnosis of a myocardial contusion and advised absolute quiet. Because of the patient's attitude in minimizing the seriousness of his injuries he was told that he had a contusion of the heart, and the dangers were pointed out to him so that his cooperation might be secured. He was given morphine. He was not to make the slightest physical or mental exertion. Mild purgatives were to be given as needed so that there would be no straining. Coughing, sneezing, laughter and any movement that might increase the intracardiac pressure were to be avoided. Thirty-six hours after I saw the patient, he died from myocardial failure. The necropsy showed two contusions in the posterior wall of the right ventricle the size of a dime (18 mm) and a laceration of the myocardium between these areas. The heart had not ruptured. There were some old cardiopericardial adhesions, some coronary sclerosis and some fatty infiltration of the heart.

In this case the heart undoubtedly failed because of the contusion that it had received. The response to the contusion was similar to that which we observed experimentally. Had my attention not been directed toward this subject by the experimental work, I am doubtful whether I should have recognized it clinically in this patient. I have one criticism to make of the treatment. I, as the surgeon, should have remained in constant attendance, and the operating room should have been kept in constant readiness so that if the contusion had ruptured the fleeting opportunity to suture it might have been utilized. So far as I can find out from the literature, no such opportunity has ever been taken by a surgeon. In this particular case, however, the heart had not ruptured and operation was not indicated. But on the basis of present knowledge of this subject there seems to be no way of foretelling whether softening and rupture would or would not have taken place. A crack in the myocardium was present. It might have extended into the cavity of the heart later on if the patient had lived.

Tuohy and Berdez⁵ reported a case in which a similar accident brought about a myocardial contusion. Other instances of cardiac contusions have been reported by the Kahns.⁶ These authors discuss the difficult problem of diagnosis.

The cases of nonpenetrating wounds were analyzed from the point of view of treatment. Dr. Bright and I were particularly interested to determine whether or not this type of trauma held any promise for future surgical development. We analyzed the group of 152

⁵ Tuohy, E. L. and Berdez, G. Two Instances of Perforation of Heart Following Nonpenetrating Chest Injury. *Minnesota Med* 9: 144-146 (March) 1926.

⁶ Kahn, M. H. and Kahn, Samuel. Cardiovascular Lesions Following Injury to the Chest. *Ann Int Med* 2: 1013-1046 (April) 1929.

cases in which rupture of the heart had occurred. These patients all died from hemocardiac tamponade. Out of the group we selected only those cases in which at least forty-five minutes or an hour elapsed between injury and death. This should allow time for preparation for the operation. The other requirement placed on the cases of this special group was that the lesion in the heart was not so extensive but that surgical repair might have been feasible (fig 6). Out of the group of 152 cases we found thirty cases in which it would seem that operation offered some chance for success. In other words, about 20 per cent or more of the cases of cardiac contusions that go on to rupture should be placed in the surgical category. Operation has not been carried out in a single case of rupture. If our conclusion is correct on the point of operability, two questions present themselves: (1) when to operate and (2) what to do at the operation.

The question as to when operation should be carried out can be answered definitely. If there is a slow leak of blood into the pericardial cavity, a warning is given by the presence of the signs of increased intrapericardial pressure. A large rupture occurring suddenly gives only a few moments for the operation. The opportunity should be seized, heroic and instantaneous as the requirements of the operation may be. To take advantage of it means that the surgeon be in constant attendance and the operating room be in constant readiness for the operation. In some of the cases the hemorrhage is slow and the urgency is not so great. One operation was carried out in this group of nonpenetrating cardiac injuries. It was by Mansell Moullin on a young man

in whom a hemorrhagic effusion developed in the pericardial cavity following a trauma received in a football game. The pericardial cavity was opened and the fluid was evacuated. The patient recovered. In our experiments a hemorrhagic effusion was not infrequently found. We feel that the demonstration of a hemorrhagic effusion in the pericardial cavity demonstrated by aspiration may be helpful evidence in the diagnosis of this lesion.

The question as to what should be done at operation can be answered only on the basis of experiment. In most of the cases in our so-called operative group the ruptured wall was firm enough so that it could have taken sutures. In those cases in which areas of the myocardium are softened and which look as though they might again rupture after they are sutured, a graft of pericardium can be sutured over the contusion. This graft will reinforce the heart so that it can the

better withstand the intracardiac pressure. This operation is being developed experimentally at the present time. It is my belief that it can be applied to nontraumatic cases also—cases of myocardial infarct and cases of spontaneous rupture in which the auricular⁷ or ventricular walls are pathologically weakened. Certainly it can be shown experimentally that a graft can reinforce an area of contusion in the heart. It remains for surgeons to look on the operation of exploratory pericardiotomy with greater favor. Why not try to control bleeding from the heart much as one would suture a tear in the liver or spleen? Why not reinforce a weakened ventricular or auricular wall by a fascial graft? There are problems to be overcome, both diagnostic and technical in nature, but these developments, I believe, will be made in the future.

Since this report was made, I have seen three additional cases in which the diagnosis of cardiac contusion seemed probable. One patient was a young man who sustained a steering wheel injury. Dr Wearn saw the boy immediately after the accident. For a few moments he was prostrate and the systolic pressure was 82 mm of mercury.

An hour later at the hospital the arterial pressure was normal. The electrocardiogram showed suggestive alterations in the T wave. There were no fractures. He had tenderness over the left third costal cartilage, which disappeared in a few days. Another patient had multiple fractures of ribs and other bones. He developed a pericardial friction rub and during a period of several weeks showed alterations in the electrocardiogram. The third patient, referred by Dr Hattery of Mansfield, Ohio, had a reverse steering wheel accident, i. e., the steering wheel was driven against the patient when a street car ran into his automobile. This patient was 32 years old and was in excellent health before the accident, which occurred in February 1934, but since the injury he has been incapacitated. He has a tender area over the precordium and on exercise he has precordial pain. He has auricular fibrillation but the electrocardiogram at the present time, ten months after the injury was sustained, does not show alterations in the T wave.

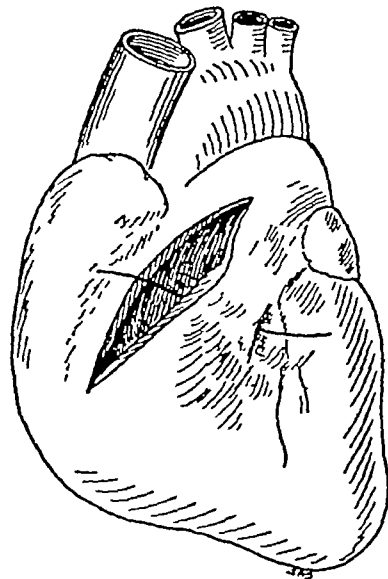


Fig 6—A nonpenetrating wound of the heart not associated with fracture of the sternum or ribs. There was a small slit like rupture in the anterior wall of the right ventricle. Through the rupture a bristle was passed and a portion of the ventricular wall was cut away to show that the injury opened the cavity of the ventricle. Undoubtedly in the future such wounds as this will be treated by operation. The myocardium usually is sufficiently firm to hold sutures. The area of contusion can be protected from rupture by grafting a segment of fascia or pericardium over the wound. This operation may find application also in cases of myocardial infarct in which the possibility of cardiac rupture exists. (Drawing from Ballance, Bradshaw, *Lecture on Surgery of the Heart*, London: Macmillan Company 1920.)

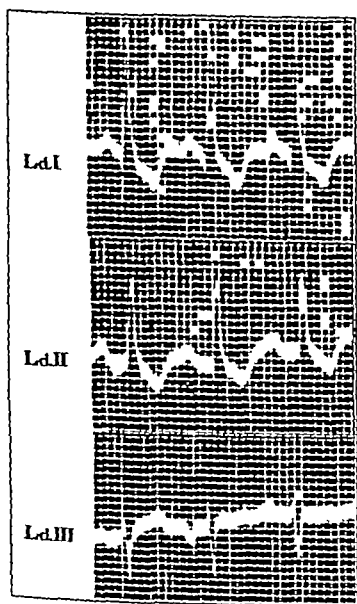


Fig 5—Electrocardiogram taken on fourth day after the accident. It shows normal sinus rhythm, left axis deviation and inversion of T in leads I and II. The inversion of T in leads I and II without digitalis therapy is significant of myocardial damage.

active group the ruptured wall was firm enough so that it could have taken sutures. In those cases in which areas of the myocardium are softened and which look as though they might again rupture after they are sutured, a graft of pericardium can be sutured over the contusion. This graft will reinforce the heart so that it can the

⁷ Clowe, G. M., Kellert, Ellis and Gorham L. W. Rupture of the Right Auricle of the Heart. Case Report with Electrocardiographic and Postmortem Findings. *Am Heart J* 9: 324-332 (Feb.) 1934.

ABSTRACT OF DISCUSSION

DR. R. L. SANDERS, Memphis, Tenn. In Memphis, most cardiac wounds are of the penetrating type. Dr. Beck has called attention to the nonpenetrating wounds of the heart. I desire to emphasize the following points made by the author. First, contused wounds of the heart occur but have not been accorded the proper clinical significance. Second, the second and third weeks of the disease mark the stage of the greatest softening and weakening of the cardiac muscle and hence the clinical importance of rest and care to avoid rupture. In Memphis hospitals my associates and I have studied a large number of records but find no diagnosis of cardiac contusion although, considered in the newer light, a few of them might be so classified. The records from two of our large hospitals and one private clinic showed that in a total of 326,500 admissions there was not a single case of cardiac contusion recorded. There were ten penetrating wounds of the heart. A study of 133,000 cases showed a body contusion in 814, but none indexed as cardiac contusion. In another survey we found eleven cases that might be placed under Dr. Beck's classification and presented as at least suggestive. Two of them showed depressed fractures of the sternum and ribs, operations were later performed, and both patients died. Eight recovered spontaneously, thus emphasizing a point made by the author that the cardiac muscle can stand a great deal of trauma and still recover. Dr. Beck has given us something to think about. In a large majority of such cases there will be an economic and insurance compensation phase, necessitating caution in making the diagnosis. However, after careful consideration of the cases Dr. Beck has presented, the condition may be recognized as a clinical and pathologic entity.

DR. JOSEPH T. WEARN, Cleveland. Dr. Beck has called attention to something that we, as internists, have rarely diagnosed in the past. It seems that the clinical condition described by Dr. Beck is in a state of confusion similar to that which existed concerning coronary thrombosis previous to Dr. James B. Herrick's papers in 1912 and 1918. Until then the clinical diagnosis of coronary thrombosis or occlusion of the coronary artery was seldom made, although it was frequently demonstrated at autopsy. A man of 55 whose condition had been diagnosed as coronary occlusion recently entered my medical service. I talked with him with great care and found that he owned a furniture store. His so-called coronary occlusion began one day when he used an implement to take a chair off the top shelf, the chair dropped, striking him in the chest. He collapsed but presently recovered. A few days later he collapsed again, at which time he was ordered to bed and since then has been considered to have coronary occlusion with typical electrocardiographic signs, but I think he has a contused heart. Recently a man entered Lakeside Hospital (and Dr. Beck was good enough to call me to see him) who had been crushed against a wall by a bull. His sternum and nine ribs on the left side were fractured, so that each time he took a breath the entire chest caved in instead of expanding. He has been watched carefully by Dr. Beck. The patient was very sick, but now, after several weeks, he is doing nicely. It is important to keep these people at absolute rest in bed for a long time—that is, from four to six weeks—because the infarcted area softens and a sterile abscess results. During the time the leukocytes are removing the dead muscle, there are two thin walls on each side of the abscess and it is then that the heart ruptures.

Individuals Limping Along—There are many individuals limping along hampered by abnormal attitudes and moods, by feelings of inferiority and of jealousy, by a latent feeling of guilt or uncleanness, by the temptation to daydream and to indulge in the seductions of phantasy. Some of these persons never develop a cleancut mental disorder. They may rarely come to the physician for these specific symptoms. The physician may only indirectly become aware of them if the patient comes on account of dissatisfaction with life. To such patients the physician, interested in human nature appreciative of the underlying conflicts of human nature, may offer invaluable help.—Campbell C. Macfie. *Psychiatry from the Standpoint of the General Practitioner, Pennsylvania M. J.* 38:59 (Nov.) 1934.

ASCITES OCCURRING DURING JAUNDICE, WITH RECOVERY

REPORT OF A CASE

JACOB MEYER, M.D.

A.B.D.

AARON LEARNER, M.D.

CHICAGO

The occurrence of ascites in cases of catarrhal jaundice is rare. Bauer,¹ in a study of the problem of catarrhal jaundice, saw only two cases in an extensive experience, in which along with the symptoms of catarrhal jaundice there was definite ascites and subsequent recovery. Jones and Minot,² in a series of twenty-six cases of catarrhal jaundice, observed two cases in which, in addition to the jaundice, a pro-



Microscopic section of liver showing increase in fibroblasts, histiocytes and eosinophilic leukocytes and also cytoplasmic changes in the liver cells.

nounced ascites developed. One of these patients recovered, and at operation (cholecystectomy) the liver showed what appeared to be a cirrhosis. The second patient, who died, showed clinically an identical picture to that of the case in which the patient recovered. Weir³ reported five cases of jaundice with ascites not due to cirrhosis in which the prognosis was considered good. We report a case presenting many similarities to the cases referred to. Further, in our case, an exploratory laparotomy gave us an opportunity to study biopsy sections removed at operation.

REPORT OF CASE

H. F., a white man aged 40, a factory worker, admitted to the service of Dr. Solomon Strouse Feb. 8, 1931, and dis-

From the Medical Service and the Stomach Study Group, Michael Reese Hospital and the University of Illinois College of Medicine.

1. Bauer, R. Zur Frage des Icterus Catarrhalis. *Med. Klin.* 22: 1558-1561, 1926.

2. Jones, C. M. and Minot, G. R. Infectious (Catarrhal) Jaundice. *Boston M. & S. J.* 189: 531-551 (Oct. 18) 1923.

3. Weir, J. F. Association of Jaundice and Ascites in Diseases of the Liver. *J. A. M. A.* 91: 1888-1891 (Dec. 15) 1923.

charged, May 12, 1931, had been in good health until one year before admission. During this year he had been under observation at the Mandel Clinic of Michael Reese Hospital because of pain in the stomach, which came on immediately after meals. This pain was relieved by soda and a light diet. There was no definite food relationship to the pain though fatty foods seemed to aggravate his complaints. The pain was not present at night. At times there was a feeling of fullness in the epigastrium and a complaint of belching but no nausea or vomiting. The patient never had a gallbladder colic. The appetite was good. He was prone to constipation. He complained of nocturia. Lately he had been feeling rather weak.

Three weeks before admission to the hospital the patient noticed that his skin was yellow and that this was becoming more marked. Shortly before and during the onset of the jaundice he felt ill, and he stated that he had a cold at that time. There were no other complaints. The patient had not observed the character of the stools or urine. On admission there were marked icterus and moderate tenderness in the epigastrium, more to the right side. The liver was 6 cm below the costal margin. The spleen was not palpable.

The icterus index on admission was 205. Two weeks after admission an edema of the lower extremity was noticed, and two days later there was definite ascites. The jaundice at this time was still present but had decreased in intensity. The icterus index was 183. Four weeks after admission the ascites and edema of the dependent parts were marked. The abdomen was tense. The scrotum also was markedly swollen. Repeated examination of the heart revealed no evidence of organic heart disease. The heart was normal to percussion. There were no murmurs. There was no evidence of fluid either in the pleural sacs or in the pericardium. The icterus index was now down to 93. The figures of the patient's weight further illustrate the amount of water retention. On admission the patient weighed 113 pounds (51 Kg.), and at the height of the ascites and edema the weight was 145 pounds (66 Kg.). The blood pressure was 122 systolic, 82 diastolic.

Laboratory examination revealed the following. The urine was positive for bile. The albumin reaction varied between negative and one plus from day to day. Occasionally there were a few white blood cells and a granular cast. The specific gravity varied from 1.030 to 1.006. The feces were clay colored.

Duodenal drainage was positive for bile. On one occasion *Giardia* was seen. An Ewald test meal revealed total acid 65 free 30, blood negative.

Blood count showed 4,100,000 red blood cells, 8,000 white blood cells, hemoglobin 70 per cent, a normal differential, and coagulation time seven minutes.

Chemical examination of the blood revealed sugar 57, 79, nonprotein nitrogen 33, 28, cholesterol 160.

The Van den Bergh reaction gave an immediate direct and an indirect positive test. The icterus index was 205, 202, 183, 93, 41, 21. The Wassermann reaction was negative.

Roentgen examination revealed the stomach of the orthotomic type, two fingerbreadths below the crest. The rugae were diffusely dilated. The appearance was suggestive of polyposis. The distended cap had a normal appearance. When partly empty it had an irregular, hazy appearance. There was some tenderness on pressure.

Primary gallbladder pictures were negative.

When ascites was noted, the patient was placed on the following regimen: bed rest, fluids restricted to 1,000 cc. daily, a soft diet, predominately carbohydrate with restriction of salt, salyrgan, one ampule every four days, later two ampules every four days, magnesium sulphate one-half ounce (15 Gm.) every morning. The fluid intake and output were measured.

The response to treatment as measured by water and weight loss was very satisfactory and after two weeks the patient had returned to approximately the admission weight of 115 pounds. The icterus index had now dropped to 41, at which level it remained. The patient presented moderate icterus, no demonstrable ascites and no enlargement of the spleen. Because the condition appeared stationary and in order to rule out a malignant condition, an exploratory laparotomy was performed. Spinal anesthesia was employed. The peritoneal cavity was dry. There were no tumors. The stomach was dilated and

thickened. The gallbladder was distended and somewhat edematous and was thickened, though not acutely inflamed. The common duct was dilated to the size of the index finger. Behind the common duct was a large gland the size of an almond. The liver was enlarged and engorged. The stomach was incised because of the roentgenologic diagnosis of gastric polyposis; the mucosa was reddened and edematous. There was no obstruction at the papilla of Vater and there were no stones.

The gallbladder was removed and drainage instituted. Biopsy sections were taken of the liver, stomach and lymph node.

Microscopic examination of a section of the liver revealed the preservation of the normal architecture. The liver cells were in distinct cords radiating from the central veins, which showed no dilatation. The walls of the central veins were moderately thin. The intra-acinus capillaries were collapsed but were readily discernible because of the large, swollen Kupffer cells which were present in increased number. The Kupffer cells stained well. The liver cells were large and swollen. The cytoplasm was pale staining and presented an appearance of variable sized rather fine pink granules lying in a gray matrix. The cytoplasmic changes as described were uniformly distributed through the acinus. Occasionally a liver cell was seen with one or more small vacuoles in the cytoplasm, without displacement of the nucleus. In general the nuclei stained well, showing a distinct nuclear wall, purplish granular basichromatin and a distinct nucleolus. Scattered through the field were liver cells with no obvious nucleus and others wherein the nucleus was very pale staining, almost completely obliterated. There was a delicate increased intra-acinus capillary fibrosis. The portal spaces were more prominent than normal, being variably enlarged. There was an increase in fibrous tissues and in this connective tissue there was an infiltration of a moderate number of lymphocytes, fibroblasts, histiocytes and a few eosinophilic leukocytes. The bile ducts and vessels of the portal spaces showed no pathologic changes.

The gallbladder wall was thickened and showed an increased fibrosis. The epithelium was to a considerable extent desquamated while the remaining epithelium, though staining well, was moderately swollen. Throughout the entire thickness of the wall there were seen an infiltration of lymphocytes, a few eosinophilic leukocytes and an increase in fibroblasts and histiocytes.

A section of the lymph node revealed obliteration of the normal architecture. There was hyperplasia of the reticulum cells, which were swollen and increased in number. There was an increased fibrosis. Scattered through the field were a small number of eosinophilic leukocytes.

A section of the pyloric portion of the stomach showed an intact epithelial lining. The mucosa was thickened. The tunica propria of the mucosa showed an infiltration of lymphocytes, plasma cells, eosinophilic leukocytes and a moderate number of macrophages.

The patient made an uneventful recovery, postoperative drainage, however, was maintained longer than usual. Two weeks after the operation the icterus index had come down to 21.

At present, approximately three and a half years after the onset, the patient, in excellent general condition, presents no signs of jaundice or ascites. Laboratory studies reveal a Van den Bergh direct negative and an indirect delayed positive reaction, the icteric index, hemolysis. The blood sugar is 63, nonprotein nitrogen, 42.

COMMENT

We have avoided the term "catarrhal jaundice" because this case presents an opportunity to examine more critically the relation between so-called catarrhal jaundice and the severer forms of liver damage.

Catarrhal jaundice was previously considered an ascending infection from the gastro-intestinal tract associated with a plugging of the common bile duct by the mucous swelling of the duodenum. Such a relatively simple conception has now been replaced by the

view of Rolleston and McNee⁴ that "most if not all cases are due to an infection involving the bile ducts and liver cells, that is to say, a combination of hepatitis and cholangitis." Klemperer and his associates⁵ on the other hand, "in view of the extreme variability existing in different cases of catarrhal jaundice," state that "this condition cannot be considered either as a morbid or pathologic entity." These authors divide catarrhal jaundice into three groups: 1 "Icterus due to obstruction of the ostium of the common duct, from gastro-intestinal catarrh. This is true catarrhal jaundice." 2 "Icterus due to degeneration of the liver with multiple necrosis. This is evidently hematogenous in origin and is Eppinger's acute yellow atrophy in miniature." 3 "Icterus due to cholangitis." Klemperer's observations parallel those of Eppinger. It is extremely interesting, in view of these opinions and observations on catarrhal jaundice, to correlate the observations of MacMahon⁶. In a recent review of infectious cirrhosis he says "Biliary cirrhosis is any cirrhosis of the liver originating from disease of the bile ducts or obstruction to the outflow of bile. Histologically the inflammation is localized in the portal areas, the cell types differing however, depending on whether we are dealing with an acute or a healing process. In the healing stage the infiltration consists of endothelial leukocytes and fibroblasts." It is obvious that the dividing line between a catarrhal jaundice and infectious cirrhosis cannot be definitely drawn. Our case showed definite evidence of gastro-intestinal inflammation and also of an infectious cirrhosis. The clinical features were those of a catarrhal jaundice during which ascites developed. These observations emphasize the fact that catarrhal jaundice cannot be considered a finely delineated entity but rather a functional disorder in which the underlying pathologic basis may be diverse.

The occurrence of ascites arouses interest in the relation of injury to liver to water metabolism. Injury to the liver is associated with a disturbance in water balance. Bauer¹ often observed evidence of water retention in catarrhal icterus, and he observed two cases with ascites. He considered the ascites a sign of liver atrophy. Adler⁷ also noted in jaundiced patients a reduction in water output. He made similar observations in patients suffering from liver disease without concomitant or only light jaundice. There is a direct relationship between liver function and the water metabolism, so that the dilution and concentration test may serve as a procedure in the study of liver function provided cardiac or renal factors can be eliminated. Pollitzer and Stolz⁸ reached the conclusion that in diffuse liver disease of the type exemplified by icterus catarrhalis there is a rise in the residual water content of the body, and a level of equilibrium reached that can pass into a condition of ascites as soon as that level is exceeded. Pozzi⁹, on observing in patients with liver disease the modification of diuresis under the action of merbaphen, found that the results secured point to a direct action of that diuretic on the liver. It is difficult however, to account how the effects of merbaphen and

salyrgan are brought about. Furthermore, the *modus operandi* of the liver in its regulatory role in water metabolism is not clearly explained, though explanations and experiments are offered by Adler, Molitor and Pick,¹⁰ Cori and Mautner¹¹ and others.¹² That the liver plays a role in water metabolism is not denied by observation, though as yet the explanations of the mechanism cannot be considered adequate. In fully developed cases of cirrhosis, portal obstruction dependent on progressive fibrosis has been demonstrated by McIndoe.¹³ The degree of fibrous tissue increase and cellular infiltration necessary to effect an ascites is difficult to say, though very likely this is a variable factor dependent in part on the functional integrity of the liver parenchyma and other factors that are not known.

SUMMARY

A case of ascites occurring during what is generally termed catarrhal jaundice went on to complete recovery after three years' observation. The case illustrates the difficulty of presenting a fixed syndrome for so-called catarrhal jaundice and directs attention to other functional alterations dependent on varying degrees of liver injury.

55 East Washington Street

Clinical Notes, Suggestions and New Instruments

URTICARIA CAUSED BY COLD

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In looking over the literature for methods of treatment and data on which to base a prognosis, I found that but few cases of urticaria due to cold have been reported in the English literature. Bray¹ found only thirty-seven cases reported in all the literature before 1931, the first of these being mentioned by Béhier² in discussing a paper on urticaria. It is of interest to note at this point that one of these thirty-seven, a case reported by Duke,³ is not an urticaria due to cold but one due to light. Since the appearance of Bray's article I have been able to find but one more case reported in the English literature, that by Weiss,⁴ although a few have appeared in other than English publications during this time.

In view of the apparent rarity of this condition I thought that it might not be amiss to add my case to the literature.

REPORT OF CASE

A white woman aged 62, came to my attention for the first time in August 1934 complaining of an itching and redness of the hands and exposed parts of the body that appeared usually in the morning on exposure to cold air or objects. She had noticed these cutaneous reactions for a period of two weeks preceding this visit and before that a mild tingling of the fingers had been noted under similar circumstances during one week in February of the same year but never prior to that time. Questioning revealed that a trip to market, being the first venture outdoors in the morning, would usually initiate an

⁴ Rolleston H. and McNee J. A. *Diseases of the Liver, Gallbladder and Bile Ducts*, ed. 3, London: Macmillan Company, 1929, p. 597.

⁵ Klemperer Paul, Killian J. A. and Heyd C. G. *Pathology of Icterus Catarrhalis*. *Arch. Path. & Lab. Med.* 2: 631-652 (Nov.) 1926.

⁶ MacMahon H. E. *Infectious Cirrhosis*. *Am. J. Path.* 7: 77-86 (Jan.) 1931.

⁷ Adler A. *Liver and Diuresis*. *Klin. Wchnschr.* 2: 1980-1982 (Oct. 22) 1923.

⁸ Pollitzer H. and Stolz E. *Ueber eine Novasurol Probe zum Nachweis des Einflusses der Leber auf die Wasser Ausscheidung*. *Wien Arch. f. inn. Med.* 8: 289-302 1924.

⁹ Pozzi A. *Water Test to Determine Functioning of Liver*. *Pol. clinico* 38: 435 (Sept. 1) 1931. *abstr. J. A. M. A.* 97: 1573 (Nov. 21) 1931.

¹⁰ Molitor H. and Pick E. P. *Die Bedeutung der Leber für die Diurese*. *Arch. f. exper. Path.* 97: 317-343 1923.

¹¹ Cori G. and Mautner H. *Der Einfluss der Lebergefäße auf den Wasserhaushalt und die hamoklassische Krise*. *Ztschr. f. d. ges. exper. Med.* 26: 301-311 1922.

¹² Pick, E. P. *The Regulation of Water Metabolism*. *Harvey Lectures* 1929-1930 pp. 25-55.

¹³ McIndoe A. H. *Vascular Lesions of Portal Cirrhosis*. *Arch. Path. & Lab. Med.* 5: 23-42 (Jan.) 1928.

¹ Bray G. W. *Localized and Generalized Allergic Type of Reaction to Cold*. *J. Allergy* 3: 367 (May) 1932.

² Béhier M. *Note sur l'urticaire intermittente*. by M. Boudron discussion by MM. Guérard and Béhier. *Bull. Soc. méd. d. hôp. de Paris* 3: 262 (Oct. 26) 1866.

³ Duke W. W. *Urticaria Caused by Light*. *J. A. M. A.* 80: 1835 (June 23) 1923.

⁴ Weiss Edward. *Urticaria from Sensitiveness to Cold*. *Recovery Following Removal of Pelvic Tumor*. *Arch. Dermat. & Syph.* 25: 823 (May) 1932.

attack of redness and itching of the face, neck and hands. Accompanying this, the patient would notice some dyspnea and palpitation, the latter being a noticeable feature only when walking very briskly. The whole attack never lasted more than five or ten minutes, and only on one or two occasions was a recurrence noted in the same day. At this time the patient also observed that if the hands were immersed in cold water or brought in contact with cold objects, as ice cubes or milk bottles, the fingers and palms would become a dusky, brawny red with swelling accompanied by itching and burning. Flexion of the phalangeal joints caused pain. When the attack was initiated by immersion in cold water a definite line of demarcation was noted. Wheals were produced at will on any part of the cutaneous surface by the application of such objects as ice cubes, frosted glasses and cold metal. They always corresponded in size and shape to the objects applied. At one time I observed a wheal measuring 6 by 4 inches (15 by 10 cm.) on the forearm that resulted from carrying a package of cold meat. These wheals had all the characteristics of the commonly observed types of urticaria, i. e. reddish or pinkish elevations of the skin accompanied by itching, stinging, prickling and burning. The phenomena in this case are essentially cutaneous, for at no time have there been any subjective or objective manifestations in relation to the mucous membranes of the mouth or throat during the eating or drinking of cold foods or liquids.

The patient suffers from a chronic pharyngitis and a tubotympanitis accompanied by a progressive otosclerosis, also mild recurring attacks of arthritis involving the small joints of the fingers (atrophic or rheumatoid type). There is a complete absence of all other forms of allergic reaction.

The family history was negative for allergic disease.

The patient was 5 feet (152 cm.) in height and weighed 103½ pounds (47 Kg.). The hair tended to be dry. The eyes and nose were normal. The tympani were dull and retracted. The mouth and tongue were normal. The teeth were well cared for. The tonsils were embedded and apparently diseased. There was lymph follicular hyperplasia of the pharynx. The neck was normal. The lungs were clear. The heart was normal. The blood pressure was ordinarily 130 systolic, 75 diastolic and during an attack it has remained the same. The pulse was ordinarily 80, with no change during an attack. The abdomen was normal. The extremities were normal except for some spindle shaped deformity of the middle phalangeal joints. The skin has shown no sign of autographism.

Urine collected immediately after an attack was yellow, acid in reaction, with a specific gravity of 1.020, and negative for sugar, albumin and hemoglobin. Microscopic examination revealed nothing abnormal. Blood studies showed a hemoglobin of 90 per cent (Tallqvist), red cell count of 4,540,000 and white cell count of 5,950, with a differential of 59 per cent neutrophils, 3 per cent eosinophils, 30 per cent lymphocytes and 8 per cent monocytes. The bleeding time was two and one-half minutes, the clotting time one and one-half minutes. The blood was type IV (Moss). The Wassermann reaction was negative.

In an endeavor to demonstrate that these cutaneous reactions were due to a disturbance of the vasomotor mechanism, 1 at one time administered 5 minims (0.3 cc.) of epinephrine hydrochloride subcutaneously, with an almost immediate subsidence of all symptoms and signs. Subsequently calcium lactate in doses of 15 grains (1 Gm.) three times a day after meals has caused a marked reduction in the frequency and severity of the attacks. There has always been a complete recurrence following its withdrawal. Neither desensitization with histamine as recommended by Bray¹ nor autodesensitization of the French has been tried in this case. They are to be tried and the results together with other studies now in mind will be reported in a later communication.

I feel that this case is of interest because of (1) the apparent rarity of this type of urticaria, (2) the spontaneous appearance of such a type of sensitivity in a person of this age with no prior allergic history in self or family with the exception of an infectious type of arthritis, (3) the fact that the phenomenon is essentially a cutaneous one, and (4) the apparent response to calcium therapy.

138 North Eighth Street

OSTEITIS FIBROSA CYSTICA AND RENAL CALCULI WITHOUT HYPERCALCEMIA

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Recent contributions¹ to the subject of hyperparathyroidism have stressed the necessity to consider the entire clinical and laboratory picture of the disease rather than to place too much reliance on any isolated observation or group of observations. The so called metabolic criteria of hyperparathyroidism may be duplicated in conditions in which there is no evidence of hyperfunction of the parathyroids.² Likewise in proved cases of hyperparathyroidism the metabolic criteria may be absent. Gutman¹ has noted that, of seventy-eight reported cases of hyperparathyroidism in which determinations of serum calcium were recorded, 25 per cent failed to show a consistent hypercalcemia. This case of osteitis fibrosa cystica generalisata is reported as an instance of probable hyperparathyroidism fulfilling all the clinical and roentgenographic criteria of the condition with, nevertheless, consistently normal concentrations of calcium and phosphorus in the serum.

Mrs. M. C. was first admitted to the New Haven Hospital in 1922, when she was 48 years old, for nephrectomy on the right side because of renal calculi and pyelonephritis. At this time some rigidity and abnormal position of the right leg was noticed but was not investigated.

She was readmitted, May 30, 1933 for a fracture of the right femur. The fracture occurred without any fall when she put her weight on the leg in getting out of a car. For some

Chemical Examination of the Blood

Date, 1933	Blood Nonprotein Nitrogen Mg. per 100 Cc.	Serum Proteins Gm. per 100 Cc.	Albumin Gm. per 100 Cc.	Globulin Gm. per 100 Cc.	Calcium Mg. per 100 Cc.	Phosphorus Mg. per 100 Cc.
	100 Cc.	100 Cc.	100 Cc.	100 Cc.	100 Cc.	100 Cc.
June 7	93	0.8	3.9	2.9	10.0	5.2
July 5	91					
July 10	97					
July 31	58	6.3	3.9	2.4	10.0	3.8
Sept. 4	67					
Sept. 5	66	6.3	3.7	2.8	10.1	3.1

years the leg had become more and more stiff with what was called arthritis, until for six months prior to admission she had been forced to use crutches. In addition she had noticed bowing and rotation of the right arm for a year and a half. For some years she had been troubled with increasing nocturnal urinary frequency. Constipation for several years necessitated the habitual use of saline cathartics.

Generalized hypotonia of the muscles was a striking feature of the clinical examination. The patient was irritable, was uncooperative, and occasionally became quite irrational. There was a moderate leukocytosis and a well marked hyperchromic anemia but no abnormal cells in the spread. The urine contained some albumin but no Bence-Jones protein. Occasional red blood cells and granular casts appeared in the urine sediment, and numerous white blood cells were continuously present. The specific gravity never exceeded 1.010. When the first chemical examination of the blood was made, the patient was taking little food and was vomiting. The blood nonprotein nitrogen was considerably elevated and the phosphorus somewhat high. The phosphorus subsequently returned to normal but the nonprotein nitrogen remained elevated. The concentration of calcium in the serum was never above normal.

Roentgen examination revealed a fracture through the middle third of the femur with decalcification and multiple cysts in the distal fragment producing marked distortion of trabeculations and expansion of the cortex. Similar cysts and osteoporosis were present in the right radius. The skull was the site of spotty rarefaction and thickening, rather suggesting

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¹ Albright, Fuller, Aub, J. C. and Bauer, Walter. Hyperparathyroidism. J. A. M. A. 102: 1276-1287 (April 21) 1934. Gutman, A. B., Swanson, P. C. and Parsons, W. B. The Differential Diagnosis of Hyperparathyroidism. J. A. M. A. 103: 87-94 (July 14) 1934. Churchill, E. D., and Cope, Oliver. Parathyroid Tumors Associated with Hyperparathyroidism. Surg. Gynec. & Obst. 58: 255-277 (Feb. 15) 1934.

² Robbins, C. L. and Kydd, D. M. A Note on the Metabolic Criteria of Hyperparathyroidism to be published.

Paget's disease. The twelfth thoracic and third lumbar vertebral bodies were markedly narrowed in their vertical diameters as the result of compression. An opaque shadow the size and shape of a hen's egg occupied the region of the left kidney pelvis.

Although the anemia did not respond to intensive liver therapy, the patient's general condition improved slightly and the fracture seemed to be healing well. Operation for parathyroid tumor was urged but the patient refused, insisting on leaving the hospital. She died at home shortly after her discharge from the hospital on September 7. Autopsy was not secured.

In view of the osteoporosis, multiple cystic tumors and renal calcification, there can be little doubt of the diagnosis of hyperparathyroidism in this case, although the serum calcium was normal and anatomic evidence of parathyroid overgrowth is lacking.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE

HOWARD A. CARTER, Secretary

THERAPEUTIC EXERCISE

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AND

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CHICAGO

Therapeutic exercise may be defined as the use of scientifically supervised movements of the body, with or without apparatus, for the purpose of restoring diseased or injured tissues as near to normal function as it is possible. There are two types of therapeutic exercise—passive and active.

Passive exercise is that form of bodily movement which is carried through by the operator without the assistance or resistance of the patient. Mennell¹ uses the term relaxed movement. Relaxed movement should be administered with great care with the extremity placed in the correct position and properly supported. A pumping movement should be avoided. All relaxed movement should be well within the limit at which pain occurs.

The occurrence of a muscle spasm is a danger signal preceding pain. If such a protective spasm occurs, the movement should be stopped immediately. It should be kept constantly in mind also that one movement through its fullest range is much better than a series of movements through a shorter range.

The chief aims of relaxed movement are to maintain suppleness and to prevent contractures and the formation of definite adhesions. In this manner, passive exercise of muscles prepares them for active movement.

Stretching of contractures and old adhesions in chronic conditions should not be confused with relaxed movement. The object of stretching is to loosen contracted ligaments, muscles and adhesions in stiff joints and is to be used only after the inflammation of the joint has subsided. The technic of such a procedure should be a slow, steady and gradually increasing pull by the operator or with apparatus. The length of time applied and the amount of tension may be gradually increased, depending on the reaction of the patient. Joint soreness may be produced by such stretching, and a short application of heat with gentle massage will help materially in making the patient comfortable. As

a rule, any pain that passes off in an hour is not detrimental to the final success of the treatment. If there is an increase of swelling and pain or the range of motion is less the next day too much has been attempted. Splints may be used and a gentle pull maintained day and night. This should be increased gradually and kept constantly within the patient's capacity, otherwise, much pain and discomfort will be caused.

The angle of movement should always be recorded by using a goniometer and never estimated by the eye of the operator. Records of movement estimated by the eye of the operator are inaccurate and worthless. This is especially true when the stretching has been forceful. A design for making a goniometer may be obtained by writing to the secretary of the Council on Physical Therapy.

There is a highly beneficial maneuver that can be applied at this stage in the treatment. It cannot be classed under the heading of movement, because joint motion does not take place. The procedure is termed muscle setting and can be practiced by the patient while the leg or arm is in a splint. By it is meant the alternate contraction and relaxation of a muscle or group of muscles without movement of the joint. This type of exercise may be difficult for the patient to learn. It should be practiced under the watchful eye of the operator until the patient has accomplished it. Muscle setting is used in the early stages of acute traumatic injury or when it is impossible to obtain joint movement in chronic cases. Great benefit is derived by its use in restoring and maintaining muscle tone and strength.

Active exercise is one of the most valuable adjuncts available in the restoring of normal muscle function. It must, however, be properly applied and in gradually increased doses, depending on the reaction of the patient, in order to insure beneficial results. It should always be remembered that nerves and muscles are parts of a unit, the muscles having the power of contractility and producing motion, and the nerve having the power of irritability and conduction. If the muscle is properly rested and made to resume work gradually within functional limitations, it does not waste.

Active exercise is that form of bodily movement which is carried through by the patient, with or without the personal supervision of the operator, and is divided into assistive, free and resistive exercise.

Assistive exercise is that form of active exercise which the patient performs, assisted by the operator or some mechanical means such as a pulley and weight. Its chief objective is to enable the patient to accomplish more than he could do unassisted. This exercise calls for judgment on the part of the operator, who should aid only when the muscle is too weak to accomplish its movement. If fibrillation of muscles occurs, the muscles have been given too great a task and assistance is needed. However, when fibrillary contractions do occur, it is advisable to cease and obtain complete relaxation before treatment is resumed. The operator then will be able to give assistance at the right moment, thereby preventing further fibrillation. Progress must be watched carefully. The operator should increase the range of movement daily and should gradually develop the type of exercise from assistive to free.

Free exercise follows the assistive type and is defined as that form of active exercise which is carried through by the patient against the least possible resistance. To do this the body of the patient and the injured muscles are placed in such a position that gravity exerts no

¹ Mennell, J. B. *Massage: Its Principles and Practice*. Philadelphia: P. Blakiston's Son & Co. 1920.

resistance to graded arc movements of the arm or leg to be manipulated. The range of movement should increase as the strength of the muscles increases and as adhesions are broken down.

True free movement is difficult to obtain and in reality the line of demarcation between free and assistive movement is not sharply defined. Free movement is obtained by eliminating the resistance of gravity and the resistance of friction. True free movement can be obtained by the "sling suspension" method, by placing the limb in a warm water bath or by the use of a smooth rectangular board, well powdered and placed so that the movement is in a horizontal plane. Each of these methods tends to reduce the friction to a minimum and produce truly free movement.

Resistive exercise is that form of active exercise, with or without apparatus, which offers resistance to muscle action. The resistance applied must be different for the different phases of the movement, least during the beginning and ending thirds, and greatest during the middle third or optimum of the muscle contraction. Correct resistance is often the only way to make one muscle group work alone and exclude its antagonists.²

No patient should be permitted or told merely to exercise his arm. It is the duty of every physician prescribing exercise to give definite directions as to the amount and kind. In the case of the patient with average intelligence, the anatomy of the part to be exercised and the reasons for the exercises should be explained to him.

In giving directions for exercises it should be impressed on the patient that, although heat, massage and electrical stimulation are used for his weak muscles, these are only to increase the circulation, and that nothing will increase muscle power but active exercise, which requires volitional effort on his part. To insure the proper regimen of treatment, definite written instructions for exercises should be given the patient.

Muscle reeducation is that form of therapeutic exercise which encourages voluntary muscular movements within functional limitations. It is given to muscles in which the neuromuscular coordination has in some way become partially destroyed. The reflex arc has become involved, making it impossible for the muscles to move by means of the reflex mechanism. As a result, coordinated movement is lost. To reeducate muscles under such conditions, two things are necessary: first, to reestablish a better coordination between the remaining nerve fibers and cells supplying the affected muscle; and, second, to secure the contraction of the desired muscle, however feeble.³

Mackenzie⁴ says that if a muscle is weakened or paralyzed, whether from injury of muscle, nerve or central cell, it is rested when its opponent is in a state of relaxation or elongation beyond the state normally regarded as necessary to produce a condition of equilibrium with its opponent. This is the zero position. Reeducation of a paralyzed muscle begins at zero and is the encouragement of voluntary muscle movements within functional limitations. The amount of work at this minimum may be slight, but it is the maximum function of the muscle at this time, and as such the muscle may soon become exhausted.

Curative occupational therapy is a form of therapeutic exercise that requires a series of specific volun-

tary movements, initiated by the patient which form component parts of a more complex and coordinated movement. This exercise is designed for the express purpose of securing definite end results and is a direct incentive for sustained effort.

The ordinary physical treatment given to a patient lasts, at the most, only an hour. The mechanical exercises given have certain definite limitations. The human body is more than a machine, and the mere formal repetition of a movement either with or without an apparatus is not of maximum therapeutic value in increasing the amount of movement in a stiff joint or as an integral part of a large coordinated movement. That is because there is no psychologic stimulant for personal initiative or for sustained effort. The patient can be told to exercise, but unless occupational therapy is used there is no incentive and interest provided to continue the exercise. In physical therapy the patient's attention is focused on the injury, while in occupational therapy his interest is in the work.

THE THERAPEUTIC EXERCISE FOR THE SHOULDER JOINT

Mackenzie, in his classification of muscles moving the humerus, points out the important fact that the abductors of the shoulder joint are the relatively weak deltoid and the supraspinatus and that the adductor is the strong pectoralis major. The external rotators are the weak infraspinatus and the teres minor, while the internal rotators are the strong latissimus dorsi and the subscapularis. With this in mind, it is well in shoulder joint injuries requiring prolonged immobilization to put the arm in abduction and external rotation. This can be done in an airplane splint or in a plaster cast with the cover of the cast cut so that it can be raised. The muscle origin, insertion and action determine the splinting. Therefore if, after a shoulder joint injury, the arm is bound to the side, the anatomy, physiology and pathology are ignored. Too frequently this position is maintained for three weeks or more, with the strong muscles shortened and the weak ones stretched, and in addition the weight of the upper limb drags on the weakened deltoid.

A joint must be considered physiologically as a whole with no one component being injured without having an effect on the whole mechanism. It is necessary to understand the various movements of the shoulder joint and the extent of their range. It is to be understood that different individuals may differ with regard to extent of movement, and therefore it is always necessary to compare the injured side with the sound one. Beevor's classification for normal movement of the shoulder joint is given herewith.⁵

Flexion of the humerus. The arm is placed at the side and raised to front horizontal, and then above the head until vertical. This is the anteroposterior plane and produces an arc of 180 degrees the normal range for flexion.

Extension of the humerus. With the arm above the head in extreme flexion it is moved downward and forward to its original position at the side. This brings the arm through the same anteroposterior plane and the range is through the same 180 degree arc.

Hyperextension of the humerus. With the arm at the side, it is moved backward to the limit of movement through the same plane. The average degree of movement for this distance is 45 degrees.

Abduction of the humerus. With the arm at the side, it is carried laterally to a side horizontal position at a distance of 90 degrees. At this point the movement in the shoulder joint is stopped by the tension of the capsule. From then on the

² Buchholz, C. H. *Therapeutic Exercise and Massage* Philadelphia Lea & Febiger 1917

³ Jones and Lovett. *Orthopedic Surgery* ed 2 New York, William Wood & Co 1929

⁴ Mackenzie. *The Action of Muscles* ed 2 New York Paul B Hoeber Inc., 1930

movement is carried out by the scapula until it arrives in a vertical position above the head, covering a distance of 180 degrees

Adduction of the humerus The arm is again carried down through the same lateral plane, through the same number of degrees to the side of the body

Horizontal adduction and abduction The arm is placed in side horizontal position and is then brought forward to a front horizontal position. This is termed adduction and the arc range is 90 degrees, which is much extended by scapular movement. Abduction is the opposite of adduction through the same plane and a range of 90 degrees

Internal and external rotation The arm is abducted to a horizontal position, the elbow flexed and the forearm at right angles, which brings the shoulder joint in a position of external rotation. Bringing the forearm forward and downward produces internal rotation. The arc is 90 degrees in this plane. With the arm in partial abduction and the forearm extended, the degree of rotation is increased to 135 degrees

It is important to note here that the scapula takes part in practically all movements. The determination of the actual range of shoulder movements is difficult and inaccurate. As the mobility of the scapula is highly variable, all angular movements in and about the shoulder joint must be necessarily approximate

After the range and strength of the muscles of the shoulder have been increased in all planes because of the carefully regulated assistive, free and resistive exercises, the patient is taught a series of exercises for home use. The following list is suggested. The particular exercises to be used should be underlined. The number of times each movement is to be used must be indicated. We have found it advisable to have a mimeographed sheet of exercises for each joint

EXERCISES FOR THE SHOULDER

1 While the shoulder is in the splint, contract the deltoid and then relax without moving the shoulder joint or using other muscles

2 While the patient lies on the back, the arm and shoulder on a powdered cardboard, in the same position as in the airplane splint, the operator supports the forearm and adducts the arm a few degrees, and the patient returns it to the original position. Gradually increase the range of motion

3 Same position as No 2. Revolve the forearm until the back of the hand touches the table

4 Same position as No 2. Move the arm across the body so that the hand touches the opposite shoulder

5 Lying on the back, with the arm at the side and the elbow bent to a right angle, bring the arm forward and up and return

6 Lying face down, the hands in back of the neck.
(a) Raise both elbows from the table without raising the body
(b) Raise the elbows with some one putting pressure on the elbows

7 Standing with the arms at the side, raise to the front horizontal position and then above the head and return

8 Standing, with the hands clasped behind the back, fingers interlocked, the palms facing up, turn the palms in and down, and extend the arms to the rear at the same time

9 Standing, with the hands at the side, raise the arms to the side horizontal position and then above the head and return

10 Standing, with the arms in the front horizontal position, raise to the side horizontal position, to the front horizontal position and return to the original position

11 Shrug the shoulders

12 Standing, with the arms in the side horizontal position, move the arms in small and large circles and in both directions

13 With the arms in the side horizontal position, rotate the arms so that the palms are alternately up and down

As the strength of the patient increases, resistance can be added with books or dumb-bells, starting with light weight and increasing the weight as the capacity of the patient increases

For assistive and active shoulder joint exercises, we use stall bars, a shoulder abduction ladder and weights and pulleys. Construction plans will be supplied on request

Curative occupational therapy for shoulder cases should be definitely prescribed. It can be used in any place with a little ingenuity. For instance, "braid weave" rug weaving may be used. No shuttle or beater is necessary and no sewing is required. The method does not require a complicated loom. The weaving, partaking somewhat of basketry, is fascinating and simple

The loom can be home made. It is 30 by 50 inches, made of $1\frac{1}{2}$ by $\frac{3}{4}$ inch wood. A series of $\frac{1}{4}$ inch slits at the top and bottom half an inch apart accommodate the warp. Along the inside $\frac{1}{2}$ inch from the inside edge of the loom are brass $\frac{1}{4}$ inch curtain rods to hold the weaving in perfect alignment and to insure a straight edge to the rug. The weaving is done with rags, which may be colored and a pattern followed. These looms may be made in various sizes and placed in various positions to conform with the patient's strength and to the joint movements required. By placing the loom high on a wall shoulder flexion, external rotation and abduction of the shoulder may be obtained. These looms may of course be purchased complete. After proper instruction, the patient can use this loom at home

(To be continued)

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
HOWARD A. CARTER Secretary

SANBORN MOTOR-GRAFIC METABOLISM TESTER ACCEPTABLE

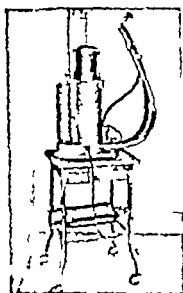
The Sanborn Motor-Grafic Metabolism Tester is manufactured by the Sanborn Company, Cambridge, Mass.

In principle, the Sanborn Motor-Grafic Metabolism Tester is a closed circuit, wet spirometer metabolism apparatus. Its appearance is good, and it is constructed so that it is convenient for use. The size of the instrument is 17 by 10 by 22 inches and the carrying weight is 35 pounds. It is equipped with a counterweighted oxygen bell of 6 liters, enough gas for an eight to ten minute test, operating in water-seal. There are two breathing tubes one for inhalation and one for exhalation, and it is equipped with either an alternating or a direct current motor directly connected to the blower, which circulates the oxygen through soda lime and breathing tubes. There is a quart and a half container holding soda lime for absorbing carbon dioxide. There is a permanent point metal stylus (a capillary pen cup is also supplied if desired) for graphically tracing the actual oxygen consumption with an electric clock mechanism for turning the chart record of tracing, once in eight minutes on 110-120 volts, 60 cycle alternating current, or a spring clock mechanism for turning the chart on direct current. There is also an adjustable breathing tube support with two-way oxygen control valve and thermometer attached to apparatus to show temperature of oxygen.

The unit is supplied complete with a metabolism barometer, an 80 gallon oxygen tank, a metal minor leak tester, enough soda lime for from forty to sixty tests, 100 stylograf charts,

three rubber mouthpieces, one nose clip, an extra capillary pen two one way valves to be used when no electric current is available, a cover for the Motor-Grafic, and an instruction booklet with all metabolism "normals" and tables. The table supplied for the Motor-Grafic has a metal base with a wooden top (five ply), measures 15 by 20 by 28 inches has a holder for the oxygen tank, and is quietly movable on rubber-tired casters.

The estimation of metabolism is derived from a measurement of the volume of oxygen consumed during a given period of time. The consumption of oxygen is measured by a water spirometer and is recorded on the cylinder rotated at a known uniform rate. The determination is started with the spirometer containing an unknown volume of air rich in oxygen. It is allowed to run until the slope recording the consumption of oxygen is constant and well defined. Since the volume thrust of the spirometer is known, as well as the rate at which the graphic cylinder is rotated, the rate of oxygen consumption can be determined from the slope. A cubic centimeter scale provided with the apparatus gives values in terms of cubic centimeters of oxygen consumed per minute when applied to the drop of the slope line in eight minutes. The apparatus is calibrated to include corrections for water vapor (2 per cent) for temperature at 21 C, at an atmospheric pressure of 760 mm. Corrections must be made for any deviations of temperature and pressure prevailing at the time of the test, to obtain values under standard conditions viz, 0 C. and 760 mm. These corrections are made by reference either to the tables or to the graphs supplied with the apparatus and give the cubic centimeters of oxygen consumed per minute under standard conditions of temperature and pressure. The normal rate of oxygen



Sanborn Motor
Grafic Metabolism
Tester

consumption for a subject of known weight, height and age is also obtained from standard tables provided with the apparatus. Knowing both the actual and the normal rate of oxygen consumption, one can readily determine the comparative basal metabolic rate.

Technical errors in the determination are detected by noting any irregularities in the slope of the graph. Leakage from the nose and throat can be detected by the highly polished detector provided.

The Sanborn Motor-Grafic is designed for use in office practice and in the hospital, where it is quietly and easily movable on the mobile table supplied as part of the complete equipment. The manufacturer claims that the unit is conveniently portable and carried to a patient's home for bedside testing. Before it is moved however, the apparatus must be emptied of water and filled every time it is transported. In addition to this, the unit is quite heavy and cumbersome and also the oxygen tank, which is not light, must be taken along.

The Sanborn Company claims that this machine is useful in the field of metabolism testing. The place of metabolism testing in differential diagnosis, in the regulating of thyroid therapy, and in preoperative and postoperative management of goiter cases is well known and has been demonstrated by physicians and surgeons during the past fifteen years in office practice and in hospitals. The manufacturer claims that the Sanborn Motor-Grafic enables physicians to obtain the guidance of basal metabolism test reports by a method that is simple for the operator, comfortable for the patient and reliable for accuracy and dependability of results.

In a clinic acceptable to the Council, a number of determinations of metabolism by means of this apparatus were made on different individuals under various conditions and have given values that were essentially correct for normal, supernormal and infranormal metabolism. The therapeutic claim for the Sanborn Motor-Grafic "that it enables doctors to obtain the guidance of basal metabolism test reports by a method that is simple for the operator and reliable for accuracy and dependability" is warranted. As regards the claim that this apparatus "is comfortable for the patient," it may be stated that it is exactly as comfortable or as uncomfortable as all other appa-

ratus that requires the patient to wear a nose clip and breathe through a mouthpiece.

In view of the favorable report presented, the Council on Physical Therapy voted to include the Sanborn Motor-Grafic Metabolism Tester in its list of accepted devices.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH Secretary

AMYTAL (See New and Nonofficial Remedies, 1934, p 90)

The following dosage form has been accepted

Tablets Amytal $\frac{1}{4}$ grain

SODIUM AMYTAL (See New and Nonofficial Remedies, 1934, p 102)

The following dosage form has been accepted

Ampoule Sodium Amytal 0.065 Gm (1 grain)

REPORT OF THE COUNCIL

THE COUNCIL AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS
PAUL NICHOLAS LEECH Secretary

ADRENAL CORTEX EXTRACT

At the instance of a commercial firm which contemplates the marketing of an extract of the adrenal cortex, the Council considered the matter of a name for an extract containing the hormone of the adrenal cortex and of a name for the hormone itself.

After a consideration of the several names suggested for the extract containing the hormone, and for the hormone itself, the Council decided that it would be advisable at this time to adopt a generally descriptive nonproprietary name for the more or less crude extracts and to defer until later the consideration of a name for the active isolated principle. The Council therefore adopted the title "Adrenal Cortex Extract" (with the Latin synonym "Extractum Adrenali Corticis"), as its nonproprietary name for extractive preparations from the adrenal gland that contain the cortical hormone necessary for life.

CEVITAMIC ACID AND THE BRAND CEBIONE—MERCK

Under the name 'Ascorbic Acid' Merck & Company, Inc., presented for the Council's consideration its preparation of the crystalline vitamin C isolated by Szent-Gyorgyi. The product is marketed in the form of tablets each containing 0.01 Gm of the acid. By reason of its rules against therapeutically suggestive names the Council could not recognize the name "Ascorbic Acid" although this term has been used in the literature. The firm asked consideration of the term "Cebion" as a proprietary brand name for its preparation. The Council voted to recognize the name "Cebion" for the firm's product if it could prove its right to a proprietary name. Meanwhile the Council adopted the term "Ce-vi-tam-ic Acid" as a nonproprietary designation for the crystalline vitamin C introduced as Ascorbic Acid. Merck & Company, Inc. then presented written permission from Szent-Gyorgyi for the use of its proprietary name "Cebione" and in accordance with its rules and previous decisions the Council voted to recognize this as the proprietary name for the Merck brand of cevitic acid in recognition of the discoverer and of the service of the firm in making the product available for therapeutic use.

The Council feels strongly that investigators in naming newly discovered medicinal substances should bear in mind the fundamentally sound objections to the use of therapeutically suggestive names.

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SATURDAY, JANUARY 12, 1935

THE PRESIDENT'S PLANS FOR ECONOMIC SECURITY

With all other American citizens, the medical profession awaited eagerly the message which the President of the United States delivered, January 4, to the joint session of the Senate and the House of Representatives. In spite of the obvious impossibility of absolutely definite statements because of the very nature of our government, the President, nevertheless, provided an indication of the character of the program contemplated in relationship to economic security. His plans seem to provide for the provision of work to many of the unemployed, the projects including such matters as slum clearing, reforestation and elimination of grade crossings, as well as many local projects. All of these have, of course, a definite interest for the medical profession. In fact, the housing projects and the elimination of the grade crossings must inevitably have a definite effect on morbidity and mortality rates.

Of special interest to the medical profession, however, were those paragraphs of his address in which the President referred particularly to questions of sickness and related problems. Thus he said:

Closely related to the broad problem of livelihood is that of security against the major hazards of life. Here also a comprehensive survey of what has been attempted or accomplished in many nations and in many states proves to me that the time has come for action by the national government. I shall send to you in a few days definite recommendations based on these studies. These recommendations will cover the broad subjects of unemployment insurance and old age insurance, of benefits for children for mothers, for the handicapped, for maternity care, and for other aspects of dependency and illness where a beginning can be made.

It is perhaps unwise to analyze too closely the significance of this statement. Interesting, however, is the manner in which the President passed immediately from unemployment insurance and old age insurance to the question of benefits for children, for mothers, for the handicapped and for maternity care, leaving the question of sickness insurance to the phrase in which he says "for other aspects of dependency and illness where a beginning can be made." The element

of time in relationship to the development of any definite plans of sickness insurance is of the utmost significance. There seem to be indications that the difficulties involved in developing schemes for providing persons in the lower wage levels with adequate medical care and at the same time preserving the quality of medical service and the integrity of the medical profession are far greater than they seemed to be at first glance to those who urged precipitate action. Innumerable experiments are now going on in many communities under local, industrial and similar auspices, including those conducted by county medical societies. Time has not yet permitted a real evaluation of their worth, yet their multiplicity is an indication of the extent and the complexity of the situation. Moreover, the employment of considerable numbers of people now unemployed and the establishment of unemployment insurance, old age pensions and the other factors mentioned in the program of social security will modify greatly the features of any plan for sickness care that may be developed.

The number of competent minds that have already been brought to bear on the solution of this problem should eventually yield at least a suitable experiment if not a complete solution. More than anything else the medical profession fears hasty action and the setting up of some scheme which, once established, will ride, like the old man of the sea, on the back of medical progress and impede its advancement. We have already witnessed the spectacle of hastily devised programs in foreign countries now undergoing constant repair. Eventually there must be some solution that will adequately serve the people and at the same time not sap the life blood of the medical profession.

THE FOOD AND DRUGS ACT REVISION

Under Association News in this issue appear statements, issued by the Council on Pharmacy and Chemistry and the Committee on Foods of the American Medical Association and endorsed by the Board of Trustees, relative to certain necessary revisions of the Food and Drugs Act in order to bring such legislation into accord with modern points of view. Some thirty years has passed since the law under which we now function first became effective. During that period there have been notable advances in the development of new types of pharmaceuticals and modifications of foods. Moreover, the administration of the measure under the Food and Drug Administration has yielded an experience that indicates quite definitely many ways in which the effectiveness of the work may be improved, as well as certain loopholes that need to be closed to the evader.

A significant feature of modern living is the development of advertising along lines never even contemplated in 1905. For example, we have seen since that time the tremendous development of great advertising agen-

cies, the use of the radio in advertising, and many other new forms of approach to public interest. Thus the chief emphasis to be placed on any new legislation must concern some type of control over advertising and promotion. People are being more and more informed relative to the nature of foods and drugs and the physiology of the human body. The intelligent purchaser wants to know the significant constituents and ingredients of products that may be taken into the body. Hence new legislation must demand suitable declaration on the labels of the significant ingredients of such preparations.

The advance in our knowledge of nutrition has brought into the situation the application of various special foods for the control of nutritional disorders known as deficiency diseases. This possibility has stimulated many exploiters to the promotion of food substances as medicaments. Any new legislation must take cognizance of the use of names of diseases on the labels of food products and thus avoid the danger of self prescription, which must be disastrous to human health. Nevertheless, the desirability of manufacture and promotion of foods for special purposes, as in conditions largely treated by diet (for example, obesity and diabetes) emphasizes the necessity for recognition of such special-purpose foods and the importance of suitable regulation over their manufacture and promotion.

Most significant also in relationship to new legislation is the placing of responsibility for failure to observe the new restrictions. It should be clear at once that publishers, as such, owners of radio broadcasting stations and others who are primarily in the business of advertising cannot be primarily responsible for exaggerated or untruthful claims made by the firms which they represent. Responsibility for advertising must rest ultimately with the individual or firm issuing the products.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION offers these suggestions to the legislators who are now concerned with the consideration of new legislation in these fields. The successful enactment of such legislation will yield incalculable good for the health of the American people as well as an immense saving to their pocketbooks.

LICE AND HISTORY

THE JOURNAL has commented frequently on the relationships between climatic factors and the spread of disease. The manner in which epidemics and wars influence the history of the world has been recounted in various publications. Quite recently, agitation has developed concerning the possibility of the spread of epidemics by means of air travel. The subject has been reviewed by Massey,¹ who indicates the way in which

the mosquito may be carried from country to country by airplane travel. Moreover, he has emphasized the possibility that cholera, plague, malaria, typhus and relapsing fever might be disseminated through the airplane, provided the vermin associated with their spread are carried either on the passenger or in other ways in air traffic.

In a forthcoming book entitled "Rats, Lice and History," Dr. Hans Zinsser,² professor of bacteriology and immunology in Harvard University, considers the manner in which the louse, the rat and the pestilences that they carry have influenced the history of the world. A preliminary chapter from this book appears in the *Atlantic Monthly* for January. Here Dr. Zinsser traces the evolution of the louse from the earliest types to the extraordinary varieties that inhabit the bodies of man, beast and fowl in these modern days. It would seem that the human head louse first made its appearance on the heads of primitive savages, coming from fur-bearing animals. Occasionally a head louse may breed with a body louse. The crab louse is of a different order. Once established on the heads of the savages, the louse seems to have passed from race to race, acquiring changes of form and feature in the process. Thus the lice of various races differ, that of the African being slightly different from the European and American types. It is interesting to know that lice have been found on mummies of early American Indians and Peruvians, and that the lice of the prehistoric Indians differ from those found on Indians living today. Apparently the louse has been the inseparable companion of man since the earliest times. Man is its only habitat and, if its host perishes, the louse is doomed unless it can promptly find another.

Until colonial times, lice were considered practically a necessity for the life and health of man. Then came the period that involved the development of the bathtub and a new order of cleanliness. "The louse is confined," says Zinsser, "in consequence to the increasingly diminishing population of civilized countries who live in distress and great poverty." He believes the louse will never be completely exterminated and that there will always be occasions when it will spread widely to large sections of even the most highly sanitized populations.

While this subject may not seem to be one that would inspire an extraordinary type of literary endeavor, the essay by Zinsser is a model of literary quality which may well afford inspiration to other contributors to the literature of medicine. The article provides a fine display of diction, it proceeds in an orderly manner, and the philosophical comments of the author, revealed with sly humor, keep one's interest constantly at a high point. The reader may acquire much scientific information with a minimum amount of difficulty and a maximum amount of pleasure.

¹ Massey, Arthur. *Epidemiology in Relation to Air Travel*. London: H. K. Lewis & Co. Ltd. 1933.

² Zinsser, Hans. *Rats, Lice and History*. Atlantic Monthly Press to be published in March 1935.

BODY BUILD AND RESTRICTED GROWTH

In a recent communication, Bakwin, Bakwin and Milgram¹ have described the results of studies designed to determine the relationship between retarded growth and the so-called body build in young human subjects. An extensive literature is available pertaining to the manifold results of restricting development in experimental animals, adjustment of the diet in any one of several ways to bring about retardation of growth is uniformly followed by differential rates of growth of various parts of the body, resulting in distortion of the normal proportions.² One of the features of this atypical development is the persistence of growth shown by the skeleton, notably by the long bones. This phenomenon was early noted by animal husbandrymen, the narrow chests resulting from disproportionate growth in length by the ribs and the "rangy" (long legged) appearance of poorly fed cattle are well known results of chronic undernutrition. The possibility of the production of similar structural alterations in human subjects under conditions of malnutrition encountered in practice and also the significance of this factor in influencing body build are questions of considerable practical importance.

In approaching the problem, Bakwin and his co-workers made use of three large groups of infants. One, from a well baby clinic, served as a control, the second and third groups were from a poverty stricken environment, the second, however, being the subject of study in a health clinic under favorable nutritive environment. In addition to body weight and length, there were recorded two lateral dimensions of the face, the circumference of the thorax and the diameter of the trunk at two levels. At the end of the first year the two groups that were supervised showed little difference either in body weight attained or in the rate of gain, whereas the third group showed a marked delay in gain in weight. For the first three weeks there was little if any difference between the three groups in any of the linear measurements. At the end of the year, however, the supervised groups were superior to the underprivileged group to a greater or less extent in respect to the ratio of lateral measurements to body length. From a comparison of rate of increase of the various dimensions of the three groups of infants, two important tendencies stand out. The delay in growth shown by the third group took place entirely in the first three months of life, thereafter there is evident little if any difference between the groups in respect to rate of change in body weight or in other dimensions. Furthermore, the retardation in development in body length is of smaller magnitude than is that in the other measurements studied.

The results of the comparative studies on infants indicate that the human subject responds to early

unfavorable environment much the same as do experimental animals, so far as correlated changes in structure are concerned. There is also the implication from the New York studies that subtle factors, not always viewed with apprehension, may exert far reaching effects on groups of people—extensive enough, probably, to alter national types of population.

Current Comment

TIME FOR PAYMENT OF ANNUAL DUES

Since Fellowship and subscription dues are payable in advance, the usual colored reminder slip is enclosed in this issue of *THE JOURNAL*. Already many Fellows and subscribers have made the 1935 payment. Those who have not remitted will find the colored slip convenient, since it combines a statement and return envelop in the one form. No addressing or postage stamps are required. A remarkable series of articles by noted authorities on "Glandular Physiology and Therapy," defining the present status of our knowledge, is about to start in *THE JOURNAL*. Every physician should remit promptly and obviate any interruption in subscription service. A list of the special journals published by the Association appears on the statement-envelop form. These journals came into being as the result of requests by specialists in the fields they cover. General practitioners will find in them a stimulating reflection of progress in the respective specialties and answers to many of their problems. All Fellows and subscribers to *THE JOURNAL* are invited to take advantage of this service rendered by the Association and subscribe at the same time for any of the special journals in which they are particularly interested.

THE RETENTION OF NICKEL IN PSORIASIS

During the last few years, frequent references have been made to observations implicating certain of the metallic elements in disease processes. Recent studies¹ on dermal biopsy specimens taken from lesions in typical cases of psoriasis suggest that the metal nickel may be related to this condition. Quantitative spectroscopic analyses demonstrated that in nearly all the samples from normal control subjects nickel was absent, whereas it was present in all the specimens from patients with this disease. The few normal samples in which nickel was present contained less than 0.01 mg to each 25 mg of tissue, while the specimens from psoriatic lesions contained from 0.01 to 0.09 mg in the same size sample. From these data it appears that there occurs a significant local retention of nickel in psoriatic lesions. The full significance of the foregoing observation is as yet a matter of conjecture. It has been stated that individuals unduly exposed to nickel appear to be peculiarly susceptible to certain skin diseases and that opportunities for the entrance of traces of nickel

1. Bakwin, Harry, Bakwin, Ruth M. and Milgram, Lillian. Body Build in Infants. *Am. J. Dis. Child.* 48: 1030 (Nov.) 1934.
2. Smith, A. H. Edit. Rev. *J. Nutrition* 4: 427 (Sept.) 1931.

1. Gaul, L. E. and Staud, A. H. Clinical Spectroscopy. The Quantitative Retention of Nickel in Psoriasis. Observations in Forty Six Cases. *Arch. Dermat. & Syph.* 30: 697 (Nov.) 1934.

into the average normal subject are by no means rare. There is a ubiquitous distribution of nickel in plants, in soils and in foods. Also traces of this element may be derived from milk, catalytically hydrogenated fat water pipes, cooking utensils, and certain appliances used in the preparation of foods. At the present time, however, no evidence is available definitely establishing nickel as a causative agent in diseases of the skin. Further investigations such as the one just described on the quantitative composition of pathologic tissues should yield information of value in elucidating the etiology of certain diseases of obscure origin.

Association News

NEW FOOD AND DRUGS LEGISLATION

The Council on Pharmacy and Chemistry and the Committee on Foods of the American Medical Association have adopted respective statements concerning the revision of the Food and Drugs Act. These statements in turn have been endorsed by the Board of Trustees. Publication has been authorized by the Council, the Committee and the Board.

AUSTIN A. HAYDEN,
Secretary of the Board of Trustees

PALL NICHOLAS LEECH
Secretary of the Council on
Pharmacy and Chemistry

RAYMOND HERTWIG,
Secretary of the Committee on Foods

Report of the Council on Pharmacy and Chemistry on Revision of the Food and Drugs Act in Special Reference to Drugs

In the thirty years since the federal Food and Drugs Act became law there have been notable developments in scientific, technologic and economic fields and many changes in methods of manufacture, distribution and sale of drugs and drug products. Experience in the administration of the act has brought to light various ways in which the law is inadequate to meet modern conditions. To the end that public health and safety shall be better safeguarded in the matter of the manufacture, distribution and sale of drugs and related products it is important that the provisions of the present law be revised and its scope enlarged.

The Council on Pharmacy and Chemistry of the American Medical Association therefore deems it desirable that the law be amended (or a new law be made)

1 To include provisions for so regulating all forms of drug advertising that it shall be truthful in statement and not deceptive by implication, the terms "advertising" to include all ways and means of bringing articles to the attention of the public for commercial purposes

2 To provide that responsibility for advertising rest with the individual or firm issuing it unless such individual or firm produces a guaranty as to the truthfulness of the advertising claims, and the guarantor is amenable to the terms of the act, in which case the guarantor shall be responsible

3 To provide that the active ingredients and the amounts or proportions thereof in all mixed drug products not listed in official compendiums (U S P and N F) be disclosed on the labels of such products and in the advertising of them

4 To prohibit the sale of drugs and drug preparations under names recognized in official compendiums (U S P and N F), unless such drugs and drug preparations meet the standards and specifications laid down in such compendiums

5 To require suitable declaration on labels and in advertising of any and all habit-forming drugs, whether sold singly or in mixtures, together with explicit warning that such may be habit forming provided that such declaration be not required in the

case of drugs or mixtures of drugs dispensed on prescription, and which are to be used according to directions of a physician

6 To provide for official announcement by the government of such drugs as may now be held, or in the future be determined, to be habit forming

7 To prohibit the mention of disease names on the label of drugs or drug preparations, or in advertising thereof unless such drug or drug preparation is a cure for the disease named, or unless such drug or drug preparation is a palliative and the nature of the palliative action is stated

8 To extend the provisions of the law to include cosmetics and the advertising thereof, the term "cosmetics" to include all substances and preparations intended for cleansing, altering the appearance or promoting the attractiveness of the person, unmedicated soaps excepted

9 To extend the scope of the term "drug" to include devices, substances and preparations intended for the treatment of disease and all devices and all substances and preparations other than food, intended to affect the structure or any function of the body this provision to be for purposes of the act and not to regulate legalized practice of the healing art

10 To prohibit the addition of drugs to foods and confections intended or offered for general human consumption, but not to prohibit such addition to, or other modification of, foods and confections intended or offered to meet special nutritional requirements or dietary needs, provided the label and advertising of products so treated plainly declare the character and purpose of such modifications

11 To require that testimonials and opinions used in advertising of drugs and drug preparations be accompanied by the name and address of the writers thereof, and to consider such testimonials and opinions as advertising claims of the advertiser

12 To provide by permit or license or other means for government control over the sale and distribution of such drugs and therapeutic agents as cannot be adequately controlled by gross inspection or chemical examination of the finished product, except that this shall not apply to the provisions of the Serums and Vaccines Act of 1902 and amendment thereto

13 To require each importer, manufacturer, jobber and retailer engaged in interstate commerce in drugs and therapeutic agents to register with the government his name, place of business, and the character of the business in which he is engaged or proposes to engage, such registration to be granted without cost to the applicant and accepted only on evidence showing adequacy of plant, equipment and personnel for the business proposed

14 To provide for cooperation between federal and state governments in the enforcement of food and drug laws in their respective jurisdictions on a plan similar to that provided in "An Act to Create in the Treasury Department a Bureau of Narcotics, and for Other Purposes" approved June 14, 1930

15 To require labels on drugs and drug preparations to bear the name and address of the manufacturer, seller or distributor, and to bear a statement of the net weight or volume of contents

16 To provide for more adequate penalties, which will be commensurate with the seriousness of violations

Report of the Committee on Foods on Revision of the Food and Drugs Act with Special Reference to Foods

The Committee on Foods of the American Medical Association, solely from the standpoint of greater consumer protection with respect to nutrition and health deems it desirable that the present Food and Drugs Act be amended (or a new law made)

1 To include provisions for so regulating all forms of food advertising that it shall be truthful in statement and by implication.

2 To ban the use of names of diseases on the labels and in lay advertising of common foods but not to exclude names of nutritional disorders arising from inadequacy of the diet in nutritional essentials or of disease names from the labels and advertising for special purpose foods which are useful in the diet during the course of such diseases

3 To ban the use of testimonials of a health, medicinal or therapeutic character, or with such implication in food advertising by persons unqualified to express a scientific authoritative opinion or judgment on the subject of the testimonials

4 To authorize the fixing of tolerances for any added or natural poison in or on food and consider food as adulterated which *bears or contains* any poisonous or deleterious substance, in excess of the tolerances, which may render it dangerous to health *irrespective of whether that constituent is added by man or exists there naturally*

5 To prevent the use of non-food material such as resinous glaze or shellac to cover confectionery

6 To ban the embedding of metallic trinkets in confectionery, which may result in their aspiration and lodgment in the windpipe

7 To prohibit the use of any artificial colors in food other than those certified by the Department of Agriculture, thereby preventing the use of toxic colors

8 To class as adulterated food prepared under insanitary conditions whereby it may have become contaminated with filth

9 To include a provision against packing food in containers or wrappings which may injuriously contaminate the food

10 To authorize the establishment of legal definitions and standards for foods

11 To consider as adulterated a food purporting to be one for which a definition and standard has been prescribed if it fails to conform to such definition and standard, and the label does not conspicuously indicate deviations from the definition and standard

12 To require that the label of foods shall bear their common or usual names if there are any, and in conjunction with the names declare the common or usual name of each ingredient article used in the manufacture of the food in the order of decreasing predominance by weight, exceptions being made for spices or other condiments, colors, flavors and leavening agents

13 To require that fanciful trade names for food be accompanied by statements identifying the ingredient articles used in the manufacture of the food in the order of decreasing predominance by weight, exceptions being made for spices or other condiments, colors, flavors and leavening agents

14 To require that informative statements required on labels be conspicuously placed thereon in simple common terms so as to be readily observed at the time and under the conditions of purchase.

15 To require that the labels of Special Purpose Foods with usefulness restricted to specific purposes such as inclusion in diets for obesity or special morbid conditions, shall prominently display in bold type the designation 'Special Purpose Food' a statement listing all ingredients in the order of decreasing predominance by weight, and the special purpose of the product. These statements, so far as is practical, should be in close proximity to the trade name. In addition, as much of the following information should be given as is significant to permit the intelligent use of the particular product by the consumer: specific properties, vitamin and mineral content, the calories per gram or ounce, and the grams each of carbohydrate, protein and fat per portion

16 To require that special values or properties of food, if given, be stated in specific recognized technical terms or units

17 To require that labels bear the name and place of business of the manufacturer, seller or distributor of foods

18 To authorize federal enforcement officials to enter on and inspect premises of those manufacturing, storing and dealing in foods in order to protect adequately the health of the public.

19 To authorize certain officials to effect seizure of food before the filing of a libel in court, and to hold same pending court action where the evidence before the enforcement officials is such as to indicate that the food is *imminently dangerous to health*

20 To provide adequate penalties for those violations of the law affecting the nutrition and health of the consumer

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4 30 to 4 45 central standard time. The next three broadcasts will be as follows

January 17	The Good Old Days	W W Bauer	M D
January 24	Progress Against Arthritis	Irving S. Cutter	M D
January 31	Thirty Six Thousand Deaths	W W Bauer	M D

National Broadcasting Company

The American Medical Association broadcasts under the title 'Your Health' on the Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4 15, central standard time. The next three broadcasts will be as follows

January 15	Causes of Death in 1933	W W Bauer	M D
January 22	Health in Winter	W W Bauer	M D
January 29	Organizing for Health	Morris Fishbein	M D

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Society News—The Tuscaloosa County Medical Society was addressed, December 14, by Dr. James S. McLester, Birmingham, on 'Old Age A Philosophy for the Later Years'. Speakers before the November meeting of the society were Drs. Chalmers H. Moore, Birmingham, on 'The Scope of Neurosurgery' and John H. Ferguson, University, 'The Autonomic Control of Gastric Function'. The annual homecoming meeting of the Talladega County Medical Society was addressed, December 11, by Drs. H. Earle Conwell, Birmingham, on 'Fracture Problems' and Frederick W. Wilkerson, Montgomery, 'Nervous Indigestion'. Dr. Wilmot S. Littlejohn, Birmingham, addressed the Walker County Medical Society, November 9, on 'Pituitary Tumors'.

DISTRICT OF COLUMBIA

District Society Meetings—The meeting of the Medical Society of the District of Columbia, January 9, was a joint one with the Washington Urological Society, speakers were Drs. Charles C. Higgins, Cleveland, and Linwood D. Keyser, Roanoke, Va., on 'Experimental and Practical Clinical Observations on Urinary Lithiasis'. The society will be addressed, January 16, by Drs. Charles A. Schutz, on 'Evaporated Milk and the Child Welfare Infant', Harry F. Dowling, 'Rapid Diagnosis and Serum Treatment of Lobar Pneumonia' and William Cabell Moore, 'Industrial Medicine and Medical Ethics'. January 23 the program will be presented by Drs. George L. Weller, Jr., on 'Early Clinical Recognition of Adrenal Insufficiency Resulting from Partial or Total Atrophy of the Adrenal Glands', James Alexander Lyon and Edmund Horgan, 'A Further Report on the Dissociation of the Thyroid from the Sympathetic Nervous System and Reduction of the Blood Supply to the Thyroid in the Treatment of Angina Pectoris', and Harry S. Bernton, 'Hygiene of Hay Fever'.

FLORIDA

Personal—The Edward C. DeSaussure Post number 9, American Legion department of Florida recently presented its medal for outstanding and distinguished service to the community during 1934 to Dr. Frank L. Fort, Jacksonville. Dr. Fort has served the crippled children of the state for ten years, first for the state board of health and more recently for the Florida Crippled Children's Commission.

Society News—A recent meeting of the Florida Midland Medical Society was addressed at Bartow, among others by Drs. James L. Estes, Tampa, on 'Surgical Accidents Occurring in the Urinary Tract Following Operation', and Jack Halton, Tampa, 'Anal Pruritus—Significance of Cryptitis Papillitis and Other Rectal Pathology'. Dr. Arthur R. Knauft, Tampa, discussed treatment of the enlarged prostate before the De Soto-

Hardee-Highlands Counties Medical Society recently —The Lake County Medical Society was recently addressed in Tavares by Dr Lonnie W Grove, Atlanta, on Surgical Aspects of the Gallbladder and Results of Eighty-Four Operations —At a meeting of the Pasco Hernando-Citrus County Medical Society, November 8, in Dade City Dr Shuler H Etheredge, Tampa, spoke on 'General Edema and Chronic Nephritis'

GEORGIA

Supervisor for Emergency Relief Appointed —Dr Marvin F Haygood superintendent of the tuberculosis sanatorium at Alto, has been granted an indefinite leave of absence to become medical supervisor for the federal emergency relief administration in Georgia

New Buildings at Georgia Warm Springs —Dr LeRoy W Hubbard, director of extension, Georgia Warm Springs Foundation, states that the buildings erected recently at the foundation were not financed by funds subscribed at charity balls in honor of the President's birthday. They were erected by contributions of material and money obtained from many sources by Messrs Hegeman and Harris New York builders who gave their services and those of their staff. They presented the buildings to the foundation through the President on Thanksgiving Day. The news item in THE JOURNAL December 22, page 1954, was based on a report in the New York Times, November 28. According to Dr Hubbard, a portion of the money raised through the birthday balls in 1934 was set aside to be drawn on for buildings as the need developed, but this fund is still intact

ILLINOIS

Influenza in Veterans' Hospital —It is reported that quarantine was ordered at the Veterans' Administration Facility in Hines, December 29 following an outbreak of influenza. One hundred patients were said to be ill with the disease

A Year Without Ophthalmia Neonatorum —For the first time in the history of Illinois, no cases of ophthalmia neonatorum were reported during the year ended July 1, 1934 according to the Chicago Tribune. The enactment of the law in 1933 providing for the use of silver nitrate solution in an infant's eyes immediately following its birth is credited with this result

Chicago

Hospital Editor Dies —Matthew O Foley, for fifteen years managing editor of *Hospital Management* a monthly journal, died at his home, January 4, of heart disease. Mr Foley was 45 years old

Physician Sentenced —Dr Lou E Davis was sentenced to fourteen years in the women's prison at Dwight Ill, December 6, by Judge Grover C Niemeyer in the criminal court. Dr Davis was found guilty November 27, on a charge of having performed an illegal operation.

University News —The Beaumont Foundation, Cleveland, has made a grant to the University of Chicago for the support of research by Dr Julius M Rogoff on the suprarenal and other endocrine glands. Dr Rogoff was formerly associate professor of experimental medicine at Western Reserve University School of Medicine, Cleveland

Dr Fraenkel Gives Bacon Lectures —Dr Ludwig Fraenkel, professor and head of the department of gynecology and obstetrics, University of Breslau, Germany, will deliver the fifth series of Charles Sumner Bacon Lectures, sponsored by the University of Illinois College of Medicine. The titles of the lectures and the dates are

Recent Advances in Gynecologic Endocrinology January 16
Practical Application of the New Knowledge of Hormones January 17
Origin Migration and Elimination of Uterine Myomas January 18

Program on Cerebral Infections —A symposium on cerebral infections will be presented before the Chicago Medical Society, January 16 by members of the faculty of Loyola University School of Medicine. Dr Francis J Gerty, professor and director of the division of neurology and psychiatry will discuss the diagnosis, Dr Victor E Gonda, clinical professor in the division medical management, and Dr Harold C Voris, associate clinical professor of surgery surgical management. Overweight was the theme of a lay educational program sponsored by the society, January 9. Speakers were Drs Samuel Soskin, director of metabolic research, Michael Reese Hospital, on "A Common Sense View of Overweight" and George A Harrop associate professor of medicine, Johns Hopkins University School of Medicine, Baltimore, "Treatment of Overweight". A dinner preceded the meeting

Society News —Speakers before the Chicago Surgical Society, January 4, included Drs Ralph A Kordenat on "The Relation of Anemia to Surgical Disease of the Gallbladder" and Charles F Sawyer, "Factors Influencing Mortality in Appendicitis" —At a meeting of the Chicago Council of Medical Women, January 4, Helen Koch, Ph D, associate professor of child psychology, department of home economics, University of Chicago, spoke on "The Nursery School and the Mental and Physical Health of Young Children" and Ethel Kram, psychologist of the laboratory schools of the University of Chicago, "Psychologic Problems Arising from Physical Illnesses in Children" —Dr Irving I Muskat discussed "Tuberculosis of the Middle Ear in Pulmonary Tuberculosis," among other speakers, before the Chicago Laryngological and Otological Society, January 7 —A joint meeting of the Chicago Orthopedic Society and the Chicago Roentgen Society was addressed January 10, by Drs Edward L Jenkinson on "Bone Lesions" and Dallas B Phenister on "Pathology and Diagnosis of Tuberculous Arthritis" —Dr Otto Saphir, among others, will address the Chicago Pathological Society, January 14 on "Anomalies of the Circle of Willis and Resulting Vascular Disturbances of the Brain" —Speakers before the Chicago Club for the Study of Arthritis, January 9 were Drs Isadore Pilot on "Pathology of Gout" and Edwin P Jordan "Clinical Aspects and Relation to Chronic Arthritis" —Dr Emil G Vrtiak gave a demonstration of slides and patients

INDIANA

Anonymous Gift for Nutrition Camp —The Marion County Tuberculosis Association has been given an anonymous donation of \$50,000 to aid in the enlargement and maintenance of its Nutrition Camp for Sick Children near Bridgeport. The association established the camp in 1928 with accommodations for thirty children, but since that time expansion has been retarded because of insufficient funds. The camp is considered a training school for development of health habits in children. When children return to their homes, nurses of the association remain in constant touch with their families to help revise the child's health program

Secretaries' Conference —The annual secretaries' conference of the Indiana State Medical Association will be held at the Indianapolis Athletic Club, Indianapolis, January 27. Speakers will include the following

William J Burns, executive secretary Wayne County Medical Society
Detroit on the society's demonstration
Dr Claude B Paynter Salem Care of the Indigent Sick
Dr Elias H Brubaker, Florida Programs for the Average Sized Medical Society
Dr Orville M Graves Princeton Relationship of the Medical Society to Social Workers and Nurses
Dr Joseph L Allen Greenfield Cooperation of Doctors and Dentists in County Society Organization Work
Dr Walter L Biering Des Moines Iowa President American Medical Association, Work of the Medical Advisory Group of the President's Committee on Economic Security
Dr Willis D Gatch dean Indiana University School of Medicine Indianapolis Comments on Indiana Division of Public Health Set Up
Albert G Milbank chairman board of directors Milbank Memorial Fund New York Relationship of the Milbank Memorial Fund to the Field of Health and the Medical Profession
Dr Samuel T Miller, Elkhart Public Health Educational Work by the Medical Society
Dr Oliver J Fay chairman board of trustees Iowa State Medical Society Essentials of Medical Progress
Dr Eldridge M Shanklin Hammond editor of the *Journal of the Indiana State Medical Association* The Journal and the County Medical Society

KENTUCKY

Society News —Dr Eric M Matsner, New York will address the Jefferson County Medical Society, Louisville, January 21, on "Medical Aspects of Birth Control" —Dr Harvey J Howard St Louis, addressed the Louisville Eye and Ear Society, January 10 on "Practice of Modern Medicine in the Field of Ophthalmology" —Dr William O Johnson will present a paper on "The Thyroid in Pregnancy" at a meeting of the Louisville Obstetrical and Gynecological Society, January 28

MARYLAND

Dr Ledingham Gives Herter Lectures —Dr John Charles Grant Ledingham, director Lister Institute, London, England, delivered the twenty-second course of lectures under the Herter Foundation, December 5-7, at Johns Hopkins University School of Medicine, Baltimore. Under the general title "Studies on Virus Problems" Dr Ledingham's lectures were "Tissue and Cell Affinities of Viruses and Reactions of the Host" "Cultivation Methods The Development of Antibodies, in Particular, the Antiviral Body" and "The Elementary Bodies in Virus Infections and the Filterable Avian Tumors and Their Etiological Significance The Outlook for the Future."

De Lamar Lectures—The next lecture in the series of De Lamar Lectures at Johns Hopkins University School of Medicine, Baltimore, will be given, January 15, by Dr Leslie T Webster of the Rockefeller Institute for Medical Research. His subject will be "Host Response to Infectious Agents." Other speakers will be

Harrison P Eddy S B civil engineer Boston February 19 Municipal Sanitation and the Public Health

Dr Frederic Maurice McPhedran of the Henry Phipps Institute University of Pennsylvania Philadelphia March 19 The Pathogenesis of Tuberculosis in Relation to Its Public Health Economics

Richard E Scammon Ph D dean of medical sciences University of Minnesota Minneapolis early in April The Effect of Plague on Western Europe

The series opened, November 20, when Dr James Angus Doull, professor of hygiene and public health, Western Reserve University School of Medicine discussed "The Epidemiology of Leprosy with Particular Reference to a Recent Study in the Philippines." Alfred J Lotka, D Sc, general supervisor, statistical bureau, Metropolitan Life Insurance Company, spoke, December 4, on "The Adventure of Life."

MASSACHUSETTS

Bill Introduced—S 52 proposes to accord liens to physicians and hospitals treating or caring for persons injured through the negligence of another, on all rights of action claims, settlements, compromises or judgments accruing to the injured persons by reason of their injuries

Personal—Dr John Francis Curtin North Abington, has been named medical examiner of the second Plymouth district and Dr William J Pelletier, Turners Falls, associate medical examiner, eastern Franklin district — Dr Conrad Wesselhoeft, Boston, was recently awarded the oak-leaf cluster for the Distinguished Service Cross, "for extraordinary heroism in action during the Aisne-Marne Offensive, France, July 18-26, 1918"

Psychiatric Internships—The Worcester State Hospital announces six psychiatric internships of twelve months to begin July 1. Registration must be made before March 1 and the examination will be held March 15 at the hospital. In addition to a rotating service in medical and surgical wards, organized instruction in the following courses will be offered: clinical psychiatry, psychoanalysis, administrative psychiatry, biopsychiatry, juvenile psychiatry, psychiatric social service, neuropathology, fever therapy, endocrines in psychiatry, research methodology, psychometrics in psychiatry and biometrics. The hospital provides maintenance. Unmarried graduates of class A medical schools who have completed an accredited internship in medicine are eligible. Applications should be addressed to the director of clinical psychiatry at Worcester State Hospital, Worcester, Mass.

Society News—At a meeting of the Massachusetts Psychiatric Society, December 14 a symposium on experimental studies of the heart rate was presented by Drs Moses Ralph Kaufman, Cambridge, Jackson M Thomas and John C Whitehorn, both of Belmont.—Speakers before the Worcester District Medical Society, December 12, included Drs Andrew E. O'Connell on "Excretory Urography" and William E. Murphy "Cancer of the Larynx."—Dr Donald S. King, Boston, addressed the New England Roentgen Ray Society, December 21, on "The Lateral X-Ray Film in the Diagnosis of Pathology in the Region of the Middle Lobe."—Mr James F. Ballard, director of the Boston Medical Library, discussed medieval and Renaissance textual manuscripts and early printed books before 1600 A. D. before the Boston Medical History Club, December 17.—The Brookfield Medical Club was addressed, December 19, by Dr Samuel H. Epstein, Boston, on "Treatment of General Paresis with Tryparsamide."—Dr Frank R. Ober, Boston, addressed the New England Physical Therapy Society, December 19, on "Relation of Muscle Atrophy to Joint Injury and the Value of Physical Therapy in This Condition."—Among others, Dr Henry M. Emmons, Boston, spoke before the New England Ophthalmological Society, December 18, on "Development of the Organ of Vision from Its Lowest Form Up to the Eye of the Primates."

NEW YORK

Eight Years Under the Medical Practice Act.—During the period from 1926 when the present medical practice act went into effect, to July 1934, the state education department investigated 3,395 complaints of illegal practice, according to Dr Harold Rypins, secretary of the state board of medical examiners. In 1,345 cases it was shown that there was no cause for action and in 1,488 cases the violations were stopped without prosecution. Among the 562 prosecutions 473 con-

victions were obtained, 84 per cent. Thirty-six cases resulted in acquittals, forty-one were withdrawn and twelve are pending trial. In the past six years the Medical Grievance Committee has considered 397 complaints against licensed physicians. Of this number 355 were disposed of by the committee, twenty-six were referred to the board of regents. Of the latter, the board revoked eleven licenses and suspended six. Formal censures were ordered in eight cases and one was dismissed. Sixteen are pending.

New York City

Appointments at New York University—The Council of New York University and Bellevue Hospital Medical College has recently announced the following appointments:

Dr Sigmund A. Agatston assistant clinical professor of ophthalmology

Dr James Burns Amberson Jr assistant professor of clinical medicine

Dr Carter N. Colbert clinical professor of psychiatry

Dr Edward B. Gresser assistant professor of ophthalmology

Dr James Swift Hanley assistant clinical professor of otorhinolaryngology

Dr Emery A. Rovenstine assistant professor of surgery

Harvey Lectures—The fourth Harvey Lecture of the year will be given by Alfred N. Richards, Ph D, professor of pharmacology, University of Pennsylvania School of Medicine Philadelphia, January 17, at the New York Academy of Medicine, on "Processes of Urine Formation in the Amphibian Kidney." The fifth lecture will be delivered by Dr Edward C. Dodds, director of the Courtauld Institute of Biochemistry, the Middlesex Hospital, London, February 2, on "Specificity in Relation to Hormone and Other Biologic Reactions."

Society News—Dr Allan Roy Daffoe, Callander, Ont. delivered a public lecture on the Dionne quintuplets at Carnegie Hall, December 10.—Speakers at a meeting of the New York Neurological Society with the section on neurology and psychiatry of the New York Academy of Medicine, January 8, were Drs Ade T. Milhorat and Harold G. Wolff, on "Creatine Metabolism in Muscle Disease", Carlyle F. Jacobsen, Ph D, New Haven, Conn, "Experimental Analysis of the Functions of the Frontal Association Areas in Primates," and Dr Gregory Zilboorg, "Sidelights in the Psychology of Murder."—The eighth afternoon lecture of the New York Academy of Medicine was given January 4, by Dr Israel Strauss on "Recognition of Early Symptoms of Brain Tumors." The ninth was presented by Dr Josephine B. Neal, January 11, on "Diagnosis and Treatment of Meningitis" and the tenth will be by Dr James Ewing, January 18, on "Relationship of Trauma to Malignancy."—Drs Francis C. Grant, Philadelphia, and Eli Jefferson Browder, Brooklyn, addressed the Medical Society of the County of Kings, December 18, on "Surgical Relief of Pain and 'The Syndrome of the So-Called Pulmonary Sulcus Tumors,' respectively.—Dr Joseph C. Doane, Philadelphia, addressed the National Society for the Advancement of Gastroenterology, December 26, on "The Effect of Feeding of Acid and Base Foods on the Reaction of Bodily Secretions and Excretions."—Drs Morris Fishbein, Chicago, editor of THE JOURNAL, and Willard C. Rappleye, dean of Columbia University College of Physicians and Surgeons, addressed the Harlem Medical Association, January 2, on "Economic Security and Medical Care" and "Recent Trends in Medical Education, respectively."

New Records in Health—Despite the unfavorable influences of the economic depression, New York City established several new records in health during 1934. The general death rate was 10.15 per thousand of population, the lowest in the history of the city, the actual number of deaths was 75,857. The greatest number of deaths (30,948) occurred in the group of diseases of the heart, arteries and kidneys, including cerebral hemorrhage. Tuberculosis which has steadily decreased in the last ten years, caused 3,950 deaths, a rate of 52.85 per hundred thousand. This result, a new low point, was attributed to efficient organization of relief and to intensified control activities, such as improved x-ray equipment, extension of facilities for pneumothorax treatment and better follow up of cases. The pneumonia death rate in 1934 was the lowest on record, but this was partly attributed to the low prevalence of measles and the absence of an influenza epidemic. Fewer cases of diphtheria were reported to the health department than in 1933, but deaths increased from 86 to 103, indicating a more severe type of the disease according to the report. The death rate from whooping cough declined from 25.7 in 1933 to 21.99 per hundred thousand of population under 5 years of age in 1934. Only 76 cases of poliomyelitis were reported with 12 deaths. There were 44 deaths from typhoid, a rate of 0.59 per hundred thousand of population new low records. The cancer death rate has again increased being 127.1 as compared with 121.6 in 1933. The health department has endeavored to

focus attention on diabetes as a health problem but, as it is not a reportable disease, figures on its prevalence are not available. The registered death rate rose in 1934 to 30.3 from 29.1 in 1933, but this is believed to be due to the aging of the city's population and to more frequent recognition of the disease. Appendicitis mortality was lower than at any time in the last five years, 13.45 as compared with 15.64 in 1934 and 16.32 in 1931. The death rate from automobile accidents declined from 15.45 in 1933 to 15.28 in 1934; the rate in 1930 was 18.53. The suicide death rate which began to increase in 1929, reached its highest point (22.1) in 1932 and in 1934 decreased to 16.43. The infant mortality rate in 1934 was 52.22 per thousand births, a reduction from 1933 but not so low as the 1932 rate, 50.91. The birth rate continued to drop, being 13.55 per thousand of population in comparison with 17.64 in 1930. During the past year the department has designated certain 'sore spots' on which it is concentrating its activity in an effort to improve health conditions that are vastly worse than those in the city as a whole. These areas are Central Harlem, the lower West Side, Red Hook-Gawanus and Williamsburg-Greenpoint.

OKLAHOMA

Society News—Drs William C. Burgess, Ringling and Lisby L. Wade, Ryan, addressed the Jefferson County Medical Society, Waurika, November 5, on rheumatic fever and urinalysis, respectively. Among speakers at a meeting of the Southeastern Oklahoma Medical Association at McAlester, December 6, were Drs Daniel E. Little, Eufaula, on "Intravenous Administration of Hydrochloric Acid," John H. Veazey, Madill, "Typhoid Fever in Children" and Leonard S. Willour, McAlester, "Skeletal Traction in Fractures of the Thigh and Leg." At a meeting of the Southern Oklahoma Medical Association, Ardmore, December 4, speakers included Drs Alfred I. Folsom, Dallas, on transurethral prostatectomy, Darrell G. Duncan, Oklahoma City, dermatologic manifestations of syphilis and James Floyd Moorman, Oklahoma City, tuberculosis. Drs Coble D. Strother, Sherman, Texas, and Raymond L. Murdoch, Oklahoma City, addressed the Bryan County Medical Society, Durant, November 12, on "Useful Drugs in the Treatment of Heart Disease" and "Common Anorectal Diseases," respectively. Drs Hugh G. Jeter and Lewis J. Moorman, Oklahoma City, were speakers before the Okfuskee-Oklmulgee County Medical Societies, Okemah, November 19, on anemia and diseases of the chest, respectively.

PENNSYLVANIA

Physician Appointed State Secretary of Welfare—Dr James Evans Scheehle, Llanerch, has been appointed secretary of welfare in the cabinet of the incoming governor. Dr Scheehle, who was graduated from the Medico-Chirurgical College of Philadelphia in 1906, has recently been coroner of Delaware County.

Society News—Drs Holbert J. Nixon, Uniontown and Chester B. Johnson, Allison, addressed the Fayette County Medical Society, Uniontown, January 3, on "Hyperchromic and Hypochromic Anemias of Pregnancy" and "Ergot in Pneumonia," respectively. Dr Floyd E. Keene, Philadelphia, addressed the Harrisburg Academy of Medicine, December 18, on "Present Status of Glandular Secretions and Therapy." The Pennsylvania Tuberculosis Society will hold its annual meeting in Pittsburgh, February 19-20, in conjunction with the annual session of the Pennsylvania Conference for Social Welfare.

Philadelphia

Seminars on Nutrition—The January series of postgraduate seminars sponsored by the Philadelphia County Medical Society includes the following program:

- January 4 Dr. Jacob Earl Thomas, The Physiology of Digestion
- January 11 Elmer V. McCollum, Ph.D., Baltimore, The Vitamins
- January 18 Dr. Rufus S. Reeves, Important Scientific Factors in the Production of the Balanced Diet
- January 25 Dr. Maurice B. Strauss, Boston, The Role of Faulty Assimilation in the Production of Anemia Including Postoperative and Malignant Lesions as Possible Factors

Patents on Medical Discoveries Prohibited—The University of Pennsylvania recently announced the adoption of a policy prohibiting the patenting for profit by any one connected with it of any invention or discovery affecting the public health. Neither the university nor any one in its employ will be permitted to patent new drugs, processes or apparatus invented or discovered that are intended for medical or surgical use. It has never been the practice of the university to patent such discoveries, but there has never before been a definite ruling against it.

Pittsburgh

Personal—Roswell H. Johnson, M.S., formerly of the University of Pittsburgh has been appointed social hygienist in the Palmyra Settlement, Honolulu, and part time professor in the University of Hawaii. He will give courses in social hygiene and eugenics.

Course in Public Speaking for Physicians—The Allegheny County Medical Society is offering to its members a course in public speaking conducted by Wayland M. Parrish, Ph.D., professor of English at the University of Pittsburgh. Brief lectures are presented by the instructor on the principles of persuasive speaking, selection and organization of materials, their psychologic adaptations to audiences and their delivery. Members of the class make brief talks, with criticisms and suggestions by Professor Parrish. Sessions are held at the Pittsburgh Academy of Medicine, Tuesday and Friday afternoons. They began January 4 and will continue for ten sessions.

SOUTH CAROLINA

Graduate Courses in Obstetrics—The South Carolina Medical Association announces a series of courses in obstetrics for physicians of the state to be given during the coming year beginning in April, with Dr. James R. McCord, Atlanta, as the instructor. Each course will begin on Monday and run through Friday. The following dates and places have been chosen: Anderson, April 15; Spartanburg, June 24; Columbia, July 8; Orangeburg, July 22; Florence, August 12; Kingstree, August 26; and Charleston, September 9. The course is part of a campaign to reduce maternal mortality in the state, according to the *Journal of the South Carolina Medical Association*.

Society News—Drs Alfred R. Shands Jr. and Fred M. Hanes, Durham, N.C., among others, addressed the Pee Dee Medical Association at its annual meeting in Florence, December 5, on arthritis and therapeutics, respectively. Speakers at a meeting of the Fifth District Medical Society in Chester, November 20, included Drs Robert Wilson, Charleston, on "Hypertensive Heart Disease," Henry L. Sloan, Charlotte, N.C., "Recent Advances in Ophthalmology," and William Weston, Columbia, "Rheumatic Fever in Children." Dr. Hugh P. Smith, Greenville, presented a motion picture on electrocardiography at a meeting of the Greenwood County Medical Society, Greenwood, in December.

VIRGINIA

Special Course at University—The department of medicine of the University of Virginia in cooperation with the Virginia Society of Otolaryngology and Ophthalmology held a special course in those subjects December 5-8. Those who assisted in conducting the course were Drs John M. Wheeler, Conrad Berens, John H. Dunnington, Ebenezer Ross, Faulkner, John R. Page and Mr. Edgar B. Burchell, all of New York, and Dr. George M. Coates, Philadelphia. Of the university staff the following gave lectures or conducted clinics: Drs Fletcher D. Woodward, Vincent W. Archer, Oscar Swineford Jr., Halstead S. Hedges and Edwin W. Burton.

Society News—At a meeting of the Postgraduate Medical Society of Southern Virginia in Clarksville, November 20, speakers included Drs John Shelton Horsley, Richmond, on "Cancer of the Stomach," James Edwin Wood Jr., University, "Treatment of Congestive Heart Failure (Old Methods and New Modifications)," and J. Bolling Jones, Petersburg, "Importance of Early X-Ray Studies of the Urinary Tract in Pyelitis of Pregnancy." Drs Lemuel R. Broome, Catawba Sanatorium, and John E. Gardner, Roanoke, addressed the Roanoke Academy of Medicine, November 5, on "Collapse Therapy of Tuberculosis" and "Thrombosis of the Left Auricle," respectively.

WASHINGTON

Society News—Dr. Vernal G. Bachman, Pasco, presented a paper on medical economics before the Klickitat-Skamania Counties Medical Society recently, among other speakers, Dr. William R. Frazier, Portland, Ore., discussed "Modern Technic in Home Delivery." Dr. Winfred H. Bueermann, Portland, Ore., addressed the Lewis County Medical Society, Chehalis, November 12, on cancer. Drs Thomas M. Joyce and Noble W. Jones, Portland, addressed the Cowlitz County Medical Society, Longview, November 13, on "Cancer of the Breast and Various Complications of the Disease" and "Diseases of the Heart," respectively. Drs James Howard Manning and Julius A. Weber, Seattle, presented papers before the Walla Walla Valley Medical Society, Walla Walla,

November 8, on "Recent Developments in Treating Diseases of the Rectum" and "Use of the Bronchoscope in Diagnosis and Management of Lung Conditions," respectively—Speakers at a meeting of the Yakima County Medical Society, Yakima, November 12, were Drs Milton B Steiner and Leo S Lucas, Portland, on "Eye Injuries and 'Early and Late Treatment of Poliomyelitis, respectively—Dr Charles E Sears Portland, Ore presented an address on jaundice at a meeting of the Spokane County Medical Society Spokane, November 8 and Dr Joseph E Bittner Jr Yakima demonstrated a device for treating fractures of the forearm and leg—Dr Bernard Myers, London addressed a special meeting of the Seattle Pediatric Society, December 1 on infant feeding

GENERAL

License Stolen—Dr Woodie Dozier McCune Chicago reports that his license to practice medicine in Illinois was taken from his office about December 21 The license, number 14910, was issued Aug 22, 1922

Urologic Congress—Members of the faculties of medical schools and of special societies in the United States are invited to attend a congress on urology under the sponsorship of the Brazilian Society of Urology in Rio de Janeiro January 21-26 Official subjects of discussion will be problems of tropical urology endoscopic surgery of the prostate social importance of infections of the masculine genitalia and renal insufficiency in urinary surgery The invitation was offered through the Brazilian ambassador to the United States

Physicians Elected to Legislative Bodies—*Northwest Medicine* reports that several physicians were sent to the legislatures of the three states it represents In Oregon Drs James A Best, Pendleton Clyde T Hockett, Enterprise and Jacob F Hosch Bend were elected In Washington Dr Dale O Nugent, Centralia, is a holdover member of the senate and Drs Robert D Wiswall Vancouver Delmar F Bice Yakima and Ulric S Ford Forks were elected In Idaho three were reelected Drs Owen T Stratton Salmon Dailey C Ray Pocatello, and Mary A Callaway Boise

Interim Revision of Pharmacopeia—E Fullerton Cook Ph M, Philadelphia, chairman of the U S Pharmacopeia Committee of Revision announces the third interim revision which will become official and enforceable May 1 The announcement primarily covers modifications in the assay for ergot and the fluid extract of ergot replacing interim revision No 1 issued Jan 1, 1934 Since that time it has been found desirable to adopt the alkaloidal salt ergotoxine ethanesulfonate as the official ergot standard For the purpose of assuring uniformity the U S P board of trustees has arranged for the packaging in ampules, under nitrogen of a standardized lot of the salt which may be obtained from the chairman, Forty-Third Street and Woodland Avenue Philadelphia Any one who wishes a copy of the revision announcement may obtain it from the same address by sending 10 cents to cover the cost of printing and distribution

Society News—Dr Reginald H Jackson Madison Wis was elected president of the Western Surgical Association at its annual meeting in St Louis December 7-8 Dr Fred W Bailey, St Louis, was elected vice president, and Dr Albert H. Montgomery Chicago secretary The 1935 meeting will be held in Rochester, Minn—Dr Stanhope Bayne-Jones, New Haven, Conn, was elected vice president for the section on medical sciences of the American Association for the Advancement of Science at its midwinter meeting in Pittsburgh December 27-January 2 Karl T Compton Ph D, president of Massachusetts Institute of Technology Cambridge was chosen president of the association—Dr Maurice W Samuels, Chicago has been reelected president of the Hotel Physicians Association of America Other officers are Drs Lee H Kiel Chicago secretary Joseph D Nagel New York Frank L Willman Washington, D C William T Harsha Chicago, Daniel T Mahoney Boston vice presidents—At the meeting of the Society of American Bacteriologists December 27-29 in Chicago Karl F Meyer Ph D, Hooper Foundation for Medical Research, San Francisco was elected president Dr Thomas M Rivers of the Rockefeller Institute for Medical Research New York vice president, and Ira L Baldwin Ph D of the University of Wisconsin secretary The next annual meeting will be held in New York—The American Birth Control League will hold its annual meeting in Chicago January 16-17 at the Palmer House An evening conference of physicians will be held Tuesday with Dr Fred L Adair Chicago as the presiding officer Speakers will be Drs Alexander M Campbell Grand Rapids, Mich Charles Sumner Bacon Irving F Stein and Rachelle S Yarros Chicago and Eric M Matsner New York.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 17, 1934

Osteopaths Again Attempt to Obtain Recognition

The failure of the attempts of osteopaths to obtain registration and therefore state recognition has been reported in previous letters Their latest attempt has thus far been more successful In the house of lords, Viscount Elibank moved the second reading of the bill for the registration and regulation of osteopaths The mover said that osteopathy was a system of healing which largely dispensed with the use of drugs Osteopaths claimed to treat disease on the principle that most diseases had their origin in some maladjustment of the body framework The osteopath did not believe that drugs effected a cure but that the body itself, when it functioned properly would effect its own remedy for disease He said that the laws regulating medical practice should not allow any unreasonable obstacle to lie in the way of the development of this school of thought Osteopaths did not ask to be admitted to the medical profession, they asked to be admitted to an osteopaths' register and that only qualified osteopaths should be registered The purpose of the bill he said was to prevent the practice of osteopathy by those who were not qualified

Lord Moynihan moved the rejection of the bill He said that it involved negation of all the principles embodied in the medical act of 1858 That act enabled every one to discriminate between those who had and those who had not passed through the medical curriculum between the qualified and the unqualified practitioner The act was inspired by a desire to protect the public against dangerous people who had undergone no medical training in those fundamental sciences on which medicine was based The bill would set aside all the defenses erected for the protection of the public If one particular theory of medicine was guaranteed recognition, it would not be long before other cults would make appeals for it Acceptance of the bill would hold up to obloquy the whole of the scientific basis of medicine today Osteopathy had no connection with the main stem of scientific medicine Medicine and osteopathy did not run on parallel lines They were not complementary to each other but in direct opposition This bill would create two standards of entry into the medical profession If osteopaths were at last recognizing that a formal medical training was necessary, there was nothing to prevent them from passing through the medical curriculum The bill was an endeavor to destroy the unity of medicine and to force on the public which was unaware of the danger a spurious science that set aside the accumulated wisdom and the expert practice of centuries

Lord Dawson president of the Royal College of Physicians said that the bill raised an important question of principle Certain callings by long custom or statute had a prescribed course of training laid down Examples were the law, the master mariner and medicine Supposing a body of persons said that they wanted to train persons for the law or as captains in Atlantic liners and would do it in their own way, without reference to the existing system their request would receive an emphatic negative Why should there be any difference in the case of medicine which had a grave responsibility for human life? There was complete liberty of thought in the medical profession Many physicians who had been trained for the medical profession practiced osteopathy The profession said that the osteopaths must go through the medical training and then they would be free to do what they liked There must be a preliminary nonvocational training to make the trained

mind Only when the medical schools were satisfied with the basic training of the students were they permitted to enter on the vocational part of their training For five years the medical student had to live laborious days and the majority required further training afterward Diagnosis was the keystone of the arch of medical training There could be no giving way on the essential point that knowledge of diagnosis must precede the power to treat The bill would give a short cut to a body of people who wanted the status of physicians If that kind of training should be allowed to displace the scientific training which could be built up only by years of experience if any short cut or back door entrance should be allowed, the whole fabric of the efficiency of the healing art would be brought down from the level it had taken years to build up Physicians were prepared to treat osteopaths as co-workers but not to give them equality of status in the science of medicine for which they did not have the proper training For osteopathy to have the status of medicine without the training in pathology would be a public danger The danger of uncontrolled and unguarded crafts was that they began well and in their own sphere did admirably but grew like a snowball and one did not hear of the infinite damage they did Osteopathy could be a perfect terror and a tragedy, as he himself knew

Lord Hewart (lord chief justice) said that the bill would allow an osteopath to issue a death certificate and as a mere lawyer he was staggered at that proposal For the government Viscount Gage said that there was nothing today to prevent an osteopath from treating a patient and receiving a fee A patient might have a complaint with which an osteopath was especially competent to deal, but if he had something more deep seated the osteopath might have no qualification for diagnosing it If the bill became law the patient would be protected against the absolutely ignorant practitioner, but his complaint would still be diagnosed by somebody who possessed a good deal less than the minimum qualifications at present In spite of the opposition of the government the motion for rejection of the bill was negatived by 35 votes to 20 and the bill was read a second time

It must be remembered that in spite of the arguments of the ablest advocates in the profession and the opposition of the government, this success of the osteopaths was obtained in a very small house The result means simply that the supporters of the bill were able to muster a larger number of votes than those who could be induced to attend to oppose it The small number who supported the bill can be explained by the support that irregular practitioners always receive in this country, often from those in high social position, who seem as amenable to quackery as any class The success or apparent success of treatment by osteopaths when orthodox treatment has failed is noised about and considered a crucial test The cogent arguments as to the danger of recognizing an inferior order of medical practitioners were ignored and the opposition to the osteopaths' proposal was represented as professional jealousy and not regard for the public welfare

The Locust Plague in South Africa

The locust plague has been exceptionally severe all over South Africa this year Trains from the north are being regularly delayed for from one to two hours Locusts congregate, covering the rails to a depth of 6 inches, and as they are crushed they make the rails slippery and bring the tram almost to a standstill The government is pursuing an energetic poisoning campaign, but although the northwest has been almost cleared little headway is being made in the midlands The antilocus measures have their drawbacks The standard method is spraying with sodium arsenite but when the same area is sprayed again and again to cope with fresh hordes, the grass becomes poisoned and cattle grazing on it die Wild birds eat

the poisoned locusts and die, and as they are the farmer's first line of defense against locust and other insect pests their destruction is beginning to alarm both farmers and naturalists Already locust swarms have penetrated within 100 miles of Capetown and it is possible—unless strong southeast winds sprung up and blow them back—that they will reach the fruit and vine trees with disastrous results Provision has been made for two special poison-spraying trains to patrol the line between Bloemfontein and Naauwpoort By the use of hose pipes the locusts are sprayed for some distance on each side of the line and innumerable swarms destroyed At times for stretches of 9 miles hoppers moved in mass across the lines and for nine or ten hours daily the poison trains moved up and down these sections In one section the hoppers were seen covering an area of 15 by 6 miles in one solid mass

Tetanus from Toy Pistols

In an annotation in the *Times* on toy pistol tetanus the statement was made that the conveying of the disease by the cartridges was an unproved hypothesis Dr James McIntosh of the Bland-Sutton Institute of pathology has therefore pointed out that some recent investigations carried out there show that the infection can be conveyed by the cartridge, the wad in particular Observations made on material from three cases of toy pistol tetanus showed that, in two, pathogenic strains of the bacillus of tetanus were present in the wad of the cartridge In each instance pure cultures were ultimately isolated In the last case pure cultures were obtained from five out of six cartridges taken at random from the box used by the patient The infection is contained in the hairlike felt of the wad, as cartridges containing paper wads were never found infected with the bacillus, nor were the metal case or powder

Apparently the discharge of the pistol is the determining factor When the pistol is fired there is a great tendency for a finger or part of the hand to come close to the hole in the top of the pistol through which the products of the explosion are discharged When this happens a deep lacerated wound is produced, into which are driven particles of the infected wad The necrotic material in such a wound is an ideal medium for the rapid growth of the bacillus The lines along which measures of protection should be taken are thus indicated

PARIS

(From Our Regular Correspondent)

Jan 21, 1935

Hemorrhage as First Symptom of Latent Amebiasis

The atypical types of amebic intestinal infection are beginning to attract more and more attention on the part of clinicians Anglade and Rosenbach have just reported three cases from an army hospital, of a clinical type of amebiasis that had previously been reported by Rachet in 1927 This latent form of amebiasis presents as its first clinical evidence a sudden severe hemorrhage from the intestine In none of the three cases reported was there the least suspicion of the amebiasis before the enterorrhagia In all three, evacuations had been normal previously It was only after the examination of the stools that the dysenteric ameba was found as the etiologic factor, hence such an examination ought to be made in every case of symptomless intestinal hemorrhage None of the three patients had ever lived in the colonies, where amebic dysentery is not so rare

Prophylaxis of Typhoid, Undulant Fever and Diphtheria

In his annual report to the Academy of Medicine, November 13, Dr Louis Martin, director of the Pasteur Institute, presented some interesting observations Only 10,657 of the 38,007 cities and villages of France have a pure water supply

Absence of *B. coli* in the reservoirs is not sufficient proof of purity. Bacteriologic examination should also be made of the water as it comes from the faucets. Many cases of typhoid occur during the summer vacation period. The water of Paris and other large cities of France is pure, but this is not always the case in the resorts to which one goes for a vacation.

Undulant fever, which was reported in 1925 from only seventeen departments of France, now exists in fifty-seven.

Milk from goats and sheep and cheese made from milk of these animals, which is consumed in many parts of France, can be considered responsible in only a small number of cases, but the disease frequently appears in severe form in cattle breeders and in farmers in the south of France. A polyvalent vaccine has been tried, but it is evident that more effective prophylactic measures must be employed to control this constantly increasing menace to the agricultural districts.

As regards diphtheria, Dr. Martin stated that in the majority of reports one finds a decrease in frequency of the disease and that vaccination with anatoxin has been well received. There are some children who can be vaccinated only with difficulty and it requires much persuasion to convince the parents that it must be repeated. This is not necessary at the beginning of an epidemic, because the parents all demand that vaccination should be done as soon as possible.

Antidiphtheria vaccination is not followed by marked reactions, but several cases of abscess formation have occurred, and there were two deaths. For the latter, the anatoxin was found not to be responsible, however. In the department where the large city of Lyons is located, one found that there was a marked decrease in the morbidity whenever two thirds of the children had been vaccinated. If only half were vaccinated, there was little change in the morbidity. Some cases of diphtheria have been reported in children who had been vaccinated, but even so the attack is usually a very mild one, though death may occur if the antitoxin is not given early enough. One can explain these cases of diphtheria in those who have been vaccinated through their being refractory or because only a single injection of the anatoxin was given. There are also children who do not form antibodies. If a vaccinated child presents the clinical signs of a diphtheria, one should administer treatment without waiting for the bacteriologic report. Dr. Martin believes that vaccination with the Ramon anatoxin should be made obligatory, preferably when the child is a year old. A committee was appointed by the Academy of Medicine to study the entire question of antidiphtheria vaccination.

Senile Dwarfism or Progeria

There is a special form of infantilism which is not as rare as was at first believed. It was first described by Variot of France in 1910 and the term *progeria* was applied by an American author, Gilford, at about the same time. The condition is found in children and adolescents who present the appearance of the aged. One of the chief characteristics, according to an article by Barraud in the *Gazette médicale*, November 15, is the emaciation due to almost complete disappearance of the subcutaneous adipose tissue especially in the face.

In most cases there is absence of the eyebrows and eyelashes. The skin is parchment-like, with visible subcutaneous vessels. There is deformity of the heads of the femurs and absence of development of secondary sexual characteristics. The disease usually appears about the third year of life, so that at the age of 18 to 20, the boy or girl looks like a child of 5 or 6 and has about the weight corresponding to the latter age. Only two necropsies have been reported, one by Gilford and the other by Orrico and Strada (1927). Gilford found sclerosis of the viscera with markedly thickened capsules as in the aged, also atheromatous plaques in the aorta, cardiac valves and coronary arteries. The suprarenals were decreased in size but normal.

There was a marked hypertrophy of the thymus, which was about twice as heavy as the normal gland. Orrico and Strada found a marked lack of development of the suprarenals, thyroids, parathyroids and testes, and an advanced sclerosis of the aortic and other large vessels, but the pancreas and thymus were normal. Radiography in these progeria (premature senility) cases reveals disturbances of ossification of the epiphyses. In the author's case there was marked improvement both in weight and in growth following the use of ultraviolet rays and opotherapy (polyglandular).

BERLIN

(From Our Regular Correspondent)

Nov 5, 1934

The Dissension Over Reconstruction of the Studentenschaft

The difficulties that persist in the studentenschaft and have been brought into that organization mainly by the National Socialist party have been reported before (*THE JOURNAL*, Sept. 29, 1934, p. 1004). This development has progressed with rapidity and has led to noteworthy results. The prerequisite of a half year of compulsory labor for students demanded for matriculation in a German university was to be accomplished this year from May 5 to October 25 by four months of labor service and six weeks of sport activities in the country. Foreigners and "non-Aryans" are excluded, whereas German matriculants residing abroad may participate although they will not be forced to take part, these are children of parents who, though German in origin, have their residence abroad. Exceptions are made of unfit individuals, of students of Catholic theology (who may participate if they choose to do so) and of those whose course of study is preceded by at least a year of practical work, during which time the person concerned does physical labor in the company of ordinary workers and associates and fraternizes with the workers outside of working hours. This work service is compulsory only for students. A voluntary choice of work service has as yet still been maintained for others. If their conduct bears satisfactory testimonial, the young people engaged in this fun called "work" will be granted special favors in case of new positions. This fact will prove a disadvantage to the progress of those excluded from participation. The work service certainly offers definite training effects. In addition, "political science education and training" are on the education program. According to the plan of Feikert, leader of the reich's students organization, after the young student has received the desired training from the Hitler youth, the storm troops and the work service, he brings this new form of life with him to the university. Feikert published a decree in September before the beginning of the present winter semester on the communal training of the studentenschaft. This decree subjects students to a National Socialist military drill. The most important provisions of the decree are the following:

After satisfactorily completing his work in the compulsory work service, the student must study at the same university for two semesters. During this time he is compelled to live in one of the "community houses" conducted by the National Socialist party and recognized by the studentenschaft. (These community houses, kameradschaftshäuser, are houses in which the communal spirit and fraternizing of the labor camps will continue, the object being to erase class distinction and provincial allegiance as opposed to national allegiance from the minds of the students and to further the interests of totalitarianism.) Here the young students are given an intensive training along National Socialist lines. Older students may be admitted to the kameradschaftshaus only if they belonged to the National Socialist organization before Jan. 31, 1933, or if since that time have been active in the National Socialist reconstruction pro-

gram The inhabitants of each kameradschaftshaus must wear uniform dress The small cap and ribbons, the insignia of the German student fraternities, cannot be worn by them during the first two semesters Feikert may install and dismiss the directors of each kameradschaftshaus at will, moreover, he exercises the same right in the student corporations and societies Through such measures the breeding of a uniform type of student will naturally become more and more complete For the law student there is the added pleasure of a stay in a "jurisprudential training camp," which he must attend between the time of his final university examination and the state or bar examination In these compulsory provisions the student leader exceeded any measure that could be tolerated by those concerned The fraternities, those traditional organizations of German students, felt threatened by these measures, which were undoubtedly directed against some of the fraternities according to remarks made by Feikert in a radio address Bitter opposition arose headed by Lammers secretary of state in the federal chancellory, who became the protector of the fraternity students The mentioned decree was disapproved of by the highest office in the government, and so the student leader had to revise it and delete the most essential clauses after it had already been in operation The first of these "student leaders," Dr Stabel, had to be dismissed because he was accused of lack of resolution, whereas his successor destroyed his own work by excessive energy The student fraternity corps became more firmly entrenched Training in the kameradschaftshaus with all its attendant results of uniformity has now become a matter of choice, no force with respect to joining these houses may be exercised either on the fraternities or on individuals There is no longer any talk of dissolving individual student corporations, which Feikert had expressed himself as intending to do

The corporations likewise took a stand against the totalitarian onslaught They protected themselves courageously against verbal attacks, provocation and actual assault This happened for example, in Bonn, where the students in their caps and colors were jostled by the Hitler youth The students of these fraternities (korps) had been considered for a long time as reactionaries, they had been following a political course to the right for quite a while and were, accused of bourgeois class prejudice and similar things by the Hitler youth They are protecting themselves with all their might against such accusations The well known play "Old Heidelberg" had to be taken off the list of performances by the order of one student leader because it did not conform to the type of present-day German students That is quite true and since that day the play has been dubbed "sentimental tripe." It is, however, more significant from the difficulties brought forth by the attempts at totalitarianism that a rift has resulted among the fraternity students All student corporations have patterned themselves according to National Socialist principles and to a great degree are controlled by the party Nevertheless there is a marked difference between the korps and the other "fighting" societies holding duels The korps have founded training camps especially for the leaders of individual societies (seniors and presidents of student classes) in which discussions on the formation of studies, student storm troop service and numerous other questions are taken up Nevertheless, the korps are striving more than the other student organizations to preserve their tradition They are often reproached for not enforcing the "Aryan principle" on their alumni that is to drop all present and past members having Jewish blood even beyond the third generation (beyond the grandmother clause) They are also reproached for being negligent in weeding out all Free Masons The same contention applies to all members who have acquired

Jewish connections by marrying a not purely "Aryan" woman The korps have compelled a few of these older members not to resign on the basis of their having fought in the war, while the other organizations take an irreconcilable attitude toward the Jewish question These differences have led to open enmity between societies that had always been joined in one intramural dueling group A common political point of view does not exist, for the burschenschaften demand an uncompromising adherence to the lines of the National Socialist party The National student leader is also seeking to regulate the direction of scientific effort He has carefully defined the prerequisites for scientific work in the face of the general decline of the universities and of liberal scientific pursuits A session of the German National Students Association in the spring of 1935 will summarize the potentialities in the younger faculty members and in the students for a permeation of the universities with the political ideas of National Socialism The stand taken by the older men with respect to the present direction of scientific effort may be seen from the following quotations The conference of rectors (after the Nazi revolution all rectors of universities were either replaced by Nazi men or were reinstated as suitable to the party) of Prussian universities several months ago declared that the rectors were "convinced of the necessity of internal change in the direction of scientific efforts and of the university along the ideas of National Socialism

National Socialism is the only living and creative power which frees the development of the mind and the university from purely specialist, theoretical and technical minute divisions" The national commissioner of justice, Dr Frank, has demanded that intellectual workers "should not strive primarily for self recognition but they must always ask themselves the question Does my scientific training serve the cause of National Socialism above everything else?" At a recent philological congress it was demanded that intellectual objectivity must give way before political subjectivity The representatives of the new National Socialist system of thought are opposed, however, by a large number of men who unwaveringly adhere to the tradition of objective science even if they do not make public declaration of the fact

It is significant that even the leader of the discussion, the chief clerk of a ministerial department and therefore an official personality, objected to the "abolishment of hypothetical processes in science." The new chief of the Public Health Office of Bavaria, Dr Walter Schultze, previously a practicing surgeon, now ministerial director and professor at the University of Munich, also expressed himself in the same way At the last National Socialist Bavarian Physicians Congress he remarked that the statement "lack of hypothetical processes in science" arose from the same trend of aberrant scientific work and of human conceit, he cites, as an example, the objection made by a physicist to the existence of the so called earth rays Recently at the Congress of German Biologists and Physicians "a group of older representatives from every possible field of science were trying to accept this erroneous impression—one and three fourths years after the National Socialist revolution

The university became more or less of a bureaucratic establishment which was neither in a position nor possessed the power to build personalities but at its best produced, in the last analysis, an army of statisticians" In order to appreciate the work of the future medical profession, it is most important to understand the new direction of the academic profession and the present makeup of the university Only those who have the talent and power to inculcate the leader principle into their students may become university instructors in the future The number of students to become physicians must be considerably limited their qualifications for the profession must be tested constantly not only by examinations but by repeated experi-

ments, by keeping a close check on the entire course of study and by demonstrations of character

These are the latest principal facts and statements from authoritative sources, which may contribute to the general picture of the type of education and the interpretation of the sciences in Germany today. There are, undoubtedly, some retarding influences and much of what is being said may be attributed to oratorical license. These sketches indicate the direction desired by the group in power which will bring outside force to bear in order to push its plans through.

MEXICO

(From Our Regular Correspondent)

Nov. 30, 1934

Educational Improvements in Mexico City

The government of Mexico celebrated the anniversary of the Mexican revolution November 20, with the following ceremonies. 1 The inauguration of a grammar school in Belem with a capacity for 10,000 children. The establishment of this school symbolizes the trend of the government to prevent the spreading of evil by giving the new generation education, an opportunity not previously provided to the people. Nowadays schools are opened all through the country. It shows also the control of the government on crime which permitted the demolition of the old dark Belem jail and the construction on the same grounds of a modern school. The Belem jail from colonial days until its demolition was a focus of epidemic typhus, which frequently spread all over the city, and a breeding place for rats a large percentage of which were either sick or heavily infested by *Rickettsia prowazekii*. 2 The inauguration of improvements at the Juarez Hospital. The old church of San Pablo joined to the hospital, was reconstructed and divided into several entirely independent departments: an assembly hall with a medical library, a large chapel, an amphitheater for necropsies, a laboratory, and refrigeration chambers accommodating twenty cadavers. In the hospital, wards were provided for emergency patients, a hair-dressing room was opened, baths were installed, offices were supplied for physicians and for consultation and departments inaugurated for the treatment of diseases of the eyes, nose and throat and for stomatology, gynecology, obstetrics, the digestive tract, bones and joints, neurosurgery, urology, x-rays and laboratory work. 3 Unveiling of a memorial plate in honor of Benito Juarez.

New Regulations for Antituberculosis Dispensaries

The department of public health has issued detailed regulations on the organization and functions of antituberculosis dispensaries, which aim to secure uniformity in the organization and services given. The dispensaries are concerned, according to the new regulations, with the detection of tuberculous patients, the investigation of the reports of visiting nurses, the diagnosis of the disease by physicians in the dispensaries, the hygienic education of patients and their families, the sanitation of houses and preventive vaccination. There will be central dispensaries in the capital of every state, with branches in some cities. Every central dispensary will be under the control of the general committee of the antituberculosis campaign. All the dispensaries will be provided with a waiting room, two wards, departments for radioscopic laboratory, and otorhinolaryngologic services, offices for the director and the general manager, and a storeroom. The personnel in every central dispensary will include a head physician who will also be in charge of a clinical ward, an assistant physician, two interns, a head nurse, two student nurses and as many visiting nurses as necessary to cover the work of the given territory, a technician, bacteriologist, a janitor, two porters, a watchman, and physicians specializing in otorhinolaryngology, radiology and bacteriology.

Marriages

MAX EVANS WHICKER, China Grove, N. C., to Miss Thelma Adelaide Wilkerson of Prospect, Va., in Lynchburg, Va., recently.

RUSSELL ROBERT RICHARDSON, Monon, Ind., to Miss Mary Elizabeth Rickards of Decatur, Ill., in Indianapolis, Dec. 6, 1934.

LOUIS BLANCHARD WILSON, Rochester, Minn., to Miss Grace Greenwood McCormick of Pittsburgh, January 2.

HAROLD WILLIAMS WILEY, Lansing, Mich., to Miss Luverne Elizabeth Herst of Grand Rapids, Dec. 1, 1934.

WEBSTER BRIDGES KEY, Memphis, Tenn., to Miss Mary Elizabeth Fry of Union City, Nov. 28, 1934.

DENNIS CARNEGIE STODENMIRE, Honea Path, S. C., to Miss Eva Hagan of Due West, Nov. 3, 1934.

CYRUS G. REZNICKER, Antigo, Wis., to Miss Sara Marie Zanna of Gilbert, Minn., Nov. 6, 1934.

JOHN SMITH NEWMAN, McRoberts, Ky., to Miss Billie Sue Brae of Rome, Ga., Nov. 18, 1934.

THOMAS FLOWMAN SPARKS, Vicksburg, Miss., to Miss Gladys Clement Dec. 3, 1934.

JOSEPH M. HARRIS, Los Angeles, to Miss Elinor Rosenwald of Chicago, January 2.

Deaths

Lewis Stephen Pilcher ☉ Upper Montclair, N. J., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1866, adjunct professor of anatomy, Long Island College Hospital, Brooklyn, 1879-1883, professor of surgery, New York Post-Graduate Medical School, 1885-1895, in 1892 president of the Medical Society of the State of New York, in 1900 president of the Medical Society of the County of Kings, member and past president of the American Surgical Association, fellow of the American College of Surgeons, member of the state board of medical examiners, 1913-1928, Civil War veteran, surgeon general of the Grand Army of the Republic in 1915 and commander in chief in 1921, surgeon to the Methodist Episcopal Hospital, Brooklyn, 1887-1907, German Hospital, Brooklyn, 1900-1908 and owner of a private hospital bearing his name 1910-1918, at various times on the staffs of the Wyckoff Heights Jewish, Bushwick, St. John's, Norwegian and Bethany Deaconess hospitals, Brooklyn, founder and editor of *Annals of Surgery*, co-author of the "American Text-book of Surgery" and other works on surgery, aged 89, died, Dec. 24, 1934, of arteriosclerosis.

Jacob Geiger ☉ St. Joseph, Mo., University of Louisville (Ky.) Medical Department, 1872, professor emeritus of surgery, St. Louis University School of Medicine, dean and professor of surgery, Ensforth Medical College, 1883-1914, past president of the Missouri State Medical Association and the Missouri Valley Medical Society, fellow of the American College of Surgeons, in 1884 president of the city board of health, president of the city council of St. Joseph, 1886-1888, formerly bank president, president of the board of managers of the State Hospital, number 2, 1910-1914, on the staff of the Missouri Methodist Hospital, aged 86, died, Dec. 8, 1934, of coronary occlusion.

Katherine Weller Dewey, Pittsburgh, Rush Medical College, Chicago, 1912, associate professor of clinical pathology, University of Pittsburgh School of Dentistry, formerly assistant in obstetrics and gynecology and fellow in pathology at her alma mater, at one time research assistant in the department of histology and oral pathology, and assistant professor of oral pathology, University of Illinois College of Dentistry, Chicago, associate editor of the *Journal of Dental Research* and co-author of a textbook called "Pathology of the Mouth" aged 66, died Nov. 11, 1934, in Bad Nauheim, Germany, of carcinoma of the stomach.

Edward John Hussey ☉ Holyoke, Mass., Harvard University Medical School, Boston, 1904, member of the American Academy of Ophthalmology and Oto-Laryngology, the New England Ophthalmological Society and the New England Otolological and Laryngological Society, fellow of the American College of Surgeons, served during the World War on the staffs of the Holyoke Hospital and the Providence Hospital, aged 61, died, Dec. 4, 1934, of bronchopneumonia.

Henry Byrd Young, Burlington, Iowa Chicago Medical College, 1875, member and past president of the Iowa State Medical Society, past president of the Des Moines County Medical Society, member of the American Academy of Ophthalmology and Oto-Laryngology, aged 83 at various times on the staffs of St Francis Hospital Burlington Protestant Hospital and the Mercy Hospital, where he died, Dec 10 1934, of uremia

Michael Francis McGuire ♂ Montpelier, Vt University of Vermont College of Medicine, Burlington 1895 past president of the Vermont State Medical Society member of the state board of medical examiners member of the New England Surgical Society, fellow of the American College of Surgeons on the staff of the Henton Hospital aged 66 died Nov 20, 1934 of myocarditis and arteriosclerosis

Emmett Terry Wickham, Waterloo, Iowa State University of Iowa College of Medicine Iowa City 1888 Bellevue Hospital Medical College, New York 1891 member of the Iowa State Medical Society past president of the Washington County Medical Society, served during the World War aged 67, died, Dec. 6, 1934, of heart disease

John Francis Healey ♂ Buffalo University of Buffalo School of Medicine, 1916 member of the American Academy of Ophthalmology and Oto-Laryngology served during the World War, on the staffs of the Buffalo City Hospital Buffalo General Hospital and the Children's Hospital, aged 41 died, Nov 30, 1934, of coronary sclerosis

Joseph Patrick Francis Burke, Buffalo, Niagara University Medical Department Buffalo, 1896 served during the World War, formerly on the staff of the Buffalo Hospital of the Sisters of Charity and the Emergency Hospital of the Sisters of Charity founder of the Central Park Clinic aged 60, died, Dec. 14 1934, of myelitis

Paul Hamlin Faucett, Columbia, Tenn Barnes Medical College, St Louis, 1908, member of the Tennessee State Medical Association, past president of the Maury County Medical Society, served during the World War on the staff of the King's Daughters' Hospital aged 49, died, Dec 8 1934, of pneumonia

Saul Rutstein, New York, Columbia University College of Physicians and Surgeons, New York 1921 aged 37, on the staffs of the Mount Sinai Hospital, People's Hospital and the Lebanon Hospital where he died Nov 30 1934, of chronic rheumatic heart disease and bronchopneumonia

John Lindley Henry, Athens, Ohio Columbus Medical College, 1891, member of the Ohio State Medical Association past president of the Athens County Medical Society on the staff of the Sheltering Arms Hospital aged 68, died Dec 7, 1934, of acute cholecystitis and nephritis

Alfred Davis Wetherby ♂ Middletown, Ky, University of Louisville School of Medicine, 1924 aged 35 died Dec 11 1934 in the Kentucky Baptist Hospital, Louisville, as the result of injuries received when the automobile in which he was driving was struck by a train.

John George Miller ♂ Lancaster N Y University of Buffalo School of Medicine, 1876, Bellevue Hospital Medical College, New York, 1877, for many years president of the board of education and bank president aged 79, died, Dec. 6, 1934, of carcinoma of the bladder

Franklin Willard Freeman, Lynnfield Center Mass University of Vermont College of Medicine, Burlington 1889 member of the Massachusetts Medical Society aged 74, died Dec 5, 1934 in the Palmer Memorial Hospital, Boston of diabetes mellitus

Lee Cowan ♂ Atchison, Kan Ensworth Central Medical College, St. Joseph, Mo, 1906, past president of the Atchison County Medical Society, on the staff of the Atchison Hospital aged 52 died suddenly Dec. 9, 1934, in St Louis of heart disease

Frederick Clayton Thiede, Grand Rapids Mich. Detroit College of Medicine and Surgery 1914 aged 45 died Dec 18, 1934, in St. Lawrence Hospital Lansing of injuries received when the hotel in Lansing where he was staying caught fire.

Fred Kirschenbaum, Brooklyn Long Island College Hospital Brooklyn, 1906, on the staffs of the Israel-Zion Hospital the Harbor Hospital and the Brooklyn Eye and Ear Hospital aged 51, died suddenly, Dec. 11 1934 of heart disease

John Geikie Adam ♂ Great Barrington Mass., Trinity Medical College, Toronto Ont., Canada 1900 served during the World War, aged 56, died Dec 1 1934, in Fairview Hospital of mesenteric thrombosis following a cholecystectomy

Ernest Lightfoot Strader, White Bear Lake, Minn., Hospital College of Medicine, Louisville, Ky 1902, formerly superintendent of the Deerwood (Minn.) Sanitarium, aged 58 died Nov 6, 1934, of cerebral arteriosclerosis and nephritis

James P. Dunigan, Sullivan, Mo., Missouri Medical College St. Louis, 1885 member of the Missouri State Medical Association, past president of the Franklin County Medical Society aged 75, died, Dec 2, 1934, of uremia

True Edgecomb Makepeace ♂ Farmington, Maine, Bowdoin Medical School, Portland 1917 served during the World War on the staff of the Franklin County Memorial Hospital, aged 43 died Nov 6, 1934 of myocarditis

William N. Bailey, White Plains Ky., University of Tennessee Medical Department, Nashville, 1884, member of the Kentucky State Medical Association, aged 76, died Dec. 18 1934, in Louisville of cerebral hemorrhage

Benjamin May Baker, Norfolk, Va College of Physicians and Surgeons, Medical Department of Columbia College New York 1889 member of the Medical Society of Virginia, aged 69 died Nov 16, 1934 of uremia

John Calvin Young ♂ Ozark Mo St Louis College of Physicians and Surgeons, 1898, past president of the Christian County Medical Society, owner of the Ozark Sanitarium, aged 74 died Dec 7, 1934 of heart disease

Ellis Herbert Whitehead, Brookings, S D State University of Iowa College of Medicine, Iowa City, 1904 served during the World War, aged 66, died, Dec. 19, 1934, in Sioux Falls of carcinoma of the pancreas

Barbour Dicks Cooper ♂ Mansfield La Vanderbilt University School of Medicine Nashville Tenn 1888 on the staff of the Mansfield Sanatorium, aged 67, died, Oct 19, 1934, of aneurysm and coronary thrombosis

Cephas T. Dodd ♂ Washington, Pa Western Reserve University Medical Department, Cleveland, 1881, past president of the Washington County Medical Society, aged 80, died, Oct 28, 1934

Emma Hortense Gabel, Chicago, Northwestern University Woman's Medical School, Chicago, 1900, aged 73 was found dead Dec. 19, 1934, of chronic nephritis and arteriosclerotic myocarditis

Jesse B. Thompson, Atlantic City N J, University of Pennsylvania School of Medicine Philadelphia, 1888 formerly bank president, aged 77, died, Nov 18, 1934 of carcinoma of the bladder

George Healy Davis, Springfield, Mass College of Physicians and Surgeons, Baltimore, 1897 aged 84 died, Oct. 28, 1934, in the Northampton (Mass.) State Hospital, of arteriosclerosis

Cecil Carrie Kellam, Port Blakely, Wash., Willamette University Medical Department, Salem, 1889, member of the Washington State Medical Association, aged 69, died Dec 7 1934

Charles H. Kisner, Oblong, Ill., Medical College of Indiana, Indianapolis, 1895 member of the Illinois State Medical Society, aged 69, died, Nov 17, 1934 of angina pectoris

Mark W. Harrison, Shadypoint, Okla Arkansas Industrial University Medical Department Little Rock, 1898 aged 76, died, Nov 11, 1934, of fibroid tuberculosis of the lungs

Louis Howe, Cody, Wyo., Medical College of Ohio Cincinnati, 1879 member of the Wyoming State Medical Society, aged 80, died Nov 20, 1934, of arteriosclerosis

Melvin Oliver Swan, Big Stone Gap, Va. (licensed in Virginia under the Exemption Law of 1895) aged 73, died, Nov 19, 1934, of diabetes mellitus

Perrin P. Johnson, Bentonia, Miss (licensed in Mississippi in 1908), aged 64, died, Nov 15 1934, of cerebral arteriosclerosis and chronic myocarditis

Thomas Jefferson Hunter, Trenton S C Louisville (Ky.) Medical College, 1891, aged 73, died, Nov 23, 1934, of arteriosclerosis and myocarditis

Charles A. Barber, Hattiesburg, Miss., Missouri Medical College, St. Louis 1884, aged 81, died, Nov 29, 1934, of nephritis and pneumonia.

Fred O. Bartlett, Rockland Maine, University of Vermont College of Medicine, Burlington, 1887, aged 79, died, Dec. 7, 1934, of heart disease

Oliver R. Edmonds ♂ Tina, Mo., Marion-Sims College of Medicine, St. Louis 1896 aged 70, died, Nov 18, 1934, of coronary thrombosis

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

CITRUS FRUITS AND DERMATITIS

To the Editor—I have a patient who shows a dermatitis on her hands soon after the ingestion of any of the common citrus fruits such as lemons, oranges, limes or grapefruit. Is it possible to desensitize this person? If so kindly give details of such procedure. If this query is published, kindly omit name and address. M D North Dakota

ANSWER.—This query brings up the relationship between contact dermatitis and allergic or atopic eczema. Sufficient evidence is now at hand to enable a clear-cut differentiation, at least theoretically. It is sometimes difficult to separate the two conditions practically, because an exciting agent may act in both ways in some instances. Thus, silk may cause a dermatitis or urticaria by inhalation, it is thought, there can be little doubt that it can also cause an eruption of the skin by direct contact. Citrus fruits (orange, lemon, lime and grapefruit) can likewise cause a skin condition by ingestion; in addition, contact with the peels of these fruits is a frequent cause of dermatitis.

In this case the question Which is the method of action? comes up. To differentiate, if the dermatitis is due to ingestion of the fruit there will usually be found one or more of the following: (1) a history of some allergic condition in other members of the family, especially a parent, (2) some other allergic condition in the patient, e. g., hay fever, bronchial asthma, food upsets with gastro-intestinal symptoms or migraine, (3) a blood eosinophilia, (4) relief by the injection of epinephrine, (5) positive skin tests cutaneous or intracutaneous, (6) a positive passive transfer (Prausnitz-Küstner phenomenon). It is not necessary that all these be present. The protein in the fruit is the exciting factor (allergen or atopen).

On the other hand contact dermatitis is characterized by (1) absence of allergy in the family, (2) absence of other allergy in the patient, (3) no eosinophilia in the blood, (4) no relief by epinephrine, (5) negative skin tests, (6) negative passive transfer and (7) positive contact or patch tests, which in most cases can be obtained by laying pieces of the peel against the skin and leaving them in place for from twelve to seventy-two hours.

All the recent literature tends to incriminate the oily fraction of the peel, not the protein, as the cause of the trouble. This is in accordance with the now established fact that it is the oily fractions of ragweed and other weeds and plants that cause the cases of contact dermatitis, the protein is not a factor in these instances. It is well known, of course, that the protein fraction of the pollen of these weeds is largely, if not entirely, responsible for the symptoms of pollen hay fever and asthma.

As to treatment if the diagnosis is contact dermatitis to peels avoidance should be sufficient, rubber gloves may be necessary. If not sufficient, desensitization may be tried by increasing injections of extract of the oily fraction of the peels. If the condition is one of allergic or atopic dermatitis or eczema, avoidance of ingestion is essential. If thought advisable the patient may be desensitized either orally or hypodermically. Orally orange juice, for example, may be given in increasing amounts, one drop of orange juice in a glass of water the first day then two, three, and so on. Hypodermically injection of a dilute extract of orange juice protein e. g., 1:10,000 with increasing dosages until a strong extract e. g., 1:100 is reached then orange juice can be added in increasing amounts. The other fruits may be administered in a similar manner. Injections of protein extracts will not help cases of contact dermatitis. Injections of oily extracts will not help patients who suffer from allergic dermatitis.

CLOSURE OF FONTANEL

To the Editor—I have recently been informed by a pediatrician that the opinion as regards the normal time of complete closure of the anterior fontanel has undergone a change, namely that early closure at the fourth or fifth month is now considered to be entirely normal. I would appreciate your view on this matter. Also has the liberal use of vitamin D in cases not markedly rachitic any bearing on the question? Please omit name. M D New York.

ANSWER.—The time of complete closure of the anterior fontanel is subject to considerable variation in normal infants. The postnatal involution goes on steadily in normal infants although at widely varying rates in different individuals and apparently more rapidly in girls than in boys. The material quoted in textbooks on which average time of closure is based

was obtained to some extent from the poorer classes of larger American and European cities. An average figure of these data is 0.3 per cent from 3 to 6 months of age. It is probable that the percentages of obliteration are somewhat low for better nourished and more rapidly growing American children. However, it is safe to say that a small percentage of apparently normal children show complete obliteration of the anterior fontanel in the first year of life. From this time on the time of obliteration increases markedly, so that by the eighteenth month the majority are closed. In some of the cases in which closure of the anterior fontanel takes place during the first year, a separate ossification center may arise in the fontanelar membranes and form distinct bone, which may occupy a part or all of the original fontanelar space. With regard to the effect on the time of closure with the liberal use of vitamin D in cases not markedly rachitic, the data of Julius Hess and his associates (*THE JOURNAL*, Aug. 2, 1930, p. 316) may be quoted. From their data they concluded that (1) ordinary doses of viosterol (comparable to the present 250 D) up to 20 drops daily had no effect on the rate of closing of the fontanel but that massive doses, above 210 drops a day, hasten the closure of the fontanel to a moderate extent.

DIFFERENTIAL DIAGNOSIS OF APPENDICITIS IN PUERPERIUM

To the Editor—Please give the differential diagnosis between acute appendicitis ruptured and coming on the following day after a normal delivery resulting in the formation of an abscess and puerperal sepsis developing the following day after a normal delivery and resulting in an abscess. Please give medical and surgical treatment for both. Please omit name and city address. M D, West Virginia.

ANSWER.—The differentiation of acute appendicitis from the onset of sepsis the day following delivery should not be difficult. A history of previous attacks of appendicitis especially during the pregnancy in question may be of some assistance. However, when symptoms of acute appendicitis set in the day after childbirth, the chief argument in favor of this diagnosis is the fact that sepsis, especially with abscess formation, rarely starts within such a short time after the birth of a baby. Furthermore, the symptoms of the two illnesses are generally different. In favor of acute appendicitis are the following signs and symptoms: an acute onset of pain which first centers around the umbilicus and then localizes in the right lower quadrant, pronounced tenderness which is higher than McBurney's point because of the enlarged puerperal uterus, vomiting as a rule, and definite muscular rigidity in the right lower quadrant. In sepsis the onset is not as dramatic as it is in appendicitis and if it is fulminant it rarely results in the formation of an abdominal abscess, because it is usually fatal before an abscess can form. On the other hand, in long drawn out puerperal sepsis cases in which there is pyemia, abscesses may be found almost anywhere in the body, within serous cavities as well as in superficial parts. In a large proportion of cases of acute sepsis, pathologic organisms may be detected in blood cultures, especially if large amounts of blood are used for the cultures. The lochia may show the same organisms as are found in the blood. In most cases in which sepsis sets in early after delivery, there has been evidence of infection during labor. Perforative appendicitis and puerperal sepsis may exist at the same time. Perforation of the appendix with or without the formation of an abscess during pregnancy or the puerperium is a much more serious condition than it is in the nonpregnant state. The reasons for this are as follows: The soft enlarged puerperal uterus moves about more or less freely and interferes with the safe localization of an abscess. It usually prevents abscess formation in the pelvis where the body can better withstand infection than in the upper part of the peritoneal cavity. There is greater absorption of bacteria and toxic products due to the intense congestion in the lower part of the abdomen and pelvis, and thrombosis and phlebitis occur more often. Bacteria in the blood may invade the freshly wounded uterine endometrium especially the placental site, and lead to puerperal infection.

The treatment of an abscess due to either acute appendicitis or puerperal sepsis is not simple unless the abscess is situated in the culdesac. In such a case a simple colpotomy, with the insertion of a large rubber T-tube, will usually secure most satisfactory results. If the abscess is not located in the culdesac but is in the broad ligament, a gridiron incision should be made above Poupart's ligament. This will drain the abscess extraperitoneally. If the abscess cannot be reached through the culdesac or extraperitoneally, the abdomen will have to be opened and the abscess cavity drained in this way. This procedure is the most dangerous of the three operations. Naturally the patient should be isolated before and after operation. Every

effort should be made to build up her resistance by supplying proper food, fluids, fresh air, sunlight, sedatives for pain, soporifics for sleep and blood transfusions when necessary. After operation, the head of the bed should be elevated to favor drainage from the abscess. Ergot should be given to keep the uterus contracted, but some of the constituents of the drug may also have a beneficial effect on the reticulo endothelial system and thus help combat infection. Solution of pituitary also has a helpful effect not only on the uterus but also on other parts of the body. Of course, nursing at the breast should not be permitted. Large amounts of alcohol taken by mouth often prove helpful in cases of puerperal sepsis. Thus far no specific cure for puerperal sepsis has been found, but in many cases antistreptococcus serum is of distinct value, especially if it is used early in the disease.

TREATMENT OF CONDYLOMA ACUMINATA

To the Editor—A woman aged 25 married two years who has had no pregnancies and states that she never had gonorrhea developed multiple venereal warts about the vulva and anus about two years ago shortly before her marriage. A physician cauterized them with electrocoagulation and they returned more severely. Another well known surgeon removed them surgically some time later and within three months they again returned in still larger clusters so that when I first began treating her last November both the labia majora and minora and the entire perineum were covered with cauliflower verrucae. I have attempted to destroy them with caustics and succeeded in destroying some of them, but if an interval of two weeks elapses between treatments they return as bad as ever. Her general and past history is essentially negative. Routine laboratory work is negative. I would greatly appreciate any suggestion offered.

M D

ANSWER—Condyloma acuminata, or cauliflower verruca, is due primarily to a filtrable virus but secondarily is dependent in part on an irritating discharge. Before anything else is done the feces and the leukorrheal discharge should be examined for the presence of *Trichomonas intestinalis* and *vaginalis*. In quite a large number of these cases that is the real cause of the disease, and if it is removed the discharge disappears and the process clears up at once. There have been various preparations recommended for the treatment of *Trichomonas vaginalis* infestation. One that has recently been recommended is the use of a douche of phenol mercuric nitrate, 1 10,000, in water, the douches being used once or twice a day. If vaginal and intestinal parasites are not found to explain the trouble, the use of local cauterization of each single lesion in a painstaking manner with trichloroacetic acid is recommended. In doing this it is necessary to be careful not to get any of the acid on the glabrous skin. The best practice is to cut down the end of an applicator to a point and then apply a small drop of the trichloroacetic acid on each one of the verrucae. Another remedy that works quite well is the use of local application to each lesion of a 40 per cent solution of formaldehyde. Along with this the use of potassium permanganate sitz baths 1 4,000 twice a day will be found of great value. They will tend to keep the parts dry and free from irritation. In treating condyloma acuminata it is well to remember that, as long as a single lesion is left, the filtrable virus is still present and is a potential start of a fresh infestation.

PITUITARY INADEQUACY—FRÖHLICH TYPE

To the Editor—While doing a routine examination on a child 10 years of age I was impressed by his peculiar distribution of fat which is of the female type. He is 55 inches (140 cm) in height and weighs 111 pounds (50 Kg). His physical examination is essentially negative with the exception of the genitalia. The penis is of normal size. The scrotum is very small. The right testicle is present but infantile being about the size of a small bean. The left testicle is absent from the scrotum and cannot be felt in the canal. It is apparently in the abdomen or entirely absent. Is this a true Fröhlich syndrome? Will adolescence correct this condition? Would you advise anything therapeutically? Will this child be sterile? Kindly omit name.

M D Connecticut

ANSWER—This case is one that might be called a modified Fröhlich type of pituitary inadequacy, involving particularly the anterior lobe of the pituitary gland. It would be necessary, in order to add to the information at hand to have a roentgen examination of the skull made with a view of determining the size and character of the sella turcica also a complete examination of the blood, including urea nitrogen, uric acid, creatinine, carbon dioxide tension of the plasma, sugar and calcium, which would throw much light on the changes brought about by the deficient pituitary on other tissues of the body.

Adolescence in a few cases will bring about normality, but if one waits to determine such an eventuality and the result is

negative, much precious time will have been lost which probably cannot be regained. It is therefore advisable to treat the case at once.

The therapeutic agents are

1 Anterior lobe of the pituitary given hypodermically three or four times weekly in doses of 1 cc, beginning with one-half or one-third this dose at first. If there is no untoward reaction such as much local irritation, or much flushing with headache, the larger doses are to be given for two or three months with an interval of a few weeks' rest afterward, before beginning them again.

2 Thyroid medication in small doses, as low as 0.006 Gm. (one-tenth grain) daily unless rapidity of the pulse and other thyroid symptoms supervene.

3 Sodium iodide in saturated solution, a few minims daily, well diluted, during alternate weeks.

4 Anterior lobe of the pituitary gland (desiccated) in doses of from 0.2 to 0.3 Gm two or three times daily, midway between meals on a completely empty stomach. This is to be given in capsules. While there is much discussion at present as to whether this material is effective by mouth, it has been used with good effect.

The urine is to be examined regularly. Should kidney irritation manifest itself by the appearance of albumin and casts, all pituitary medication is to cease.

Later on, if the testicles remain small and undescended the anterior pituitary-like principle from the urine of pregnancy might be given in place of the ordinary anterior pituitary for a few weeks at a time, but usually the anterior pituitary alone is sufficient.

5 Carbohydrates and fats should be reduced to a minimum and the caloric intake reduced to about 1,000 calories three days a week.

The question as to the sterility of the child cannot be answered at present. The chances are that he will not be sterile. But within a year this probably can be determined by the development of the genital system. The best indicator of a successful treatment will be the rapid growth in height of the patient. This causes, among other things an attenuation of the body mass with a resultant diminution of the obese appearance. Also, a beginning pubic and axillary hair growth would indicate development.

WEIGHT REDUCTION

To the Editor—What would be the best method of weight reduction in a patient with the following history. A girl aged 14 years who is about 5 feet 7 inches (170 cm) tall and weighs 201 pounds (91 Kg) has always been large for her age and has always had an excessive appetite. Her parents are both large her father being 6 feet 2 inches (188 cm) and weighing almost 300 pounds (136 Kg) her mother weighing almost 200 pounds. This girl has had no past illnesses except the diseases of childhood and a right sided pyelitis. Investigation of the latter condition showed a very small, poorly functioning kidney on the right side with a kink in the ureter. There apparently is an endocrine dysfunction in this case and I have had the patient on anterior pituitary 2 grains (0.13 Gm) and desiccated thyroid, one-half grain (0.03 Gm) twice daily. The girl's menstrual function is normal. I watched her for two years and kept her on a limited diet at least a part of the time. This diet consisted of approximately 1,000 calories daily. Even when on this diet rather rigidly she lost but little weight. She is a school girl and is moderately active. Please omit name.

M D Iowa

ANSWER—The best method and indeed the only method of weight reduction in this patient, as in all patients regardless of endocrine disturbance, is to cause the energy intake in the form of food to be less than the energy output in the form of heat and physical work. When the energy expenditure of the patient, as determined by a basal metabolic test, is subnormal it is justifiable and advisable to administer a preparation such as desiccated thyroid in order to increase the energy consumption toward the normal. But even this does not insure a loss of weight unless the patient's food intake is insufficient to maintain the normal energy output. If the patient's basal metabolic rate is not below normal and thyroid is given to cause a loss of weight, it is obvious that the drug must be maintained indefinitely unless the patient reduces the food intake when the thyroid is discontinued. Thus in all cases the feeding habits of the patient are the crux of the situation.

It is apparent from the description that the patient, like her parents, has always eaten too much. It is also apparent that, whatever her protestations, she did not adhere to the diet prescribed. Success in her case must depend on the degree in which treatment is made a matter of vital interest and importance to herself so that she will follow prescriptions faithfully. At her age also, much may be gained by inducing her to take more physical exercise in the form of systematic physical training and games.

LYCOPODIUM IN BABY POWDERS

To the Editor—I am rather anxious to know whether lycopodium is a constituent of baby powders and whether to your knowledge it has a beneficial or harmful influence in its use as an external application and also whether or not any allergic reactions have been recorded from its use. Please omit name.

A L R

ANSWER—Lycopodium is the principal genus of the Lycopodiaceae, a family of the fern-allies. There are about 185 species, widely distributed in temperate and tropical climates. The commonest species *L. clavatum*, also known as staghorn moss, has spores, which constitute lycopodium powder.

This powder is used extensively in operating rooms for coating rubber gloves and tubes. It is also frequently used for covering excoriated areas such as the napkin area in infants, and it is sometimes mixed with talc. As such it may be a constituent of some baby powders. As a dusting powder it is probably beneficial although in the presence of open wounds its use is advised against because of the possibility of a resultant lycopodium granuloma, as reported by William Antopol (*Lycopodium Granuloma Arch Path* 16 326 [Sept] 1933).

M M Peshkin (Bronchial Asthma and Other Allergic Manifestations in Pharmacists, *THE JOURNAL*, June 7 1924 p 1854) reported the case of a student of pharmacy who developed coryza and bronchial asthma when lycopodium was inhaled and who gave a huge positive scratch test to lycopodium. Lambright and Albaugh (*J Allergy* 5 590 [Sept] 1934) reported three cases of lycopodium rhinitis one definitely proved in these cases the lycopodium was used in a powder for the hair.

The occurrence must be rare and positive tests to lycopodium are unusual.

Lycopodium is also extensively used in the preparation of fireworks.

TREATMENT OF SYPHILIS

To the Editor—A man aged 46 had a chancre May 30. Treatment with nearsphenamine, 0.6 Gm. was started immediately. He received six injections and then arsenical treatment was stopped because of itching of the palms soles and extremities. He then received ten injections of iodobismutol followed by two weeks of mercury inunctions. Then bismuth arspenamine sulphionate 0.2 Gm. was given intramuscularly once itching of the palms and soles recurred. I then gave him an injection of 0.1 Gm. of bismuth arspenamine sulphionate and again the itching recurred. It seems to me that this patient is extremely sensitive to the arsenicals. Kindly outline a plan of treatment leading to a clinical and serologic cure. The Wassermann and Kahn reactions are both 4 plus. Please omit name.

M D

ANSWER—The treatment this patient has received has been adequate. According to modern standards itching of the palms, soles and extremities is generally regarded as the danger signal of an impending arsenical reaction usually a dermatitis or hepatitis, and calls for a temporary suspension of arsenical treatment or a reduction in dosage. There is no way of avoiding or overcoming hypersensitivity to the arsenicals. It is impossible to outline a plan of treatment in such a situation that will lead to a clinical and serologic cure. Conservatism would suggest a course of one of the heavy metals preferably bismuth salicylate 0.2 Gm. intramuscularly for ten doses at five day intervals followed by a cautious resumption of nearsphenamine in doses not to exceed from 0.3 to 0.45 Gm. for from six to eight injections. In early syphilis continuous or uninterrupted courses of treatment are advisable until the patient has had at least two or preferably three courses of alternate arsenical and heavy metal therapy irrespective of the outcome of the Wassermann and Kahn reactions.

DERMATITIS IN PACKING INDUSTRY

To the Editor—Last week I saw six cases of an acute dermatitis in the employees of a local meat packing house involving principally the skin between the fingers and the lower half of the forearm. This seems to be a new experience for these men who are old at the game but the condition has shown up since they have been working on cattle sent in from the drought section of the West which are being slaughtered for government use. I wondered whether you have had inquiries from other sections relative to the same disease and also whether you have any suggestions to offer as to what the condition might be other than an acute dermatitis of exogenous etiology. Please omit name.

M D Ohio.

ANSWER—There is an acute dermatitis which involves the hands and forearms of persons engaged in dressing slaughtered animals, which is not a rare condition. Certain individuals are more susceptible than others. Again those who develop acute dermatitis while dressing one species of animals may not be affected while dressing another species. Because of this fact some believe it to be the result of a sensitization to an animal substance contained in the intestinal tract acting as an

irritant. The disease is perhaps more frequent in the winter than in the summer months.

No scientific investigations have been conducted to determine the cause of this condition, therefore, but little of pathologic value is known. Among those engaged in dressing swine, it is known as "hog itch."

The inquiry states that acute dermatitis was seen in six men who were engaged in dressing slaughtered cattle. They were accustomed to doing this kind of work, yet the dermatitis was a new experience to them. This being the case, perhaps the acute dermatitis noticed in these cases is different from the one just mentioned.

PERNICIOUS ANEMIA AND CHOLECYSTITIS

To the Editor—A man of about 60 was run over by an automobile with resulting several fractures of the ribs and hemothorax. About ten days later a very severe attack of cholecystitis developed with perforation and localized abscesses. Operation was delayed for a week because of the fractures of the ribs and the poor general condition of the patient. Drainage of the abscesses and removal of the gallbladder were followed by a most remarkably smooth convalescence and there have been no residual abdominal symptoms. About six months later the patient presented himself with a severe pernicious anemia to which he has responded very rapidly with large doses of liver. Is there any connection between the trauma and the cholecystitis? Are the cholecystitis and the subsequent surgery responsible for the pernicious anemia? What available literature is there on the question of pernicious anemia following trauma? Please omit name and address.

M D New York.

ANSWER—While injury to the gallbladder may be followed by cholecystitis, it is of course not possible to say that there was any specific relationship in this case. It is extremely improbable that there was any etiologic connection between the cholecystitis and the pernicious anemia. Although there is a rather high incidence of gallbladder disease in pernicious anemia (Bethell, F H and Harrington, B D. The Incidence and Significance of Disease of the Gallbladder and Liver in Pernicious Anemia, *Am J Digest Dis & Nutrition* 1 256 [June] 1934), there is no evidence that it is a causative factor. Some types of liver damage (cirrhosis) may produce a blood picture somewhat similar to that found in pernicious anemia (Goldhamer, S M, Isaacs Raphael, and Sturgis, C. C. The Role of the Liver in Hematopoiesis, *Am J M Sc* 188 193 [Aug] 1934). The only type of "trauma" that has been reported as being followed by pernicious anemia is the surgical resection of the stomach or too great reduction in the intestinal length by anastomosis. This literature has been summarized by S M Goldhamer (*The Pernicious Anemia Syndrome in Gastrectomized Patients Surg Gynec & Obst* 57 257 [Aug] 1933).

STAINS ON TEETH

To the Editor—The upper central and lateral incisors of a girl aged 3½ years in excellent health have become decidedly black. The parents and curiously the child are much concerned about it. The only article of food she dislikes and rebels against is milk otherwise she is on a general diet. A scholarly dentist who examined her maintains that nothing can be done to check this condition of a jet black discoloration. It occurs to me that the condition is evidence of an unbalanced diet or certain type of vitamin deficiency or some systemic aberration. Regardless of what the underlying factors may be the selective tendency for the upper teeth favors a local rather than a systemic etiology. If this is a vitamin deficiency how may this elective localization be explained? Your discussion of the etiology and method of procedure to combat this condition will be greatly appreciated. Please omit name.

M D New York.

ANSWER—In general, as Bunting says, "stains on teeth have no pathological significance other than they indicate a relative degree of malhygiene and give to the mouth an unsightly appearance." With respect to black stain or discoloration this is only partly true since a black stain may be found in mouths that have excellent care, and general discoloration of a tooth is frequently suggestive of death or advanced degeneration of the pulp. Little is known about the black stain that is superficial on the lateral surfaces of teeth or is close to the gum line, except that it is removed with ease and tends to recur promptly. Some of the black stains are of metallic origin, from deposits containing iron silver mercury or other metals. Deep discoloration of a whole tooth as a rule is caused by changes in the pulp. Mottled enamel is sometimes black but is not found in temporary teeth. Since the teeth involved in this case are temporary teeth that will be lost comparatively early no form of radical treatment is indicated unless frank pathologic changes can be demonstrated. The pulps should be tested for vitality. Roentgenographic examination may be made although it is unlikely that additional information will be gained in this way. Since vitamins diet and systemic dis

erse have not been connected with this condition, the patient's limited consumption of milk and general health are not significant, and the treatment, in the absence of any further information as to the etiology of the discoloration, is confined to cleaning and polishing the visible surfaces of the discolored teeth

ACIDOGEN NITRATE

To the Editor—Can you give me any information regarding Acidogen Nitrate (Abbott)? This preparation is put up in capsules and about eight are given each day with meals to dilute its irritating action. The drug is supposed to diminish the body alkalinity (pH). Is the drug harmful? Has it any therapeutic value? M D Jackson Mich

ANSWER—According to the catalogue of the Abbott Laboratories, Acidogen Nitrate appears to consist of 3 grains of carbamide nitrate (urea nitrate) per capsule.

Although the manufacturers propose the use of the preparation for 'adjunct therapy in various allergic conditions' hay fever, hyperesthetic rhinitis, migraine, chronic urticaria, serum disease, allergic gastro intestinal affections (diarrhea) and asthma with productive cough critical textbooks of pharmacology which have been examined do not refer to such use of urea or nitric acid. The claims do not do credit to a reputable pharmaceutical concern.

The ingestion of urea nitrate would be expected to yield an acid reaction. Nitric acid has been extolled by some physicians for the treatment of asthma and related conditions, but the treatment has never received general acceptance.

Acidogen Nitrate Capsules have not been accepted for inclusion in New and Nonofficial Remedies nor has the Abbott Laboratories requested the Council to consider the product.

CLAIMS FOR ANAYODIN

To the Editor—A circular letter from Ernst Bischoff Company on Anayodin contains the following statement: ANAYODIN comes nearest to being the ideal amebicide. It safely rids the intestinal tract of amoebae usually with a single treatment of four pills three times a day for eight days. Does this statement express the present consensus of opinion? Is the product accepted by the Council?

M D Ohio

ANSWER—The statement is far too optimistic. There is no known amebicide that can be depended on to eradicate *Endamoeba histolytica* from the intestinal tract with a single course lasting eight days. Such propaganda is exceedingly unfortunate.

Anayodin is a proprietary name for chiniofon-N N R. The Council on Pharmacy and Chemistry has considered Anayodin and found it unacceptable for New and Nonofficial Remedies.

Chiniofon is recognized as one of the useful amebicides provided it is used in sufficient dosage over a sufficient length of time and the result is checked by repeated examinations of the stools. Frequently it is found advisable to employ alternating courses of chiniofon and other amebicidal drugs. Our correspondent is referred to the Query and Minor Note, 'Treatment of Amebiasis' THE JOURNAL, June 23, 1934 page 2134.

The Council has accepted the following brands of chiniofon: Chiniofon Searle and Chiniofon-Winthrop.

DOG DISTEMPER AND HUMAN PNEUMONIA

To the Editor—A client's sister developed pneumonia which terminated fatally while caring for some dogs in her kennels that were suffering from canine distemper. A specialist was called in consultation and he emphatically stated that the condition was due to an infection received from the dogs. From the description given and the veterinarian's diagnosis it is reasonable to believe that the dogs were infected with distemper complicated with the secondary organism of the pulmonary type (*Alcaligenes bronchisepticus-canis*). Can you give me any information or references that I may read on this subject? I realize that the information that I have given you is meager but it is all that was given to me. From personal observations I have reason to doubt that this condition is probable.

JOHN H. RUST D V M Wellesley Hills, Mass

ANSWER—Dog distemper is caused by a filter-passing virus that is regarded as not pathogenic for man. *Bacillus bronchisepticus* may be associated with dog distemper as a secondary invader of the respiratory tract. This bacillus, also called *Alcaligenes bronchisepticus*, 'has been found associated with infections of the respiratory tract in guinea-pigs, dogs and man' (Zinsser, Hans, and Bayne-Jones, Stanhope. A Textbook of Bacteriology, ed 7, New York, D Appleton-Century Company, 1934 p 650). Whether it can cause fatal pneumonia in man is not known. The best comprehensive article on dog distemper is by P P Laidlaw (A System of Bacteriology in Relation to Medicine, London, His Majesty's Stationery Office 7 232, 1930).

PHYSICAL QUALITIES OF FECES

To the Editor—Physiologists state that normal stools float. Can you tell me what the significance is of stools that habitually sink in water for years no matter what the diet is? What is the bacterial content of the stool? I have read somewhere that they compose two thirds of the bulk. Patients under my instruction have noticed the stools sometimes extruding bubbles of gas and sinking. Do you suppose that this is due to dissociation of gases caused by decrease in temperature or more probably that the fecal matter contains gases that are more readily dissociated than normal? I have noted that stools, particularly in patients with pernicious anemia have the property of sinking in water. These patients are supposed on account of the achylia to have an excess of putrefactive and other organisms according to Hurst throughout the intestinal tract. On this account the stools are more heavily laden with bacteria. Then again while the oxygen is almost absent in the large intestine it is present higher up in normal individuals but the erythrocytes in pernicious anemia patients are deficient in numbers and efficiency so that the interchange of gases is dislocated. These are questions that I have not seen discussed in the literature and I would appreciate it if you could elucidate some of these problems or tell me where I would be likely to find answers. THOMAS I O DRAIN M D Philadelphia

ANSWER—No medical significance can be attached to the buoyant properties of stool.

The bacterial content of the stools averages one third of the dry weight.

Gases present in stools are formed as a result of bacterial action fermentation and putrefaction. When gaseous stools are submerged, the gases will be released and bubble to the surface. The ease and rapidity with which this is accomplished depends on the adhesive qualities of the stool.

BRONCHIAL ASTHMA

To the Editor—I have an inquiry from a patient from New York City relative to this climate in his particular case. He writes me that he has a nonallergic bronchial asthma and wants to know whether the climate of northern Alabama would be more satisfactory than his present location over the next six months period. I would appreciate any information that you can give me in this connection. Please omit names if published. M D Alabama

ANSWER—If it is true that the bronchial asthma is non-allergic a point that one should be certain of, the climate of northern Alabama, or for that matter any other southern region, will probably be quite satisfactory for the next six months period.

It is well known that the infectious type of bronchial asthma is often benefited by moving to a warmer climate where infections are less common and where there is more exposure to sunshine and fresh air. It is equally well known that persons with pollen asthma often do poorly when sent to southern regions where pollen is present most of the year.

IMPROVEMENT IN HEALTH AFTER EMOTIONAL UPSET

To the Editor—A woman who had been a chronic invalid for years having a chronic suppurative otitis media and repeated respiratory infections, which kept her in bed for weeks at a time suddenly had a great grief which inside of a week reduced her to death's door. The grief passed and she recovered. Since that time she has gradually become stronger and more resistant to disease. The chronic suppurative otitis media has ceased discharging and if she does get a cold or other infection she promptly throws it off and is gradually gaining in weight and feels good. Is there anything in the shock of grief that may cause this change in the human body? Please omit name. M D., Ohio

ANSWER—There are many changes in body metabolism associated with emotion (Cannon. Bodily Changes in Hunger, Fear, Rage and Pain). It is possible that these might be a factor that could influence the bodily resistance to infections. However, one would hesitate to assert positively that this is true in this case. Other factors might be more important. For example, severity of emotional reaction in some instances is an indication of ambivalence in the cause for the emotion—something both feared and desired. In the absence of facts it is obviously impossible even to suggest that this might be true in this case but improvement in general health may well follow relief from conflicting emotions.

ISCHIORECTAL ABSCESS

To the Editor—Will you be kind enough to let me know what is the best medical or surgical treatment for an ischiorectal abscess of ten years duration? JOSEPH DIAMONDSTEIN M D Calumet City Ill

ANSWER—The treatment for ischiorectal abscess is surgical. The duration of the disease no doubt has made a great deal of fibrous tissue, which will delay healing.

The abscess should be opened widely and the fibrous tissue excised as widely as possible without interfering with the function of the rectum or anus. It should be packed wide.

open, including all the pockets or sinuses. The packing should be changed every few days so that the cavity will heal from the bottom. If there is an opening into the rectum below the sphincters or below the internal sphincter, it should be opened widely. If the opening is above the internal sphincter one should avoid cutting this sphincter until a second operation, if the sinus persists.

INSULIN AND NEURITIS

To the Editor—A woman aged 78 who has had diabetes for several years has been taking insulin 12 10 and 12 units of U 40 for the past fifteen months which has been sufficient to keep the urine sugar free on a sufficiently sustaining diet. She weighs 190 pounds (86 Kg). The pulse is 78 regular and normal. The systolic blood pressure is 130 diastolic 80. For the past nine months she has had neuritis in the right hand and forearm which has gradually become worse. The skin or surface temperature of the right hand and forearm is two or three degrees lower than that of the left but there has been no blanching or cyanosis. Roentgen examination shows no unusual sclerosis or arthritis. The blood picture is normal except that the blood sugar has been rather persistently elevated averaging around 200 or over. Six weeks ago an attempt was made to drive down the blood sugar by increasing the doses of insulin further control of diet, and dextrose intravenously controlled by insulin. The carbon dioxide has been consistently around 53, there is no acetone. Hot olive oil baths were used on the hand. There was slight improvement in the neuritis but this has not been progressive. Can you suggest any addition to the treatment or any other line of treatment? Please omit name.

M D Ohio

ANSWER—In a patient 78 years of age it is at times extremely difficult to decide whether pain such as described is due to neuritis, arteriosclerosis or a combination of the two. It is now pretty generally agreed that the elderly diabetic patient with arteriosclerosis does not always respond to insulin treatment as well as does the younger patient. It would seem wise, therefore, in the present instance to suggest that the patient be kept on a moderately high diet, well balanced, and that the insulin be omitted temporarily. Whereas this procedure would not be entirely accepted by all writers, it has been tried and has in certain hands given excellent clinical results.

DIURETICS—PROTEINS METABOLIZED AS SUGAR

To the Editor—Which of the purine base diuretics is most used and probably best in cardiac cases? What percentage of proteins are metabolized as sugar? Please omit name.

M D Pennsylvania

ANSWER—It is difficult to give a categorical answer to the first question. Caffeine is probably the most widely used purine base diuretic. However, theobromine sodium salicylate is also widely used and is generally regarded as more effective.

The percentage of protein metabolized as sugar, according to experimental data, lies between 46 and 58 per cent. The former figure is based on the work of Minkowski and von Mering on depancreatized dogs. The latter figure is based on the work of Lusk and his school on phlorhizinized dogs and has been generally accepted in this country as the basis for clinical calculations.

PELLAGRA OR ECZEMA

To the Editor—A woman, aged 28 who has been in excellent health all her life and is now in good health has eczematous patches on the inner aspect of both arms. She has had patches on the back of the legs in the groins and on the sides of the neck. These eruptions are always bilateral. I would call it pellagra but for the fact that she is in good health and full of pep. Is there any other disease except pellagra that has bilateral manifestations? If so what? Please omit name.

M D Mississippi

ANSWER—Most skin diseases of internal origin, as eczema, seborrheic dermatitis, lichen planus and psoriasis, to mention a few, are distributed symmetrically. The patches in the case mentioned are described as eczematous. Do they itch? If so, they may be patches of eczema. The distribution is typical for that disease but not for an ordinary case of pellagra.

BORN BLIND

To the Editor—In a person said to be 'born blind' what is the posture of the eyelids—open or closed? And do the tear ducts function so that tears are shed? Please do not publish my name.

M D, Missouri

ANSWER—"Born blind" may mean any one of a dozen different things, and the position of the eyelids depends entirely on the condition that produces the lack of vision. In microphthalmus, for instance, the lids are closed, whereas in the atrophy of hydrocephalus the lids are open.

It is presumed that by 'tear ducts' is meant 'tear glands'. If so they do function normally.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *Written (Group B candidates)* The examination will be held in various cities throughout the country April 29. *Oral (Group A and Group B candidates)* New York, June 10. Sec. Dr. C. Guy Lane, 416 Marlborough St. Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written (Group B candidates)* The examination will be held in various cities of the United States and Canada March 23. *Final oral and clinical examination (Group A and Group B candidates)* Atlantic City N. J. June 10-11. Group B application lists close Feb. 23 and Group A application lists close May 10. Sec. Dr. Paul Titus 1015 Highland Bldg. Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY Philadelphia, June 8 and New York June 10. Application must be filed at least sixty days prior to date of examination. Sec. Dr. William H. Wilder, 122 S. Michigan Blvd. Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY New York June 8. Sec. Dr. W. P. Wherry 1500 Medical Arts Bldg. Omaha.

CALIFORNIA Reciprocity San Francisco Jan. 16. *Regular* Los Angeles Feb. 4. Sec. Dr. Charles B. Pinkham 420 State Office Building Sacramento.

COLORADO Denver Jan. 18. Sec. Dr. Wm. Whitridge Williams 422 State Office Bldg. Denver.

CONNECTICUT Basic Science New Haven Feb. 9. *Prerequisite to license examination* Address State Board of Healing Arts 189½ Yale Station New Haven.

DISTRICT OF COLUMBIA Washington Jan. 14-15. Sec. Commission on Licensure, Dr. W. C. Fowler 203 District Bldg. Washington.

ILLINOIS Chicago Jan. 22-24. Superintendent of Registration, Department of Registration and Education Mr. Eugene R. Schwartz, Springfield.

MINNESOTA Minneapolis Jan. 15-17. Sec. Dr. E. J. Engberg, 350 St. Peter St. St. Paul.

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* The examinations will be held in medical centers where there are five or more candidates, Feb. 13-15. Ex. Sec. Mr. Everett S. Elwood 225 S. 15th St. Philadelphia.

NEVADA Reciprocity Feb. 4. Sec. Dr. Edward E. Hamer Carson City.

NEW YORK Albany Buffalo New York and Syracuse, Jan. 28-31. Chief Professional Examinations Bureau Mr. Herbert J. Hamilton, Room 315 Education Bldg. Albany.

SOUTH DAKOTA Pierre Jan. 15-16. Dir. Division of Medical Licensure Dr. Park B. Jenkins Pierre.

VERMONT BURLINGTON Feb. 13-15. Sec. Board of Medical Registration Dr. W. Scott Nay Underhill.

WASHINGTON Seattle Jan. 14-16. Dir. Department of Licenses Mr. Harry C. Huse Olympia.

WYOMING Cheyenne Feb. 4. Sec. Dr. W. H. Hassed Capitol Bldg., Cheyenne.

Tennessee June Examination

Dr. H. W. Qualls, secretary, Tennessee State Board of Medical Examiners, reports the written examination held in Knoxville, Memphis and Nashville, June 14-15, 1934. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. One hundred and eight candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad	Number Passed
Stanford University School of Medicine	(1933)		1
Tulane University of Louisiana School of Medicine	(1934, 2)		2
Johns Hopkins University School of Medicine	(1931)		1
St. Louis University School of Medicine	(1934)		1
University of Rochester School of Medicine	(1933)		1
Meharry Medical College	(1932), (1934, 32)		33
University of Tennessee College of Medicine	(1934, 28)		28
Vanderbilt University School of Medicine	(1933) (1934, 40)		41

Seventeen physicians were licensed by endorsement from January 9 to August 30. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad of
College of Medical Evangelists	(1933)	California
Tulane University of Louisiana School of Medicine	(1926) N B M Ex.	
(1930) Mississippi		
University of Maryland School of Medicine and College of Physicians and Surgeons	(1933)	N Carolina
Harvard University Medical School	(1929)	Michigan
Detroit College of Medicine and Surgery	(1930)	Michigan
St. Louis University School of Medicine	(1931)	Missouri
University of Nebraska College of Medicine	(1920)	Nebraska
Eclectic Medical College Ohio	(1920)	Indiana
University of Oklahoma School of Medicine	(1932)	Oklahoma
University of Pennsylvania School of Medicine	(1928)	N Carolina
Woman's Medical College of Pennsylvania	(1926)	Penna
University of Tennessee College of Medicine	(1927)	Arkansas
(1930) Mississippi		
Vanderbilt University School of Medicine	(1932) N B M Ex.	
Medical College of Virginia	(1931)	Virginia

Iowa June Examination

Mr H W Grefe director, Division of Licensure and Registration, reports the written examination held by the Iowa State Board of Medical Examiners in Iowa City, June 5-7, 1934. The examination covered 8 subjects and included 100 questions. An average of 75 per cent was required to pass. Seventy-six candidates were examined all of whom passed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Northwestern University Medical School	(1934)	85	4
State University of Iowa College of Medicine	(1934)	89	9
81.3 * 82 * 83.5 * 83.9 * 83.9	84	84.1 * 84.4 *	79.6
84.6 * 84.9 * 85 * 85.1 * 85.3 * 85.5 * 85.5	86	86.1 * 86.6 *	
85.8 * 85.8 * 85.8 * 85.9 * 85.9 * 86 * 86.1	86.8	86.9 * 86.9 *	
86.3 * 86.3 * 86.4 * 86.5 * 86.5 * 86.8 * 86.9	87	87.3 * 87.3 *	
87 * 87 * 87.1 * 87.1 * 87.1 * 87.3 * 87.3	88	88.1 * 88.1 *	
87.4 * 87.4 * 87.9 * 87.9 * 87.9 * 88 * 88.1	88.4	88.5 * 88.5 *	
88.3 * 88.3 * 88.4 * 88.4 * 88.4 * 88.5 * 88.5	89	89 * 89.4 *	
88.5 * 88.6 * 88.6 * 88.8 * 89 * 89 * 89.4	90	90.1 * 91.4 *	
89.9 * 90 * 90 * 90.1 * 91.4 * 92.8 *	(1925)	85	4
Harvard University Medical School	(1933)	83	5
University of Nebraska College of Medicine		86	9

* License withheld pending completion of internship

Book Notices

Outline for Psychiatric Examinations. Edited by Clarence O Cheney M.D. Director New York State Psychiatric Institute and Hospital. Cloth Price \$1.50. Pp 134. Published by the New York State Department of Mental Hygiene Albany. Ulten State Hospitals Press 1934.

This is a revision of the Guides for History Taking and Clinical Examination of Psychiatric Cases edited in 1921 by Dr George H Kirby. Dr Cheney, the successor of Dr Kirby as director of the New York State Psychiatric Institute and Hospital, assisted in the preparation of the 1921 edition, which itself was modified from the original set of clinical guides devised by Dr Adolph Meyer some fifteen years previously for use in the New York State hospitals. In this revised work Dr Cheney has made a number of amplifications and alterations in keeping with the increased use to which the Guides has been put by medical students and psychiatrists in various fields of activity. The same division of material as in Kirby's edition is maintained, and, except for minor variations, that work has been kept relatively intact. There are sections on the psychiatric anamnesis, on special personality study, on physical and mental examinations, on body development and endocrine glands and on examination of uncooperative patients. Particular emphasis has been laid, in the section on family and personal history, on personality studies. A noteworthy addition is the chapter on the psychiatric examination of children and equally significant is the classification of psychiatric problems in children. The classification of mental disorders, which was approved by the American Psychiatric Association at its 1934 meeting with definitions and explanatory notes compiled by the editor, has been included. The book contains fifty pages more than the earlier work and will undoubtedly continue to serve as the best of its kind for the practical handling of the psychotic patient by both the intramural and the extramural psychiatrist.

Das Glaukomproblem und die Glaukomoperationen. Von Dr Leopold Müller Primärarzt im Kaiserin Elisabethhospital in Wien. Boards Price 8 marks. Pp 103 with 1 illustration. Vienna Wilhelm Mauclrich 1934.

The first six pages of this booklet, in which the author emphasizes the necessity of differentiating between true or primary glaucoma and secondary glaucoma, are of inestimable value. After that the remaining sixty-one pages of part I leave much to be desired. All true glaucomas are divided into JGLK comprising what is recognized as inflammatory or, better, uncompensated glaucoma, and G L K spl, which includes glaucoma simplex or compensated glaucoma and a combination of the two called KGLK. All other forms of glaucoma are relegated to the medieval trashbox. The author attributes JGLK to a congenital predisposition plus an excessive secretion from the ciliary gland (vide Duke Elder) and an excess in the LO (liquor ophthalmicus) of a mythical substance that he calls zykin, which is supposed to be somewhat akin to the principles of the posterior pituitary lobe. Closure of the

chamber angle is accounted for by an edema of the sclerotic fibers of the pectinate ligament, "which can never be proved." G L K spl, however, is due to excessive secretion from that selfsame ciliary gland but without any involvement of the controlling nerves, and consequently the physical action is different. The characteristic excavation of the nerve head is not due to pressure he concludes, but to a mysterious infiltration of the nerve head by liquor ophthalmicus, with consequent formation of Schnabel caverns and ectasia. Much emphasis is placed on some twenty-odd cases of G L K spl without hypertension that he has observed during his lifetime. Throughout these sixty-one pages are numerous statements emphasized by capitalizations. The majority of these do not agree with the modern concepts of glaucoma, and those who are familiar with the evidence shown by the painstaking experimental work of modern investigators will wonder at the temerity of the author. The second part of the book is devoted to the surgery of glaucoma and is confined to discussion of cyclodialysis, Müller's modification of the Elliot trephining operation, and the classic iridectomy. The medical treatment of glaucoma is dealt with in a rather summary fashion and in statements that are so positive that one is led to wonder whether or not a more benign form of glaucoma attends the Kaiserin Elisabethhospital than other hospitals abroad and in this country. However, several interesting statements appear. One is that cyclodialysis is so uniformly successful in controlling hypertension subsequent to cataract operation that in malignant G L K spl the lens should be extracted even though it is not cataractous, the operation to be followed later by a cyclodialysis. Hofrat Dozent Dr Leopold Müller has published some nice pieces of work, but this cannot be included among them.

A Textbook of Medical Diseases for Nurses Including Nursing Care. By Arthur A Stevens A.M. M.D. Honorary Consulting Physician to Philadelphia General Hospital and Florence Anna Ambler B.S. R.N. Principal School of Nursing Samaritan Hospital Troy New York. Second edition. Cloth Price \$2.75. Pp 513 with 9 illustrations. Philadelphia & London W B Saunders Company 1934.

This book gives a brief but comprehensive outline of medical diseases and study for the graduate nurse. The volume is intended as a reference work. Each disease is defined, with the etiology, pathology, symptoms, complications, diagnosis and prognosis, together with an outline of treatment and nursing care. The authors state that their object in writing the book is, first, the education of the nurse in a potential knowledge of those diseases and processes with which she will have to deal and, second, training in actual nursing care of the patient, and the intelligent execution of the physician's orders. There are some valuable procedures outlined in the appendix which have been found satisfactory after trial in the Philadelphia General Hospital.

Outline of Clinical Psychoanalysis. By Otto Fenichel M.D. Translated by Bertram D Lewin M.D. and Gregory Zilboorg M.D. Cloth Price \$5. Pp 492. New York Psychoanalytic Quarterly Press W W Norton & Company Inc 1934.

In this book Fenichel has brought together the psychoanalytic concepts of the clinical varieties of neuroses and psychoses into a systematic treatise. It thus constitutes a systematic (and the first) textbook of clinical psychoanalytic psychopathology. The material has been collected from an enormous literature combined with the personal clinical experience of the author, the fundamental points of distinction between the different types are illustrated by brief statements of analytic interpretation of actual cases. The book undoubtedly will do much to crystallize the concepts of clinical psychoanalysis and to bring them into correlation with medical practice. It has great value for the practicing analyst and the student of psychoanalysis, rendering available conveniently the work of many authors. For an intelligent reading of the book, however, a general knowledge of the principles and theories of formal psychoanalysis is necessary. As Fenichel says in the introduction 'we must assume that our readers are acquainted with the methods of psychoanalysis as well as with the general theory of the neuroses.' Conceding this limitation, it is difficult to praise the book too highly. The work has been done excellently and even though he may not subscribe to the views expressed, the reader cannot fail to obtain a far better orien-

tation as to the medical significance of psychoanalysis. Criticisms are offered and gaps in data are frankly noted, and at the same time there is no effort to oversimplify or to minimize the complexities of the problems discussed.

Allergische Diathese und allergische Erkrankungen Von Dr. Hugo Kämmerer, Professor der Universität München. Second edition. Paper. Price 26 marks. Pp. 309 with 4 illustrations. Munich. J. F. Bergmann. 1934.

This volume constitutes one of the best German works on allergy. The book is divided into two sections: the first section dealing with the general principles of allergy and the second with the allergic diseases. Not only are the orthodox allergic diseases such as hay fever, asthma, urticaria, eczema and hyperesthetic rhinitis discussed but full discussion is given in individual chapters to such manifestations as allergic gastrointestinal disturbances, migraine, epilepsy, toxemias of pregnancy, gout, arthritis, infections, the kidneys in relation to allergy, the heart and vascular disturbances. The author makes no claim that these conditions should all be regarded as allergic; he merely attempts to correlate the available literature and opinions. The book abounds with references and American literature is given fair credit. One might say that it has too many references and too little of the author's opinions from his own experiences. As is customary in German medical literature there is no hesitancy in mentioning and recommending patent medicines. This work is a reflection of the rapidly growing interest in the field and technique of allergy in Germany—an interest which until recent years had been almost monopolized by American physicians. One who wishes actual facts and authoritative directions as a guide in the care of allergic diseases should read first one of the more simple textbooks on allergy which give a more direct approach to the subject. For reference reading and for the purpose of correlating the modern literature on allergy this book not only serves a definite purpose but is one of the best in the field.

Diseases of the Skin. A Handbook of Dermatology for Practitioners and Students. By S. Ernest Dore, M.A., M.D., F.R.C.P., Consulting Physician for Diseases of the Skin, St. Thomas's Hospital, and John L. Franklin, M.A., M.D., M.R.C.P., Assistant Physician for Diseases of the Skin, Westminster Hospital. Cloth. Price \$5. Pp. 410 with 46 illustrations. New York. D. Appleton-Century Company, Inc. 1934.

The last edition of Sir Malcolm Morris's handbook published in 1907, will be remembered as a small rather fat green volume of some 700 odd pages with about seventy illustrations, some in color. It was a readable book with a strong imprint of the author's personality. The revision of Sir Malcolm's book by Dore and Franklin has by a process of condensation produced a new and smaller volume which can be conveniently carried in the coat pocket. Many new dermatoses have been included; the rarer ones in fine print and the newer concepts of dermatologic conditions have been incorporated in the text. One misses some of the old prints of leprotic and syphilitic British subjects that embellished Sir Malcolm's book, and economy evidently has dictated the omission of the colored plates. Nevertheless the practitioner will find this small volume useful for a rapid review of the subject.

Het chorionepithelioma malignum van den man en zijn biologische beteekenis. Door Bernardus Johannes Christiaan den Hartog. Academisch Proefschrift. Ter Verkrijging van den graad van doctor in de geneeskunde aan de Universiteit van Amsterdam op gezag van den rector magnificus Mr. I. H. Hilmans, hoogleeraar in de faculteit der rechtswetenschappen, in het openbaar te verdedigen op Woensdag 5 Juli 1933 des namiddags 3 uur. Paper. Pp. 260 with 122 illustrations. Amsterdam. J. H. de Bussy. 1933.

On the basis of seven personal cases, the author concludes that chorionepithelioma is a product of the male germ cells and that the ripe ovum does not possess the power to originate epithelium, this power being acquired only after fecundation has taken place. He discusses extensively the facts concerning malignant chorionepithelioma of the male and closes his work with an exposition of the theories on histogenesis of teratomas of the genital glands and their origin from the germ cells and on the formation of chorionepithelioma from male differentiated germ cells. The thesis is well written in fluent language, covers the subject thoroughly and competently, and offers a number of excellent illustrations.

Nursing Schools Today and Tomorrow. Final Report of the Committee on the Grading of Nursing Schools. Paper. Price \$2. Pp. 268. New York. 1934.

The function of the committee, as stated in the introduction, was "the study of ways and means for insuring an ample supply of nursing service, of whatever type and quality is needed for adequate care of the patient, at a price within his reach." In the second chapter there is presented a wealth of statistical information demonstrating conclusively that there is an overproduction of nurses. The figures showing the increase in the number of nurses during thirty years and the ratio of nurses to population are startling and convincing. In spite of this enormous surplus of nurses with average training, the report declares that there are not enough nurses available to fill positions having higher requirements. "We need trained nurses with a broader experience and better basic professional background. We need more really skilful, professionally minded bedside nurses. We need nurses who have taken specialized training following R.N. to fit them for special responsibilities." This statement, in substance, is reiterated throughout the report but the evidence on which it is based is nowhere disclosed. The committee proposes as a solution of the problem of overproduction that hospitals close their training schools and employ graduates to care for their patients. The feasibility of this plan is shown in considerable detail. The recommendation is pertinent and practical and, should it be extensively adopted by hospital authorities, the committee will have made a notable contribution to the readjustment of our economic life.

The Jew in Science. By Louis Gershenfeld. Cloth. Price \$9.75. Pp. 224. Philadelphia. Jewish Publication Society. 1934.

After some introductory chapters, which provide a brief history of the beginning of civilization and particularly of the early contributions of the Jewish people, the author discusses the development of science up to the time of Maimonides and then to the period of the Renaissance and our modern period. The second half of his book is devoted to a listing of significant names of Jewish workers in many fields, including an extensive section on medicine. A final section is devoted to American Jewish scientists. There are also brief descriptions of recently established Jewish institutions of learning. The book is a useful reference work.

Die Haut und Geschlechtskrankheiten. Eine zusammenfassende Darstellung für die Praxis. Herausgegeben von Prof. Dr. Leopold Arzt und Prof. Dr. Karl Zieler. Lieferung 16. Band I. Physiologie. Von Prof. Dr. Hans Königstein. Das Hautpigment. Von Prof. Dr. Herbert Fuhs. Paper. Price 9.60 marks. Pp. 141-330. Berlin & Vienna. Urban & Schwarzenberg. 1934.

Königstein of Vienna devotes 168 pages to a comprehensive discussion of the fundamental principles of the physiology of the skin. All the newer methods of testing cutaneous function are discussed, among them the dermo reaction to different stimuli, pharmacodynamic methods, capillary microscopy and electrophysiologic test methods. There are chapters on the skin as a protective organ and as an excretory agent, on temperature regulation and on metabolism. Much of the material is of such a complicated nature and of primarily physiologic rather than clinical interest that it does not lend itself readily to a review by a practicing dermatologist. Fuhs in a chapter of thirteen pages gives a rather brief discussion of the nature and chemistry of melanin pigment, including the researches of Bloch, Masson, Pautrier and other workers in this field.

Medicine Man in China. By A. Gervais. Translated from the French by Vincent Sheean. Cloth. Price \$2.75. Pp. 336 with illustrations. New York. Frederick A. Stokes Company. 1934.

Deep in a remote province of China larger than France and Germany combined a young French physician worked for a few years in the medical school in Chentu. He tells the story almost in a fictional manner, but it is clear to the reader that he is dealing with the naked truth. A fine journalistic instinct makes his story full of humor and gives to the reader an understanding of Chinese character such as he would hardly be likely to get from a much more abstruse and scientific volume. Dr. Gervais left China because he feared that it would eventually absorb him as it has absorbed many other Caucasians who have lived too long under its subtle dominion and yet at the same time he felt that he would always remain a foreigner to the Chinese civilization.

Medicolegal

Malpractice Fragments of Extracted Tooth Lodged in Lung—The plaintiff sued the defendant-dentist for malpractice, claiming that while extracting several of her teeth under a general anesthetic the dentist permitted fragments of one tooth to become lodged in her right lung, and that he failed to inform her of that fact. Judgment for \$25,000 was given for the plaintiff, and the defendant dentist appealed to the Supreme Court of Oregon.

The trial court did not err, said the Supreme Court in permitting an expert witness to testify that the treatment and care administered by the defendant, as outlined in a hypothetical question, was not in conformity with that degree of care, skill, diligence and knowledge ordinarily possessed and exercised by the average dentist in good standing in the same or similar localities. This testimony did not trespass on the province of the jury. The trial court erred further contended the defendant in instructing the jury that he was required to exercise the degree of care ordinarily exercised by a specialist, since there was no allegation in the complaint that he was employed by the plaintiff as a specialist. Regardless of the allegations of the complaint, said the Supreme Court, the defendant as a witness in his own behalf without objection placed himself in the category of a specialist. He testified that his main work was extracting teeth and he classified himself as an extraction specialist. If this was true, then the plaintiff was entitled to the defendant's skill as a specialist.

Two allegations in the complaint contended the defendant which charged that he 'hurriedly, carelessly, negligently and wantonly failed and neglected' to exercise care to see that no tooth or fragment thereof escaped into the trachea or so failed and neglected to discover whether any extracted tooth, or fragment thereof had not been removed from the plaintiff's mouth, should on his motion have been withdrawn from the consideration of the jury because there was no competent evidence to establish the negligence alleged. The Supreme Court held, however, that it was proper to allow the jury to consider the allegations. During the operation the plaintiff was unconscious. No one else was present except the defendant and his assistant. The plaintiff could not testify as to any of the alleged acts of negligence and obviously the others present would not. The fact remains, said the court, that fragments of a tooth were not removed from the plaintiff's mouth and that they escaped into the trachea. The jury could, in view of the circumstances and of the testimony of expert witnesses reasonably infer that the defendant's negligence as charged in the allegations was responsible therefor.

The Supreme Court could find no error in the record and consequently affirmed the judgment for the plaintiff.—*Schamoni v Semler (Ore.)* 31 P (2d) 776

Libel and Slander Report and Testimony of Examining Physician Privileged—Oakes sued the Weil Baking Company and Goldenberg its president, for damages for injuries attributed to a kick administered by Goldenberg. Prior to the trial, on the demand of the attorneys for the defendants in that suit, Oakes submitted to an examination by Dr Walther who in a written report to the attorneys stated, in part:

I consider the patient's mental state decidedly abnormal for a man of twenty-five; he is mentally undeveloped in my opinion.

At the trial, the report was read into evidence by Dr Walther. Subsequently Oakes brought the present suit against Dr Walther for libel and slander, alleging that the portion of the report quoted above was false and that Dr Walther knew of its falsity that it was made to humiliate and discredit him, and that it had no connection with the purpose for which he submitted himself for examination and was therefore entirely uncalled for. Judgment was given for the physician, and Oakes appealed to the Supreme Court of Louisiana.

A communication, said the Supreme Court, made in good faith, on any subject matter in which the party has an interest or in reference to which he has a duty, either legal, moral or social if made to a person having a corresponding interest

or duty, is qualifiedly privileged. And such a communication, even if untrue, if made as indicated and without malice, cannot be the basis of an action for libel or slander. Within the rule just announced, Dr Walther had a qualified privilege to make the statement of which the plaintiff complained. He had an interest in the subject matter about which he was writing. He had been employed to ascertain the plaintiff's physical condition and to communicate the result of his findings to his employers. He had become possessed of information affecting their rights, and it was clearly his duty to give them that information. It follows, therefore, that in making his report to his employers the defendant committed no actionable wrong, unless he acted maliciously, which the record shows was not the case. The defendant testified that his examination of the plaintiff, on which his report was predicated, was both objective and subjective. The plaintiff's claims as to his alleged injuries were apparently unsatisfactory to the defendant, and the statement of which complaint was made was clearly written, said the court, in explanation of the defendant's inability to understand the plaintiff's claims. This explanation, further observed the court, was obviously made in good faith for the purpose of showing why a subjective examination of the plaintiff was unsatisfactory and why the defendant reached the conclusion that there was little or no basis for the plaintiff's claim of extensive injury in his suit against the baking company and Goldenberg.

The testimony given by Dr Walther in court in the prior case in response to questions by counsel, was presumptively privileged and before this presumption can be overcome the court said the plaintiff must show affirmatively that the testimony was not pertinent and material to the issue involved in the case. This, the court said the plaintiff failed to do. The judgment of the trial court in favor of the physician-defendant was consequently affirmed.—*Oakes v Walther (La.)* 154 So 26

Insurer's Right to Autopsy—Cremation of Insured's Body—The defendant insurance company issued a policy providing indemnity against the accidental death of Schachner. The policy conferred on the insurance company "the right and opportunity to make an autopsy, where it is not forbidden by law." Schachner died on January 3, from asphyxiation occasioned by breathing poisonous illuminating gas. In accordance with directions in his will his body was cremated. Later, on January 8, his widow, the beneficiary named in the policy, learned for the first time of the policy when a safety deposit box was opened. The insurance company refused to pay on the policy and the widow brought suit in the district court of the United States for the northern district of Illinois, eastern division. Judgment was given for the widow, and the insurance company appealed to the circuit court of appeals, seventh circuit.

The insurance company contended that the cremation of the body before it had an opportunity to make an autopsy relieved it of liability under the policy. Ordinarily, said the circuit court of appeals, under a policy similar to the instant one, if the insurance company was refused permission to make an autopsy it would be absolved from liability. But here the cremation was carried out before the widow had knowledge of the existence of the policy. There was no evidence that the cremation was not procured in good faith. There was no undue haste in disposing of the body. There was no obligation on the part of the widow to keep the body indefinitely on the possibility that at some future time an insurance policy granting the insurer the right to make an autopsy might be found. The beneficiary was under no duty to tender the body for autopsy. An autopsy may be required only on demand of the insurer seasonably made. If after death and before a request for an autopsy has been made, the circumstances have become such that the request would be unavailing, this of itself should not bar recovery on the policy. That there might be circumstances under which the insurer would not have the right to make an autopsy is clear from the clause of the policy which permits it where it is not forbidden by law. Where it is so forbidden, the claim must be disposed of as though no right to autopsy had been given. The parties to the policy must have contemplated that if, without fault of the beneficiary,

it was impossible to produce the body for autopsy, this of itself would not defeat recovery. If it were otherwise, the right of recovery under such a policy would be defeated if before it was possible to make an autopsy the body had been destroyed in a fire or blown to bits by an explosion, or rendered unavailable through any other of the many possible happenings. The court was satisfied that, under the circumstances of this case, cremation of the body before the insurance company had an opportunity to request an autopsy did not of itself bar recovery.

The trial court correctly charged the jury, said the circuit court of appeals, that if the evidence tended to show that the insured's death might have been either accidental or suicidal, and if the evidence did not preponderate to show suicide, a presumption arose that the death was accidental. There is an initial presumption against death by suicide. A coroner's verdict of accidental death was attached to the proofs of death delivered to the insurance company and as such was received in evidence. The trial court properly instructed the jury that the coroner's verdict constituted no evidence of the cause of death but was received in evidence merely to show compliance with the insurance policy which required proof of death to be delivered to the company. A coroner's verdict does not constitute evidence of any fact or finding therein stated and is not admissible as such.

The judgment in favor of the beneficiary was accordingly affirmed—*Ocean Accident & Guarantee Corporation Limited, v. Schachner*, 70 F (2d) 28.

Paternity of Baby Born 250 Days After Alleged Intercourse—The defendant was convicted of being the father of the complaining witness's illegitimate baby and appealed to the Supreme Court of North Dakota, contending that the evidence was insufficient to support the conviction.

The baby was born April 7, 1932. The complaining witness testified that the first act of intercourse between her and the defendant occurred during the first week of August 1931, approximately 250 days prior to the birth of the child. The period elapsing between the alleged intercourse and the birth of the child, observed the Supreme Court, was thirty days less than the normal gestation period, and in order to convict the defendant on the charge preferred against him, evidence was necessary to show that the birth was premature. No such evidence was produced, although the birth occurred in a hospital and was attended by a physician and nurses who could have been called as witnesses. In the absence of evidence showing a premature birth, a presumption arises that the birth occurred at maturity. Unless in this case the birth was premature, said the court, conception necessarily occurred before the date on which it is claimed that the defendant had intercourse with the complaining witness. Under such circumstances, the defendant could not be the father of the child. The Supreme Court therefore reversed the conviction and ordered a new trial—*State v. Muldoon* (N D), 254 N W 475.

Workmen's Compensation Acts Payment of Fees of Medical Witnesses Out of Attorney's Fee—The Oklahoma industrial commission allowed the claimant's attorney 20 per cent of the award as his fee, "providing said attorney pay the witness fee of the doctors who testified for the claimant at the hearing of this case." In vacating that part of the award enclosed in quotations, the Supreme Court of Oklahoma said that to permit the fees of the attorney to be divided with the physicians who testified in the case would produce a very bad situation. Two physicians testifying for the claimant estimated his disability at 75 per cent and 80 per cent total, respectively, while the physicians testifying for the employer placed the disability at not more than 10 per cent. Such divergence of estimates, observed the court, may be bona fide, but if the attorney fee which is based on the amount of recovery is to be divided with the doctors who testify in the case, there exists an incentive for a witness to aid in procuring a large award. In reaching this conclusion, the court referred to the case of *Hillhoit v. Prairie Oil & Gas Co.* 26 P (2d) 406 abstracted in THE JOURNAL, June 2, 1934 p 1878—*Magnolia Petroleum Co. v. Rader* (Okla.), 32 P (2d) 281.

Society Proceedings

COMING MEETINGS

American Academy of Orthopedic Surgeons New York, Jan. 14-16 Dr. Philip Lewin 104 South Michigan Boulevard Chicago Secretary
American Orthopsychiatric Association New York, Feb. 21-23 Miss Mary A. Clarke 50 West 50th Street, New York Secretary
Annual Congress on Medical Education and Licensure Chicago, Feb. 18-19 Dr. William D. Cutter, 535 North Dearborn Street, Chicago, Secretary
Pacific Coast Surgical Association Santa Barbara Calif., Feb. 21-23 Dr. Edgar L. Gilcreest 384 Post Street San Francisco Secretary

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Seventh Annual Meeting held in Chicago Nov. 2 and 3 1934

The President, DR. W. S. MIDDLETON, Madison, Wis., in the Chair

Bone Marrow (Sternal) Biopsies

DR. E. L. TUOHY, Duluth, Minn. A review of the literature is made to bring out the widely varying technical methods and to determine whether hematologists feel that the circulating blood smear yields all that is needed, exclusive of bone marrow smears. Years of diverse interpretation of blood smears indicate that, once satisfactory marrow smears are available, much correlation is necessary to adjudge the cellular elements—their stages and degrees of maturation and preponderance. However, the blood work already done should relatively quickly point the way to the diagnostic and therapeutic criteria that the marrow shall provide in addition to circulating blood smear standards.

DISCUSSION

DR. F. J. HECK, Rochester, Minn. There is some difficulty in getting satisfactory staining of bone marrow preparations. Downey, following the suggestion of the Herrick Clinic at Panama, has obtained excellent results by using the Giemsa stain in twice the concentration ordinarily used.

Iron and Copper in Human Blood

DR. ADOLPH SACHS, Omaha. A large series of normal whole blood iron and copper determinations has been established in adult males and females. There is an apparent relationship between the copper and iron levels of human blood. When the iron content decreases, the copper content rises. This is nicely shown in a large series of cases including all types of anemia, pernicious, secondary and sickle cell, and leukemias. Tuberculosis and other diseases are included. In addition, comparisons of fetal and maternal bloods have been made, with some interesting observations. A blood copper deficiency, or, in other words, a copper anemia, has never been observed in the series.

DISCUSSION

DR. H. Z. GIFFIN, Rochester, Minn. Did Dr. Sachs make any observations on the use of copper in children?

DR. W. S. MIDDLETON, Madison, Wis. As far as our clinical experience in the adult is concerned, in no type of anemia in the wards of the Wisconsin General Hospital did we find that copper had any value. A series of eighty cases was studied and in none of these was copper effective.

DR. ADOLPH SACHS, Omaha. It was not felt that copper therapy was necessary, because at no time is there a copper deficiency in the human being. As to copper in children, it is a peculiar thing that right after birth the child instead of having a low copper content soon develops the normal amount. The series in children's blood is not large enough at present to report, but this will be done later.

Iron Retention Following Use of Ferric Ammonium Citrate in Hypochromic Anemia

DR. W. M. FOWLER and ADELAIDE P. BARER, PH.D., Iowa City. Iron balance studies have been done on over thirty patients with hypochromic anemia in an effort to determine the amount of iron retained as well as the factors that influence the retention of iron and hemoglobin regeneration. Six cases are reported in which only ferric ammonium citrate by mouth was administered. Two patients had anemia secondary to chronic uterine hemorrhage while the remaining four gave

no history of excessive blood loss. Large amounts of iron were retained by all patients, one retaining the equivalent of 676 Gm of metallic iron in forty eight days and another 627 Gm in twenty-four days. The periods of maximum iron storage and of maximum hemoglobin regeneration coincide, although only a small percentage of the retained iron was utilized in hemoglobin formation. It was found, during the course of these balance studies, that patients with so-called idiopathic hypochromic anemia lost exceptionally large amounts of blood by menstruation. The average amount of blood lost by ten such patients was 258 cc, as contrasted to the average loss of 54 cc. in ten normal subjects.

DISCUSSION

DR. HOWARD L. ALT, Chicago. It is interesting that a woman can lose so much blood during menstruation without being conscious of it. This confirms the general impression that menstrual bleeding is an important factor in the cause of hypochromic anemia with achlorhydria. I have followed a series of such cases over a period of two years after the discontinuance of iron therapy. Three patients who had either a natural or an artificial menopause remained quite well, whereas it was the rule for the younger patients to have a relapse. Menstruation as a factor in the production of the anemia in these patients is thus suggested.

DR. CECIL STRIKER, Cincinnati. Did the feeding of hydrochloric acid expedite the storage of iron in the body?

DR. C. W. BALDRIDGE, Iowa City. In observing these results I have been impressed with the unreliability of the history in ascertaining whether or not a patient loses a normal amount of blood by menstruation. The patient's statement is only an opinion, because she usually has no standard with which to compare herself, the concentration of hemoglobin in menstrual fluid varies and commercial vaginal napkins are capable of absorbing a surprisingly large amount of fluid. By measuring the iron content of material lost by menstruation Dr. Barer found marked variations. Menstrual iron in one case was equivalent to only 7 cc. of the patient's own blood, while in another it was equal to 992 cc. These figures represent the extremes among those patients who considered that they menstruated a normal amount.

DR. W. M. FOWLER, Iowa City. I am unable to answer Dr. Striker's question in full. We have balance studies in progress to determine the influence of added hydrochloric acid and in those completed there has been no appreciable effect.

Splenectomy in Acute Erythroclastic and Thromboclastic Crises and in Hypoplastic Anemia

DRS. CHARLES A. DOAN, GEORGE M. CURTIS and BRUCE K. WISEMAN, Columbus, Ohio. The role of the spleen, both as an inhibitor and as a stimulatory factor, in the hemolytopoietic equilibrium has been demonstrated. Its influence in many clinical syndromes is reflected through a selective effect on one or more of the formed elements of the blood. Splenectomy, while recognized as an effective therapeutic measure in chronic congenital hemolytic jaundice and in certain types of thrombopenic purpura, has been considered to be definitely contraindicated in acute hemoclastic crises. Our studies of the dramatic cellular responses—including blood platelets, white cells and erythrocytes—that follow immediately on the removal of the pathologic spleen in patients with chronic disease, led to the conviction that, with adequate medical and surgical management, splenectomy should be a safe and rational procedure and the method of choice in the treatment of acute splenic crises, even in the presence of a severe anemia. Emergency splenectomy has therefore been performed during acute erythroclastic and thromboclastic crises and has been completely justified by the immediacy with which the pathologic process has been stopped and recovery initiated in critically ill patients. Blood transfusion and liver extract are distinctly contraindicated in hemolytic icterus, blood transfusions are indispensable in the treatment of thrombopenic purpura. The physiologic inhibitory and phagocytic functions of the spleen for blood cells underlie the rationale for the removal of the "normal" or atrophic spleen in hypoplastic anemia, with the reestablishment, at least temporarily, of a more normal equilibrium. Sixteen successful splenectomies covering a wide range

of diseases—hemolytic jaundice, thrombopenic purpura, Banti's syndrome, myeloid and lymphatic leukemia, polycythemia vera, and hypoplastic anemia—form the basis of the conclusions in this study.

DISCUSSION

DR. O. H. ROBERTSON, Chicago. I should like to know the authors' ideas concerning the mechanism of this striking rise in red blood cells following splenectomy.

DR. STANLEY E. DORST, Cincinnati. Did you make a second count after the spleen had been delivered but before the pedicle was cut and the spleen removed?

DR. M. A. BLANKENHORN, Cleveland. I should like to ask the authors what their diagnosis was when the chart showed an immediate postoperative leukocytosis of 70,000. Also I should like to ask them to reiterate the indications for the removal of a spleen weighing 40 Gm and how they came to the conclusion that such indications are valid.

DR. S. H. GOLDBAMER, Ann Arbor, Mich. I should like to know whether the counts were made on capillary or on venous blood, and whether there was a control on the blood volume in these counts.

DR. J. A. EVANS, La Crosse, Wis. The authors speak about liver extract being contraindicated in familial hemolytic jaundice. I understand that Murphy recommends liver extract. Would the authors tell us why they feel that liver extract is contraindicated?

DR. GEORGE M. CURTIS, Columbus, Ohio. Concerning the rationale of splenectomy in acute hemoclastic crises, my early studies showed an immediate postoperative rise in both red cells and hemoglobin. This ensued soon after the spleen was removed. Counts were taken fifteen minutes after splenectomy and thereafter at frequent intervals. These results of the immediate effects of splenectomy in hemolytic icterus raised the question of their occurrence in the acute crises. Since essentially an autotransfusion followed splenectomy for hemolytic icterus, it seemed to be indicated in acute hemoclastic crises. This has been accomplished twice, successfully. One patient with a large stone in the common duct had a double jaundice, an acute obstructive jaundice and a hemolytic jaundice. A cholecystostomy was made, and it precipitated an acute hemoclastic crisis. There was a fall in the hemoglobin and red cells. An emergency splenectomy was done fifty-eight hours after the cholecystostomy. The patient recovered from this, with a characteristic rise in red cells and hemoglobin. No such rise followed the cholecystostomy. Results give me hope that there can be surgical intervention in acute hemoclastic crises. This is largely contrary to the present view.

DR. BRUCE K. WISEMAN, Columbus, Ohio. During this study, some facts developed that seem to have an important bearing on the pathogenesis of congenital hemolytic icterus. The controversy has waged for many years as to whether the inherited defect is primarily an abnormality of the bone marrow or of the spleen. Those who adhere to the belief that the inherited defect is in the bone marrow regard the associated overactivity of the spleen in destroying red blood cells as simply a compensatory phenomenon designed to remove from the blood stream the defective units produced by an abnormal bone marrow. Those who regard the spleen as the tissue that has inherited the defect, in this case a defect resulting in an increased hemolytic activity, attribute the associated abnormality in the red blood cells as secondary to a damaged bone marrow produced by the long continued demand made on it for cells which it never can quite produce in adequate numbers without eventually some sacrifice in quality. If the first of these hypotheses is correct, no change in the quality of these cells as regards fragility, average diameter and thickness would logically be expected after splenectomy, since the primary defect responsible for the abnormal characteristics of these cells would still be intact. On the other hand, if the spleen is responsible for the damaged red cells incident to a hard-driven bone marrow, one would expect to find some cases in which the damage to the bone marrow had not progressed to an irreparable stage and which, on removal of the overactive spleen, might again become normal with the production of cells with normal physical characteristics. In one of our patients, a woman, aged 47, who had been the victim of her disease for at least twenty

years, the blood examined about eighteen months after splenectomy showed the presence of red blood cells without any of the defects so characteristic prior to the surgical treatment. In fact, in all our cases in which operation has been performed, the blood cells have shown a partial return to normal as regards fragility, diameter and thickness. Additional follow up of these cases will be made to see whether in any of the latter eventual restoration to normal will occur. In any case it would seem that the complete restoration to normal of the red cells in one case and the partial restoration in the others constitutes evidence that with the removal of the spleen the primary source of the inherited defect has also been removed, thus implicating the spleen and not the bone marrow as the primarily defective tissue that gives origin to the sequence of events terminating in the syndrome and characteristic features of congenital hemolytic icterus.

DR CHARLES A. DOAN, Columbus, Ohio. Dr Robertson asks as to the nature of the mechanism responsible for the promptness of the erythrocyte increase following splenectomy. We believe it to be of twofold origin. First in importance is the reservoir function of the spleen itself, greatly magnified when splenomegaly exists. Studies of splenic artery and vein blood at operation have indicated that in pathologic states, such as congenital hemolytic icterus, many more erythrocytes enter than leave this organ. Under the conditions of operative manipulation and the administration of epinephrine, sequestered red cells not already destroyed by the splenic phagocytes are forced into the general circulation and remain available after ligation of the pedicle. Secondly, the high reticulocyte percentage must reflect an unusually active bone marrow production of new erythrocytes which, with both reservoir and destructive activities of the spleen eliminated, accomplishes a more effective mobilization of essential blood elements as evidence, the immediate increase in erythrocyte fragility range postoperatively, followed later by a decrease. To answer the query as to just when the increase in circulating units occurs, we have made frequent observations on the day of operation before and during as well as after removal of the spleen. Some elevation in the total count from a well established base line may be noted before the patient is taken to the operating room and during the preliminary preparations, but the maximum peak is not attained until ligation of the pedicle has completely eliminated the spleen from the circulation. Dr Blankenhorn inquires as to the reason for a 70,000 total white count in case 6 of hemolytic jaundice immediately after splenectomy. The base line leukocyte counts in this particular individual had been between 12,000 and 15,000, reflecting a sensitive myelocytic marrow, which in response to the operative trauma gave an unusually generous transitory granulocytosis. All cells were mature actively motile elements with some nuclear "shift to the left," denoting an ordered delivery of new elements from the marrow. The variability in the degree and duration of postoperative leukocytoses in these cases has been no greater than that encountered following other types of surgical manipulation. To the request for the rationale of splenectomy in hypoplastic anemia in which no enlargement of the organ occurs I would cite the Frank-Krumbhaar law of increased erythrocyte resistance, erythremia, persistent thrombocytosis and leukocytosis following removal of the normal mammalian spleen. Our own experimental and clinical experience clearly implies a normal physiologic splenic control of blood destruction and inhibition of new cell delivery, which in the race of a waning competency on the part of the marrow may prematurely precipitate a critical shortage of essential units. Under such circumstances, when evidence of some regenerative activity remains the removal of a normal or even atrophic spleen may reestablish temporarily a positive balance, i. e., of more than two years' duration to date in the case reported in this series. The principles involved are not unlike those invoked in the advocacy of total removal of the normal thyroid gland for cardiac decompensation. Our studies have included both capillary and intravenous blood samples, in parallel with comparable observations throughout. Hematocrit and hemoglobin studies have confirmed the absolute increase in actual cell volume that follows splenectomy. Liver extract is not indicated in the treatment of congenital hemolytic jaundice because we believe the inherent difficulty to be in spleen

and not in bone marrow, the pathologic change in the marrow is a hyperplasia of erythropoietic tissue at the erythroblastic and not at the megaloblastic level. Liver extract is contra-indicated in hemolytic jaundice because in our experience and in the published experience of other investigators an exacerbation of the hemolytic diathesis frequently follows its use. No significant alteration in the reticulocyte percentage is apparent on the day of operation, though a prompt subsidence to normal occurs during the early postoperative convalescence. This may be interpreted to indicate that there is no sudden speeding up of the bone marrow delivery of new erythrocytes immediately after splenectomy to explain the relative erythremia that has been noted; rather is the phenomenon that of decreased cellular destruction. May I reiterate that, while present knowledge of splenic function is incomplete, it is sufficient to justify ligation of the splenic artery or, when possible, the removal of the spleen, when evidences of acute cellular destruction or of critical marrow insufficiency point to this organ in clinical disease states.

The Intrinsic Factor (Castle) in Subacute Combined Cord Degeneration Without Anemia

DRS. ROBERT T. PORTER and WALTER L. PALMER, Chicago. The secretory functions of the stomach in cases of subacute combined cord degeneration without anemia have received relatively little study. A patient with the history and evidences of subacute combined cord degeneration with a normal blood count and a histamine proved achylia was studied after the method of Castle. The patient's gastric juice obtained by histamine stimulation was incubated with ground beef and fed to two patients with typical pernicious anemia. There was no increase in reticulocytes or in the blood count after eleven days. This is interpreted as showing an absence of the intrinsic factor in this case.

DISCUSSION

DR. LOUIS LEITER, Chicago. I should like to ask whether controls were run on individuals who should have had the intrinsic factor.

DR. HARRY GOLDBLATT, Cleveland. I should like to ask why Castle's extract of normal gastric juice was not used as the control material in the second period. It would seem to me that this would have been better than to use liver extract in the second period.

DR. S. M. GOLDBLUM, Ann Arbor, Mich. If the "intrinsic factor" of Castle is supposed to be a substance necessary for the maturation of red blood cells, why is there any hematopoiesis in this case, unless the 'intrinsic factor' is present in the gastric juice. Patients with pernicious anemia in relapse have red blood cell counts at different levels, some having two million, others three million, and so on. How can this variation be accounted for if the 'intrinsic factor' is absent? It seems to me that it is not a question of the absence of the 'factor' in the gastric juice but rather a quantitative deficiency that causes the variable degree of anemia. If this is true, in this case there is not a sufficient decrease in amount of the 'intrinsic factor' to produce the anemia at present, or the patient still has a sufficient amount stored in the liver to maintain a normal blood count. In patients with gastrectomy, the pernicious-like anemia may develop anywhere from two to fifteen years following the operation. Perhaps, if one waits long enough, this patient will develop an anemia.

DR. WALTER L. PALMER, Chicago. In some cases in which the entire stomach has been removed, pernicious anemia has failed to develop even after many years. Our feeling is that the relation between the intrinsic factor of Castle, pernicious anemia and combined cord degeneration is rather obscure in spite of the excellent work of Castle.

DR. ROBERT T. PORTER, Chicago. In answer to Dr. Leiter, we have studied two normal persons and found a definite reticulocyte response. In answer to the question why we did not use normal gastric juice in the second case, the patient became so concerned over the lack of improvement that we had to do something. As Castle has shown that ten days is sufficient time in which to secure response from this intrinsic factor, we concluded that it was from the liver extract. We had no chance to use the intrinsic factor of Castle in the first case because of the lack of cooperation of the patient. We

of course do not know much about the developing of red cells. Whether there is a factor in liver that is comparable to the combined extrinsic and intrinsic factors, I am unable to say.

Effect of Irradiation on White Blood Cells in Chronic Myelogenous Leukemia

DR F H BETHELL, Ann Arbor, Mich. With the decrease in number of all types of leukocytes after irradiation in chronic myelogenous leukemia (intensive study of six cases) there is a slight increase in the relative number of neutrophils, with a definite rise in the ratio of adult to young forms. The percentage incidence of cytoplasmic basophilic granulation is increased, and as the cells affected are chiefly young neutrophils this phenomenon may not properly be considered as degenerative in nature but rather as due to an effect on the cells before their release into the circulation. Vacuolization, however, occurs almost exclusively in the older cells and is probably a degenerative effect. The decreased percentage of vacuolated cells after treatment does not support the contention that the action of the roentgen ray on myeloid tissues is strictly degenerative.

DISCUSSION

DR. CHARLES A DOAN, Columbus, Ohio. I should like to ask, first, what dosage of x-rays was used in these cases. Second, what effect do the x-rays have on the agranular or very young forms, the myeloblasts, which predominate in some cases? Is it possible to administer a "maturation dosage" of x-rays to these cells?

DR. RAPHAEL ISAACS, Ann Arbor, Mich. This work shows for the first time that after roentgen treatment an increase is not found in the number of cells which, it is known, are degenerated. The present view held by most people is that the x-rays kill the cells. Consequently we looked at the smears before and after roentgen treatment, and we found fewer killed cells after irradiation than before. The interesting thing is that no one has thought of looking at the blood before roentgen treatment to see the number of degenerated cells floating around. They looked after treatment and saw them apparently increased. Dr Bethell has found them decreased.

DR. F H BETHELL, Ann Arbor, Mich. Our usual policy is to treat patients with myelogenous leukemia intensively over a short period rather than with smaller dosage over a longer period. The patients referred to in the paper received 200 roentgens, measured at the level of the skin, in each treatment. The areas treated were 16 by 16 cm. and were situated in the anterior and posterior splenic region. We have not recently treated patients in the myeloblastic stage, as in the few instances in which this has been done the results have been unsatisfactory.

Effect of Fever on the Circulation

DRS J MURRAY KINSMAN and JOHN WALKER MOORE, Louisville, Ky. Fever was produced by the use of a vaccine or an infra-red heat cabinet. With these fevers the cardiac output is increased when the pulse rate is below 120 but remains normal or actually becomes decreased when the pulse rate is above 120. The lesser circulation time is usually decreased with fever, but it seems to bear no constant relationship to the output or the pulse rate. The venous pressure in fever from vaccine therapy shows little or no change from normal, whereas it shows a decided rise with fever resulting from infra-red cabinet heat. The systolic and diastolic blood pressures are almost invariably lower than normal with fever from infra-red heat, but little or no change occurs with fever from the use of vaccine. The work of the heart with fever as calculated from the work formula of Starling shows an increase when the output is greatly increased and a decrease when the output shows little change. The determinations of cardiac output and so on were carried out with the dye injection (direct) method

DISCUSSION

DR. L N KATZ, Chicago. This communication corresponds with experiments on animals. However, caution should be used with regard to the method employed for determining cardiac output in man. The accuracy of this method of measuring cardiac output has been seriously questioned. Consequently until such time as this particular method is checked with the direct Fick principle involving puncture of the right

and left ventricle, one can consider the interpretation as being suggestive but not proved.

DR. WALTER M SIMPSON, Dayton, Ohio. These data coincide closely with clinical observations that I have made during the treatment of patients with artificial fever by physical methods. I have found that methods requiring a prolonged period of induction result in more serious demands on the cardiovascular system than those methods which induce fever rapidly. If the method elevates the fever level to 105 or 106 F within forty to fifty minutes, the patient tolerates the remaining five or six hours of therapeutic fever at that level much better than if it required two hours to raise the temperature to the desired level. The newer methods that have been devised for the artificial induction of fever provide the physiologist and the clinician with instrumentation for valuable studies of cardiovascular function. It is apparent to those who are engaged in work in this field that knowledge of the physiology of fever is exceedingly inadequate. The means are now at hand for extensive studies in this field.

DR. JOHN WALKER MOORE, Louisville, Ky. In answering Dr Katz's criticism of our injection method for determining the cardiac output, I would say that we have checked with close agreement the method against the direct Fick in dogs and against direct measurement of flow in heart-lung preparation and various types of glassware experiments.

DR. J MURRAY KINSMAN, Louisville, Ky. Dr Moore has answered Dr Katz's question at least partially, but I might emphasize that we began to put faith in this method only after we had done exhaustive experimentation from all angles on dogs and in glass-water experiments. In those experiments we were able to calculate the output of fluid within 5 per cent. There is no point in going into the accuracy any more in detail here except to say that it is our belief that rebreathing methods are of little value in cases of cardiac decompensation because of the changes in oxygen level. We believe that they will not give an accurate picture of what is going on. We realize that our method will not be accepted entirely until others have had a chance to use it and until, as Dr Katz said, it is checked by the direct puncture. Dr Striker asked about the effect on the myocardium. So far as we can tell, we have noticed no bad effects. The dye is not toxic in the quantity we use. As far as puncture is concerned, no harm has been seen to result from it. Dr Middleton wanted to know about the changes in pressure. We do not know any more about that than stated. It is just a matter of theory as to whether the procedure here discussed reflects the true pressure inside the body. We have not investigated the venous pressure in the vein in relation to capillary pressure.

Precordial Leads in Normal Persons and in Patients with Ventricular Hypertrophy

DRS F D JOHNSTON, C E KOSSMAN and F N WILSON, Ann Arbor, Mich. Using a method that records the potential variations of a single electrode, we took leads from six different points simultaneously with lead I in a series of thirty normal persons. Similar curves were taken in a series of patients with ventricular hypertrophy. In normal subjects the chief upstroke, which is analogous to the intrinsic deflection of direct leads, occurred about 0.02 second earlier on the right side of the precordium than on the left. In left ventricular hypertrophy this difference in the time of the chief upstrokes is usually greater than normal, in right ventricular hypertrophy it is usually less. The normal precordial electrocardiogram and that obtained in curves of ventricular hypertrophy also differ with respect to the absolute and relative amplitudes of the different QRS deflections on the two sides of the precordium.

DISCUSSION

DR. L N KATZ, Chicago. I wonder whether some of the differences in the onset of the rise of QRS in the precordial curves over the right and left ventricles could not be explained either (1) by an abnormal position of the two ventricles in relation to these fixed points or (2) by an abnormal degree of approximation or separation between the anterior chest wall and the heart. These factors must be ruled out before the changes can be attributed to the altered sequence of stimulation of the two ventricles.

DR F N WILSON, Ann Arbor, Mich We adopted this method of leading because we found that in animals it yielded precordial curves that resembled the curves obtained by leading directly from the anterior surface of the heart more closely than the precordial curves obtained by other methods When the hind leg is used as the indifferent point in dogs, there is a striking resemblance between the precordial and the direct curves in most of the experiments but not in all Experience has shown that the resemblance is still more striking and is more consistently found when the present method is used The statement that precordial leads yield curves similar to those that would be obtained by leading from the anterior surface of the exposed heart is based not on theoretical considerations but on what is actually found to be the case in animal experiments

Influence of Position and Contact of the Heart on the Electrocardiogram

DRS J R SMITH and W B KOUNTZ St Louis There has been considerable discussion concerning the nature of the human electrocardiogram Lewis, in a study on animals, expressed the view that the human levocardiogram is characterized by an upward deflection in lead 1 and a downward deflection in lead 3 and that the dextrocardiogram is downward in lead 1 and up in 3 Barker and others by stimulating the human heart directly, have found the opposite to be true in each instance It has been demonstrated that contact of the heart to the chest and contact of the heart in the chest may influence tremendously the electrocardiographic curves As it is impossible to separate these two factors with the heart inside the chest, a different technic was devised in order to separate the influence of these two factors A dog heart-lung preparation (Starling) was set up the thorax of a cadaver, recently dead was opened and the heart removed The apex of the dog's heart was connected by means of an electrode to the human esophagus, with the preparation outside the thorax The esophagus of the preparation could thus be connected to an electrode in any portion of the human thorax The three standard electrocardiographic electrodes were attached to the wrists and left ankle of the cadaver in the usual fashion and electrocardiograms obtained Such an arrangement caused the cardio-electrical impulses arising in the dog's heart to be reflected in the cardiograms using the three leads from the cadaver, though the heart-lung preparation was outside the body It was found that the direction of extrasystole complexes could be changed by modifying the point of contact of the chest electrode to right or left of the spine on the posterior thoracic walls or to the right or left anterior thoracic walls Extrasystoles were produced by directly stimulating the lateral walls of the ventricles of the heart preparation with an interrupted current With the chest electrode in the left anterior part of the chest, extrasystole complexes from either ventricle gave curves similar to those of Barker obtained in man Changing the chest electrode to the right posterior part of the chest, and producing extrasystoles in the same way, resulted in curves like those Lewis obtained in the dog From this work it would appear that contact of the heart within the chest and the electrical resistance of tissues through which the cardio electric impulse passes are important factors in determining the type of curve a given extrasystole will produce.

DISCUSSION

DR. F N WILSON, Ann Arbor, Mich I am particularly interested in the present study, although I would not venture to say exactly what it means without careful consideration of the details of the experiments There are one or two comments I should like to make A cadaver, considered as a conductor of electricity, is not exactly the same as the living body My associates and I made that discovery when we attempted to study the distribution of electric currents in a cadaver some two or three days old. It was found that the dependent parts of the body contained most of the fluid, and it seemed probable that this altered the conductivity of these parts and was responsible for some of the anomalous results that we obtained. I should like to point out also that normally the heart is completely surrounded by a conducting medium The electrical field which it generates must be altered more or less by any procedure that changes the resistance between any two points

of this field When the heart is removed from the body it may continue to generate the same currents, but the distribution of these currents is necessarily greatly altered, and the potential variations that occur at any point on the heart's surface may bear no resemblance to those that occurred at the same point when the heart was in its natural position Merely exposing the anterior surface of the heart must greatly alter its electrical field In some instances the three standard leads are adequate to detect these alterations, in other cases they are not. When the three leads remain the same, it is not justifiable to say that the electrical field of the heart has not been changed, for only three points of this field have been investigated

DR L N KATZ, Chicago This excellent study, taken in conjunction with the work by Eyster and that of the laboratory with which I am affiliated, raises the question whether the vector analysis introduced by Einthoven might be incorrect as used at present For example, recent studies of ours have shown that insulation of the heart completely abolishes the electrocardiographic deflections We have found that the posterior muscle mass and the diaphragm are the good electrical conductors and that the blood vessels and lungs are the poor conductors In reality our work suggests that the position of the heart in the chest in relation to the good and poor conductors is perhaps the most important factor that determines the contour of the electrocardiogram

DR W B KOUNTZ St. Louis The curves here presented are not considered to be normal electrocardiograms, but rather a cardio-electrical impulse directed through the cadaver in such a way as to give a normal appearing electrocardiogram We believe with Dr Wilson that a body which has been dead for some time is not a good medium for study with regard to the electrical conduction We have tried to avoid this as much as possible by obtaining bodies soon after death The question of the relationship of the electrical axis is interesting As the electrodes are moved laterally, in some bodies 4 cm. from the midline, there are changes in the character of the normal complexes These complexes take on the features described as left and right axis deviation. Within a close range on both sides of the median line the normal complexes are upright in all leads, but the extrasystoles are inverted The results of these experiments appear to conflict with the Einthoven theory It appears that other factors such as conduction of the electrical impulse through the tissues, may influence the electrocardiogram. These results however must not be too hastily assimilated until conditions of conduction resembling more closely those found in the living body have been studied.

SYMPOSIUM ON RELATIONSHIPS OF HYPO THALAMUS AND HYPOPHYSIS

1 Somnolence Resulting from Lesions in the Hypothalamus

DR S W RANSON, Chicago Prolonged somnolence lasting for many days can be produced in cats and monkeys by lesions in the hypothalamus After recovery from the somnolence the monkeys showed a remarkable decrease in emotional excitability They became tame and tractable, although before the operation they were wild and exceedingly difficult to handle. An explanation of these observations will be attempted

2 Relation of the Hypothalamohypophyseal System to Diabetes Insipidus

W R. INGRAM, PH D, and CHARLES FISHER, PH D, Chicago Permanent polyuria has been produced in twenty cats by placing small lesions so as to interrupt the tractus supra-opticohypophyseus Lesions elsewhere in the hypothalamus in a large series of cats have not produced such effects

3 Effect of Hypothalamic Lesions and Stimulation of the Autonomic Nervous System on Carbohydrate Metabolism

DR. LOYAL DAVIS Chicago Hyperglycemia and glycosuria are not produced by pancreatectomy in cats that have a lesion of the hypophysis produced by the Horsley-Clarke stereotaxic instrument. Bilateral hypothalamic lesions, symmetrically placed with the stereotaxic instrument may be followed by pancreatectomy without the development of hyperglycemia and

glycosuria. Such lesions must be situated in the tuber cinereum slightly rostral to the mamillary bodies at the level of the ventromedial hypothalamic nucleus. Stimulation of the superior cervical sympathetic ganglion and the stellate ganglion in cats produces a marked hyperglycemia and glycosuria. These results are not obtained following section of the splanchnic nerves or bilateral, symmetrical lesions of the hypothalamus.

The Recognition of Myxedema

DR. H. D. KITCHEN, Winnipeg, Manit. The term myxedema implies a profound metabolic disturbance and conjures up a picture of an individual whose mental and physical processes are greatly slowed, with expressionless face, tropic changes evidenced by thin dry hair and coarse dry nails and exhibiting adiposity and a very marked intolerance to cold. One expects to find on examination a low blood pressure, slow pulse and a basal metabolic rate of minus 30 or lower. Women may give a history of sterility or amenorrhea. Such is the picture that most physicians visualize when thinking of a case of myxedema, and yet in spite of this definite clinical conception or perhaps because of it, many cases are overlooked. Diagnostically most practitioners are prone to be concerned primarily with the patient's most outstanding complaint and neglect often to see the patient as a whole. There are several reasons for this. In the first place the history may be misleading and the patient may not complain of undue fatigue because he may not remember feeling any different and may regard his condition as normal. Intolerance to cold may also be taken for granted and the wearing of additional clothing (such as a sweater) in a comfortably heated room or extra clothing when outdoors and the use of extra bedding may have become so fixed a part of the routine that it does not cause any voluntary mention by the patient. A careful history, however, will usually elicit these facts which are of the greatest importance. Undue reliance on the basal metabolic rate and not enough on clinical evidence may prove fallacious, and there is unfortunately a tendency to demand that, in a case in which the suspicions are aroused, the basal rate must of necessity conform to the low level usually expected before the diagnosis of myxedema can be made. The greatest cause for error is undoubtedly the focusing of the attention on symptoms. These may be very pronounced and at times very misleading, because they do not suggest the underlying endocrine disorder. Anemia, joint pains, flatulent dyspepsia, menorrhagia, extreme dyspnea, and chest pain of anginal character are some of the common symptoms of myxedematous patients. This presentation emphasizes some of the difficulties that result from undue concentration on symptoms. Diagnostic errors of this sort can be minimized if patients are regarded not as stomachs, hearts or chests but as individuals.

Lipoid Pneumonia in an Adult

DR. FRED E. BALL, Chicago. In a case of lipoid pneumonia in an adult the cause was the long continued use of liquid petrolatum as a nasal spray. [The clinical history, pathologic changes and microscopic sections of the lungs were presented and the pertinent literature was reviewed.]

DISCUSSION

DR. J. J. SINGER, St. Louis. My experience with iodized poppy seed oil proves that vegetable oils do not produce the evil results that liquid petrolatum does. I have used iodized poppy seed oil in patients over a period of years and in children who have been much weakened and yet there were no signs of lipoid pneumonia. It is my experience that, since these children who are bottle fed and fall asleep with the bottle in the mouth are relaxed, a certain amount of milk enters the lung. One thing is certain, though it is sometimes forgotten, the cough reflex is not very sensitive in many people and objects that are swallowed apparently do enter the lungs. I am sure from the reports of a large number of cases recorded in children that many more cases have occurred than has been suspected. I mention the question of iodized poppy seed oil because it is brought up often by people who are not familiar with its diagnostic value and who believe that such occurrences happen. In my experience I have not had it happen. I find by the use of the various iodized oils that I am able to make a diagnosis that could not otherwise be made. By removing the fear that it is dangerous, papers of this sort will have a tremendous value.

Artificial Pneumothorax in the Treatment of Acute Lobar Pneumonia

DR. L. E. HINES, Chicago. Twelve selected patients with acute unilateral lobar pneumonia were treated by artificial pneumothorax. Nine received immediate symptomatic relief of pain and dyspnea. It appeared that the procedure brought on an artificial crisis in four patients. Four (33 per cent) died and necropsies revealed an early pneumonia in the opposite lung of two patients. A localized pyopneumothorax was present at necropsy near the site of thoracentesis in one patient.

Renal Status and Alkalosis

DRS. M. W. BINGER and E. H. BERGER, Rochester, Minn. A series of eight cases of renal insufficiency associated with alkalosis were studied. Six of the patients had duodenal ulcer, one a malignant ulcer of the stomach, and one had been treated for ulcer but no ulcer was found. All patients had received intensive alkali therapy. While data were lacking regarding the renal status prior to alkali therapy, it is probable that these cases presented some degree of renal damage prior to alkali therapy which impaired the acid base regulating function of the kidneys and concurrently the alkalosis augmented the renal insufficiency. It is emphasized that previously impaired renal function is an important etiologic factor in alkalosis and should be considered in the alkali treatment of peptic ulcer. It is noted that patients who have renal damage do not tolerate well either acid or basic salts, there being a tendency to develop acidosis when acid salts are given and alkalosis when alkalis are administered. The role that the liver plays in this balance is not definitely determined. In these cases there was little evidence of hepatic insufficiency.

DISCUSSION

DR. WALTER L. PALMER, Chicago. How long after the use of alkali therapy was the renal function determined? Also, in how many instances of previously determined impaired renal function did alkalosis develop? I have not observed any greater tendency to alkalosis in cases of impaired renal function than in those with apparently normal function. In my experience, when one follows the urea clearance test of renal function during alkalosis, the renal function decreases as the carbon dioxide increases. For instance, a patient with normal kidney function to start with will develop alkalosis. With the discontinuance of alkalosis the renal function has in my cases returned to normal except in a very few cases in which there was reason to think that previously existing renal damage had been present.

DR. WILBER E. POST, Chicago. The treatment of ulcer is out of my present line of study but I have had occasion to observe cases of alkalosis in connection with study of mineral metabolism over a period of several years in association with Dr. Hoffman and Dr. Thomas. It is well recognized that alkalosis is much more likely to take place in cases of obstruction of the pylorus. In fact, one can predict it with certainty if one gives a considerable quantity of alkali. In the next place, when a small amount of fluid is given with the alkali, alkalosis is likely to occur. A part of the significance of the latter is made clear when one recognizes in the studies of Dr. Hoffman that were presented to this society a year ago that the retention of water is equivalent to 1 liter for each 3.5 Gm. of sodium. If the patients do not get water the sodium will not be excreted and they will get alkalosis. In view of these observations, the part that appeals to me is this: it is a question in my mind whether renal dysfunction referred to in this paper is not in truth an impairment of the other tissues of the body. There is profound disturbance of water balance in the tissues, even to the point at which dextrose and salt solution injected subcutaneously will not be absorbed at all. The administration of acid and large quantities of water is, of course, the means of correction.

DR. NORMAN M. KEITH, Rochester, Minn. This work should remind one of the physiologic fact that the normal kidney is an important regulator of the acid base equilibrium of the body. The normal kidney is well able to excrete a large amount of acid or alkali. On the other hand, the damaged kidney is much more limited in its excretion of acid and alkali. For example, acid salts in glomerular nephritis can cause more marked acidosis than in the normal, and alkalosis in the cases

of Drs Binger and Berger occurred more often in cases showing previously damaged kidneys. Chronic nephritis is frequently latent and not diagnosed. Last June a patient of mine had a serious gastro-intestinal hemorrhage from a duodenal ulcer. The blood urea was found to be elevated to 90 mg per hundred cubic centimeters. He made a quick recovery from the hemorrhage, but the blood urea has never returned to the normal level and at present it is 60 mg. I have since investigated this case more thoroughly and have found that he undoubtedly has had a chronic renal lesion for at least ten years and that the gastro-intestinal upset caused an acute exacerbation.

DR. M. W. BINGER, Rochester, Minn. Answering the first question, one has to take into consideration that there are no two cases quite alike and so there are no two renal conditions quite on the same basis. I do not think any two of these cases reacted the same to the treatment for alkalosis. For instance, one patient with a diagnosis of duodenal ulcer came in practically in coma, in fact, we thought it was a primary renal disease. However, there were symptoms of alkalosis and this man on getting plenty of fluids—he was taking from 6 to 7 quarts a day—was an entirely different man, the symptoms of alkalosis entirely cleared up, and the blood urea fell from 146 to normal in a few days. In a second case, of arteriosclerotic hypertension in a man, it was about two weeks before the symptoms of alkalosis cleared up and the renal function improved. I think that would answer the second suggestion, that the results of treatment of alkalosis depend greatly on the urinary output and the renal function. It is not known what happens to the kidneys in this condition, whether there is a swelling of the kidney, whether it is an intrinsic chemical change, or whether it is a derangement of some specific function of the kidney, for example, the acid-base regulating mechanism. It is known that if plenty of fluid can be given, either by mouth or intravenously, the alkalosis per se will clear up in very short order. If there is damage to the kidney, the situation is entirely different. A similar condition is seen in nephritis, in which neither acid nor basic salts are tolerated well. One has to be very careful about subjecting such kidneys to abuse.

A True Enterorenal Syndrome

DRS E. G. WAKEFIELD and J. ARNOLD BARGEN, Rochester, Minn. From time to time we have observed patients who came to the hospital with abdominal cramps and marked distention, suppression of urine, cramps in the arms and legs, elevated blood urea, and normal carbon dioxide combining power and chlorides of the blood. For practical purposes it is necessary to consider these patients as cases of intestinal obstruction. It is not until after blood chemistry and urinary output are observed that one suspects the true nature of the condition. After administration of intravenous fluids, these patients begin to pass urine with a normal specific gravity, albumin about grade 1 (on a basis of 4) and an occasional red blood cell in the sediment. Synchronous with administration of intravenous fluids and application of hot abdominal stupes and warm rectal irrigations, the azotemia clears up and abdominal symptoms, even when marked, subside. The practical application and importance of differentiating these cases from true intestinal obstruction is apparent.

Absorption and Excretion of Calcium and Phosphorus in a Patient with a Colostomy and Ileostomy

DR. RICHARD M. JOHNSON, Minneapolis. An unusual opportunity for studying the fate of calcium and phosphorus in the intestine was afforded by a patient with a high colostomy and low ileostomy. Increased calcium intake was followed by a marked increase in ileac calcium elimination and a slight increase in urinary calcium excretion but failed to alter the phosphorus excretion appreciably. The administration of viosterol increased the urinary calcium and phosphorus excretion and decreased the ileac phosphorus elimination and slightly increased the ileac calcium elimination. Injection of parathyroid extract decreased the ileac elimination of calcium and phosphorus and greatly increased the urinary calcium and phosphorus excretion. In this one case the colon failed to excrete calcium or phosphorus at any time during the study. The reaction of the ileac content was acid the pH varying from 4.3 to 6.8. The acidity was greater during the fasting state

than after the ingestion of food. The reaction of the contents of the small intestine may possibly influence the excretion of calcium into the intestine.

DISCUSSION

DR. EDMUND ANDREWS, Chicago. I have made a series of estimations of the calcium in the fluid excreted by the lower part of the colon. Some of these have been on material passing by rectum and others on the reflux from double-barreled colostomies of the sigmoid. In some cases there was a carcinoma in the sigmoid from which the fluid came and in others not. While I have never investigated the effect of viosterol on calcium administration, I have always been astonished at insignificant amounts of calcium that were found in this fluid which does not seem to fit in well with the current concept of calcium excretion.

Abnormal Dextrose Tolerance Curves Occurring in Toxemia

DRS SAMUEL SOSKIN, M. DAVID ALLWEISS and I. ARTHUR MIRSKY, Chicago. The abnormal dextrose tolerance curves occurring in toxemic conditions have been generally interpreted as indicating an impairment of pancreatic endocrine function and consequent disability in the storage and oxidation of carbohydrates. We have recently demonstrated that the liver and not the pancreas is essential for the normal dextrose tolerance curve. The present report offers experimental evidence that toxins do not exert their effects through the pancreas but interfere with the homeostatic activity of the liver. [The bearing of these results on the interpretation of the dextrose tolerance curve in toxemic conditions, as applied to prognosis and carbohydrate therapy, was discussed.]

Effect of Oil of Peppermint in Emptying Time of Stomach

DRS H. I. SAPOZNIK, R. A. ARENS, HEINRICH NECHELES and JACOB MEYER, Chicago. We have been studying the effects of oil of peppermint on gastric secretion and motility in man and dog. The present report deals with the effect of oil of peppermint on the emptying time of the stomach determined by roentgen examination with a barium milk meal. The normal emptying time of the stomach of six normal women was first determined by the barium milk meal and the average time was found to be 240 minutes. In one patient with gastroparesis, emptying time was 310 minutes. Following the admixture of 2 cc of peppermint oil to the barium milk meal there was a decrease in emptying time, the average time being 145 minutes, an average decrease of 45 per cent. Immediately after the peppermint barium mixture was taken, antiperistalsis was observed. This lasted for about fifteen minutes. It was our impression that the dose of peppermint oil (2 cc.) was too strong and may have been the cause of the initial antiperistalsis. We therefore determined the effect of peppermint lozenges on reduction of emptying time by 38 per cent was noted. Control with olive oil and chocolate candy showed a decrease in emptying time of 10 and 13 per cent respectively. When 100 cc of 7 per cent alcohol was added to the barium milk mixture the decrease in emptying time was 19 per cent. When 2 cc of peppermint oil was added to the alcohol the emptying time was reduced to 135 minutes, a decrease of 44 per cent. The results obtained may offer an explanation for the symptomatic relief following the use of peppermint oil in various gastro-intestinal disorders and the feeling of comfort obtained by use of camomile mints or creme de menthe after a heavy meal. Further studies on the effect of peppermint oil on the motility of the gallbladder and intestine are being continued.

DISCUSSION

DR. HEINRICH NECHELES, Chicago. In all probability, the action of oil of peppermint on the empty stomach is different from that on the meal-containing stomach. When oil of peppermint was added to a meal, the emptying time of the stomach was definitely decreased. I should like to add the observation of our roentgenologist that oil of peppermint greatly facilitates fluoroscopy of the duodenum, particularly in ulcer patients with pylorospasm, by relieving the spasm so that the duodenal cavity may be visualized immediately.

(To be continued)

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

4:161 196 (Nov.) 1934

- Etiology and Pathology of Bronchiectasis A W Blair, University — p 161
Symptomatology Diagnosis and Treatment of Bronchiectasis E G Givhan Jr Birmingham — p 169
Irradiation for Inflammatory Conditions E E. Brown Nashville, Tenn — p 174
When the Diabetic Meets the Surgeon J L Branch, Montgomery — p 177
Surgical Aspect of Peptic Ulcer J S Turberville Century Fla — p 181

American Journal of Cancer, New York

22:497 764 (Nov.) 1934

- *Study of Benign Neoplasms of Rat's Breast J Heiman New York — p 497
Teratoma of Testicle. C C Herger and A A Thibadeau Buffalo — p 525
*Carbohydrate Tolerance in Cancer Patients and Effect on It of Roentgen Ray Radiation F H L Taylor and H Jackson Jr Boston — p 536
Round Cell, Spindle Cell and Neurogenic Sarcomas of Lip T de Cholnoky New York — p 548
Growth of Human Fibroblasts in Mediums Containing Silver J P M Vogelaar and Eleanor Erlichman New York — p 555
Studies in Mouse Leukemia \ Metabolic Differences Between Trans mission Lines of Mouse Lymphatic Leukemia J Victor and Margaret R. Wintersteiner, New York — p 561
Therapy of Spontaneous Mouse Tumors Failure of Additional Inorganic Compounds M C Marsh Buffalo — p 572
The Bearing of Genetic Work with Transplanted Tumors on Genetics of Spontaneous Tumors in Mice. C C Little, Bar Harbor Maine — p 578
Chemical Constitution of Chicken Tumor Extracts A Claude New York — p 586
*Development of Multiple Tumors in Tarded and Radiated Mice. Part II M C. Reinhard A. A Thibadeau and C F Candee Buffalo — p 590
Effect of Aqueous Extracts of Chicken Tumor on Nucleic Acid D A MacFadyen New York — p 597
Effect of Radiation Lactate and Iodoacetic Acid on Tumors W R Franks M M Shaw and W H Dickson Toronto — p 601
Electrical Currents from Dental Metals as Etiologic Factor in Oral Cancer M C Reinhard and H A. Solomon Buffalo — p 606
Study of Serum of Chickens Resistant to Rous Sarcoma F G Banting and S Cairns Toronto — p 611
Study of Rous Sarcoma Tissue Grafts in Susceptible and Resistant Chickens D Irwin S Cairns and F G Banting Toronto — p 615
Nephrogenic Tumors C F Geschickter Baltimore and H Widenhorn Freiburg Germany — p 620

Benign Neoplasms of the Rat's Breast—Heiman carried out experiments to establish, if possible, the transplantability of benign neoplasms of the rat's breast, their rate of growth and their relation to malignant changes, and to determine the conditions for the assumption of the characteristics of malignant tumors. He found that benign fibromas and fibro-adenomas of the rat's breast are easily and continuously transplantable. They grow not only in the region of the mammary glands when transplanted but also in the axilla, groin nape of the neck, outer side of the thigh and in the abdominal cavity. The transplanted tumors do not always retain the structure of the spontaneous tumors from which they are derived. The transplantability of a tumor is not a criterion of malignant manifestation. Although the growth energy of the tumors fluctuates widely, there has been no cessation in one series for fifty-three generations, in a second for thirty-three generations, in a third for thirty two generations and in a fourth for sixteen generations, during a period of ten years. This type of tumor grows as readily in adult rats as it does in young rats. In the former the growth tends to glandular hyperplasia, in the latter to a

marked increase of fibroblasts. It has been found that three of the six primary fibro-adenomas of the breast which were transplanted through four generations or more became actively growing cellular tumors with the morphology of sarcomas. Some of the tumors ulcerate through the skin, but this is due only to pressure on the skin and is not an evidence of malignant change. With a large number of inoculations and the implantation of two or more fragments 3 mm in diameter, these benign tumors are readily transplantable for many generations in suitable hosts. The benign tumors as they developed into sarcomas required smaller and fewer fragments for transplantation. Krehbiel has transplanted one such tumor (308) by the trocar method, using 3 mg of tumor substance, for fifty-six generations. Of sixteen rats with spontaneous benign tumors, six yielded tumors transplantable for from four to fifty-three generations.

Carbohydrate Tolerance in Cancer Patients—Taylor and Jackson undertook an investigation to determine further the incidence of a lowered carbohydrate metabolism in cancer and to study the relationship, if any, of the blood calcium to the carbohydrate tolerance in cancer patients. Thirty-five patients suffering from various forms of carcinoma were studied. There seems to be no direct relationship between a decreased sugar tolerance and cancer alone. There is some evidence that the decreased tolerance for carbohydrate encountered in about one third of the patients studied was due in part to the general malnutrition and cachexia commonly found in cancer. Some patients with a lowered sugar tolerance had definite involvement of the gastro-intestinal tract. Even in those patients in whom a lowered sugar tolerance was found, as determined by the usual criteria, it was not certain that such decreased tolerance curves were not due to delayed utilization of dextrose caused by the large amount of this material ingested. Most of the abnormalities found were consistent with the types found following the feeding of carbohydrate in nondiabetic patients suffering from starvation or malnutrition. The lack of direct relationship between cancer and sugar tolerance was shown still further by a consideration of the effect of roentgen radiation. Roentgen radiation did not produce any marked changes in the carbohydrate metabolism. When the tolerance for dextrose was normal at the outset, more than half of the patients studied showed an unchanged sugar tolerance following roentgen treatment. Of those patients who did show a change, the same number showed a trend toward normal as showed a further decrease in tolerance for dextrose. There was, however, a tendency among patients originally possessing a lowered tolerance for dextrose for the tolerance curves to become more normal. It was found impossible to predict from an analysis of initial sugar tolerance curves whether the outcome would be favorable or unfavorable. In patients who originally showed a normal tolerance for carbohydrate, the development of a progressively decreasing tolerance strongly indicated an unfavorable prognosis. It has been found impossible to show any relationship between the decreased sugar tolerance found in some cases of cancer and the total serum calcium.

Multiple Tumors in Tarded and Irradiated Mice—Reinhard and his associates state that there is no evidence that short wavelength radiation changes the susceptibility of mice to the production of tar tumors, nor does the radiation alter the carcinogenic power of the tar used. They believe that the low spontaneous tumor incidence of the nonirradiated mice is a direct result of the tarring. In their irradiated group this low incidence may be attributed to the tarring also, or it may be a result of the radiation or a combination of the two. It is possible that the occurrence of the spontaneous tumors has merely been retarded, and, had the mice lived longer, a proportion of mammary carcinoma might have been obtained that would more nearly approximate the normal expectancy. The appearance of the multiple tumors, distant in all cases from the site of painting, may be considered evidence in favor of a general action of the tar. This is especially emphasized by the striking absence of tumors at the site of painting. However, the possibility of chance contact must not be overlooked but in view of the failure to produce tumors at the site of painting itself this possibility is somewhat remote. The authors call

attention to the difference in the histologic picture as between the multiple sebaceous adenomas produced in their series and the typical tar cancer produced locally by repeated paintings with this agent

American J Obstetrics and Gynecology, St Louis

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- License to Practice Medicine President's Address F W Lynch San Francisco—p 629
 Granulosa Cell Tumors of Ovary Clinical and Pathologic Study of Thirty Six Cases E Novak and J N Brawner Jr Baltimore—p 637
 *Iliac Lymphadenectomy with Irradiation in Treatment of Cancer of the Cervix. F J Taussig St Louis—p 650
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 *Influence of Pregnancy on Tumor Growth L A Emge San Francisco—p 682
 Status of Residual Tube Following Ectopic Pregnancy in Relation to Sterility and Further Pregnancy Analysis of Ninety Cases Examined by Uterotubal Insufflation I C Rubin New York—p 698
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 Innocuousness of Rupture of Membranes Early in Normal Labor E L King New Orleans—p 763
 Demonstration of Lymphatic Circulation in Pelvis of Living Woman by Roentgen Rays G Gellhorn St Louis—p 769
 Emphysematous Vaginitis C B Ingraham and I C Hall Denver—p 772

Irradiation in Treatment of Cancer of Cervix—Taussig reports twenty-six cases of cancer of the cervix in which the treatment consisted of irradiation of the cervix and surrounding tissues and the surgical removal as far as feasible of the tributary pelvic lymph nodes. Eighteen fell into group 2 and eight into group 3 according to the degree of malignancy. In the selection of suitable cases he gives preference to younger persons in good physical condition, excluding all markedly obese patients and those with heart or kidney complications. Radiosensitive tumors with a high malignant index were also less frequently subjected to this procedure. The immediate operative result was usually satisfactory. There was rarely any postoperative shock except in the more advanced cases. The outlook is encouraging in the group 2 cases but discouraging in the group 3 cases. Of the latter only one patient has survived two and one-half years since operation. Of the group 2 patients, one died after operation, five died of recurrence from twelve to twenty-one months after operation, twelve are living, one with a probable recurrence, and eleven are clinically well for periods ranging from four months to three and one-half years. The operation is as follows: A midline incision is made under spinal anesthesia. After simple ligation and removal of the right adnexa, the posterior sheath of the broad ligament on that side is caught with a clamp and the ligament is opened, exposing the ureter. The iliac gland, the most common site of cancer metastasis is caught and ligated. When this gland and its surrounding fat are removed, the obturator nerve can be seen shining white and running straight toward the obturator foramen. After passing the finger between it and the external iliac vessels one can usually feel an elongated, usually rather round and firm, gland lying halfway between the iliac bifurcation and the femoral ring. By retracting the round ligament, one exposes this region and the removal of this obturator gland is effected without difficulty. If the parametrium is not thickened too much it is possible to follow the ureter down to where it crosses the uterine artery. At this point a definite round nodule or pair of nodules, the uterine glands or glands of Championnier can be felt. The removal of these glands is more difficult, since injury to the ureter must be avoided. It is often necessary to ligate the uterine vessels to accomplish this. In such instances radon seeds were

implanted into the lymph node. Two gold radon seeds of 15 millicuries each are implanted with a trocar along the course of the sacro-uterine ligaments. A third radon seed of equal strength is implanted into the loose connective tissue of the iliac bifurcation. In order to prevent the formation of a hematoma in the broad ligament, the connective tissue space that has been opened is compressed by suturing the round and sacro-uterine ligaments to one another at a distance of 4 or 5 cm. from their uterine insertion. The remaining wound is closed by a running peritoneal stitch. The same procedure is done on the other side. The abdomen is closed without drainage. This was usually followed by an intracervical application of radium.

Influence of Pregnancy on Tumor Growth—Emge correlates the clinical with experimental observations and concludes that 1 The influence of pregnancy on the behavior of neoplastic tissue depends on a complex set of factors 2 The growth rate of neoplasms is inherent, but the controlling mechanism is still unknown. Clinical evidence suggests that pregnancy favors a protective mechanism against tumor growth. 3 Neoplastic tissue takes part in the local and remote reactions incident to pregnancy, the ultimate result depending on the length of the gestational period. These changes are of a temporary nature. The extent of involution of benign neoplasms depends on their relation to the generative organs, particularly the uterus. 4 Neoplastic tissue sensitive to hormone stimuli may exhibit increased activity during pregnancy. 5 Physical changes in benign tumors during gestation are not necessarily expressions of growth activity. 6 It is not proved that pregnancy favors the inception of malignant growth or the malignant degeneration of benign tumors. 7 Experimental evidence substantiates the clinical observations in general and permits the conclusion that pregnancy as a rule does not influence the growth rate or the size of neoplasms beyond certain reactions, of which retardation is the most frequent. In many instances it remains unaffected, and occasionally an acceleration is observed. At the termination of gestation, neoplasms assume their primary growth rate.

American Journal of Physiology, Baltimore

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 Effect of Continued Oral Administration of Histaminase and Pancreatine on Gastric Secretion F Biguria and A Canzanelli Boston—p 243

Effect of Posture on the Heart—Schneider and Crampton determined the output of the heart of several subjects in both the standing and the reclining position. Their results substantiate the older point of view attacked by Grollman. Without exception the subjects showed an increase in the output

of the heart after assuming a recumbent position for fifteen minutes as compared with the output while standing. Ordinarily on prolonged quiet standing the output of the heart either remains unchanged or decreases slightly in subjects exhibiting no distress as a result of the long standing. The output of the heart decreased in subjects who, on long quiet standing, display poor circulatory compensation in the erect position. A pulse pressure below 20 mm of mercury indicates a falling cardiac output.

American Journal of Public Health, New York

24: 1099-1196 (Nov.) 1934

- Public Health in Tudor England. S. V. Larkey. San Francisco.—p. 1099.
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Outbreak of Milk Poisoning Due to Toxin Producing Staphylococcus Found in Udders of Two Cows. J. A. Crabtree and W. Litterer. Nashville. Tenn.—p. 1116.
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Health Problems Connected with Ethylene Treatment of Fruits. E. M. Chace. Los Angeles.—p. 1152.
Pleio-Antigenicity of Proteus. H. Welch. F. L. Mickle and E. K. Borman. Hartford. Conn.—p. 1157.

American Review of Tuberculosis, New York

30: 519-598 (Nov.) 1934

- Relations of Make Up of Body to Disposition to Tuberculous Infections and Their Course. L. F. Barker. Baltimore.—p. 519.
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Some Physiopathologic Aspects of Artificial Pneumothorax. G. E. Ehrenburg. Spivak. Colo.—p. 535.
Pulmonary Lesions Experimentally Produced by Intratracheal Introduction of Aluminum Oxide and of Borosilicate Glass. W. S. Lemon and G. M. Higgins. Rochester. Minn.—p. 548.
Some Clinical Aspects of Nontuberculous Allergy in Tuberculosis. J. E. Sherman and O. E. Egbert. El Paso. Texas.—p. 561.
Rib Fracture by Cough. Report of Case. C. R. Howson. Los Angeles.—p. 566.
Intestinal Tuberculosis in Fourteen Hundred Autopsies. P. M. Crawford and H. P. Sawyer. Denver.—p. 568.
Precipitin Test as Means of Diagnosis of Tuberculosis in Cattle. Janet McCarter. W. Wisnicky and E. G. Hastings. Madison, Wis.—p. 584.
The Lymanhurst Classification of Tuberculosis. C. A. Stewart. F. E. Harrington and J. A. Myers. Minneapolis.—p. 588.
Problems of the General Practitioner in Tuberculosis. E. J. Simons and J. B. Simons. Swanville. Minn.—p. 593.

Nontuberculous Allergy in Tuberculosis—Sherman and Egbert observed that the desensitization of a tuberculous individual to an offending protein is harmless in that it does not incite an activation of the tuberculosis. The administration of the so-called nonspecific protein, in the ignorance of the existence of the inciting atopen, will sometimes cause activation of the allergy, but not of the tuberculosis. Acquired allergy is not related to immunity. Acquired allergy is most prevalent in arresting cases of tuberculosis, in which the immunity is greatest. The evidence is in favor of the original conclusion that allergy and immunity in tuberculosis are one and the same.

Intestinal Tuberculosis—Crawford and Sawyer state that ulcerative tuberculous lesions of the intestine were found in 68.8 per cent of fatal phthisis at necropsy. Ulcerative intestinal tuberculosis was found as a complication of tuberculous pulmonary disease in 87.5 per cent in Negroes, as against 42.2 per cent in white persons. Tuberculous laryngitis occurred in 36.6 per cent of cases of intestinal tuberculosis, but 96.6 per cent of cases of tuberculous laryngitis showed intestinal ulceration. Only 10.8 per cent of the ulcers in this series were of the classic girdling type. In 540 cases of intestinal tuberculosis complicating tuberculous pulmonary disease, 53.7 per cent occurred in cases in which the duration of the pulmonary symptoms was from six months to three years. In 34 per cent of cases the intestinal lesions were asymptomatic, and in 35 per cent the duration of enteric symptoms was less than six months. Marked intestinal symptoms were not present in any cases

showing only preulcerative lesions. There were 51.6 per cent of cases classified as having had good treatment, as against 36.8 per cent of cases showing evidence of serious deficiencies in treatment. Some form of collapse therapy for the control of the pulmonary disease had been carried out in 20 per cent of the cases.

Archives of Neurology and Psychiatry, Chicago

32: 915-1124 (Nov.) 1934

- Cerebral Circulation. XXXII. Effect of Stimulation of Sympathetic Nerve on Pial Vessels in Isolated Head. J. L. Pool. H. S. Forbes and G. I. Nason. Boston.—p. 915.
Herniation of Nucleus Pulposus. Cause of Compression of Spinal Cord. M. M. Peet and D. H. Echols. Ann Arbor. Mich.—p. 924.
Neurofibrils in Systemic Disease and in Supravital Experiments with Remarks on Pseudo-Atrophy of the Brain. L. Alexander. Boston.—p. 933.
Premotor Area. Its Relation to Spasticity and Flaccidity in Man. C. Davison and I. Bieber. New York.—p. 963.
Tumors of Rathke's Cleft (Hitherto Called Tumors of Rathke's Pouch). C. H. Frazier and B. J. Alpers. Philadelphia.—p. 973.
Children's Imaginary Companions. Margaret Svendsen. Chicago.—p. 985.
Psychoses Associated with Somatic Diseases That Distort Body Structure. Lauretta Bender. New York.—p. 1000.

Herniation of Nucleus Pulposus—Peet and Echols discuss two cases of nodules on intervertebral disks producing symptoms of tumor of the spinal cord, in the first case syndrome of involvement of the cauda equina, complete cerebrospinal fluid block, localization with iodized oil, laminectomy and removal of a nodule from an intervertebral disk with recovery and in the second case clinical signs of pressure on the cervical spinal cord, partial subarachnoid block, laminectomy and removal of a nodule from an intervertebral disk with partial recovery. The nodules removed were not tumors but consisted of nucleus pulposus tissues that had undergone secondary changes following herniation from the intervertebral disks. Herniated nucleus pulposus should be considered in cases of compression of the spinal cord that present roentgen evidence of a diseased disk at the proper level.

Premotor Area and Its Relation to Spasticity—Davison and Bieber state that an analysis of six cases of flaccid hemiplegia revealed destruction of the lower two thirds of the premotor area in five. In the other case only half of the premotor area was affected. In the first three cases, with complete occlusion of the middle cerebral artery, the degree of involvement of the premotor area was grossly identical with that observed in cases of hemiplegia with complete closure of the middle cerebral artery accompanied by spasticity. In the other three cases, with incomplete occlusion of the middle cerebral arteries the premotor cortex was not so extensively destroyed. In these cases the gray matter of the lower two thirds of the premotor area on gross examination appeared partly spared. Careful microscopic examination, however, revealed histopathologic changes. These consisted of a slight distortion of the cyto-architectural layers, small areas of destruction with a dropping out of the ganglionic cells, proliferation of the vessels and an increase in the glial elements. Clinicopathologic investigations reveal that the premotor area in man may be involved without giving rise to spasticity, and that the integrity of the premotor area is not solely responsible for the presence of flaccidity.

Tumors of Rathke's Cleft—Frazier and Alpers suggest the following revisions in the nomenclature of sellar and parasellar lesions: (1) the term hypophysis should be retained and pituitary discarded, (2) the term craniopharyngioma should be discarded in favor of tumor of the hypophyseal stalk and (3) the so-called tumor of Rathke's pouch should be designated tumor of Rathke's cleft. They attempt to establish the tumor of Rathke's cleft as a definite entity by presenting a case in which the tumor was situated entirely in the suprasellar area, with no visible connection with the third ventricle. Its structure and, in part, its location are suggestive of a congenital tumor originating from the remnants of Rathke's cleft. They believe that the feature in their case that differentiates the tumor from other tumors in the region of the sella turcica is the presence of a single layer of ciliated columnar epithelium. The possibility of the origin of these ciliated cells and cysts from the pars tuberalis of the hypophysis suggested itself, but, so far

as is known this portion of the hypophysis contains no ciliated cells. Nevertheless, the fact remains that there are in the human hypophysis ciliated cells that are found in the so-called Rathke cleft. The presence of ciliated epithelium lining Rathke's cysts was described by Erdheim in man and by Martin in rats and marsupials. The significance of these ciliated cells is uncertain. Rasmussen suggested that they may be pathologic or that "they should be looked on as unusual differentiations of hypophyseal tissues or as migrations of nasopharyngeal elements during early stages of development." The authors state that, whatever the origin of the ciliated cells may be, it is certain that at least in some human hypophyses such cells are found lining the remains of Rathke's cyst and that they conform in their morphology to the type of cell seen in their case. Theoretically, tumors of Rathke's cleft should be found within the sella turcica, but when one considers the origin of the anterior lobe from the buccal epithelium and the process of traversal and rotation during the course of its development, it is not surprising to find such tumors wholly outside the sella turcica.

Archives of Otolaryngology, Chicago

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Roentgen Changes in Petrous Portion of Temporal Bone Without Clinical Manifestations G. M. Coates, M. S. Ersner and D. Myers Philadelphia—p. 615

*Cytology of Nasal Polyps T. E. Walsh and J. R. Lindsay, Chicago—p. 649

*Paralysis of Larynx Due to Lead Poisoning Including Contradiction of Semon's Law M. C. Myerson New York—p. 659

Agranulocytic Angina Further Report on Case with Fatal Outcome Following Oral Surgical Treatment B. L. Bryant Cincinnati—p. 665

Hay Fever Among Japanese Part I H. J. Hara Los Angeles—p. 668

Aural Tuberculosis J. Miller, Greenwich Conn.—p. 677

Influence of Fluorine on Bony Labyrinth of White Mouse Further Observations A. Lewy Chicago—p. 693

Incidence and Significance of Sinusitis in Pneumonia E. H. Campbell Philadelphia—p. 696

Cytology of Nasal Polyps—Walsh and Lindsay examined cytologically the polyps from seventy-five cases of nasal polyposis and found that they could be divided into two types: those with many eosinophils in the tissue and those in which eosinophils were scarce or absent. Correlation of the clinical and histologic observations revealed that the polyps in the second type were invariably associated with infection in the nose or accessory sinuses, while those in the first type were often found in persons free from infection and associated frequently with demonstrable allergy. Accumulated evidence points to the fact that eosinophilia in the tissue is associated with allergy, and it is suggested that the presence of eosinophils in the nasal polyps is indicative of allergy. In cases in which eosinophilia in the nasal polyps is associated with infection, the infection is secondary in the allergic membrane or possibly there is an allergic sensitivity to the infecting organism. Surgical intervention in the two types gives different results. The results in patients with polyps having few or no eosinophils were distinctly satisfactory, while those in patients with polyps having many eosinophils were mostly disappointing. The histologic examination of nasal polyps with regard to the presence or absence of eosinophils offers a simple method of determining whether the polyps are due to infection or whether they are the product of nasal allergy. The result of surgical treatment of polyps with few eosinophils is good, but in the presence of many eosinophils it is poor.

Paralysis of Larynx Due to Lead Poisoning—Myerson collected nineteen cases of paralysis of the muscles of the larynx due to lead poisoning, to which he adds a personally observed case. A consideration of the various paralyses of the larynx due to lead poisoning leads him to question the validity of Semon's law, "that the fibers of the motor nerves going to the abductors succumb to organic affections sooner than or exclusively of the adductors." Semon believed that there was an actual biologic difference in the composition of the laryngeal muscles and nerve endings which explained the predilection of organic disease for the abductor muscles and their nerves. In the twenty cases of involvement of the larynx due to lead poisoning there were two of unilateral adductor paralysis and

no other involvement. There was one case of unilateral adductor paralysis associated with involvement of the interarytenoid muscle. A single case of paralysis of the interarytenoid muscle is included, as are also two cases of bilateral adductor paralysis. An unusual case of involvement of both cricothyroid muscles is also included, so that seven of the twenty cases showed involvement of muscles other than the abductors. These seven cases constitute a definite challenge to the validity of Semon's law.

Canadian Public Health Journal, Toronto

25: 461 512 (Oct.) 1934

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Morbidity and Mortality in Industrial Establishments R. V. Ward Montreal—p. 476

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The Inspectors of Sanitary Units Their Work and Their Responsibilities J. Gregoire Quebec—p. 488

Reporting of Communicable Diseases in Health Units A. R. Foley Quebec—p. 493

Georgia Medical Association Journal, Atlanta

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Journal of Immunology, Baltimore

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The Agglutinogens M and N of Landsteiner and Levine A. S. Wiener, Rebecca Zinsher and J. Selkove Brooklyn—p. 431

*Thermostable Bactericidal Substance Demonstrated in Human Serum, Particularly During Fever F. Wulff, Frederiksberg Denmark—p. 451

Agglutination Reaction Observed with Some Human Bloods Chiefly Among Negroes K. Landsteiner New York W. R. Strutton Orangeburg N. Y. and M. W. Chase—p. 469

Antigenic Relationship of Alcohol Soluble Fractions of Brain and Testicle J. H. Lewis Chicago—p. 473

Potency and Changes with Storage of Poliomyelitis Serum M. Brodie, New York—p. 479

Distribution and Solubility of M and N Note W. C. Boyd Boston—p. 485

Rate of Response of Rabbits to Two Antigens of Tubercle Bacilli G. B. Reed, Christine E. Rice and B. G. Gardiner Kingston Ont.—p. 487

Thermostable Bactericidal Substance in Human Serum—Wulff demonstrated that a thermostable bactericidal substance occurs in human serum, particularly during fever. Its effect was particularly seen in tests with a strain of meningococcus highly susceptible to the bactericidal substances of serum. The thermostable bactericidal substance was found besides in some few other cases, in tests with two different strains of meningococci with three strains of Pfeiffer bacilli and with almost the same frequency as with the highly susceptible meningococcus strain in tests with a strain of *Diplococcus crassus*. The thermostable bactericidal substance is found to occur primarily in the serum of febrile patients, in tests with a highly susceptible meningococcus strain the thermostable substance was demonstrable in 85 per cent of the febrile patients examined, one fourth showing a marked action. The thermostable substance could not be demonstrated in 90 per cent of the nonfebrile patients. Injection of sulfosin seems to stimulate the organism to produce a thermostable bactericidal substance. Increase of the bactericidal substances in active serum was found in tests against a *diplococcus* strain, a phenomenon that is probably elicited only under quite special conditions. The thermostable bactericidal substance seems to keep well in vitro. The thermostable bactericidal substance possesses an enzymic property, since it did not become fixed in absorption tests with the meningococcus strain that was killed by it.

Journal of Lab and Clinical Medicine, St. Louis

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- Abridged Key to the Genera of Pathogenic Fungi F W Shaw, Richmond, Va.—p 113
- Pharmacologic and Therapeutic Study of Bromsalizol, or Monobrom Saligenin D I Macht and F Dunning Baltimore—p 127
- *Clinical Significance of Very Low Concentration of Urea in Blood A E Osterberg and N M Keith Rochester Minn.—p 141
- Cholesterol Esters as Mechanism of Fat Metabolism H Petersilie, New York.—p 144
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- Use of the Hagedorn Jensen Blood Sugar Technic in Cases of Phlorhizinization Note S B Barker New Haven Conn.—p 192
- *Stable Starch Indicator for Iodometric Estimation of Chlorides in Blood and Urine C S Shapiro New York.—p 195
- Simple Method for Manifolding of Kymograph Tracings D Lubin Baltimore.—p 199
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- *Application of Bismuth Sulphite Medium in Isolation of Bacillus Typhosus from Feces T F Sellers, Janie F Morris and Madge Reynolds Atlanta Ga.—p 202
- Solution Pressure Dome for Mammalian Laboratory O G Harne and C E Butts Baltimore.—p 207

Low Concentration of Urea in Blood—Osterberg and Keith reviewed the records of the past four years and found twenty-five cases with widely differing ailments in which the concentration of urea in the blood was less than 10 mg per hundred cubic centimeters. For the determination of urea in the blood they used the van Slyke and Cullen modification of the Marshall urease method on whole, oxalated blood. Several patients were suffering from a serious chronic disease, such as pulmonary tuberculosis, encephalitis, diffuse skin lesions, chronic suppuration, diabetes mellitus, duodenal ulcer and Addison's disease. In some cases also there were chronic renal lesions, these including bilateral pyelonephritis, bilateral hydronephrosis, tuberculosis of the kidneys, and the diffuse nephritis associated with disseminated lupus erythematosus. The occurrence of a low value for urea in the blood in diabetes insipidus would seem to be a possible result of the enormous water exchange. Similarly, in diabetes mellitus the low value for urea might be the result of polyuria. In duodenal ulcer with obstruction the water and inorganic metabolism may be upset markedly, but it can be corrected readily by large intravenous injections of fluid. In this condition also a low value for urea in the blood might be the result of a large intake of water. However, in other cases no definite organic lesions or marked physiologic disturbances were demonstrated, and the symptoms were described as being due to nervous exhaustion. The occurrence of an abnormally low content of urea in the blood in cases with bilateral renal disease seems rather paradoxical. In a case of disseminated lupus erythematosus the value for urea was 6 mg per hundred cubic centimeters, the patient was taking in and excreting a considerable volume of water, but the diet was inadequate. The most plausible explanation is that during a temporary process of healing in the kidneys, urea and water were readily excreted and the production of urea was decreased. In a case of chronic pulmonary tuberculosis in which albuminuria and cylindruria developed during the last month of illness the value for urea in the blood was 6 mg per hundred cubic centimeters, and at necropsy there were no demonstrable histologic abnormalities in the kidneys. Thus it is possible to have a very low value for urea in patients with abnormal kidneys whether the renal disturbance is due to demonstrable histologic changes or to physiologic abnormalities.

Indicator for Estimation of Chlorides in Blood—Shapiro prepared a stable starch indicator with the use of acetylsalicylic acid and methenamine as preservatives. It was found to keep in the original state for several months. Comparative tests indicated that it may be used safely in iodometric

methods for chlorides in blood and urine. The tests further show that this indicator works well when the specimens themselves contain the foregoing preservatives.

Medium for Isolation of Bacillus Typhosus from Feces—Sellers and his associates find that the bismuth sulphite medium as devised by Wilson and Blair is superior to the endo medium as a means of laboratory detection of *Bacillus typhosus* in feces. They discuss the preparation of the medium, its practical application and its advantages and disadvantages. They especially recommend bismuth sulphite medium for use in state and municipal laboratories in which the detection of typhoid carriers among food handlers and dairy workers is an important feature.

Journal of Pediatrics, St. Louis

5: 573 726 (Nov) 1934

- The Common Cold and Allied Upper Respiratory Infections Observations During Five Year Course of Self Selection Diet Study Clara M Davis Winnetka Ill.—p 573
- Hemophilus Pertussis Endo-Antigen (Krueger) Use in One Hundred and Twenty Two Cases G F Munus and C A Aldrich, Winnetka, Ill.—p 590
- *Pertussis in Adults G Mannerstedt, Oakland Calif.—p 596
- Sickle Cell Anemia in White American Family J V Cooke and J K Mack St. Louis.—p 601
- Primary Carcinoma of Kidney in Childhood Review of Literature Case Report with Necropsy C S Boyd and J R Lisa New York.—p 608
- Acute Infectious Croup General Study of Acute Obstructive Infections of Larynx, Trachea and Bronchi with Analysis of Seven Hundred and Twenty Seven Cases A H Neffson and S M Wishnik, New York.—p 617
- *Diphtheritic Myocarditis Review of Four Hundred and Ninety Six Cases A Hoyne and N T Welford Chicago.—p 642
- *Rheumatic Encephalitis (Chorea Insaniens) Case Report with Use of Avertin Therapy I A Frisch New York.—p 654
- Endocrine Studies in Infants and Children I Methods of Procedure and Diagnostic Criteria. M B Gordon Brooklyn.—p 659

Pertussis in Adults—Mannerstedt states that, in a recent epidemic of pertussis, chronic coughs in adult contacts were sufficiently common to suggest a study of the cases to determine whether or not *Haemophilus pertussis* was an etiologic factor. A thorough history covering all the anticipated characteristics was taken in all adults (twenty-nine, aged 24 years or more) presenting themselves with a chronic cough. This was supplemented by careful follow-up notes. Blood counts were taken when the patients were first seen and periodically from every two to five days during the clinical course. Cough plates were taken when feasible and, after adequate incubation, thoroughly examined bacteriologically. The author observed that, in adults, pertussis starts with an insidious cough from one to three weeks after exposure. This cough lasts from five to six weeks or longer. It is worse at night and is intensified by such factors as exertion, excitement, eating and temperature changes. Whooping and vomiting are infrequent, but gagging and choking are common. A thick, white, tenacious phlegm is raised. Positive cough plates were obtained in six cases. The clinical picture and blood studies were similar to the remaining cases. The blood count in adult pertussis is not as characteristic as in the juvenile cases and usually is of no value in diagnosis.

Diphtheritic Myocarditis—Hoyne and Welford point out that in 496 cases of myocarditis which developed in 4,671 diphtheria patients there was a fatality rate of 62 per cent. The fatality rate was 75 per cent during the age period from 1 to 5 years, 54 per cent from 6 to 10 years, 50 per cent from 11 to 15 years, and 43 per cent in those older than 15 years. The mortality was highest (70 per cent) in cases in which there was nasal involvement and lowest (11 per cent) in simple tonsillar diphtheria. Of all deaths from diphtheritic myocarditis, 79 per cent occurred during the first fourteen days of the disease, the average day on which death occurred being the tenth. Abdominal pain and vomiting with a falling pulse rate and blood pressure were signs of grave prognostic importance. The malignant type of diphtheria was an important factor in accounting for the high mortality rate. The most important pathologic change in 126 necropsies was extensive toxic myocardial degeneration. Epinephrine and caffeine were of no value as permanent circulatory stimulants. Parenterally injected dextrose solution seemed to be a life saving measure in some cases of severe diphtheritic myocarditis.

Rheumatic Encephalitis and Tribrom-Ethanol—Frisch presents the case of a most severe type of chorea, so-called chorea insaniens, which occurred shortly after the course of a rather mild acute rheumatic fever. The involvement of the central nervous system was widespread and severe, evidenced by a most marked motor activity and severe emotional disturbance, and by hyperpyrexia and cyanosis, which were probably of cerebral origin. During the course of the severe nervous disturbance, there was progressive cardiac involvement, indicated first by an incomplete heart block, followed by a definite pericarditis with effusion. After the acute central nervous system involvement had subsided, residual nervous phenomena resulted. These phenomena consisted of fixation of the eyeballs in a downward gaze, with inability for ocular motor activity in any direction—an evidence of basal ganglion disease affecting ocular motor control. Because of the newer knowledge of the pathology of chorea, the clinical features of his case and its close relationship to the rheumatic virus the author believes that the designation of the condition as rheumatic encephalitis is justified. After other sedatives had failed to produce any result, rest and relaxation were obtained by tribrom ethanol. This was administered rectally in a dosage of 80 mg per kilogram of body weight. During the quiet periods produced by the anesthetic, nourishment and other therapeutic aids could be administered.

Medical Annals of District of Columbia, Washington

3 255 274 (Oct.) 1934

- Maternal Morbidity and Mortality in the District of Columbia H F Kane and H P Parker Washington—p 255
Iodine Resistant Hyperthyroidism W R Morris, Washington—p 257
Some Observations on Posterior Sinusitis R A Kearny Washington—p 262
Interrupted Subcuticular Suture J Horgan Washington—p 268
Midsternal Thoracotomy H H Kerr Washington—p 269

New England Journal of Medicine, Boston

211 801-848 (Nov 1) 1934

- Mistaken Diagnoses of Cancer Case Studies D Merrill Boston—p 801
Treatment of Varicose Ulcer by Gentian Violet C M Krinsky Worcester Mass—p 803
Occurrence of Common Duct Stone Following Gallbladder Operations L Hermanson Boston, and S Goldowsky, Providence R I—p 806
Disinfection in Osteomyelitis of Phalanx (Felon) F J Cotton and G M Morrison, Boston—p 809
Forty Years F B Sweet, Springfield Mass—p 810
Hospitals Now and Then F A Washburn Boston—p 816
Description of Voluntary Hospital Insurance Plans Now Utilized by English Workmen and Their Families S Lamb, Liverpool, England—p 821

211 849 906 (Nov 8) 1934

- Cancer of Lower Colon (Sigmoid) and Rectum E L Hunt Worcester Mass—p 849
*Treatment of Angina Pectoris and Congestive Failure by Total Ablation of Normal Thyroid Gland XV Particular Reference to Surgical Technic and Summary of Results in Rheumatic Heart Disease D D Berlin H L Blumgart, A A Weinstein J E F Riseman and D Davis, Boston—p 863
Transurethral Prostatic Resection H C Bumpus Jr, Pasadena, Calif—p 871
Treatment of Fractures About Ankle Joint. C R Murray New York—p 878

Treatment of Angina Pectoris by Ablation of Thyroid

—In the course of the last eighteen months, Berlin and his associates have treated seventy-five patients with various types of chronic heart disease by total ablation of the normal thyroid. In an attempt to reduce the operative mortality and postoperative complications to a minimum anatomic and surgical studies have been made of the parathyroid bodies and the recurrent laryngeal nerves. The value of various anesthetics has also been studied. As a result of these studies, improvements in surgical and medical management have been effected and the last thirty-six consecutive operations on patients with chronic heart disease have been performed without mortality. They discuss the surgical problems that should be considered in the technic of the operation the parathyroids, recurrent laryngeal nerves, the necessity for total ablation of the thyroid the choice of anesthesia the selection of patients and changes in preoperative and postoperative treatment, the preoperative basal metabolic rate and coronary thrombosis. They give the results of total thyroidectomy for the treatment of chronic rheumatic heart disease and compare with them those obtained in the

treatment of arteriosclerotic heart disease. They believe that the beneficial results that have been achieved by total ablation of the normal thyroid in patients with angina pectoris and recurrent congestive failure warrant the further application of this procedure in patients who are incapacitated in spite of all available medical treatment.

211 907 948 (Nov 15) 1934

- Clinical Study of Chronic Ulcerative Colitis E S Emery Jr., Boston and P H Wosika, Chicago—p 907
Pernicious Anemia W P Murphy Boston—p 914
Pulmonary Tuberculosis Roentgenologically Considered. A S Merrill Manchester N H—p 916
Two Stage Operation for Bladder Tumors A H Crosbie Boston—p 920
*Presence in Egg White and in Rice Polishings Concentrate Low in Vitamin B₂ (G) of Antipernicious Anemia Principle D K Miller and C P Rhoads, New York—p 921
*Leverage Reduction in Fractures of Surgical Neck of Humerus. F J Cotton and G M Morrison, Boston—p 924

Antipernicious Anemia Principle in Egg White—The observations of Miller and Rhoads indicate that, contrary to the conclusion of Wills, the dietary antipernicious anemia factor is present in egg white, hence they fail to substantiate the conclusion of Wills that the antipernicious anemia factor and vitamin B (G) are dissimilar. That vitamin B₂ (G) and the antipernicious anemia dietary constituent are identical is also not justified, since egg white may well contain an almost infinite number of substances other than the vitamin. The results of an experiment in which a clear cut increase of reticulocytes and improvement of blood values followed the administration of an amount of rice polishings concentrate containing only 75 units of vitamin B₂ (G) are clear cut. If vitamin B₂ (G) is the active principle it must be effective in an exceedingly low concentration, since in two experiments no more than 100 and possibly as few as 20 units daily was sufficient to effect a response. In one experiment an amount of material containing only 75 units daily was effective. The difference in weight between the largest rats employed and an average adult human being is as 1,400. Conclusive proof of the identity or lack of identity of the dietary antianemic factor and vitamin B₂ (G) must be deferred until isolation of the vitamin in a pure form.

Fractures of Humerus—The form of reduction that Cotton and Morrison are using for fractures of the surgical neck of the humerus is as follows. Finger and roentgen examination are done in order to define the relation of fragments. Then the patient is anesthetized and placed on his back. Strong steady pull is exerted downward on the wrist (arm in extension) with a hand grip or with a clove hitch about the wrist, for at least five minutes. Then the operator thrusts his arm through the axilla and, with his hand flat on the table beneath the patient's scapula, uses his forearm as a lever to pry the humerus outward. This is to overcome the spastic pull of the great pectoral muscle. When this spasm eases off, the assistant adducts the straight arm to the midline and forward (upward as the patient lies) while the surgeon, with the position of his arm almost unchanged, uses this arm as a lever to pry the upper end of the lower fragment out and backward. After one or two maneuvers of this sort, something moves, this is checked roentgenologically and the maneuver is repeated or varied as indicated. If reposition is fairly exact, the tendency to redisplacement is small and no apparatus other than a sling and a circular swathe is needed. Motion may be begun early (one week). Pendulum exercises are most useful with the arm hanging free, the patient doing the swinging. The authors cite three typical cases as ordinary routine examples.

New Orleans Medical and Surgical Journal

87 281 354 (Nov.) 1934

- Congenital Syphilis G C Jarratt Vicksburg Miss—p 284
Value of Quantitative Skin Tuberculin Test in Adults. M Sullivan and W R Wirth New Orleans—p 291
Practical Tuberculosis Case-Finding Program. B D Blackwelder Hattiesburg Miss—p 295
Summary of Refractive Conditions and Causes of Blindness in Mississippi A G Wilde Jackson Miss—p 303
Squint and Its Treatment L F Gray Shreveport La—p 307
Pneumoperitoneum Concurrent with Paracentesis Its Use in Papillary Adenomas of Ovary L A Fortier and T T Gately New Orleans—p 315
Treatment of Esophageal Strictures with Air and Water Pressure J C Rice Natchez Miss—p 316

Oklahoma State Medical Assn Journal, McAlester

27: 389-424 (Nov.) 1934

- *Epilepsies Associated with Endocrine Disorders H. H. Turner Oklahoma City—p. 389
Report of Series with Alum Precipitated Toxoid C. E. Bradley Oklahoma City—p. 393
Generalized Skin Eruption with Gastrointestinal Involvement Due to Two Different Species of Fungi O. G. Hazel and J. H. Lamb, Oklahoma City—p. 395
Pneumoperitoneum as Practical Procedure in Gynecology A. R. Sugg Ada—p. 398
The Neurasthenic Patient S. C. Shepard and F. J. Nelson Tulsa—p. 401
Rhabdomyoma W. H. Bailey Oklahoma City—p. 408

Epilepsies Associated with Endocrine Disorders —

Turner demonstrates the importance of endocrine dyscrasias as an etiologic factor in the causation of epilepsy. He presents cases illustrating endocrine (parathyroid, pancreas, suprarenal and hypophysis) disorders in the convulsive states relieved by endocrine therapy. Calcium metabolism is regulated by the parathyroids. One of the prominent actions of calcium is on the excitability of the nervous and muscular systems. This is evidenced in parathyroid tetany by marked nerve and muscular hyperirritability due to a lowered calcium balance. Calcium by mouth is indicated in the parathyroid and infantile types. The role of the pancreas and disturbed sugar metabolism as a causative factor in epilepsy has been demonstrated by Seale Harris and others. They have proved conclusively the definite association of convulsive states with hyperinsulinism and other hypoglycemic conditions. The majority of cases of functional hypoglycemia may be treated by frequent feedings or by a diet high in fat, which has a depressing effect on the pancreas, or with solution of pituitary, which is an antagonist of insulin. Hyperinsulinism due to neoplasms of the pancreas is best treated by operative procedures. Myasthenic, narcoleptic and epileptic episodes are frequent sequels of suprarenal insufficiency. In Addison's disease fatigue, insomnia, mental aberrations, nervous irritability and convulsive seizures occur commonly. Their immediate relief following injections of extracts of suprarenal cortex is striking. In other hyposuprarenal conditions epinephrine, the hormone of the medulla, may be equally efficacious. The relationship between the hypophysis and epilepsy was established when an anatomopathologic examination in cases of epilepsy revealed changes in the pituitary. A typical case is the one reported by Kryloff. The rather frequent occurrence of physiologic and morbid changes in the hypophysis, thyroid, suprarenals and other incretory glands in cases of epilepsy gives an indication of the relationship of these glands to this condition. It is an established fact that there is a definite functional relationship, and one is readily able to suppose that convulsive crises may be lessened by a normal physiologic balance and aggravated by a condition that produces an abnormal or toxic pituitary secretion. This may readily explain the numerous cases of thyroid origin and their relief by the administration of thyroid or by thyroidectomy, accompanying changes in the suprarenals and relief by suprarenal substance and by denervation, and the convulsive action of insulin, which is partially counteracted by the injection of solution of pituitary.

Public Health Reports, Washington, D. C.

40: 1325-1358 (Nov. 9) 1934

- The Role, Organization and Function of Psychiatric Service in a Correctional Institution R. P. Hagerman W. K. Dyer and C. C. Lumburg—p. 1325
The Social Point of View of Psychiatric Service in a Correctional Institution Amy N. Stannard—p. 1336
40: 1359-1382 (Nov. 16) 1934
The National Leprosarium Carville La. Review of More Important Activities During the Fiscal Year Ended June 30, 1934 O. E. Denney—p. 1359
The Personality Factor in Prison Discipline F. G. Zerbst and D. E. Singleton—p. 1365
Problem Neuroses and Their Management in a Correctional Institution M. J. Peacor—p. 1370

40: 1383-1414 (Nov. 23) 1934

- *Streptococcus Bacteriophage Study of Four Serologic Types Alice C. Evans—p. 1386

Serologic Types of Streptococcus Bacteriophage —

Evans describes four serologic types of streptococcus bacteriophage, designated A, B, C and D. Their distinct behavior in cross serologic reactions is the only character that clearly

differentiates them. The virulence of a lytic filtrate for a given strain of streptococcus depends on the sensitivity of the strain and varies with different strains. When kept in a refrigerator protected from the air, streptococcus bacteriophage retains its virulence for years. Exposure hastens its deterioration. The addition of phenol or merthiolate in quantities used ordinarily for preservation also hastens its deterioration. There was no notable difference in the deleterious effect of the two preservatives. The inactivation temperature for streptococcus bacteriophage lies between 60 and 65 C. There is a slight but definite difference in the inactivation temperature of the several types of bacteriophage. Bacteriophages A and B were inactivated at 60, bacteriophage D at 63 and bacteriophage C at 65 C. The size and the nature of the plaques formed on agar cultures depend on the streptococcus that forms the substratum as well as on the type of the bacteriophage. Secondary cultures were generally resistant to lysis by filtrates homologous to that in which growth occurred. In the nascent state (in the presence of a sensitive strain) streptococcus bacteriophage will attack strains that are resistant to the filtered lysate. The four races of bacteriophage in the nascent state were examined for ability to attack 421 strains of hemolytic streptococci. Bacteriophage A lysed 89.3 per cent of strains, B, 88.4, C, 79.3, and D, 9.7 per cent. In general, pneumococci were more sensitive than hemolytic streptococci to the four types of bacteriophage in the nascent state. None of the few strains of the alpha type of streptococcus examined were sensitive to the bacteriophage. Among the few strains of *Streptococcus lacticus* examined, one was found sensitive to bacteriophage D and one of a few strains of *staphylococcus* was found sensitive to bacteriophage A. According to their sensitivity to the four races of bacteriophage, the strains of hemolytic streptococci fell into eight groups, the largest of which agree in a general way with groups already recognized as species on the basis of other characteristics.

Radiology, Syracuse, N. Y.

23: 521-650 (Nov.) 1934

- *Roentgenologic Study of the Duodenum After Intubation and Obturation P. H. Shiffer Stroudsburg Pa.—p. 521
Roentgen Therapy in Chronic Sinusitis Further Report F. E. Butler and I. M. Woolley Portland Ore.—p. 528
Irradiation of Radiosensitive Tumors M. Kahn Baltimore—p. 538
Treatment of Epithelioma of Skin G. E. Pfahler and J. H. Vastine Philadelphia—p. 542
Radiation Therapy in Carcinomas of the Uterine Cervix. H. Schmitz, Chicago—p. 548
*New Encephalographic Technic Insufflation of Air by Double Puncture Method Cisternal and Lumbar Combined M. R. Castex and L. E. Ontaneda Buenos Aires Argentina—p. 551
Changes in Lungs and Pleura Following Roentgen Treatment of Cancer of Breast by Prolonged Fractional Method Harriet C. McIntosh, New York—p. 558
Some of the Difficulties in Interpretation of Cholecystograms Cassie B. Rose Chicago—p. 567
Right Upper Abdominal Pain D. C. Balfour and B. R. Kirklin Rochester Minn. C. Hunter and B. J. Brandon Winnipeg Manit. and L. J. Carter Brandon Manit. reported by L. J. Carter Brandon Manit.—p. 571
Results of Treatment of Carcinoma of Penis H. H. Bowing R. E. Fricke and V. S. Counsellor Rochester Minn.—p. 574
The Mesentery Radiologic Study R. Pomeranz Newark N. J.—p. 582
Diaphragm and Plate Divider for Chest Roentgenography C. J. Zintheo Jr. Richmond Highlands Wash.—p. 594
Solitary Cysts of the Kidney C. C. Higgins and E. J. Lavin Cleveland—p. 598
Obstetric Roentgenography J. Rodriguez Fort Wayne Ind.—p. 604
Gastrojejuno-colic Fistula L. G. Glickman Milwaukee—p. 609
Prenatal Diagnosis of Lacuna Skull (Luckenschadel) R. J. Maier Chicago—p. 615

Roentgenologic Study of the Duodenum.—Shiffer employs a tube 106 cm. in length and 6 mm. in diameter for roentgenologic study of the duodenum. The tube is divided longitudinally into two lumens by a rubber partition, one leading to a balloon at its distal end and the other to an opening just proximal to the attachment of the balloon. A duodenal bucket at the distal end of the tube over which the balloon is attached is employed for the purpose of making the localization of the distal end of the tube under the fluoroscope easier. A Luer syringe is used to inject air, usually about 40 cc., into the balloon. The size of the balloon and the amount of air necessary to distend it are tested prior to each intubation. When the balloon is in place it is distended with air. A

barium mixture is then allowed to run from a small vessel by gravity into the duodenum proximal to the balloon, the speed of flow being regulated by the height of the reservoir. The patient is intubated after a fast of from twelve to fifteen hours. The time required for the balloon to reach the duodenum varied from one-half to one and a half hours. This time can be shortened if fluoroscopic control and manual manipulation are used. It is well to have 1 or 2 inches of slack tube in the stomach so that it does not hug the lesser curvature of the stomach too closely. The ideal place in the duodenum for the balloon is in the third or fourth portion. The purpose of the examination will be defeated if too much air is used at first. Undue stretching of the duodenal wall will initiate violent reverse peristalsis with regurgitation of the balloon. A complete obstruction should not be done at first, as an acute lesion may be present. Caution must also be used when the barium is allowed to run in so that a too sudden increase of pressure in the duodenum is not caused. Sufficient air to distend the balloon to a diameter of 2.5 cm. should be injected at first, and then the barium mixture is allowed to run in slowly if a small amount of the barium escapes beyond the balloon, more air may be introduced slowly until the opaque substance can be seen to fill the proximal duodenum. Fluoroscopic observations are made continuously while the cap and the rest of the duodenum above the obstruction are being filled, films being exposed at any desired times. The tube is withdrawn after deflation of the balloon at the end of the examination. In a series of thirty patients, twelve normal and eighteen pathologic, the author observed that sometimes certain lesions not clearly recognizable by the ordinary roentgenologic methods may be identified. In these cases the foregoing technic confirmed the diagnosis of a normal duodenum in twelve, duodenal ulcer in seven and differentiated adhesions from ulcers in four ruled out both ulcers and adhesions in three, and demonstrated a cholecystoduodenal fistula in one, a dilated ampulla of Vater in three, duodenal occlusion or stasis in three and an enlarged head of the pancreas in one.

New Encephalographic Technic—Castex and Ontaneda submit an encephalographic technic based on the existing difference of tension between the fundus of the dural cavity and the cisterna magna, when the patient is sitting up. The principle of the method is that, if a glass container filled with air is connected to a needle inserted into the cistern and another needle in the dural cavity, the lumbar liquid will pass into the glass container because of its higher pressure, will dislodge the air harbored in it and then will send this air into the cistern and finally into the endocranium, without practically altering the endocranial tension. The results that they obtained by this method in about 100 cases are satisfactory and they believe that it is just as innocuous as ventriculography or more so, and much more than encephalography, thus compensating for its greater technical complexity.

Science, New York

80:463-484 (Nov 23) 1934

- *Blood Pressure of Typhoid Carriers F C. Forsbeck Lansing Mich.—p 478
- The Energy Requirement of an Acromegalic Giant A W Rowe Boston.—p 482
- Determination of Carbon Dioxide in Atmosphere of Closed System C. Z. Rosecrans—p 483
- The Axis of the Human Foot. H. Elftman and J. T. Manter New York.—p 484

Blood Pressure of Typhoid Carriers—Forsbeck observed that a chronic typhoid carrier of long standing is more likely to have hypertension than a person of the same age in the general population. The arbitrary limit of normal systolic blood pressures is placed frequently at 140 mm. The mean systolic pressure even for those older than 60 years is but 135.2 mm. On the other hand, of forty carriers of long and short standing, 55 per cent had a systolic pressure above 140 mm., the mean systolic pressure of the group being 155 mm. An elderly group of twenty-seven persons in a county home, many of whom had arteriosclerosis, had a mean systolic pressure of but 145 mm., whereas twenty-seven carriers with the same mean age had an average pressure of 175 mm. In the eleven carriers who had typhoid before 1911 the lowest systolic pressure was 158 mm and the mean 197 mm.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Anaesthesia, Manchester

12:1-48 (Oct.) 1934

- Spinal Anesthesia Sebrechts.—p 4
- General Intravenous Anesthesia with Evipan Sodium P. Serocca.—p 28
- Dosage of "Avertin" as Surgical Anesthetic. W R N Morton.—p 33
- Who Was the Person Who Discovered Chloroform for Anesthesia Was It Simpson or Waldie? A J O Leary.—p 41

British Journal of Surgery, Bristol

22:201-416 (Oct.) 1934

- Fracture of Femur with Luxation of Ipsilateral Hip A. K. Henry and M. Bayumi.—p 204
- Fragilitas Ossium Tarda I. Fraser.—p 231
- Cysts in Region of Pancreas Notes of Case A. E. Webb Johnson and E. G. Muir.—p 241
- *Gangrene Following Fractures Excluding Gas Gangrene. H. Dodd.—p 246
- *Chronic Epididymo-Orchitis or Fibrosis of Testicle of Filarial Origin. P. N. Ray.—p 264
- Osteogenesis Imperfecta with Blue Sclerotics in Natives of India Two Cases W. L. Harnett.—p 269
- *Cholecystitis Without Stone Investigation of Two Hundred and Sixty Four Operated Cases from Clinical Radiologic and Pathologic Aspects Attempt to Determine Factors of Service in Estimating Prognosis. W. A. Mackey.—p 274
- Pancreatic Fistula Report of Case Cure by Pancreatogastrostomy R. M. James.—p 296
- Torsion of the Gallbladder A. R. Short and R. G. Paul.—p 301
- One Stage Lobectomy for Bronchiectasis Account of Forty Eight Cases. A. T. Edwards and C. P. Thomas.—p 310
- Sarcoma of the Duodenum Report of Case. M. Silverstone.—p 332
- Establishment of Laryngeal By Pass H. P. Pickerill.—p 337
- Excision of Esophagus for Carcinoma R. Rutherford.—p 340

Gangrene Following Fractures—Dodd states that gangrene may follow after several types of injury to the main artery of the limb. 1. Complete division of the chief vessel by sharp or blunt trauma. 2. Penetration of the principal artery, e.g., by a fragment of bone, groups 1 and 2 usually result in cessation of the blood supply by thrombosis or by the formation of a diffuse traumatic aneurysm. 3. Contusion or rupture of the intima or of the media and the intima together, leading to vascular obstruction by thrombosis. 4. Embolism by a thrombus that has originated in the artery at the level of the injury becoming detached and lodging more distally as an embolus, it is usually located at a bifurcation, e.g., at that of the popliteal artery. A condition of segmentary vessel spasm may also result in threatened or actual gangrene. In the diagnosis of injury to and occlusion of a main artery, all or various combinations of the following signs and symptoms may be found. 1. Presence of pulsation above the injury, with impairment or loss of it below this level. 2. Below the traumatized place an alteration from the normal sensation. 3. Blanching, cyanosis and stone coldness of the limb below the injured area. Later bullae and large blebs may form on the skin. 4. Loss of muscle power, e.g., inability to make the slightest movement of the foot or toes after a fractured tibia, even with considerable effort. 5. Presence of a hematoma and bruising about the vessel. This may not be apparent immediately on inspection but if the part is palpated by the fingers, the tension will be detected. 6. Sometimes tenderness and pain localized precisely over the chief vessel at the point of injury, this suggests thrombosis. 7. Gradual fall in the blood pressure of the limb as compared with the systemic figure denoting failing local circulation. Careful inspection of the roentgenograms may reveal signs of calcified arteries. When the onset of gangrene following a fracture is suspected in view of the inevitable amputation when it occurs surgical intervention, even though it may be heroic, is justified. The systemic indications of diseased arteries and especially the foregoing signs of interference with the circulation in a limb, should be watched for in all bone injuries. When the symptoms have appeared and have not subsided shortly wide exploration of the main vessels at the site of injury is suggested. When the vessels have been defined the further procedure will depend on the changes found on the patient's condition on the surgeon and on his equipment. One of several operations may be necessary. He presents cases of noninfective gangrene following various fractures.

Fibrosis of Testicle of Filarial Origin—Ray reports a case of chronic epididymo orchitis of nonvenereal origin. In the differential diagnosis of the case new growth of the testicle, diffuse tertiary syphilitic orchitis or gumma, hematocele and epididymo-orchitis of filarial origin were taken into consideration. The insidious onset, tardy rate of growth, history of venereal disease, moderately positive Wassermann reaction and the firm consistency of the swelling were points in favor of a diffuse syphilitic orchitis rather than a gumma. The points against it were the presence of testicular sensation, lymphangiectasis of the spermatic cord and the history of two previous attacks of pain in the testicle with successive increase in size. These points were in favor of a filarial complication. The testicle was adherent to the scrotum anteriorly, presenting a small fluctuating area, through which about a drachm (4 cc) of sterile necrotic fluid was evacuated. During the patient's four weeks in the hospital, the course of the disease was apyrexial. The blood report showed an eosinophil count of 2 per cent, but no definite cause could be discovered to explain it. The blood was not examined again for the microfilaria. The testicle was removed by operation. The testicle and epididymis, which was converted into a necrotic mass, were embedded in a connective tissue matrix surrounded by a thick fibrous capsule, obliterating the vaginal sac. Microscopically, sections of adult female worms (*Filaria Bancrofti*) and numerous microfilarias, contained within the uterus, were seen in the tunica albuginea. Degenerating adult filarias were also seen in the epididymis. No evidence of secondary pyogenic infection could be adduced. The conclusion reached was that the adult filaria was the real cause of the pathologic changes in the testicle. The condition has been described under the name of chronic epididymo-orchitis or fibrosis of the testicle of filarial origin.

Cholecystitis Without Stone—From a study of 243 cases of cholecystitis without stone and twenty-one cases of cholesterosis of the gallbladder accompanied by gallstones, Mackey observed that. In cases of cholecystitis without stone, cholecystectomy carries a mortality of 3 per cent. Cure of symptoms results in 30 per cent, and improvement in 30 per cent. In 37 per cent the end result of operation is unsatisfactory. Cholecystitis without stone seems to belong to a region on the borderline between functional and organic disease. No single test is infallible, though, in the individual case, study of the clinical history, the cholecystogram and subsequently the microscopic sections may each yield information pointing toward or away from the gallbladder. The results of cholecystectomy indicate that it is dangerous to overemphasize any one of these methods of investigation or to attribute importance to minute details. To establish a diagnosis of cholecystitis the history must be typical and should include pain. No evidence has been obtained that either flatulent dyspepsia or food selection necessarily indicates gallbladder disease or is likely to be relieved by the removal of the gallbladder. Cholecystographic changes must be definite and mere impairment of the density of the gallbladder shadow does not mean invariably that the gallbladder is pathologic. While almost every gallstone will be revealed by the use of the dye test, the same degree of precision is not attained in the field of stoneless cholecystitis. Microscopic changes are probably not significant unless they are fairly gross. Cholesterosis of the gallbladder is not of itself a pathologic or symptom-producing condition. A considerable proportion of patients are unrelieved by the removal of a stoneless gallbladder, the therapeutic failures are due to symptoms having their origin outside the gallbladder. The appendix, however, does not seem to be the organ responsible. The results of surgical treatment of cholecystitis without stone are relatively unpredictable in the individual case, even by the most modern of laboratory procedures. Certainly they are not so good as in the presence of gross organic disease, when generally speaking, symptoms are clamant and relief after operation is dramatic.

Edinburgh Medical Journal

41 605 652 (Nov.) 1934

Type II Auriculoventricular Block and Role of Digitalis in Etiology of Auriculoventricular Block. W A R Thomson—p 605
Evipan Anesthesia C K Joannidis—p 612
Malakoplakia of Urinary Bladder Report of Case A E. Chisholm and G R Tudhope—p 626

Guy's Hospital Reports, London

84: 257 386 (July) 1934

Three Early Nineteenth Century Guy's Physicians William Babington, James Curry and James Laird W Hale White—p 259
*Hemorrhagic Nephritis and Necrosis of Liver from Dioxan Poisoning H Barber—p 267
The Heart in Myxedema M Campbell and S S Suzman—p 281
Studies in Bright's Disease XI Value of Antiscarlatinal Serum in Prevention of Postscarlatinal Nephritis A A Osman—p 302
Sclerema Neonatorum (Adiposum) C K Simpson—p 307
Anal Achalasia and Megacolon (Hirschsprung's Disease, Idiopathic Dilatation of the Colon) A F Hurst—p 317
Observations on Gastritis C K Simpson—p 351
Fallacies in Fecal Bacteriology F A Knott—p 363
*Role of Manipulation in Treatment of Lower Back Pain T T Stamm—p 372
Recurrent Mouth Ulcers G P B Whitwell—p 383

Nephritis and Necrosis of Liver from Di-Ethylene Di-Oxide Poisoning—Barber cites the records of five men who died as the result of working in a process in which di-ethylene di-oxide was used. The morbid anatomy was proved, by necropsy, to be hemorrhagic nephritis in four cases associated with central necrosis of the liver, which was proved by histologic examination in three cases. There is evidence that a few intense exposures to the chemical toxin are much more serious than repeated slight exposures. It is suggested that the kidney disease was the more serious condition and was responsible for the fatal termination. It is possible that the liver necrosis, although widespread, was compatible with recovery. The morbid anatomy and histology show such acute damage to the kidneys as to suggest one large dose of the poison absorbed from the stomach. But it was concluded that absorption was by inhalation. The most feasible explanation is that after the process was intensified some liver necrosis was taking place day by day, unsuspected in the absence of jaundice and that, when the toxipylactic action of the liver failed, the poison passed on to the kidneys. In no case was there jaundice to indicate damage of the liver, but the early symptoms of the fatal illness are compared with short attacks of stomach trouble, which are attributed to sublethal doses of the poison producing some liver necrosis, from which recovery took place. The fatal illness lasted about a week, from the third day of which uremia was predominant. There is little evidence of disease from chronic poisoning, but those exposed to the chemical showed a definite increase of leukocytes, particularly the neutrophils. The absence of fatty change in the liver of the fatal cases is quite different from what is found with other known liver poisons, such as alcohol and chloroform.

Manipulation in Treatment of Lower Back Pain—Stamm points out that the possibilities of manipulation as a method of treatment are limited. Only two purposes can be achieved by its employment: (1) the replacement in apposition of displaced articular surfaces in dislocations and subluxations and (2) the breaking down of obstructions to movement. Pain in the back may be produced by the stretching of fibrous or scar tissue, by localized pressure, as when two bony points become impacted, and by congestion, which acts by causing intercellular tension, as in the pain of inflammation. The pain associated with the stretching of fibrous or scar tissue is characteristic. It is induced by activity and becomes steadily worse until rest is taken. The pain associated with a subluxation is also of the first variety. As the articular surfaces are no longer in correct apposition, certain of the ligaments of the joint must be under increased tension and this may persist even at rest. The pain therefore tends to be of a more continuous nature, and the congestive element is frequently present. The pain of localized pressure plays a much less important part in these cases and is usually associated with gross organic changes. In most cases the affected bony projections can be identified either by palpation or by roentgenograms and it is found that movements which tend to separate them will relieve pain and vice versa. There is little scope for manipulation in the majority of cases of this type. Lower back pain which has its cause in the congestion of inflammation is similar in character to pain in other parts of the body attributable to the same cause. It takes the form of a continuous ache, made worse by activity and persisting even during rest. It is not relieved by alterations of position. It is characteristic of this type of pain that a feeling of stiffness in the part is experi-

enced after a period of rest, and the first movements are the most painful. Manipulation in cases of this character requires careful consideration. In subluxation manipulation affords the only rational line of treatment and gives satisfactory results. The majority of patients are afforded instant and complete relief. In acute and chronic sprain the adhesions and scar tissue can be broken down by manipulation and full mobility restored. There are then no structures to be put on the stretch, and the pain is relieved. At this stage exercises are beneficial, because by their means the restored mobility is retained and adhesions are prevented from reforming. In chronic strains, the result of inadequate muscular function, muscular reeducation, together with the correction, after careful analysis of faulty posture associated with and related to occupation is indicated. Manipulative treatment is merely an important incident in the general scheme. In cases of focal infection, the infection is dealt with first. Then, if the pain persists, manipulation may be performed. The results in the majority of doubtful cases show that the pain is relieved considerably by the manipulation, indicating that no active inflammation was present. Cases of sacro-iliac contusion derive no benefit from manipulation. Prolonged immobilization in a plaster cast would appear to be a more rational line of treatment. In all cases of possible damage to bone or cartilage in which manipulative treatment is contemplated, preliminary roentgen examination is of the utmost importance. Manipulative treatment must not be undertaken for osteo-arthritic cases as complete ossification of the spine may occur. In acute cases of true primary sciatica and in those cases in which the pain has been present for only a short time, manipulation should be avoided. In long standing cases however, in which it is probable that the pain has been perpetuated by the presence of adhesions, it is not of itself a contraindication to manipulation, which is often followed by considerable relief from pain.

Journal of Anatomy, London

69: 1 152 (Oct.) 1934

- Dual Structure of Neopallium Its History and Significance R A Dart—p 3
Muscles of Full and of Short Action R W Haines—p 20
Arterial Vascular Patterns H H Woollard and G Weddell—p 25
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Vascularization of Cartilage D J Hurrell—p 47
*New Method of Study of the Brain Capillaries and Its Application to the Regional Localization of Mental Disorder F A Pickworth—p 62
Variations in the Cortical Lipoid of Guinea Pig Suprarenal with Sex and Age R Whitehead—p 72
Regenerative Power of Uterus II Selye and T McKeown—p 79
Extroversion of Cerebral Hemispheres in Human Embryo R H Hunter—p 82
Some Mechanical Factors in Evolution of the Central Nervous System R D Wright—p 86
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Dorsal Hair Tracts of the Australian Aborigine. F Wood Jones—p 91
Structure of Primate Kidney W L Straus Jr—p 93
Skull Showing Absence of Coronal Suture R K Rau—p 109
Emissary Foramina of the Cranium in Primates G I Boyd—p 113
Breech Fused Twin Monster M A H Siddiqui—p 118

New Method of Study of Brain Capillaries—Although more than 1,000 sections of brains of mental patients have been examined, Pickworth considers the work still in its preliminary stage. Although it is stated that the cerebrum is one of the most vascular of organs, he has found that the vascularity of the brain is far less than for instance that of the kidney (about one sixteenth), which is surprising in view of the vascularity of the brain membranes but understandable since a large proportion of the brain substance consists of organic soluble "electrical insulating" material. The preponderance of vascular abnormalities is in the cerebral supply, amounting in many cases to almost complete anemia. In many cases it is the sub-cortical part of the brain that is almost devoid of normal staining hemoglobin, merely the shell of the cortex showing the vessel stain. i. e., early stage of general softening of the brain. These and the smaller ischemic areas indicate neighboring brain paralysis, congestion may be associated with increased irritability of brain tissue. Loss of brain substance follows continued ischemia which becomes evident as a reduction of thickness of the cortex or as changes in pattern of the

architecture, owing to the plastic nature of brain substance, the volume of any given focal lesion becomes greatly reduced in the course of time. Quite commonly the author has found softenings of the brain, unsuspected during life, which vary in size from microscopic areas to an inch or more in length. These occur in any part of the white matter of the brain and its stem. Capillary hemorrhages are commonly seen, occurring in great numbers in the basal ganglions of the few cases that he has examined which during life showed choreiform symptoms. Abnormalities of the tissues adjacent to the lateral and third ventricles are not uncommonly present, and often thick walled tortuous vessels in the basal ganglions are the seat of pathologic changes sometimes accompanied by masses of yellow brown granules.

Lancet, London

2 969 1030 (Nov. 3) 1934

- Talipes Equinovarus. D Browne—p 969
*Posterior Inferior Cerebellar Thrombosis with Unusual Features A J Hall and Elizabeth Cowper Eaves—p 975
Psychoses in Cases of Malaria Following Exhibition of Atabrine. A N Kingsbury—p 979
Silicosis and Malignant Disease J H Dible—p 982
*Immunization Against Yellow Fever with Attenuated Neurotropic Virus G M Findlay—p 983
Hemostatic Possibilities of Snake Venom R G Macfarlane and B Barnett—p 985

Posterior Inferior Cerebellar Thrombosis—Hall and Eaves report a case of left posterior cerebellar thrombosis belonging as regards distribution of sensory loss, to the less common type in which sensation is affected entirely on the side opposite the lesion. The loss of tactile sensation, as well as sensations of temperature and pain over the whole contralateral side is in marked contrast to all previously recorded cases, in which the loss has been dissociated only. The left posterior inferior cerebellar artery was smaller than usual, the left anterior inferior cerebellar artery was unusually large. An area of degeneration corresponding to the distribution of the left posterior inferior artery was consistent with an occlusion of that vessel three months before death. It was smaller than usual. No other appreciable area of degeneration was found in any part of the brain stem. The degeneration of the spinothalamic tract could be traced only as far as the lower part of the pons. The authors suggest that in this man tactile impulses from the opposite side traveled through the medulla either with or closely adjacent to those of pain and temperature.

Immunization Against Yellow Fever—Findlay states that the presence of active neurotropic yellow fever virus circulating in the blood stream during the course of immunization renders the patient concerned a potential danger both to himself and to the community if any of the known mosquito vectors of yellow fever are present. Although Mathis, Laigret and Durieux state that their mass experiments were not followed by any epidemic outbreak, this does not alter the fact that, as shown by the experiments of Davis, Lloyd and Frobisher, and of Roubaud and Stéfanopoulou, *Aedes aegypti* is capable of taking up the neurotropic virus from the blood stream of monkeys and retransmitting it to other animals. Davis has recently shown that at each bite the stegomyia mosquito injects approximately 100 times the infective dose for the mouse. The chief personal danger to which a person with active circulating neurotropic virus is exposed is that the barrier between the blood stream and the brain may be broken down and the central nervous system may be invaded by the virus. This appears to have occurred in two cases reported by Laigret. It certainly occurred in one of the monkeys inoculated in the course of the present investigation. Davis, Lloyd and Frobisher also record the case of a monkey that developed encephalitis following the bite of a mosquito infected with the neurotropic virus. Occasionally also mice and guinea-pigs inoculated intraperitoneally with neurotropic virus have developed encephalitis in the absence of any known cerebral trauma. Therefore the barriers between the blood and the brain cannot be regarded as always impermeable to the neurotropic yellow fever virus. A second danger which cannot be excluded entirely is that the neurotropic strain may revert suddenly to the viscerotropic virus. In man following the inoculation of neurotropic virus, leukopenia and bradycardia are common, while symptoms such as albuminuria and jaundice have been recorded also,

and in hedgehogs Findlay and Clarke have shown that subcutaneous inoculation of neurotropic virus is capable of producing lesions in the liver and stomach similar though rather less in degree than those produced by the viscerotropic virus. The neurotropic virus should be regarded as pantropic rather than strictly neurotropic.

Chinese Medical Journal, Peiping

48 809 1016 (Sept.) 1934

- Xerosis Bacillus in Chronic Dacryocystitis H T Pi—p 809
Bilateral Congenital Epicanthus Inversus and Ptosis Report of Case T H Luo—p 814
Cuenod and Nafas's Modification of Saunders Operation for Trichiasis and Entropion E R Cunningham—p 819
Entropion in the New Born and Its Treatment K V Chow—p 830
Membranous Conjunctivitis Complicated by Binocular Corneal Ulcers Caused by Streptococcal Infection P S Soudakoff—p 833
Recent Progress in the Study of Etiology of Trachoma T F Tang—p 839
Tuberculosis of Bulbar Conjunctiva Case P S Soudakoff—p 847
Papular Syphilid of Bulbar Conjunctiva Report of Case T L Chin and C K Hu—p 852
Gumma of Bulbar Conjunctiva Case Report E R Cunningham—p 856
Ocular Syphilis C K Hu and E Chan—p 858
Cysticercus Cellulosa Subconjunctivalis Report of Case H H Feng—p 863
Keratoconus T H Luo—p 869
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Some Clinical Observations on Cases of Keratomalacia in Manchuria W H Gow—p 885
Keratitis Nummularis Dimmer Case Report W Y Chen—p 890
Some Remarks on Prolapse of Iris and Its Treatment W H Gow—p 894
Leukoma Adherens and Staphyloma Corneae Among Chinese W P Ling—p 897
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Cholesterol Crystals in Juvenile Cataract C H Chou—p 910
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Cataract Among Chinese H T Pi—p 928
Subcapsular Cataract in Osteomalacia H T Pi—p 948
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Recent View on Structure of Vitreous Body P Soudakoff—p 969
Senile Disciform Degeneration of Macula Report of Three Cases P Soudakoff—p 975
Ocular Neoplasms Among Chinese Brief Clinicopathologic Report of Eighty Two Cases with Discussions Part II W P Ling—p 982
Epibulbar Melanoma Case T H Pan—p 987
Acute Retrobulbar Neuritis in Myelitis Report of Case S P Chang—p 991
Retrobulbar Neuritis Among Chinese Preliminary Report C Pan—p 999
Oculogyric Crises Case Report E R Cunningham—p 1006

Subcapsular Cataract in Osteomalacia—Pi reports four cases from the observation of which there can be no doubt of the existence of cataract in osteomalacia. It is a subcapsular type of cataract similar to that observed in postoperative tetany. In the first case the capsular and subcapsular cataracts existed at the same time. Usually the subcapsular cataract exists alone. In the first two cases the lenticular opacities were in the form of radiating spokes and irregular patches. In the last two cases the lenticular opacities were composed of very fine dustlike dots confined to the subcapsular layers of the lens. In spite of the severe changes that took place in the lens of the second case the visual acuity remained still more or less normal for both near and far distance. In the third case the vision for both near and far distance was reduced, although the patient was not aware of the disease at all. In the first case there was blurring of the vision for a duration of five years. The cataract seems to have been a slowly progressive disease unlike the cataract in postoperative tetany, which, according to the observations of different authors, usually runs a rapid course. The lenticular opacities during the time of observation were reduced after the administration of thyroid hormone, which is usually not effective in postoperative tetany cases. Tetany was not observed in the third case, and even Chvostek's and Trousseau's signs were absent. The author's opinion is that the formation of cataract in tetany cannot be the result of tetany itself but rather the effect of deposition of calcium phosphate in the lens. He recommends that the term cataracta tetanica should be discontinued in reference to the disease since the cataracts are developed either with or without tetany and since tetany of the other diseases such as epilepsy, gastric disturbance and tetanus, does not produce any changes in the lens. In place of this general term he suggests cataract in osteomalacia or adult rickets cataract in rickets or cataract due to hypoparathyroidism and so on.

Presse Medicale, Paris

42: 1617 1640 (Oct 17) 1934

- *Undulant Fever and Tuberculosis L Bernard—p 1617
Eczema of Nursing and Allergy A Sezary—p 1619
Criterion of Treatment of Gastro-Intestinal Ulcer in Medical Therapeutics C Bonorino Udaondo—p 1621
Meinicke Reaction in Colonial Practice S Golovine—p 1624

Undulant Fever and Tuberculosis—Bernard considers the differential diagnosis of these two conditions and their possible association. He believes that the cases involving difficulties of differentiation may be classed in five categories. 1 Undulant fever simulating tuberculous infiltration. The principal symptoms are asthenia, pallor, emaciation and sweats beginning insidiously usually in young persons and progressing persistently with resistance to all treatment. 2 Pulmonary forms of undulant fever. These may be subdivided into an acute type of pulmonary congestion, a corticopleural type and pleurisy with effusion. 3 Undulant fever cachexia. This occurs in prolonged undulant fever when the general condition is so profoundly affected as to simulate tuberculosis. 4 Acute forms. In this type, undulant fever may be confused with miliary tuberculosis. 5 Localized types. In this group, localization in the articulations and elsewhere may resemble those which are characteristic of tuberculosis. The association of the two conditions has been confirmed by numerous observations. He concludes that the two conditions may be easily confused and may also be associated. The confusion may be clarified by careful clinical analysis and especially by blood culture, agglutination reaction and intradermal reaction. Recent epidemiologic inquiries have demonstrated the progressive frequency of undulant fever, and it is important to know that this condition produces a new group of "false tuberculosis."

42 1641 1656 (Oct. 20) 1934

- *Action of Urinary Extracts on Rabbit Suprarenals and Its Application to Diagnosis of Cancer G Roussy, C. Oberling and P Guerin—p 1641
Nature Place and Interpretation of Roentgenologic Symptomatology in Cardiology D Routier and R Heim de Balsac—p 1642

Urinary Extracts in Diagnosis of Cancer—Roussy and his collaborators have applied the urinary-suprarenal test of Aron for cancer to seventy patients with and without cancer. It is supposed by Aron that the urine of cancerous patients, when injected into rabbits, contains a specific principle which causes the excretions of lipoids from the suprarenals. The method consisted in preparing an alcoholic extract from 25 cc. of fresh urine, drying this extract, redissolving it in a small quantity of physiologic serum and injecting it under the skin of a rabbit. The same process is repeated daily for three days and the animal is killed forty-eight hours after the last injection. The suprarenals are fixed and stained and sections are cut. In a "positive reaction" the spongocytes of the suprarenal cortex have lost most or all of their fatty inclusions, they seem dark and the difference between the normally clear fascicles and normally dark reticulum tends to be abolished. In twenty-nine of their seventy cases, the results were doubtful, this does not exceed the limits of normal variability. In a group of twenty-one positive cases there were thirteen cancers, one lymphogranulomatosis and seven noncancerous conditions. There were twenty negative reactions in ten cancerous and ten noncancerous patients. These results combined with others led the authors to the conclusion that the test cannot be used in the diagnosis of cancer.

42 1657 1680 (Oct 24) 1934

- *Studies on Physiologic Properties of Anterior Pituitary Like Principle A Brindeau H Hinglais and M Hinglais—p 1657
Biliary Chlorine E Chabrol R Charonnat, J Cottet and M Cachin—p 1660

The Anterior Pituitary-Like Principle—The separation of the follicle stimulating and luteinizing factors of the anterior pituitary-like principle present in the urine of pregnant women according to Brindeau and his co-workers, has never been completely realized. They have attempted to resolve this difficulty by using the titration method for the luteinizing factors described by Hinglais and Brouha, by which the specific action of this factor on the genital tract of the male mouse is utilized.

They have also employed the Zondek titration method for the follicle stimulating factor, using the prepuberty female. In this manner they were able to obtain preparations rich in one factor and poor in the other. The physiologic effects of these preparations were tested on prepuberty female mice, prepuberty male mice and rabbits. Also the successive and combined action of the preparations was tried. The results led them to the conclusion that the hypothesis concerning the two factors present in the anterior pituitary-like principle is correct. They also confirmed the conclusion that the isolated luteinizing factor does not act on the ovarian follicle unprepared for its action. They believe that the anterior pituitary-like factor is a system of complex hormones comprising at least three elements, viz, a hormone of follicular maturation, a hormone of follicular sensitization, and a so called hormone of luteinization. These three hormones are not bound to each other in the natural products or active extracts in any constant quantitative relation.

Archivio Italiano di Chirurgia, Bologna

38 227 366 (Oct.) 1934

- *Elephantiasis of Rare Localization Case E. Leo —p 227
- Experimental Surgery of Parathyroids C. Rossi —p 251
- Intramural and Interstitial Forms of Calculosis of Gallbladder B. Baroni —p 273
- Histopathology of So-Called Cysts of External Menisci L. Santa —p 338

Elephantiasis of the Back—Leo reports the case of a woman, now 29 who suffered a trauma when between 6 and 7 that caused neither immediate alterations of the tegumental tissues nor inflammatory complications but was followed by the development of elephantiasis to such an extent that the whole back was involved. None of the causes considered in the pathogenesis of elephantiasis or the factor of heredity were found in the clinical history. Her somatic and psychic characteristics indicated the presence of a grave complex endocrine dysfunction, especially of the thyroids and of the hypophysis, which the author believes was the predisposing factor for the development of the disease. Trauma and the mechanical factor of gravity acted as secondary agents. The author presents a critical review of the various surgical treatments of elephantiasis among which he prefers Gaetano's operation: complete removal of the subcutaneous, edematous and infiltrated tissues and partial removal of the muscular aponeurosis which results in a modification of the venous and the lymphatic circulations. He followed the general principles of Gaetano's operation satisfactorily, with some modifications, however, because of the site of the disease.

Calculosis of Gallbladder—Baroni reviews the history and literature of Morgagni-Aschoff's "intramural" form of calculosis of the gallbladder, studies the anatomy, histology, pathology and pathogenic significance of 'Luschka's tubules' which have been considered the anatomic structure from which intramural calculosis develops, and reports three cases of the "interstitial" form of calculosis, that is, calculi formed in the tissural layers of the walls of the gallbladder not originated in the Luschka's tubules, as well as the results of the clinical, anatomic, histopathologic and histochemical studies performed in his cases. The condition was associated with lipoidosis and in one case, with a strawberry gallbladder and the classic form of intramural calculosis. The mechanism of formation of the calculi is explained as follows. In one or more perivascular cells of the reticulo-endothelial system a process of primary infiltration with lipoids (cholesterol and its sterols), bilirubin and calcium occurs. The subsequent nuclear degeneration and structural destruction of the cells results in the liberation of moriform masses of lipoids, which accumulate in the tissural layers of the gallbladder. Owing to the mechanical and chemical stimulation of cholesterol the process is associated with an active and periodic proliferation of connective tissue cells with formation of giant plasmodial cells, which, because of the local and general factors, especially those related to the disturbances of the cholesterol metabolism, are in turn subjected to the same processes of lipid and pigmented infiltration, cellular degeneration and liberation of moriform masses, which add themselves to those previously stored in the parietal layers of the gallbladder. By this mechanism true calculi of cholesterol, mixed with calcium, are formed in the walls of the structure. The author compares and identifies the observations made in cases

of lipoidosis and of strawberry gallbladder with those observed in his cases of interstitial calculosis. He comments on the modern views of the clinical and anatomopathologic differentiation between a gallbladder with lipoidosis and a strawberry gallbladder, two conditions which have been considered initial stages of lipid infiltration and which he considers two phases in the evolution of interstitial calculosis. He emphasizes the practical and theoretical importance of his hypothesis on the existence and origin of the interstitial form of calculosis a form of equal importance with the classic intramural form, with which it may coexist in the same gallbladder without any mutual interdependence.

Policlinico, Rome

41 1637 1680 (Oct. 22) 1934 Practical Section

- Perivisceritis Case C. Frugoni —p 1637
- *Pancreatic Diastase During Pregnancy V. Marzetti —p 1651
- Putrid Pneumothoracic Empyema and Secondary Myiasis. V. Maccone. —p 1656

Pancreatic Diastase During Pregnancy—Marzetti studied the pancreatic diastase of the blood of forty-five women in different stages of pregnancy, according to the method proposed by Katsch. The latter consists in placing 0.1 cc. of blood in 2 cc. of a 0.3 per cent solution of glycogen. The mixture is put in an incubator for two hours. The dextrose content is determined after removal of proteins. The blood sugar determination previously made on fasting and the individual reduction value of the glycogen solution are subtracted from the dextrose determination. This practical measure for the diastatic power of the blood is applicable to all blood sugar tests. The author found a marked increase of the pancreatic diastase in pregnancy. This he attributes to the hyperproduction of ferments through greater pancreatic action. This action is also believed to have been influenced by the mechanical factor of pregnancy and by the fetal pancreas through the mother. The author concludes that the method of Katsch is a valuable aid in determining the carbohydrate metabolism in pregnant women and, in an indirect way, in testing the hepatic function, which runs parallel to the pancreatic function.

Beiträge zur Klinik der Tuberkulose, Berlin

85 313 392 (Oct. 22) 1934

- Atelectasis and Pulmonary Tuberculosis F. Fleischner —p. 313
- *Significance of Atelectasis for Course of Tuberculosis P. N. Coryllos —p 339
- *Processes of Induration and of Disintegration in Mediastinal Lymph Nodes with Impairment of Adjoining Organs in Higher Age Groups. A. Arnstein —p 343
- Calcium Content of Sputum of Tuberculous Patients. S. Puder and T. Herzog —p 364
- Anatomic Basis of Allergy in Experimental Tuberculosis J. Zeyland and E. Piasecka Zeyland —p 369
- Observations in Cases of Rethoracoplasty D. Szeloczy —p 377
- Rudimentary Polyserositis and Its Sequels H. Mayrhofer —p 385

Atelectasis and Course of Pulmonary Tuberculosis—Coryllos found that atelectasis is not an occasional complication but a constant phenomenon in the course of pulmonary tuberculosis and that it plays an essential part in the course of the disease, particularly in the development of the tuberculous caverns and in the healing process. His observations lead to a new estimation of the significance of the collapse therapy. He compares a cavern in the presence of a pneumothorax with a bronchial fistula, the air content of which is never absorbed, because it is always refilled by the bronchial fistula. He further evaluates the significance of anaerobic conditions for the metabolism of the tubercle bacilli in the caverns. Then he discusses the relation between the oxygen deficiency and the development of connective tissue showing that pulmonary collapse and atelectasis favor the development of connective tissue in the healing process of tuberculous changes. He stresses the significance of immobilization in the treatment of tuberculous organs, for he is convinced that deficiency of oxygen and development of anaerobic conditions play an important part in the destruction of tubercle bacilli.

Mediastinal Lymph Nodes of Aged Persons—Arnstein shows that in aged persons the disorders that can be traced to tuberculous or anthracotic indurations or to softening of the mediastinal lymph nodes are extraordinarily manifold. The incidence of such disturbances is comparatively high. To the

usual diagnostic difficulties that are encountered in patients of the higher age groups are added those that are due to the type and localization of the primary disturbance. However, in the greatest majority of the cases it is possible to identify the disorder with considerable certainty, provided the details of the clinical aspects are given consideration. The leading symptoms are paralysis of the recurrent nerve, particularly of the left side, roentgenologic demonstration of an adhesion diverticulum or a traction diverticulum of the esophagus, coughing up of a blackish substance in the sputum, repeated attacks of pneumonia in the same portion of the lung or typically localized, and usually circumscribed lobar tuberculous foci. The differential diagnosis is made difficult by various tuberculous and nontuberculous disorders and particularly by bronchial carcinoma, for the latter develops occasionally in aged persons. The treatment of the processes of induration and of softening and of their sequels in the mediastinal lymph nodes of the aged should be conservative. A more active treatment is advisable only in exceptional cases.

Beitrage zur klinischen Chirurgie, Berlin

160 449 560 (Nov. 7) 1934

Histopathology of Synovial Membrane of Knee Joint in Nonspecific Disorders. A. Lawen and M. Biell—p. 449

*Genesis of So-Called Prostatic Hypertrophy. F. Reischauer—p. 460
Severe Uncorrected Injuries to Vertebrae. W. Kanert—p. 484

*Significance of Mesenteriolitis for Symptomatology. Diagnosis. Course and Complications of Appendicitis. O. Levin—p. 491

Congenital Dilatation of Ureters. P. Blumel—p. 522

Genesis of Prostatic Hypertrophy—Reischauer emphasizes that an important factor in the histologic study of the genesis of prostatic hypertrophy is the use of special stains to bring out the elastic fibers. The so-called prostatic hypertrophy is not a compensatory regenerative process on the part of certain glandular elements. The new growth is formed by the proliferation of the mesenchymal tissue of the centrally located layer of muscle about the prostatic urethra. The new formation is capable of further growth even in the absence of the so-called preexisting or accessory prostatic glands frequently found in the fibromuscular ring of the prostatic portion of the urethra. The resulting tumor devoid of glandular elements, cannot, however, be grossly distinguished from an 'adenomatous' hypertrophied prostate. These prostates, composed almost entirely of fibromuscular nodular masses, do not owe their character to the destruction of the glandular elements and their replacement by fibro-adenomatous tissue but are primarily devoid of glandular elements. The distribution of glandular elements in the new formation is confined to the junction of glandular epithelium with the localized proliferating fibromyomatous bundles of the urethral portion. The growth stimulus is imparted to the epithelium, if it exists at the junction, resulting in the formation of epithelial proliferations. These develop into individual nodules, which grow faster than those devoid of an epithelial covering. They dominate the picture and are referred to as fibro-adenomas. The same process may occur secondarily. The junction of epithelium with the spindle cell fibers may take place secondarily. The epithelium of the so called preexisting glands as well as of the urethra may respond to the growth stimulus imparted to it by the new connective tissue. The epithelium of the excretory ducts at the junction with the proliferating mesenchymal tissue may be stimulated to glandular proliferation in the same nodules. The author has frequently found this to be the case. Prostatic hypertrophy, therefore, is not to be regarded as a fibro-adenoma in the usual sense in which the epithelium is the sole proliferating element. The primary element is the centrally located prostatic musculature. The sprouting of the spindle-cell fibers may take place in the absence of glands in the median lobe of the prostate. The relationship to myomatosis of the uterus becomes more evident if the proliferation of the stroma is considered the cause of prostatic hypertrophy.

Significance of Mesenteriolitis in Appendicitis—Levin made a study of forty-one cases of acute appendicitis, forty-five cases of interval and eleven cases of so-called primary chronic appendicitis, with particular attention to the mesen-

teriolum of the appendix. He concludes that in every case of appendicitis there are definite inflammatory alterations in the mesenteriolum of the appendix. The extent of alterations in the mesenteriolum corresponds to the severity of the infectious process in the appendix. The following typical alterations were present in the mesenteriolum in the acute stage of appendicitis: edema, infiltration with polymorphonuclear leukocytes, acute lymphangitis with frequent thrombophlebitis, reaction on the part of the endothelium of the capillaries and the mesothelial cells, and a perivascular, perimural and, at times, endomural, leukocytic infiltration. The mesenteriolum exhibited in every case traces of the former inflammatory processes in the form of newly built connective tissue bands, of endovasculitis and perivasculitis, perineuritis and endoneuritis, accumulations of histiocytes and lymphoid cells and, at times, typical formation of lymphoid follicles. The histologic study of the mesenteriolum is of importance in the fixing of a pathologic diagnosis of appendicitis. The local as well as the reflex pains of appendicitis are caused by mesenteriolitis. The mesenteriolum acts as the first barrier to the infection spreading from the appendix. The symptomatology of acute and chronic appendicitis is expressed by pains originating in pathologic alterations in the mesenteriolum and the mesentery. Pain and local tenderness are not pathognomonic for appendicitis, since mesenteriolitis and mesenteritis, which cause them, may be produced by other disease processes in this locality. The local symptoms support rather than decide the diagnosis of appendicitis. Persistence of symptoms after the removal of an acutely inflamed appendix is due to the persisting mesenteriolitis and mesenteritis. Physical therapy is indicated in such cases. Theoretically one might urge an operation, aiming at the interruption of the impulses of pain by sectioning the ileocecal nerve. The possibility of the flaring up of a latent infection in the mesentery must not be lost sight of in operating in cases of interval appendicitis.

Deutsche medizinische Wochenschrift, Leipzig

60 1663 1702 (Nov. 2) 1934

Organization of Prophylactic Inoculation Against Diphtheria. M. Gundel and F. Müller Voigt—p. 1663

Shock Syndrome. V. H. Moon—p. 1667

Diagnosis of Predisposition to Collapse. S. Rusznyak, S. Karady and D. Szabó—p. 1670

*Is Diabetes Insipidus a Genitohypophyseal Disorder? F. Lickint—p. 1672

Vaccination, Late Reaction and Late Encephalitis. E. Thomas—p. 1673

Comparative Experiments on Stimulating Action of Lobeline and of Carbon Dioxide on Morphinized Respiratory Center in Rabbits. B. Behrens and W. Graubner—p. 1675

Retarded Sedimentation Speed of Erythrocytes. G. Roesler and J. Meisel—p. 1677

Is Diabetes Insipidus a Genitohypophyseal Disorder?

—Lickint says that diabetes insipidus was formerly considered a hypophyseal disorder. In view of the relations between the anterior lobe of the hypophysis and the gonads and the fact that in other diseases of the hypophysis, such as acromegaly, gigantism, hypophyseal obesity, adiposogenital dystrophy and eunuchoid gigantism, there frequently exist disturbances of potency and other gonadal disorders, it is probable that at least the genuine form of diabetes insipidus is a genitohypophyseal and not primarily a hypophyseal disorder. He considered this the more probable after observations on twelve male patients with diabetes insipidus. A number of other reports call attention to the much higher incidence of diabetes insipidus in men than in women. He thinks that the male gonad plays an important part as an eliciting factor of diabetes insipidus. Six of ten patients observed by him had disturbances of potency before diabetes insipidus became manifest and these disturbances became more severe later. In this connection it is pointed out that the hypophysis has been known to increase in size following extirpation of the male gonads. Treatment with testicular preparations was tried in one of the author's cases, while in the others only hypophyseal preparations were employed. There was a favorable response to the testicular preparations. The author concludes that an exogenic noxa, such as an infection or a trauma, may be the eliciting factor in so called symptomatic diabetes insipidus. However, a disturbance of the gonads is responsible in the genuine form, at least in some of the cases.

60: 1703 1742 (Nov. 9) 1934

- Examination of Ear, Nose and Throat W. Uffenorde—p. 1703
 Death Caused by Internal Diseases in Its Relations to Time of Day and Year R. Wigand—p. 1709
 Shock Syndrome V. H. Moon—p. 1711
 *Ninhydrin Reaction of Serum for Diagnosis of Cancer H. Lehmann, Facius and F. Witting—p. 1714
 First Brucella Abortus Infection in Turkey O. Serefettin—p. 1723
 *Behavior of Eosinophile Cells in Itching Skin Diseases H. L. Salisico—p. 1723
 Cosmetic Powders as Carriers of Infection Schnitter—p. 1724

Ninhydrin Reaction of Serum for Diagnosis of Cancer—Lehmann-Facius and Witting point out that Abderhalden introduced a ninhydrin reaction in 1927, which subsequently was modified by other investigators, and describe their own technic of the ninhydrin reaction as follows. Two cubic centimeters of active serum from a patient together with 0.2 cc. of fresh normal guinea-pig serum that had been diluted with an equal amount of physiologic solution of sodium chloride is mixed in sterile test tubes. The tubes are plugged with sterile cotton and placed in an incubator (37 C.) for from eighteen to twenty-four hours. Then 5 cc. of pure 96 per cent alcohol is added and the tubes are boiled in the water bath until the alcohol has boiled up once. This is followed by filtration into new tubes through a Schleicher-Schüll filter No. 595. To this alcohol filtrate is added 0.1 cc. of a 1 per cent alcoholic solution of ninhydrin. A glass rod is placed in the tube and the contents of the tube are boiled for ninety seconds under constant movement over the Bunsen burner. In a control series 0.2 cc. of the patient's serum is mixed with 0.2 cc. of physiologic solution of sodium chloride, and 0.2 cc. of twice diluted guinea-pig serum is mixed with 0.2 cc. of physiologic solution of sodium chloride. Specimens of serum of which the alcoholic filtrate produces with ninhydrin a noticeable blue coloration may be considered positive, while the controls remain either water clear or show a slight yellow. It has been observed that particularly in the positive tests the alcohol filtrate boils down considerably. In that case it must be filled up to the original amount by the addition of alcohol. The reading should always be taken against a white paper background. According to the intensity of the blue coloration various degrees of reactions may be distinguished. The blood specimen with which the reaction is made should be withdrawn in the morning while the patient is still fasting. The serum should be poured off and centrifuged soon after it has become separated from the clot so as to prevent the passage of hemoglobin into the serum. The test should be begun on the same day on which the blood is withdrawn. The same rules apply to the guinea-pig serum. The examination of 415 serums revealed that the ninhydrin method indicates the presence of carcinoma in about 70 per cent of the cases, while 90 per cent of the patients who are free from it give negative reactions. The ninhydrin method is based on the fact that the serum protein of patients with cancer is attacked by the antibodies contained in normal serum (guinea-pig serum), in this process alcohol soluble cleavage products are produced which can be demonstrated by means of ninhydrin.

Behavior of Eosinophils in Itching Skin Diseases—To determine whether there are connections between the behavior of the eosinophils of the blood and the itching in certain skin diseases Salisico examined patients with various skin diseases. In patients with eczema, he generally observed an increase but the eosinophil count was never high and there was no parallelism between itching and eosinophilia. Cases of pruritus showed greater uniformity, the eosinophil count being on the upper limit of the physiologic values. The blood picture in lichen Vidal disseminatus showed a pronounced eosinophilia but there was no relationship between the degree of eosinophilia and the intensity of the itching. In cases of scabies the behavior of the eosinophilia was not uniform, but the values were generally rather high. In urticaria developing after ingestion of strawberries, the eosinophils were considerably increased. After three days the values returned to normal and there was parallelism between the itching and the increase and decrease in the number of eosinophils. The eosinophil values in pyoderma remained within normal limits. In a case of dermatitis herpetiformis Dühring fluctuating values were noticed but there was no accumulation of eosinophils in the itching skin areas. In

pemphigus vulgaris there was only a slight increase in eosinophilia, however, large numbers of eosinophils were detected in the blisters. The author thinks that in dermatoses eosinophilia and itching seem to be connected in that both are caused by an alteration of the skin. Itching seems to develop in response to the slightest, not yet visible, tissue infiltration, whereas pathologic changes in the number of eosinophils seems to develop only in response to graver disorders (disintegration of epithelia, liberation of parenteral proteins that exert a toxic influence). Eosinophilia and itching do not have to run parallel but may do so in cases in which irritation of the nervous system and of the blood forming apparatus are equally severe. The author further points out that, if the disease process persists for longer periods, well formed eosinophils are replaced by those that show signs of degeneration. In severe disorders that terminate fatally, a transformation of an eosinophilic blood picture into an aneosinophilic one seems to take place.

Deutsche Zeitschrift für Chirurgie, Berlin

243: 761 822 (Nov. 5) 1934

- Neuropathic Joint Disease E. Bergmann—p. 761
 Hyperthyrmization and Hyperthyreosis H. Hanke and E. Widmann—p. 772
 *Effect of Loss of Chlorides on Intestinal Activity H. Eitel and A. Loeser—p. 781
 *Injuries to the Knee So-Called Posttraumatic Dry Knee. A. Jirasek—p. 792
 Subcutaneous Rupture of Biceps and Its Treatment. H. Hanke—p. 807

Effect of Loss of Chlorides on Intestinal Activity—Eitel and Loeser removed pieces of small intestine of from 15 to 3 cm. in length from guinea-pigs and rabbits and placed them in a modified Locke's solution. Physostigmine or prostigmine in a dilution of 1:20,000,000 was added for its peristaltic effect. The peristaltic movements of the intestinal segments were recorded by means of a kymograph. Three modified solutions were likewise experimented with in which the sodium chloride content was raised 50, 75 and 100 per cent, respectively. The behavior of the intestine was the same when it was placed in Locke's solution that did not contain sodium chloride, and when to the same solution sodium sulphate, sodium nitrate or sodium acetate was added. These solutions failed to influence the peristaltic effect of physostigmine. When the pieces were placed in Locke's solution that was not deprived of its sodium chloride, the normal peristaltic movements developed after a few minutes. The authors conclude that a certain amount of chlorine ions is essential in order to provoke the peristaltic effect of certain medicaments. To test their contention *in vivo*, the authors placed guinea-pigs on a diet capable of reducing the chloride content of the blood. This consisted of corn washed in distilled water. They were given abundant lime water. Theobromine sodiosalicylate, 1 Gm., was given daily. When the chloride reduction reached the point of producing convulsions, the animal was killed and segments of the intestine were removed. These segments, when placed in Locke's solution with a reduced chloride content, failed to show spontaneous active peristalsis characteristic of the intestine of a guinea-pig. These experiments demonstrate the effect of hypochloremia on intestinal peristalsis. They likewise explain the therapeutic effect of administration of hypertonic solutions of sodium chloride in ileus as recommended by Orr and Haden.

Posttraumatic Dry Knee Joint.—Jirasek defines a dry knee as a condition of the knee joint in which, in the course of an operation undertaken because of symptoms following an injury, no fluid or only a slight amount is found. He observed this condition in twenty-four cases. The subjective symptoms were diffuse pains in the knee, limited and painful movements and uncertainty of the knee. Among the objective symptoms were noted limitation of flexion, less frequently of extension and, in most cases, limping. The extension symptom as well as tenderness of the inner aspect of the joint were frequent. Atrophy of the quadriceps was commonly observed. Acoustic phenomena were present in half of the cases. In sixteen no fluid was observed in the joint during the operation, while in eight only traces were observed. It is uncertain whether this condition constitutes an independent nosologic entity, a functional state or a definite disturbance of the synovial membranes. The remote results and the proper treatment of these cases are as uncertain as the cause itself.

Klinische Wochenschrift, Berlin

13: 1521-1560 (Oct 27) 1934 Partial Index

- Experimental Cirrhosis of Liver and Its Relation to Etiology of Human Cirrhosis V H Moon—p 1521
Significance of Lactic Acid for Cardiac Metabolism A Ruhl—p 1529
*Action of Vitamin A on Serum Cholesterol of Human Subjects F Lasch—p 1534
Behavior of Blood Eosinophilia in Epinephrine Leukocytosis M Dobreff L S Dotschinoff and B Marinoff—p 1536
*Action of Antianemic Liver Extract in Experimental Toxic Anemias K Paschke and G Taylor—p 1538

Vitamin A and Serum Cholesterol—Lasch approached the problem of the action of vitamin A on the cholesterol content of the serum from two points of view. He studied (1) whether it is possible to increase the serum cholesterol of human subjects just as has been done in animals and (2) whether a regulating action of the liver on the cholesterol metabolism can be found by the determination of the different cholesterol fractions. He observed that if from 40,000 to 80,000 rat units of vitamin A is administered three times daily to human subjects, an increase in the cholesterol content of the serum becomes manifest in from five to ten days. The increment is due primarily to an increase of the cholesterol esters, and this indicates a direct action on the regulatory function exerted by the liver on the cholesterol metabolism.

Antianemic Liver Extract in Toxic Anemia—Paschke and Taylor point out that pernicious anemia is classified with the hemolytic anemias and that for this reason it was logical to examine the action of antianemic liver extract on experimental hemolytic anemias. The experimental anemia that has been examined most frequently is the one produced by phenylhydrazine. Some investigators have maintained that liver extract has no influence on this type of anemia, while others have stated that liver extract would cure this type of anemia. A protective action of liver extract against poisoning with phenylhydrazine appeared dubious to the authors, because the anemia induced by means of phenylhydrazine differs essentially from pernicious anemia. They decided to duplicate the experiments of the investigators, who asserted that they observed a protective action of liver extract against phenylhydrazine poisoning. The authors made their experiments on rabbits instead of on dogs and found that liver extract never exerts a protective action against a subsequent phenylhydrazine poisoning. Then they studied saponin anemia and found that treatment with liver extract prevents saponin anemia in rabbits. They discuss the significance of this observation for the hypothesis of the action of liver therapy and assume that liver extract counteracts a toxic influence in pernicious anemia.

Monatsschrift f Geburtshilfe u Gynäkologie, Berlin

98: 1128 (Oct) 1934

- *Influence of Thyroxine on Blood Coagulation and Its Use in Prophylaxis of Thrombosis F Kausch—p 1
Gonorrhea in Women, Particularly Its Treatment F Heilmann and F Schrenk—p 10
*Management of Delivery Without Protection of Perineum S A Fraymann—p 23
Overly Large Twins K Holzapfel—p 30
Section of Pelvis or Cesarean Section? K. Holzapfel—p 31
Modification of Electrocardiogram by Pregnancy and Delivery H Eufinger and H Molz—p 34

Thyroxine and Blood Coagulation Prophylaxis of Thrombosis—Kausch describes observations on the coagulation of the blood following intravenous administration of thyroxine and also after the oral administration of another thyroid extract. He found that several days of administration of thyroid extracts produced a retardation of the coagulation of the blood in the minority of the cases and only in a slight degree. However, he believes that in spite of this the medication with thyroid extract is helpful in the prophylaxis of the postoperative thromboses and embolisms, for the thyroid extract stimulates the circulation and the metabolism and incites the patients to greater mobility.

Management of Delivery Without Protection of Perineum—Fraymann designates as "protection of the perineum" all the manipulations employed in facilitating the passage of the fetal head through the vulva. He compared deliveries in which the perineum was given protection (2,000 cases) with

those in which this was not done (762 cases). He found that in primiparas the perineal tears were by 7 per cent more frequent in the absence of perineal protection than with it; in multiparas the incidence was higher by 61 per cent. The smallest fetus causing a rupture in a primipara with perineal protection weighed 2,000 Gm. and in a multipara 2,220 Gm. The largest fetus that did not cause a tear in a primipara without perineal protection weighed 4,450 Gm. The puerperium takes a more favorable course without perineal protection than with it. A comparison of the two groups (without and with perineal protection) without ruptures shows that among those with perineal protection the number developing fever is much higher. Consequently, those in whom the perineum was protected have to stay at the hospital somewhat longer. Traumas of the fetus were 18 times more frequent in cases with perineal protection than in those without it, and asphyxia of the infants was 7.3 times more frequent. The author maintains that without perineal protection severe asphyxia or even death of the fetus is almost never observed. In managing a delivery without perineal protection, the respiration of the parturient woman must be given attention while the head passes the vulva, so that the passage takes place outside of the expulsive labor pains.

Münchener medizinische Wochenschrift, Munich

81: 1679-1716 (Nov 2) 1934 Partial Index

- New Possibilities of Diagnosis of Anemia (Results of Erythrocytometry) H E Bock—p 1686
Severe Colics of Rectum Following Ingestion of Large Amounts of Grapes O Rohrhirsch—p 1689
Religious Psychotherapy G Giehm—p 1690
*Treatment of Sciatica with Histamine Iontophoresis A Dzsinich—p 1693
Influence of Calcium Salt of Dioxypionic Acid and of Calcium Gluconate on Calcium Content of Serum in Various Modes of Administration K. Durr—p 1694

Treatment of Sciatica with Histamine Iontophoresis—Dzsinich points out that many investigators believe that circulatory disturbances play a part in the pathogenesis of sciatica. It is believed that a local vascular spasm retards the circulation, and this in turn leads to an accumulation of metabolic waste products. The ischemia and the waste matters irritate the nerve and the surrounding muscles, and painful spasms are the result. On the basis of this theory, Deutsch developed the treatment with histamine iontophoresis, for, if histamine is introduced in this manner, the capillaries become dilated, their permeability increases and the arterioles become dilated by reflex action. The author decided to try this treatment in patients with true sciatica. A special type of foil was attached to the anode, was dampened and was then applied. The foil was applied at four different sites, first on the gluteal muscles, then on the popliteal fossa, then on the ankle and finally on the antagonistic muscles of the extensor side of the thigh. The negative pole, in the form of a large, flat electrode, was applied to the thorax. The author considers it advisable to employ a battery current. He began the treatment with from 6 to 8 milliamperes, applying the electrode for from three to four minutes to the sites mentioned. The treatment was repeated daily and the strength of the current was gradually increased. Of the thirteen patients treated in this manner, five were completely cured, five showed great improvement, two were slightly improved and one remained unchanged. Chronic cases were less amenable to treatment than the recent cases. The author concludes that histamine iontophoresis is as effective as other physical methods and stresses that the treatment is simple, short and not unpleasant.

81: 1717-1752 (Nov 8) 1934 Partial Index

- Treatment of Leukorrhea M Rodecort—p 1718
Proteus Infection in Human Subjects, Particularly Their Surgical Manifestations W Block—p 1720
*Prophylaxis of Diphtheria by Combined Method E. Kauert—p 1723
*Diagnosis of Syphilis from Dried Drop of Blood Suitability of This Method for Consultation Hour P Dahr—p 1723
Peculiar Psychogenic Neurotic Syndrome of Eye and Nose C L van Steeden—p 1726
Sitz Baths in Gynecology H Eruser—p 1727

Prophylaxis of Diphtheria by Combined Method—The increasing incidence of diphtheria induced Kauert to protect the children newly admitted to his sanatorium by means of passive immunization with diphtheria beef serum. Since the protective

action of this passive immunization begins to subside after four weeks, the author decided to add to this procedure the active immunization by diphtheria anatoxin, which becomes effective after four weeks. The result of this combined immunization surpassed all expectations, for the diphtheria epidemic ceased at once in the children's sanatorium.

Dry Blood Test for Syphilis—Dahr describes further experiences with Chediak's method. His first report in the *Deutsche medizinische Wochenschrift* (60 94 [Jan. 19] 1934, abstr. THE JOURNAL, March 31, 1934, p. 1113) was based on experiences on 600 specimens. Now his observations cover 1,000 specimens and he has slightly modified his technic. Whereas in his first experiments he followed Chediak's suggestion and used the "original extract" of the Meinicke clarification reaction I, he now employs the "original standard extract" of the Meinicke clarification reaction II. This is advantageous because, if the first extract is used the blood as well as the extract must be diluted with a solution containing 35 per cent of sodium chloride and 0.03 per cent of sodium carbonate and this solution must always be freshly prepared, while if the second extract is employed it is sufficient to use the 35 per cent sodium chloride solution without the addition and this solution does not have to be freshly prepared each time. Moreover, the use of the second extract improves the reliability of the test. The author reiterates the advantages of the dry blood test, stressing particularly its reliability, rapidity, simplicity and inexpensiveness. However he admits that for the clarification of difficult diagnostic problems the test alone is not adequate but should be done together with several other serologic tests.

Strahlentherapie, Berlin

51 193 364 (Oct. 17) 1934 Partial Index

- Round Cell Sarcoma R. Baumann-Schenker—p. 201
- *Persistent Cutaneous Carcinomas and Their Cure. A. Hintze—p. 237
- *Three Years' Experiences with Extremely Hard Roentgen Rays in Treatment of Carcinoma E. von Schubert—p. 271
- Treatment of Malignant Tumors of Female Genitalia by Means of Roentgen and Radium Rays S. Vidaković—p. 300
- Chemotherapy as Most Successful Adjuvant of Ray Therapy in Malignant Conditions F. Nahmacher—p. 305
- Ultrashort Waves in Treatment of Malignant Tumors E. Hasche and W. A. Collier—p. 309
- Small Field Roentgen Therapy of Deep Lying Tumors A. Kukowka—p. 312

Persistent Cutaneous Carcinomas and Their Cure—Hintze designates as "persistent" those cases of cutaneous carcinoma which, more than five years after the first treatment (surgery or irradiation), are not free from symptoms, or, after having been free for some time are again in need of treatment. He describes observations on seventy-one persistent cutaneous carcinomas, of which thirty-nine had first been treated surgically and thirty-two irradiated. The majority of the carcinomas (sixty-two cases) involved the face. Of four cases in which the first as well as all successive treatments had been surgical, not a single case was cured. Of thirty-five patients who had first received surgical treatment but who later had been irradiated, nineteen were cured by irradiation in the author's clinic. Of seventeen patients whose first treatment had been irradiation (in other clinics) one case was cured by an operation, while four were cured by irradiation in the author's clinic. In nine of the fifteen patients who had been treated first with radiation in the author's clinic, multiplicity was the cause of the persistence, while in six cases the primary focus persisted or relapsed. Of the group who had multiple tumors eight are now cured, and of the relapsing group three were cured. Two of the three relapsing cases that were not cured had been treated with repeated small doses (old method) in one the doses had been of medium size, and in none had large doses been given during the first treatment. The author maintains that persistence in case of cutaneous carcinoma—aside from multiple foci—is the result of inadequate primary treatment.

Extremely Hard Roentgen Rays in Treatment of Carcinoma—Von Schubert states that the women's clinic of the Charité in Berlin has had the use of a gamma volt apparatus

for the last three years and thinks that it is now time to give a preliminary report about the results obtained with extremely high tension in the treatment of carcinoma. Following a recapitulation of observations on animals and plants, he states that experiments on a paraffin phantom of dimensions corresponding to those of the human body revealed that in case of a tension of 575 kilovolts, of a filter of 3 mm of copper and 3 mm of aluminum, of a field of incidence of 19 by 19 sq cm., and of a focus distance from the surface of 100 cm., 65 per cent of the surface dose was demonstrable at a depth of 10 cm. Measurements in the vagina of a patient indicated that about 67 per cent of the administered dose was effective in the pelvis. The author discusses the number, size and arrangement of the fields, the dose, the intervals between the irradiations, the tolerance of the skin, serial and massive irradiations, the addition of radium rays, the general reactions, the blood picture and the effect on the tumor. Then, after describing the material, he points out that the severest cases had been selected for this treatment. Nevertheless, in carcinoma of the uterine cervix several permanent cures were obtained, and in some other localizations, such as in the esophagus, at least a temporary improvement was produced. In several cases of vaginal carcinoma the results seemed likewise favorable. However, the observations so far do not permit the conclusion that the results obtained with this method surpass those of other methods. But it can be asserted that the normal tissues tolerate this type of irradiation relatively well. Moreover, rather large doses may be applied within a comparatively short period without causing severe cutaneous and general reactions. Thus, if cure should depend on the size of the dose, this method would prove advantageous.

Wiener klinische Wochenschrift, Vienna

47: 1313 1344 (Nov. 2) 1934 Partial Index

- *Behavior of Iodine Content of Blood in Patients with Circulatory Disease F. Kisch—p. 1317
- Esophagobronchial Fistula in Case of Esophageal Diverticulum—R. Pape—p. 1320
- Rare Sport Injury Pulling of Left Brachial Plexus During Boxing H. Kraus—p. 1322
- *Immunization Experiments with Gonadotropic Hormones H. Ehrlich—p. 1323
- Impairment of Kidneys Caused by Deficiency of Sodium Chloride. E. Tschulow—p. 1324
- Inflammations of Synovial Bursae. E. Freund—p. 1326.
- Prognosis and Treatment of Hemorrhagic Disorders H. Lehnndorff—p. 1329

Iodine Content of Blood in Circulatory Disease—Kisch observed that the iodine content of the blood of patients with circulatory insufficiency has normal values even if there exists a considerable increase in the basal metabolism. The heightened basal metabolic rate frequently observed in patients with heart disease and with cardiac insufficiency, therefore, cannot be ascribed to an excessive production of hormones by the thyroid. The iodine content of the blood may fluctuate slightly when the circulatory disturbance improves or when it becomes exacerbated. However, these fluctuations always remain within normal limits and they show no relationship to the behavior of the basal metabolism. In a number of obscure circulatory disturbances in which there existed changes such as increased basal metabolism, tachycardia, slight dilatation of the heart and swelling of the thyroid but in which exophthalmos was absent, the iodine content of the blood was normal, so that it would not be justifiable to assume the existence of hyperthyroidism. In patients with goiter, who had an increased iodine content of the blood, there was always exophthalmos and profuse blood perfusion of the skin. The question whether the increase in the iodine content of the blood is absent also in cases of inactive exophthalmic goiter, in which the basal metabolic rate is increased, may be answered in the affirmative.

Immunization Experiments with Gonadotropic Hormones—Ehrlich attempted to immunize rabbits and sheep by repeated intravenous injections with a gonadotropic hormone preparation. He performed these experiments not only because of theoretical interest but also because he thought it possible to arrive at a method for the diagnosis of pregnancy. He gives tabular reports of various tests and states in the conclusion that by repeated intravenous injections it was possible

to produce in rabbits and sheep specific antibodies against the hormone of the anterior lobe of the hypophysis. It proved possible by means of serologic methods to effect a sharp differentiation between two hormones of the anterior hypophysis, the gonadotropic and the thyrotropic. He admits, however, that in the present status of experiments it is not yet possible to employ the immune serums for the early diagnosis of pregnancy. He thinks that a considerable amount of experimentation will have to be done before the problem has been completely clarified.

Zentralblatt für Gynäkologie, Leipzig

58 2593 2640 (Nov 3) 1934

Limits of Ability to Recognize and of Responsibility in Tubal Pregnancies. K. Fink.—p. 2594

External and Internal Transmigration of Human Ovum. J. Gosau.—p. 2599

*Pelvic Pain. Resection of Superior Hypogastric Plexus to Counteract Pain. F. S. Wetherell.—p. 2603

Survival of Autotransplanted Ovaries. C. Stanca.—p. 2608

Significance of Bag of Waters in Dilatation of Uterine Orifice. H. Burger.—p. 2611

Formerly Unknown Localization of Relapsing Herpes Simplex During Intermenstrual Period. E. C. Abraham.—p. 2616

Eczema of Pregnancy Cured by Removal of Focus of Infection. G. von Bvd.—p. 2619

Diagnosis of Tubal Pregnancy—Among seventy-eight cases of tubal pregnancy, Fink states that forty were referred to his clinic with an erroneous diagnosis. Some cases were wrongly diagnosed as appendicitis, cholecystitis and peritonitis. These are the least grave mistakes, since surgery is resorted to at once and the condition is clarified by operation. The incorrect diagnoses are more reprehensible if the examination and the taking of the anamnesis have been inadequate. Under those conditions, tubal pregnancies have been diagnosed as displacement or prolapse of the uterus with tumor or as a cyst. In another group of cases curettage had been done. The author admits that the cases presenting typical symptoms were hardly ever wrongly diagnosed, but he points out that the atypical cases seem to be more frequent. He considers it a mistake in clinical instruction to overstress the typical symptoms of tubal pregnancy. The atypical cases should also be given attention.

Resection of Superior Hypogastric Plexus in Pelvic Pain—Wetherell suggests the resection of the superior hypogastric plexus in cases of severe pelvic pain. He obtained relief in cases of dysmenorrhea, in severe pain of advanced uterine carcinoma and in cases in which the usual gynecologic operations and the therapeutic measures failed. The necessity of diagnosing and treating pathologic conditions of the pelvis that are discovered in the course of this operation brings it into the sphere of the gynecologist. The author points out that it may become necessary to resort to ganglionectomy and to ramisection, and in some instances chordotomy may even be required. The latter intervention, however, should be done by a neurologic surgeon. The author describes the topographic conditions of the hypogastric plexus and the method of resection and calls attention to certain dangers that must be avoided. He stresses the necessity of a careful anamnesis to bring out that the pain actually involves the pelvis.

58 2641 2704 (Nov 10) 1934

Accomplishments and Limitations of Obstetrics in the Home. P. W. Siegel.—p. 2642

Simple Reliable Bloodless and Rapid Sterilization of Uterine Tube. O. Honcamp.—p. 2654

Adenocystic Ovarian Fibroma. O. Frankl and E. Klaffen.—p. 2656

Reaction of Uterus to Solution of Pituitary. R. Tachezy.—p. 2663

Manual Detachment of Placenta and Significance of Solution of Pituitary During Postpartum Period. F. Bachner.—p. 2676

Clinical Aspects and Diagnosis of Tuberculosis of Adnexa. R. L. Livachina.—p. 2681

Reaction of Uterus to Solution of Pituitary—Tachezy states that according to Knaus the uterus of animals as well as of human beings ceases to react to solution of pituitary with an increase in the tonus as soon as the secretion of the corpus luteum becomes active. Knaus had observed that in women with a cycle of twenty-eight days this action of the corpus luteum is evident from the sixteenth day to the penultimate day of the cycle. Since the influence of the corpus

luteum commences from twenty-four to forty-eight hours after ovulation, Knaus reasoned that in a cycle of twenty-eight days ovulation takes place between the fourteenth and sixteenth day. The author cites several other investigators who studied the same problem and shows that one agreed with Knaus while two others contradicted him. Then he describes his own studies and in summarizing them he states that he was unable to corroborate the inhibiting influence of the corpus luteum hormone on the reaction of the uterine musculature to solution of pituitary. In the cases examined by him, the reaction to solution of pituitary was most typical during the second half of the cycle, that is, during the time the hormone of the corpus luteum supposedly exerts its strongest action. In five pregnant women (between the second and fifth months) he obtained always positive reactions. On the basis of these tests he concludes that the ovulation term cannot be determined in the manner in which this is done by Knaus.

Vrachebnoe Delo, Kharkov

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Abdominal Symptom Complex in Thoracic Diseases. E. Ya. Fishenzon.—p. 417

Influence of Thyroid Function on Results of Volhard's Test. V. T. Boev.—p. 425

*Symptoms and Prophylaxis of Ergotism. S. Gaysinovich, E. Kenigsberg and A. Kogan.—p. 433

Surgical Procedure in Cryptorchidism. A. G. Kiselev.—p. 439

Mud Bath Treatment of Gynecologic Patients in Polyclinic Outside of Spas. Shuyom Yudilevich and Ventik.—p. 443

*Vascular Pathology of Epidemic Cerebrospinal Meningitis. A. I. Geymanovich and N. I. Golik.—p. 455

Symptoms and Prophylaxis of Ergotism—Gaysinovich and his co-workers divide ergot poisoning, resulting from ingestion of bread contaminated with ergot, into three forms: (1) the spasmotic, (2) the gangrenous and (3) the mixed. They have noted in the gangrenous form a stage that they consider pregangrenous and capable of regression without reaching the stage of gangrene. The spasmotic form was the most frequent. Symptoms of intoxication may manifest themselves between the first and the twentieth day after the ingestion of contaminated bread. They consist of vertigo, general weakness, somnolence, paresthesias and gastro-intestinal disturbances. After two or three days there appear intensely painful muscle cramps of the flexor groups of hands and feet. Occasionally there may be psychic symptoms such as restlessness, excitement and increased motor activity. Epileptiform fits were observed. The gastro-intestinal disturbances consisted of vomiting, profuse diarrhea and abdominal pains. The blood pressure was raised and the blood picture showed a pronounced eosinophilia of from 5 to 19 per cent. There were atypical cases showing only severe gastro-enteritis and no spasmotic manifestations. The authors call attention to a rare form that resembles closely tabes dorsalis. Gangrene of the terminal areas of extremities manifests itself from ten to fifteen days after the onset of general symptoms of poisoning. The gangrene is preceded by severe continuous pains, coolness and bluish discoloration of the extremities. The authors administered intravenously from 15 to 20 cc. of a 3 per cent solution of magnesium sulphate daily and felt that the results were superior to those obtained from exhibition of the usual narcotics and bromides. In the pregangrenous form, 1 cc. of 1 per cent solution of pilocarpine was administered daily because of its dilating effect on the blood vessels.

Vascular Pathology of Epidemic Cerebrospinal Meningitis—Geymanovich and Golik found pronounced alterations in the blood vessels not only of the meninges but of the brain tissue as well in cases of epidemic cerebrospinal meningitis. They have observed in the subacute cases in children a well developed endarteritis hyaline degeneration of arteries and panphlebitis in the substance of the brain tissue. The meningeal vessels were the seat of endarteritis with hyaline degeneration. Pronounced endarteritis was not observed in young adults, in whom the predominating lesion was hyaline degeneration with thrombosis. In patients of advanced age they found hyaline degeneration of blood vessels with lymphoid infiltration and necrosis about the vessels and scattered minute hemorrhages. The postmeningitic headaches are probably the

result of these vascular alterations. The possibility of vascular changes in postmeningitic cases must therefore always be kept in mind.

Acta Obstet. et Gynec. Scandinavica, Helsingfors

14 213 337 (No. 3) 1934

- *Diagnosis of Malignant Chorionepithelioma O Gröné—p. 213
- Paratyphoid Infection of Corpus Luteum Cyst Case R. Kaijser—p. 232
- Applicability of Some Hepatic Functional Tests in Pregnant Women and Maternity Patients K. Lehmann—p. 241
- Necessity of Strict Isolation of Cases of Puerperal Sepsis S. Clason—p. 289
- Does Microscopic Diagnosis Afford Prognostic Guidance in Cervical Cancer? P. Wetterdal—p. 302
- Analysis in Emesis and in Hyperemesis of Pregnancy by Folicle Stimulating and Luteinizing Factors H. Anker and P. Laland—p. 310
- *Plastic Operation for Vaginal Defect According to Kirschner-Wagner M. Nielsen—p. 314
- *External Extraperitoneal Endometriosis M. Nielsen—p. 322

Diagnosis of Chorionepithelioma—Gröné calls attention to the difficulty of diagnosing certain cases of chorionepithelioma and shows that the Aschheim-Zondek pregnancy reaction is a valuable aid in the diagnosis. He reports the history of a woman, aged 28, who developed a hydatid mole immediately following the first pregnancy. The mole was expelled and two days later the remnants were removed with a blunt curet. Immediately thereafter, lutein cysts, each the size of a fist, appeared on both sides of the uterus. A month later they had almost completely disappeared, but the uterus was enlarged and a sanguinolent discharge persisted. On the basis of the microscopic examination of the material removed by curettage, a chorionepithelioma was suspected. The Aschheim-Zondek test proved strongly positive, but titration disclosed only 28,000 mouse units of hormone in each liter of urine. An expectant treatment was decided on, and after another two months the condition was practically unchanged. The uterus was perhaps somewhat larger, but it could be moved. During this time there occurred no profuse hemorrhages but there was constantly a slightly bloody discharge. Repeated curettage revealed the same results. The Aschheim-Zondek reaction remained strongly positive, but the urine contained less than 28,000 mouse units of hormone per liter. Inoculation of curettage material into mice gave positive reactions. Following the total extirpation of uterus and adnexa, three months after the expulsion of the mole a typical chorionepithelioma was detected on the anterior wall of the uterus. Two weeks after this operation, the Aschheim-Zondek reaction was negative. Before discharge from the hospital, the patient was given six high voltage roentgen treatments. Six months later the Aschheim-Zondek reaction was still negative and the patient had gained weight. The author reiterates the value of the Aschheim-Zondek test, describes the titration method and the examination of tissues, and stresses the hormone origin of the lutein cysts. In discussing the significance of the negative outcome of the Aschheim-Zondek reaction, the author describes a case in which chorionepithelioma was suspected on the basis of the microscopic observations. Operation disclosed a myomatous thickening of the uterine wall with a placental remnant. The author does not believe that it is possible to make a general rule for cases in which the hormone and histologic symptoms point in different directions. The strength of the hormone titer, the age of the patient and her desire to preserve the child-bearing capacity must be weighed in the different cases.

Plastic Operation for Vaginal Defect—Nielsen reports the successful plastic formation of a vagina according to the method of Kirschner-Wagner. The advantage of this operation in comparison with those previously employed is that, by a comparatively simple intervention a vaginal tube is created, which is covered with squamous epithelium and, except for the lighter color of the mucous membrane, closely resembles the natural vagina. The principle of the operation is that from an incision behind the small fovea, which in congenital vaginal defect is to be found behind the urethral orifice, the surgeon penetrates bluntly to the peritoneum in the fossa of Douglas, and that when the canal so formed has been dilated to fully

two fingerbreadths, an epithelium-clad prosthesis of rubber sponge is inserted. The after-treatment, which begins with the removal of the prosthesis from ten to fourteen days after the operation and consists in daily dilation of the canal formed, is an important part of the procedure.

Extraperitoneal Endometriosis—Nielsen reports two cases of external extraperitoneal endometriosis, one vaginal and one in the round ligament. Of the theories that have been advanced so far (the embryonal, the sero-epithelial, the metastatic and the implantation theory) the last mentioned must be regarded as accounting most convincingly for the genesis of endometriosis. The uterine genesis has been proved for both internal and peritoneal endometriosis. As regards the vaginal case, a lesion of the vagina had occurred two or three months before the symptoms began to show and it is probable that an implantation of endometrial particles into the wound had taken place during the subsequent menstruation. In regard to the case of endometriosis in the round ligament, it must be assumed that an implantation of endometrial particles had taken place in a preexisting vaginal process and that the endometriosis had spread from there to the round ligament and become established there while disappearing from the serous surface.

Norsk Magasin for Lægevidenskapen, Oslo

95 1217 1360 (Nov.) 1934

- *Two-Stage Transvesical Prostatectomy After Examination and Clinical Study R. Grön and A. Mikkelsen—p. 1217
- Fractures of Spine and Resulting Invalidity N. Paus—p. 1298
- *Hormone Investigations in Pernicious Vomiting of Pregnancy H. Anker and P. Laland—p. 1324

Two-Stage Transvesical Prostatectomy—In Grön and Mikkelsen's material from 1925 to 1932, suprapubic prostatectomy was done in ninety-one cases of prostatic hypertrophy and eight of prostatic cancer. The average age in the first group was 69.33, four patients were more than 81. The gravest complication after prostatectomy was hemorrhage, and, after cystostomy uremia. Seven out of ninety-eight cases of hypertrophy ended fatally after the first stage operation, and seven of the ninety-one, or 7.7 per cent, after the second stage, giving a total mortality rate of 14.3 per cent. The later fate of seventy-nine of these patients is known: fifty-four are living and twenty-five have died (two as a result of the prostatectomy, twenty-three from intercurrent disease). Of the eight patients suffering from cancer, one died after operation, of the seven, two are living. The authors found that the majority of the patients were well after the prostatectomy, capable of work according to their ages, and micturating normally. Later, cancerous development was observed in two cases of hypertrophy. Prostatectomy is considered the normal method in the treatment of hypertrophy. The indications are wide. When residual urine cannot be eliminated by catheter treatment for a short time, prostatectomy should be performed. Contraindications are renal insufficiency, grave infection of the urinary tract, senile dementia, myocarditis, coronary sclerosis and fatty heart. Advanced age is not in itself a contraindication, arteriosclerosis and hypertension are only a relative contraindication. Both cystostomy and prostatectomy call for preoperative treatment. Vasectomy should be done in prophylaxis. The endovesical resection method should until further notice be reserved for the experienced urologist. The possibility of cancerous development in an adenoma must be borne in mind in every case of prostatic hypertrophy. The prognosis for a clinically undemonstrable cancer in an adenoma is relatively good on enucleation.

Hormone Investigations in Pernicious Vomiting of Pregnancy—In three of eight patients afflicted with vomiting or pernicious vomiting, Anker and Laland found subnormal values of the anterior pituitary-like principle in the urine, these values in the serum were hypernormal in all cases. In the six patients in whom analyses of the anterior pituitary-like principle were continued during rest in bed and abundant administration of fluids, vomiting ceased simultaneously with the rise in the content of the anterior pituitary-like principle of the urine and the reduction of its content in the serum. Control analyses in pregnant women without vomiting showed normal values of anterior pituitary-like principle in the urine and the serum.

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PAIN IN BENIGN ULCERS OF THE ESOPHAGUS, STOMACH AND SMALL INTESTINE

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With the possible exception of some esophageal ulcers, this study deals almost wholly with the experiences of patients harboring peptic ulcers. The symptoms commonly accepted as being diagnostic of peptic ulcer may be experienced by patients who do not have ulcer, and certain intrinsic gastro-intestinal lesions, such as benign tumor or carcinoma, occasionally produce symptoms clinically indistinguishable from peptic lesions. On the other hand, extensive or subacute perforating peptic lesions have often been observed among patients whose histories had lost to an appreciable degree the symptoms previously so characteristic for peptic ulceration.

Although there is a fairly consistent reduplication of characteristics in the syndrome of peptic ulcer, there is nevertheless much variability in the symptoms. This variability does not necessarily represent individual responses to the same morbid process, although changes in symptoms can often be noted in the same patients at different stages of the life cycle of the disease. This paper is concerned with the study of these mutations in order to ascertain whether certain pathologic complications consistently produce a similar behavior of the syndrome experienced by these patients.

It seemed reasonable that, when peptic ulcer passed through the various stages of its life cycle and invaded different depths of the tissues into which it burrowed, it might be expected to produce some definite changes in symptoms, as neighboring organs are invaded and as normal physiologic processes become increasingly disturbed, symptoms might well be assumed to arise which would substitute for or complicate the symptoms included in the original syndrome. Therefore ulcers in different portions of the gastro-intestinal tract were selected for study, the different states of pathologic development were ascertained by direct inspection of tissues and the various pathologic processes were correlated with the symptoms that were actually being produced at the time of laparotomy. By comparing a sufficient number of such lesions with the symptoms that were produced, it was believed that a type of serial section picture could be built up which would permit correlation of the varying changes in the histopathologic life cycle of peptic ulcer with the changing painful experiences noticed by patients harboring such lesions.

The usefulness of having accurate information regarding the actually existing pathologic conditions of the lesions under consideration is readily apparent.

By studying with sufficient thoroughness the exact situation of the pain and the course over which it is projected as well as the behavior of symptoms caused by lesions in varying situations and at varying depths of tissue, certain information may become available by which the anatomic and physiologic problems of abdominal pain and its pathways can be better understood.

PATHWAYS AND MECHANICS OF PAIN

Painful impulses arising from peptic ulcers may originate in the wall of the gastro-intestinal tract, course along over sensory bundles in the sheaths of the splanchnic nerves, cross over through the white rami communicantes of the thoracic nerves along the posterior roots, and thus enter the posterior horn of the spinal cord. Pain also may be conducted to the spinal cord over the sensitive cerebrospinal somatic nerves, twigs of which supply the parietal peritoneum and the mesentery. The vagus nerves carry some sensory fibers, but these are probably not very important in telegraphing to the brain painful impulses arising from peptic ulcers.

There are several other pathways by which painful impulses caused by peptic ulcers can leave the abdomen, such as through the ganglionated sympathetic chain or by way of the aortic plexuses, and thence through the rami communicantes to the spinal cord. Furthermore if these lesions are situated high in the gastro-intestinal tract, the phrenic pathways may be utilized.

Difficulty at once arises, however, when an attempt is made to explain the origin of pain from viscera which ordinarily seem practically insensitive to the stimuli that experience has taught would produce pain on body surfaces. Lennander¹ attempted an explanation of this paradox by suggesting that painful impulses from diseased viscera reached the patient's consciousness through the medium of the parietal peritoneum and its subserous layer over the cerebrospinal sensory nerves. Ross² suggested that internal organs gave rise to two kinds of pain: true splanchnic pain, which was felt in the organ from which the afferent impulse arose, and an associated somatic pain, which, he believed, was felt in the cerebrospinal nerves of the body wall which are connected with the same segments of the spinal cord as the affected splanchnic nerve.

Mackenzie,³ accepting entirely Ross's hypothesis regarding referred somatic pain, denied the possibility

From the Division of Medicine the Mayo Clinic.
Read before the Section on Gastro-Enterology and Proctology at the Eighty-Fifth Annual Session of the American Medical Association Cleveland June 15 1934

1 Lennander K. G. Weitere Beobachtungen über Sensibilität in Organ und Gewebe und über lokale Anästhesie. Deutsche Zeitschr f Chir 73: 297 350 (June) 1904

2 Ross James. On the Segmental Distribution of Sensory Disorders Brain 10: 333 361 1888

3 Mackenzie James. Remarks on the Meaning and Mechanism of Visceral Pain as Shown by the Study of Visceral and Other Sympathetic (Autonomic) Reflexes I Sympathetic Reflexes Brit M J 1 1449 1454 (June 23) 1906 III The Mechanism by Which Visceral Pain is Produced ibid 1 1523 1528 (June 30) 1906

that the splanchnic nerves could transmit impulses from the viscera interpreted by the brain as pain. Instead he suggested that the viscus sends forth a stimulus over the splanchnic afferent fibers into the posterior horn. There it sets up an area of increased irritability, producing hyperalgesia in the skin of the abdominal wall supplied by the cerebrospinal sensory nerves that enter the affected segment of the cord. This he called a viscerosensory reflex. He stated that an increased stimulus reaching the spinal cord in this way sometimes spreads to the anterior horn cells affecting a motor center, causing contraction of skeletal muscle in the area receiving

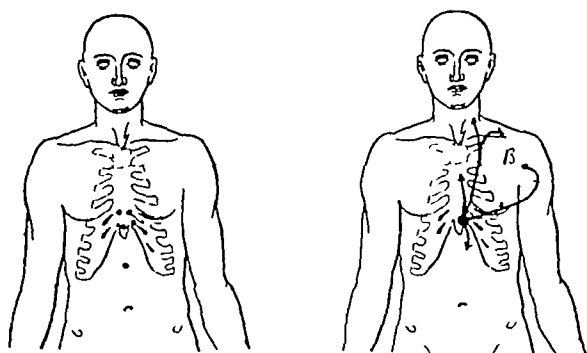


Fig 1—Ulcers of the esophagus. Left origin of pain. Right radiation of pain. In the charts each dot indicates the point at which each patient felt the maximal distress. Arrows indicate regions to which pain was projected, the depth of shading indicates relative frequency of pain shifts.

its nerve supply from the same spinal segment. This he described as the visceromotor reflex. In this way he attempted to explain rigidity overlying a painful abdominal lesion.

Hurst⁴ later pointed out that it should not necessarily be assumed that the viscera were insensitive because certain stimuli applied there were not interpreted as pain. He suggested that it was merely a matter of applying an adequate stimulus to the wall and

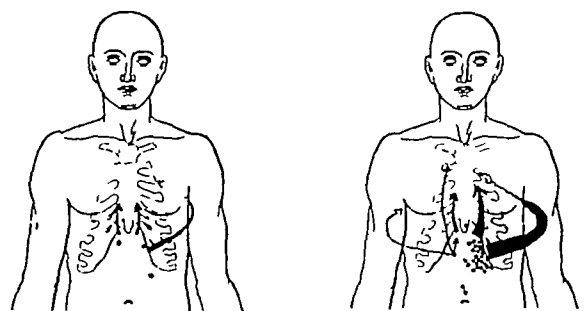


Fig 2—Left nonperforating gastric ulcers including subacute ulcers. Right perforating gastric ulcers not including perforation to liver; the only instance of shift of pain to the right in this group occurred in cases in which the perforation was to the pancreas.

argued that increased tension on the muscular wall of these organs can produce true visceral pain. He expressed the belief that abdominal tenderness associated with ulcer is either a "visceral" tenderness or a "reflex" tenderness. He suggested also that subserous connective tissue in a viscus is sensitive to pressure when inflamed, this he calls visceral tenderness. Reflex tenderness, he stated, is produced by impulses from the ulcer traveling over the afferent sympathetic fibers into

the spinal cord, rendering the segments to which they run abnormally sensitive. Local stimulation of the sensory fibers in the skin, subcutaneous tissues and skeletal muscles supplied by the same spinal segment as those of the organ in which the abnormal afferent stimuli originate give rise to discomfort or pain when under ordinary conditions no unpleasant sensation would have arisen from such stimulation.

Morley⁵ expressed the opinion that true visceral pain exists, but he suggested that tenderness and rigidity in the abdominal wall are entirely referred from the sensitive cerebrospinal nerves of the parietal peritoneum.

Palmer⁶ believes that hydrochloric acid plays a definite part in the production of the pain of peptic ulceration. By introducing 0.5 per cent hydrochloric acid into the stomach of the patients with peptic ulcer, he could produce pain consistently so long as the experiment was carried on during the period in which the ulcer was active. Mann and Bollman⁷ expressed the belief that the repeated introduction of 0.5 per cent hydrochloric acid into the stomach, at frequent regular intervals, will eventually produce severe pain. Hurst⁴ suggests that hydrochloric acid acts as a stimulus that ultimately raises the tension of muscular fibers in the coat of the viscus, thus causing pain. Kinsella⁸ believes that the pain of peptic ulcer is caused by local pressure on

Summary of Material for Study

Type of Ulcer	Cases	Uncom- plained	Com- plained	Original Lesion		Recurring Lesion	
				Gastric	Duodenal	Gastric	Duodenal
Esophageal	7						
Gastric	120	20	40	0		30	
Duodenal	190	55	55		40		40
Gastrojejunal	70	20	50	3	67		
Gastroileal	2						
About a Meckel's diverticulum	4						

the splanchnic nerves by the inflammatory reactions incidental to the ulcerating process. Wilson⁹ is of the opinion that relaxation of the duodenum when the food enters causes relief of pain.

MATERIAL FOR STUDY

Only those cases were accepted for study in which direct inspection of tissues was obtained and in which the history included exact information regarding the syndrome under consideration. These cases are summarized in the accompanying table.

An inquiry was made as to the situation of the lesion and as to the duration and character of the pain, its time of onset, mode of relief, and whether there were any appreciable differences in the general characteristics over the entire life cycle of the lesion under consideration. An effort was made to ascertain the location not only of the more recent areas of pain but also of those experienced since the origin of the syndrome attributed to the patient's present illness. In most instances, dia-

⁵ Morley, John. Abdominal Pain. Edinburgh. E & S Livingstone, 1931.

⁶ Palmer, W. L. The Mechanism of Pain in Gastric and in Duodenal Ulcer. III. The Role of Peristalsis and Spasm. Arch. Int. Med. 39: 109-133 (Jan.) 1927.

⁷ Mann, F. C. and Bollman, J. L. Experimentally Produced Peptic Ulcers. J. A. M. A. 99: 1576-1582 (Nov. 5) 1932.

⁸ Kinsella, V. J. The Mechanism of Pain Production in Abdominal Visceral Disease with Special Reference to the Pains of Peptic Ulcer. M. J. Australia. 1: 64-84 (Jan. 21) 1928.

⁹ Wilson, M. J. Duodenal Ulcer. Observations on the Behavior of the Stomach and Duodenum in the Presence of Pain. Arch. Int. Med. 41: 633-641 (May) 1928.

⁴ Hurst, A. F. The Goulstonian Lectures on the Sensibility of the Alimentary Canal. Delivered at the Royal College of Physicians on March 14, 16 and 21, 1911. London. H. Frowde, Hodder and Stoughton, 1911.

grams have been used whereon the situation of the distress has been accurately charted. It should here be stated that percentages indicated in the various groups are not mutually exclusive.

ESOPHAGEAL ULCER

The ulcers included in this group were situated just above the cardia. Pain usually was present or intensified during deglutition. Forty-five per cent of the patients noted a shift of pain upward to areas indicated in figure 1. Forty-five per cent gave a history suggesting peptic ulcer.

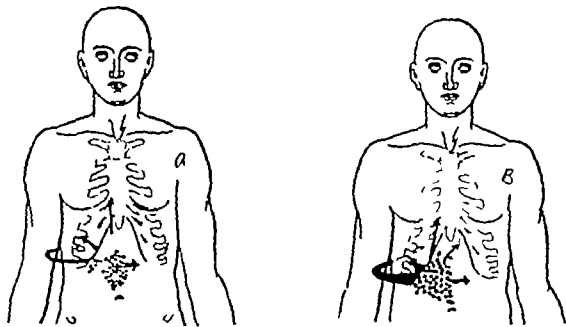


Fig 3—Left, nonperforating duodenal ulcers including subacute and larger ulcers. Right, perforating or deeply penetrating duodenal ulcers.

GASTRIC ULCER

More than 90 per cent of patients with shallow gastric ulcers complained of poorly localizable pain. Definite localization of pain was possible in 50 per cent of cases in which the ulcer was large or subacutely inflamed. In 90 per cent of cases in which the ulcer was perforating, the pain was accurately localizable to the left upper abdominal quadrant, usually near the costal margin. With invasion of the mesentery, mesocolon or abdominal wall 93 per cent of patients noted secondary shifts of pain into the thorax or back (fig 2).

DUODENAL ULCER

Obstructing duodenal ulcer usually produced diffuse epigastric distress, frequently with a loss of the sequence of symptoms assumed to be diagnostic of ulcer. In 64 per cent of cases of nonperforating ulcer, the situation of the distress was poorly defined. Extensive or subacute ulcers frequently produced accurately localizable pain. In 90 per cent of cases, perforating duodenal ulcers produced pain which was localized with accuracy to the right upper abdominal quadrant. Seventy-seven per cent of patients with perforating lesions experienced a shift of the pain to the region of the liver or into the back (fig 3).

GASTROJEJUNAL ULCER

Pain caused by shallow ulcers in or about a gastro-enteric stoma is usually poorly localizable. Patients with perforating ulcers that involved a gastro-enteric stoma had definitely localizable pain, and furthermore they noted shifts of the pain into the lower portion of the abdomen or into the back in 88 per cent of cases. In 96 per cent of cases, patients who harbored perforating ulcers that were definitely jejunal in situation noted a downward or posterior projection of that pain. The situation of pain caused by perforating stomal ulcers that invade the anterior abdominal wall is usually on a higher level than in those cases in which such ulcers perforate posteriorly (fig 4).

ULCER OCCURRING ABOUT A MECKEL'S DIVERTICULUM AND GASTRO-ILIAC ULCER

The symptoms caused by an ulcer occurring about the orifice of a Meckel's diverticulum presented none of the characteristics usually attributed to peptic ulcer. When such ulcers were perforating, the pain was fairly well localized in an area to the right or left of and slightly below the umbilicus. The two gastro-iliac ulcers occurred in cases in which anastomosis had not been correctly made between the stomach and the ileum before the patients had come to the clinic. In both cases the symptoms maintained some of the characteristics usually noted in anastomotic ulcer. In one case the pain was indicated as being to the right of the umbilicus and, in the other, slightly above it. The pain in the latter was referred downward and through to the back, the lesion being a perforating gastro-iliac ulcer.

COMMENT

It should be stated that no definite rules of behavior can be formulated which invariably apply to the pain or the syndrome caused by peptic ulcer. The syndrome caused by such lesions usually maintains its original characteristics so long as there is no decided change in the morbid anatomic characteristics of such a lesion. Let the ulcerating process deeply invade the wall of the viscus, however, so that the serosa and, subsequently, tissues surrounding the gastro-intestinal wall are invaded and the characteristic picture of peptic ulcer usually becomes somewhat distorted.

The pain of a small, shallow peptic lesion is usually localized with some difficulty unless it produces mechanical disturbances, and this is true regardless of the position of such a lesion. It may produce no pain at all.

When the deeper tissues of the viscus are invaded, the syndrome as a rule becomes more definite and, with the origin of more severe pain, an area of more definite distress can usually be indicated with fair precision.

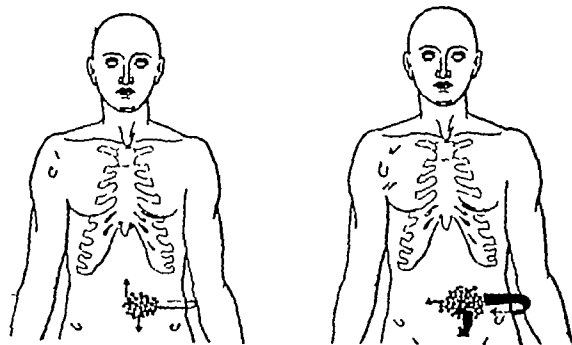


Fig 4—Left, nonperforating gastrojejunal ulcers including large and subacute ulcers. Right, perforating ulcers within or below the anastomosis.

When the inflammatory reaction is extensive, and especially when the lesion has penetrated to the tissues surrounding the viscus, a new area of pain may develop. The second pain may be noted in addition to the original pain, or it may supplant it entirely. Whereas in esophageal ulcer the original pain is in the vicinity of the manubrium of the sternum, it may later extend through to the back or upward into the upper portion of the sternum or into the neck.

In gastric ulcer the pain, in its inception and when the ulcer is shallow, is usually to the left and slightly below the umbilicus. With deep penetration, however,

there usually develops a shift of this pain to a definite area to the left of the median line, frequently approximately at the costal margin, and often there is further projection of this pain into the left portion of the back or upward anteriorly and laterally over the lower ribs. With duodenal ulcer the original pain is usually poorly recognizable although it is indicated as being above or frequently slightly to the right of the umbilicus.

With the development of subacute inflammation, and particularly when deep penetration occurs, the pain frequently shifts toward the right costal margin, and in addition there often develops projection into the right part of the back or upward into the region of the liver or right side of the thorax. Shallow gastrojejunal ulcers often manifest their presence by pain to the left of the median line or slightly below the umbilicus. When deeply penetrating or perforating, these ulcers frequently produce a shift of pain to the lower part of the abdomen, most frequently to the left side, although occasionally through to the back to a lower area than was the site of pain with the original duodenal or gastric ulcer.

With the onset of this secondary pain, other changes in the characteristics of the syndrome experienced by these patients frequently develop. There is less tendency toward intermittence of symptoms, less relief from distress by the use of food or alkalis, earlier onset of pain following meals and more distress at night. Frequently, abdominal tenderness becomes noticeable, and a rather persistent sensation of soreness may develop which usually is maximal over the area of pain. Frequently this pain is not in the ulcer sequence, nor is it relieved by food or alkali. This is particularly noticeable when extensive inflammatory reactions pass beyond the confines of the bowel and invade tissues surrounding the viscus. Although extensive or subacute lesions may be productive of the foregoing symptoms, definite penetration progression of the ulcerating process can usually be correctly assumed when the history reveals the presence of such changes from the original symptoms. The projection of pain into secondary areas does not necessarily occur with the development of acute distress. It frequently occurs and may be associated with much tenderness when the pain is and has always been mild.

With the development of obstruction there is frequently much distortion of the usual ulcer syndrome, the pain-food-ease sequence is often lacking, the retention type of vomiting may develop, and, in the presence of such a complication, the distress is usually indicated as diffusely spread out over the epigastrium. This is so regardless of the position of the lesion causing the obstruction.

The presence of several coexisting peptic lesions, if involving different segmental areas, such as an active duodenal ulcer and a gastrojejunal ulcer, may frequently be diagnosed by a careful consideration of the areas to which patients localize their pain. Very important lesions are not infrequently missed because dual pain areas and pain shifts are not carefully evaluated.

A definitely reappearing pain in a well localized area, with consistent projection of the pain to definite areas, may be more accurate than a roentgenogram in pointing out the gastro-intestinal segment from which such pain arises.

A minute scrutiny of pain is important in the recognition of the disease and of its complications, and in such

a crucible of clinical experience the theories regarding mechanics and pathways of such pain can be tested and applied. I have been impressed by the consistently recurring pain and pain projection experienced by various patients with lesions of identical histopathologic characteristics. The uniformity of these subsequently developing changes in situation and projection, depending on the depth of tissues invaded, is too definite to be a mere coincidence. Data are thus available to test theories and to ascertain whether they harmonize only with a single fact relative to the problem of pain in peptic ulcer or whether they are sufficiently flexible to be applicable to the problem of the varying behavior of this pain under different pathologic conditions. Among other considerations regarding the ulcer problem it should be clear why the pain of an ulcer that involves only the wall of the viscus, without extension to neighboring organs, should give an indistinctly localizable pain which only exceptionally shifts to other areas. It should explain, on the other hand, why the pain of an ulcer that invades neighboring tissues in the course of perforation should produce definite shifts with projection to secondary areas. It should lend itself to the explanation of why ulcers originating in identical tissues produce a definite posterior and lateral shift of pain when they penetrate to the mesentery and yet produce less definitely projecting pain that is on a different level when they perforate to the anterior abdominal wall.

It must also explain why the approved syndrome of ulcer may be present in the absence of ulcer, and why on the other hand extensive, subacute perforating peptic lesions frequently retain only the fragments of the syndrome that is assumed to be so characteristic of peptic ulceration.

A solution of these problems is not readily discernible in the hypothesis of Mackenzie.³ The splanchnic accumulation of pain impulses, and the relay of these peripherally as pain over the spinal sensory nerves, could be applied to explain some of the pain experienced by patients with ulcer. Mackenzie, when he formulated his hypothesis, did not believe that the splanchnic nerves carried sensory fibers. At the present time it seems an established fact that some sensory branches run along these splanchnic nerves.

The varying shifts of pain that occur when ulcers venture beyond the confines of the bowel can probably be explained more satisfactorily by the assumption of other routes than the splanchnic nerves. The hypothesis of Morley⁵ better fits the interpretation of the pain behavior of perforating ulcers. He suggested that such pain is picked up by the sensory spinal nerves and transmitted to the superficial branches of such nerves. He would classify the shifting distress of a perforating ulcer as a "referred pain." Regarding the origin of such pains he stated that "referred pain only arises from irritation of nerves which are sensitive to those stimuli that produce pain when applied to the surface of the body." He assumed that tissues such as the mesentery, mesocolon and abdominal wall are innervated by the sensory spinal nerves, a presumption which clinical experience would lead me to assume is entirely reasonable. I have noted, however, although I must admit that this occurred rarely, that projecting pains exactly similar to those observed in ulcers that invade tissues external to the bowel occasionally arise in ulcers that invade serosal tissues, and even rarely in ulcers which, although extensive, are not penetrating. This

could, of course, be explained on the basis of direct invasion of such tissues by products of inflammation or by unusually distended viscera, but I am not convinced that pain transmitted over the splanchnic route cannot be projected into secondary areas.

The slightly upward, left, lateral and posterior shift of the pain of gastric ulcer, the right, lateral and posterior shift of the pain of duodenal ulcer, and the downward, slightly lateral and posterior shift of the pain of jejunal ulcers all conform fairly well to peripheral areas supplied by somatic branches that could be expected to be invaded by posterior perforation of such lesions. In this connection the behavior of pain caused by lesions perforating to the anterior abdominal wall is interesting. In such instances there is local tenderness and rigidity, frequently a palpable mass, and the pain has less tendency to project widely. It is designated almost invariably as occurring in areas contiguous to the spot into which the penetrating lesion had attached itself. Furthermore, it is usually on a definitely higher level than is noted by patients having ulcers in identical positions but which perforate posteriorly.

It would seem that the most reasonable explanation for the various and varying situations and references of pain caused by peptic ulcer would have to assume at least a dual nervous mechanism. The simple, clean-cut, uncomplicated peptic ulcer may well be a visceral syndrome caused by rhythmically reasserting "adequate" stimuli and appreciated by means of afferent conducting mechanisms within the sympathetic nervous system.

The diffuse epigastric distress that is almost universally noted with obstructing ulcers, regardless of the position of such ulcers in the stomach, duodenum or jejunum, in all probability arises because of disturbed intragastric mechanics or disturbances in the stomach wall which could be a visceral phenomenon that would seem to be transmitted mainly along the sympathetic nerves.

With invasion, in the progress of perforation of tissues surrounding the wall inhabited by a peptic ulcer, it would seem that the warnings of the traumatizing effects of such invasion would be conducted over nerves guarding these tissues, which would probably be branches of the somatic nerves. These nerves being sensitive to many stimuli, in addition to the adequate stimulus producing pain over the splanchnic route, could be expected to produce a syndrome less rhythmic and clean cut than the syndrome caused by an uncomplicated ulcer.

The fact must not be lost sight of that, even though a perforating ulcer gets beyond the confines of its place of origin, it is still setting up irritation to the wall of the viscus. Thus impulses would be collected from both sources, that is, over the splanchnic and over the somatic nerves.

It is readily conceivable that the syndrome of peptic ulcer might well be influenced in this way. A disturbed ulcer syndrome, that is, one in which the symptoms are mainly over areas supplied by somatic nerves, could easily be assumed to receive predominance of impulses from without the bowel wall over branches from this system of nerves, whereas a pick-up of sensations over the splanchnic nerve plexuses not distracted by a mixture of impulses arising over the somatic nerves might conceivably be assumed to produce a syndrome usually accepted as being a characteristic peptic ulcer complex of symptoms. Much additional evidence will have to

be used by physiologists, anatomists, surgeons and clinicians before the final analysis of these varying phenomena associated with peptic ulcer and its syndrome will have been satisfactorily explained.

CONCLUSIONS

1 The clean-cut syndrome usually accepted as being diagnostic of peptic ulcer indicates an uncomplicated ulcer.

2 When the pain of gastric ulcer shifts definitely to the left, slightly upward or to the back, when the pain of a duodenal ulcer is projected toward the right, upward over the region of the liver or through to the back, or when the pain of a gastrojejunal ulcer extends downward or through to the back, one can usually correctly assume deep penetration or partial perforation of such a lesion.

3 The presence of two distinctly separated areas of pain especially if such pain is projected into two widely separated areas, frequently is indicative of two peptic lesions, such as an associated duodenal ulcer and gastrojejunal ulcer or an associated gastric ulcer high on the lesser curvature and a perforating duodenal ulcer.

4 The situation of the pain of an obstructing ulcer, regardless of the situation of the lesion, is usually diffusely spread out over the epigastrium.

5 Uncomplicated peptic ulcer probably indicates its presence as a visceral phenomenon, which asserts itself over the splanchnic nerves.

6 The projecting pain of perforating peptic ulcers are in all probability the result of direct stimulation of the somatic nerves with a relay of these impulses as pain into the peripheral or cutaneous branches of such nerves. It is conceivable that the distortion of the approved ulcer syndrome in such instances is influenced by the accumulation of impulses of varying intensity over both the splanchnic plexuses of nerves and over the somatic nerves.

ABSTRACT OF DISCUSSION

DR RALPH C BROWN, Chicago. Dr Rivers has clearly outlined the extent to which confusion still exists among physiologists with respect to the precise mechanism of peptic ulcer pain. However, a mass of accurate clinical data is now available, established facts that are of the greatest value in differential diagnosis. It is known that an ulcer not complicated by an extensive perigastritis gives rise to pain or distress only when free hydrochloric acid in considerable concentration is in contact with the exposed surface of the ulcer. Free hydrochloric acid is without doubt the direct irritant that initiates the pain. As a striking illustration I would cite two cases of gastrojejunal ulcer recently under my observation. With clocklike regularity about one and one-half hours after food-taking, pain would appear in the left testicle, would increase to almost agonizing intensity, and would continue until relieved by giving the patient food or an alkali. Relief of the testicular pain in these patients by hydrochloric acid neutralization was immediate and complete. In these two cases the left renal nerve supply had become involved in the inflammatory mass surrounding deeply penetrating jejunal ulcers. The nerve supply to the kidney and to the testicle is derived mainly from the sympathetic through the solar and aortic plexuses and from the splanchnics. It would be difficult to explain the testicular pain in these cases of jejunal ulcer on any basis other than direct chemical irritation of the renal nerves thus exposed in the base of these ulcers. The relief from alkalis was immediate and complete. It seems to me highly improbable that the pain of ulcer can be explained on the basis of increased intragastric tension. In certain cases of high grade pyloric obstruction of long standing, with great hypertrophy of the stomach musculature, the visible and palpable gastric peristalsis forms globular masses having almost the

firmness of a grapefruit. The intragastric tension at such a time must be very great, yet no discomfort is experienced by the patient. I do not believe it is possible to determine accurately the location of an ulcer by the localization of the pain or distress. The characteristic response of the patient with an active ulcer, whether gastric or duodenal, when asked to indicate the site of distress, is the unhesitating placing of one or two finger tips at one definite point in the epigastrium. True, this point will vary in different individuals, but most commonly it is in the midline. Less than 10 per cent of patients with active ulcer will indicate the site of distress with the palm of the hand. This point is of definite diagnostic value, especially in differentiating the pain of ulcer from that caused by a spastic bowel.

DR. FRANK SMITHIES, Chicago. It is necessary to diagnose not only peptic ulcer but its localization as well. If it is in the stomach, the prognosis is different from that of an ulcer in the duodenum. There is the greater possibility of serious complications when the ulcer is gastric. Likewise the histologic state of the ulcer must be diagnosed. This is most essential with regard to the exhibition of proper treatment. By the time the gastro-enterologist sees the patient, his clinical story is that of what happens in consequence of various types of complications—these all affect what happens secretorily, from the standpoint of motility and interference with general nutrition. Hence the symptomatology of progressive ulcer is an ever changing one, so are the special laboratory observations. Dr. Brown has emphasized how mild may be the symptoms of chronic ulcer, and he has done that, I am sure, with the object of emphasizing the fact that chronic ulcer is not especially a mucosal disease. It is a mural disease—a periduodenal and a perigastric disease. I want to point out an observation which I think is important. Sometimes one sees a patient with pain diffused over an area requiring a hand to cover it. If that patient begins to have marked distress in one place, and it begins to have a definite point of reference to the back, up to the teeth (I have seen teeth taken out because such pain supposedly was due to bad teeth), to the shoulder to the nipple, or is angina-like and if the pain reference point always is to one place, the clinical interpretation is that a histologic complication is occurring in the ulcer whether the lesion is gastric or duodenal. When, in addition to the constancy of the patient's description of distress, one elicits local tenderness, one is being told by a pathologic process that there is a histologic change going on and that one is dealing with something entirely different in the ulcer. In such circumstances one may expect serious consequences to occur even though at intervals the patient is in the greatest of comfort. The lesion has passed from its mucosal to a definitely mural stage with possibilities of serious vascular or motor accidents. The author did not emphasize the point of reference of pain by the patient to the region in which tenderness is noted, but what I have suggested is a hint. Relief of pain in ulcer doesn't concern physicians today. There are many mechanisms—the Christian scientist, a highball, a lot of alkali, a baseball game and so on. The mechanism of relief varies with the individual, and possibilities for relief frequently depend on the histologic status of the ulcer at the particular time.

DR. SIDNEY K. SIMON, New Orleans. One of the inferential points brought out in Dr. Rivers' splendid contribution is the stress that he lays on a purely clinical phenomenon in the diagnosis of ulcer. The great tendency in recent times in the diagnosis of gastro-intestinal conditions has been to stress largely the laboratory phenomena, very often at the expense of clinical interpretations. Dr. Rivers shows clearly the importance of just one simple phase of the clinical data, and that is the proper interpretation of the pain location. I should like to ask the author what his impression is in regard to the localization of points of tenderness, in relation to the somatic description of the pain by the patient. The older clinicians learned to depend to a certain extent on the location of areas of sensitiveness for the differentiation of the gastric from the duodenal ulcer. The description of the painful area along the spinal column or to the left, rather, of the spinal column, by Bowers has been stressed and I should like to know from Dr. Rivers whether he has correlated in any way in his own observations these various areas of sensitiveness or head zones or Boas's

points in relation to the differential diagnosis of the different phases of peptic ulcer.

DR. A. H. AARON, Buffalo. The responsibility of the correct interpretation of pain rests with gastro-enterologists. I will mention two cases. A woman had a sudden terrific pain in the upper part of the left diaphragm, referred to the neck, and was in shock. The diagnosis was made of a perforated lesion of the stomach and gastrostomy was done. She died. An ulcer was found at the junction of the cardia in the stomach, which had perforated and also crowded a large vessel. She had the typical referred pain to which Dr. Capps called attention, which she could reproduce by mechanical stimulation of the inner portion of the diaphragm which received its innervation through the phrenic, and referred pain to the neck. In the second case the situation was more serious. A man had terrific pain referred to the neck. It was diagnosed as coronary thrombosis, but what he actually had was an ulcer in the esophagus. The patient unfortunately presented cardiographic changes, was in collapse, had referred pain such as Dr. Rivers described, and was on a restricted regimen for a long time. He altered his whole conduct in life, the character of his activities, and what he really had was revealed on examination of the esophagus to be a peptic ulcer of the esophagus. The referred pain was due to that. He had somewhat of an effort syndrome associated with his pain.

DR. ANDREW B. RIVERS, Rochester, Minn. Dr. Brown intimated that it is not always possible to localize ulcers correctly from the situation of their pain. This is particularly true with ulcers that do not have penetrating characteristics. If ulcers are of the penetrating variety, it is frequently possible to localize with a fair degree of accuracy the position of the lesion. However, this does not preclude the necessity for corroborating such impressions by roentgenologic investigations. If an ulcer has been localized under the fluoroscope and these pain shifts occur, the probability of a complicated histopathologic condition of the ulcer is suggested. There are still many things regarding the mechanism of pain production in ulcer that are unsettled. There seems no doubt that acid is one of the chemical causes for the production of pain. However, whether acid is responsible for the production of pain by bringing into play some other related mechanism, such as spasm, is not finally determined as yet. Regarding the matter of tenderness in peptic ulcer, I doubt that the situation of such tenderness always corresponds to the position occupied by the ulcer. There are some suggestions that in extensive peptic ulcers there may be visceral tenderness. On the other hand, it seems likely that in most instances the tenderness associated with penetrating lesions is due to actual somatic invasion. This may be due to direct peritoneal irritation, or it may at times be felt along the distribution of the somatic nerve affected by such nerve irritation.

The Physician of the Gods—The Romans followed the Greeks in regarding Phoebus Apollo, the physician of the gods as the inventor of medicine. By the nymph Coronis, who seems to have indiscreetly joined the god while he was bathing in a river, Apollo had a son Aesculapius. He entrusted the education of the boy to the centaur Chiron, who taught him the charge of the art of medicine. Arrived at manhood, Aesculapius performed many miracles of healing but his very efficiency proved his undoing. It happened in this way. The seer Polydus while watching by the body of the dead Glaucus, saw a snake approaching and promptly killed it. In a few moments, however, he observed a second snake which drew near its dead companion and touched the lifeless body with an herb that it carried in its mouth. At the touch, the dead snake instantly revived. Polydus communicated his discovery to Aesculapius, who used the same herb to restore the life of Hippolytus, whose death had been brought about by his incestuous stepmother, Phaedra, the Greek counterpart of Potiphar's wife. Jupiter incensed that a mortal should usurp the divine prerogative of raising the dead, blasted Aesculapius with a thunderbolt. After his deification a temple was erected for the worship of Aesculapius at his birthplace, Epidaurus, a town in the Peloponnesus about thirty miles from Athens—Jeffrey, Eric. *The Ancient Romans Through Medical Eyes* *Am J Australia* 2: 439 (Oct 6) 1934.

ULCERATIVE COLITIS

II THE FACTOR OF DEFICIENCY STATES

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During recent years the concept of deficiency disease has been enlarged. It is becoming increasingly apparent that chronic vitamin deficiency produces a variety of vague borderline states of ill health that have no place in existing nomenclature. These conditions, however, seldom appear uncomplicated or well defined. The contributory factors are more complex than those operative in the laboratory, where the environment of the experimental animal is subject to strict control. It is probable, therefore, that the resulting clinical picture in man is not the simple expression of lack of a single factor as a vitamin. Deficient supply of other essential food substances such as protein, iron, calcium, phosphorus and iodine undoubtedly contribute to the syndrome.

We have encountered indications of deficiency disease in forty-seven cases of chronic ulcerative colitis. These observations have been drawn from seventy-five consecutive cases seen in hospital, dispensary and private practice in New York City. They represent all stages of the disease anatomically from mild localized proctitis to advanced and extensive involvement of the entire colon. The clinical expression has varied from the mild form with relatively slight symptoms to the very severe type requiring prolonged periods of hospitalization and, at times, surgical intervention.

In most instances the phenomena suggesting deficiency disease have not been associated with a clinical picture that coincides exactly with any of the well recognized conditions usually included within this group. The diagnostic criteria that we have adopted have been restricted to the objective changes that have been shown to occur in various deficiency states. They find expression particularly in the mucous membranes of the mouth, in the skin, in changes in the blood chemistry, and in the associated anemia.

Alterations in the mucous membrane of the tongue have been the most common of the abnormal manifestations. They appear to be among the earliest recognizable indications of deficiency disease. They present the features that are characteristic of sprue, pernicious anemia and pellagra. The initial phase begins as an inflammation of the fungiform papillae over the anterior third. This causes them to stand out with undue prominence and leads to a strawberry-like appearance. If progression occurs, a diffuse glossitis develops in which the anterior portion of the tongue becomes inflamed, red and often tender. At this stage small, painful aphthous ulcers may appear and may be present also on the buccal mucosa. Ultimately, as is the case in sprue, the filiform papillae degenerate and the characteristic smooth atrophy of the tongue results. More rarely, and only in the advanced and serious cases, the inflammatory process has extended to involve the mucous membrane of the mouth, producing a condition indistinguishable from the diffuse stomatitis of pellagra.

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These changes are relatively slight in many instances and may easily escape notice. The smooth atrophy is frequently restricted to the tip and to the edges of the tongue. It is seldom as prominent as in Addisonian anemia.

Eleven of the patients have presented abnormal conditions of the skin. These individuals, with one exception, were seriously ill. The cutaneous phenomena that appeared in the course of prolonged hospitalization did not exhibit the characteristics of infection or of response to common irritants. They were preceded or accompanied by other clinical indications of deficiency.

Alteration in the texture of the skin has been the most common change observed. It becomes abnormally dry and scaly, especially over the extremities. This is frequently associated with hyperkeratosis follicularis and a harsh, almost sandpaper-like skin surface. With general clinical improvement these phenomena have receded and have given place to normal soft and elastic integument.

Symmetrically disposed atrophy of exposed skin surfaces has been noted in five of the patients. This has usually, but not invariably, followed exposure to sunlight. The changes, however, have been noticeably disproportionate to the degree of sunburn. This has been most evident over the dorsum of the hands. In one case, however, the scapular region was similarly affected and in another the greater portion of the extremities.

TABLE 1—Indications of Deficiency Disease in Forty-Seven Cases

Tongue	46
Buccal mucosa	4
Skin	11
Blood chemistry	7
Anemia	40
Peripheral neuritis	1

was involved. The skin in these instances is dry, wrinkled, parchment-like and transparent.

We have noted a variable type and degree of dermatitis in three of the cases. One patient developed a classic pellagra after exposure to the sun, with acute inflammation of the exposed areas and an acute diffuse stomatitis. These phenomena cleared rapidly on the parenteral administration of liver extract. Pigmentation followed the cessation of the inflammatory process in the skin. The other cases probably represent incipient pellagra. In one a symmetrical smarting dermatitis appeared over the metacarpophalangeal joints of both hands and over both heels. In the other, a similar process developed over the extensor surfaces of the elbows and over the anterior surface of both knees. In two instances a brownish discoloration of the face and flanks appeared without antecedent dermatitis, analogous to the pigmentation in sprue.

A discrete maculopapular erythematous eruption developed in two patients during their stay in the hospital. In neither instance did these changes follow on exposure to any known etiologic agent, and the consulting dermatologist was unable to classify them with certainty. The individual lesions varied from a few millimeters to a centimeter or more in diameter. They were reddish brown or copper colored, discrete, slightly raised and indurated but not tender, painful or itching. They were largely restricted to the extensor surface of the hands, forearms and arms, and the calves of the legs. There was no involvement of the palmar surface of the hands, the lesions appearing only on the

dorsum Liver extract seemed responsible for their disappearance in the one case in which it was used

An extensive and spreading skin gangrene of the flank occurred suddenly following ileostomy in another patient, who presented changes in the buccal and lingual mucosa strongly suggestive of pellagra The initial focus of the gangrenous process was not immediately adjacent to the operative field and multiple secondary foci appeared, which were completely surrounded by normal skin These changes could not be attributed to trauma, mechanical or chemical, and aerobic and anaerobic cultures failed to throw light on the etiology

TABLE 2—*Oral Lesions in Forty-Six Cases*

Inflamed lingual papillae	31
Apthous ulceration	8
Smooth atrophy of tongue	29
Diffuse stomatitis	4

Both the protein and the mineral metabolism of the body may be seriously disturbed in the advanced stages of chronic ulcerative colitis Blood chemistry determinations have shown marked deviations from normal in seven cases These patients were seriously ill and without exception presented other indications of deficiency disease The total plasma protein was below normal limits in four In three of these this change was associated with inversion of the albumin-globulin ratio and extensive edema The serum calcium values were lowered in four cases However, this reduction was not sufficient to induce clinical evidence of tetany The total base was below normal in one patient who presented a severe grade of malnutrition

Thirty-nine of the seventy-five cases have shown significant grades of anemia In thirty-one the characteristics of the hypochromic microcytic type were constantly present The color index remained uniformly below unity, the average cell diameters as measured by the Eve halometer, were low, and microcytes predominated in the stained smear

Eight of the cases, on the other hand, have presented an anemia that is difficult to classify All but one of these patients exhibited other evidence of deficiency states The color index has varied irregularly to both sides of unity when followed over a period of months With indexes at unity or above, the average cell diameter has tended to exceed 7.5 microns and the stained smear has shown varying numbers of macrocytes These variations persisted until liver extract was added to the therapy With this, the index has remained constantly at lower levels and the stained smear has presented the characteristics of the simple or iron deficiency anemias The gastric acidity studies are inconstant in this group In two patients a normal response to histamine was obtained Hypo-acidity was present in one, and complete anacidity in four Four of these patients showed varying degrees of smooth atrophy of the tongue There was no evidence of subacute combined sclerosis

These phenomena in the buccal mucous membranes, the skin and the blood have been observed in various deficiency diseases in man Although the association does not prove conclusively that these changes result from the deficiency, accumulating clinical experience supports the belief that they may be accepted as dependable indications Determination of the specific factor or factors responsible for the development of a

particular lesion is quite another matter, however The results of experimental studies have frequently been contradictory Much of the early work in nutrition must be reevaluated in the light of subsequent knowledge Diets that were believed to be deficient in one principle have later been shown to be lacking in several Consequently the original deductions are inaccurate.

Inadequate supply of the vitamin B complex seems to play a part in the production of lesions in the mouth Hutter, Middleton and Steenbock¹ have regularly produced smooth atrophy of the tongue in rats maintained on diets that were believed to be complete except for vitamin B₂, or G On the other hand, Zimmerman and Burack² have studied the effect of what they consider to be an uncomplicated B₂ deficiency in dogs Weight loss, vomiting, diarrhea and muscular weakness developed in the animals, finally ending in death They found lesions of the nervous system, an intact gastro-intestinal mucous membrane, and no evidence of dermatitis, gingivitis or glossitis The cutaneous and oral lesions of pellagra are believed to be closely related to deficiency of this substance and have been shown to respond to the continued administration of various preparations of liver³ Regeneration of atrophic lingual papillae in man has been observed when a good source of the B complex such as yeast is added to the dietary Similarly, the oral or parenteral administration of liver extract has been followed by restoration of the tongue to normal⁴ In our cases the feeding neither of yeast nor of liver extract has seemed completely effective. When given intramuscularly or intravenously, however, the latter has checked the apthous ulceration and the diffuse stomatitis Progressive regeneration of the atrophic lingual papillae has resulted when it was administered over a sufficient period of time

It is probable that skin lesions other than the dermatitis of pellagra are related to a deficient supply of these vitamins Cowgill, Stucky and Rose⁵ reported that in dogs kept for long periods on diets adequate except for the entire vitamin B complex, cutaneous lesions developed, which frequently were symmetrically dis-

TABLE 3—*Skin Lesions in Eleven Cases*

1 Dry scaly skin	8
2 Hyperkeratosis follicularis	6
3 Symmetrical atrophy	5
4 Symmetrical dermatitis	3
5 Pigmentation	2
6 Discrete erythematous eruption	3
7 Skin gangrene	1

posed These at first were slightly raised, round or oval, and in many instances subsequently ulcerated Healing followed the addition of yeast to the diet without other therapy Rhoads⁶ has seen gangrene of the skin associated with severe pellagra in Puerto Rico

- 1 Hutter A M Middleton W S and Steenbock, Harry Vitamin B Deficiency and the Atrophic Tongue J. A. M. A. 101 1305 1308 (Oct 21) 1933
- 2 Zimmerman H M and Burack E Studies of the Nervous System in Deficiency Diseases II Lesions Produced in the Dog by Diets Lacking the Water Soluble Heat Stable Vitamin B₂ (G) J. Exper. Med. 59 21 34 (Jan) 1934
- 3 Ramsdell R. L. and Magness W H Parenteral Liver Extract Therapy in Treatment of Pellagra Preliminary Report Am. J. W. Sc. 185 568-573 (April) 1933 Ruffin J M and Smith D T The Treatment of Pellagra with Certain Preparations of Liver ibid 512 521 (April) 1934
- 4 Oatway W H and Middleton W S Correlation of Lingual Changes with Other Clinical Data Arch. Int. Med. 49 860-876 (May) 1932
- 5 Cowgill G R. Stucky C. J. and Rose W B The Physiology of Vitamins V Cutaneous Manifestations Related to a Deficiency of the Vitamin B Complex Arch. Path. 7 197 203 (Feb) 1929
- 6 Rhoads C P Personal communication to the author

The significance of the discrete symmetrically disposed skin eruption and of the one case of skin gangrene that we have observed is difficult to determine accurately. However, the association with other more dependable indications of deficiency disease suggests that they result from the same mechanism.

Deficiency of vitamin A has been shown to produce epithelial hyperplasia, metaplasia and keratinization.⁷ Hyperkeratosis about the hair follicles particularly on the extensor surfaces of the arms and legs and over the abdomen has been attributed to lack of this factor. The sweat and sebaceous glands atrophy. The epithelium of the hair follicles undergoes keratinization, causing it to project as a plug above the surrounding skin surface.⁸ The skin becomes dry, scaly and shriveled.⁹ These changes, together with acneiform eruptions, have recently been observed associated with night blindness and xerophthalmia. Both the cutaneous and the ocular phenomena disappeared on the addition of cod liver oil to the dietary.¹⁰ Although none of our cases have exhibited xerophthalmia or night blindness recent work indicates that these conditions probably result from advanced grades of deficiency and that minor degrees of vitamin A deprivation are not uncommon in the general population.¹¹

The abnormal blood chemistry studies and the disturbed fluid balance may represent an inadequate available supply of protein and of electrolytes or an excessive loss of these substances from the body. The edema that we have observed in these cases exhibits the characteristics of the so-called nutritional, or war edema. This results from the change in osmotic relationships attendant on reduction of the blood proteins. Moschowitz¹² has encountered this condition in three cases of ulcerative colitis with chronic diarrhea. He considered the protein deficit to be the result of exudation of serum from the ulcerated surface of the colon. While this constant loss unquestionably plays a part, we believe that the deficient available supply is also a factor of some importance.

The cases with varying color index anemias and inconstant macrocytosis suggest an irregular and slight deficiency of the hematinic principle requisite for normal erythropoiesis. Since the diets of these patients were rich in extrinsic factor, the defect must lie in insufficient production of intrinsic gastric factor or in imperfect absorption from the intestine. The net effect, however, appears to be intermittent in action and insufficient to produce the complete picture of true macrocytic anemia, although the blood picture borders on this condition.

These varied indications of deficiency disease have appeared in spite of dietaries that are completely adequate for the normal individual. Stool examinations have not revealed sufficient evidence of faulty digestion to account for their occurrence. Consequently our attention was attracted to the function of the small intestine. It seemed possible that one or both of two factors might be responsible for the development of

deficiency states in the presence of a complete diet. Hypermotility might cause too rapid a rate of passage through the tract, or a defect in the absorbing mechanism might offset an apparently adequate diet.

Twenty-nine of thirty-seven cases studied roentgenographically have shown significant changes in the small intestine. These frequently extend from the duodenum to the ileocecal junction. The normal mucosal pattern is distorted, as though the mucosa, and especially the valvulae conniventes, were edematous. There is dilatation of individual coils and groups of coils without evidence of obstruction. There is disorganization of normal motor function with reduction of activity and uncoordinated muscular contraction. No evidence of ulceration of the small intestine has been obtained. These changes have been constantly present and most marked in patients with advanced grades of deficiency disease.¹³

Exact interpretation of these studies of the small intestine is impracticable at present. There are clinical and experimental observations, however, which suggest that they may themselves be the expression of deprivation of the vitamin B₁. Anorexia has been a troublesome clinical problem in many of our cases. This symptom has been shown to be one of the most characteristic effects of partial deprivation of the antineuritic

TABLE 4—Blood Chemistry Determinations in Seven Cases

Low plasma proteins	4
Inverted albumin globulin ratio	3
Low serum calcium	4
Low total base	1

vitamin, and it appears well in advance of polyneuritis.¹⁴ We have encountered the latter condition in only one case. Furthermore, reduced motor activity of the intestinal tract has been observed in animals on the withdrawal of this vitamin from the diet.¹⁵

Deficiency states have been observed in ulcerative colitis in the past. Jones¹⁶ considers them not infrequent, and Dickson¹⁷ and Larimore¹⁸ have suggested that avitaminosis might play an important rôle. However, the clinical pictures of the recognized deficiency diseases are relatively infrequent. The lack of correlation between the objective phenomena developing in animals on experimental diets and those observed in man have interposed obstacles to the development of this concept. Although the experimental evidence is striking, clinical experience has not supported the view that avitaminosis may operate as a primary cause of the disease.

Our studies, on the other hand, lead us to believe that deficiency states play an important part in the

13 Mackie, T. T. and Pound R. E. Changes in the Gastro-Intestinal Tract in Deficiency States with Special Reference to the Small Intestine. A Roentgenologic and Clinical Study of Forty Cases to be published.

14 Cowgill G. R. Vitamin B₁ in Relation to the Clinic. J. A. M. A. 98: 2282-2288 (June 25) 1932. Kruse H. D. and McCollum E. V. Review of Recent Studies on the Antineuritic Vitamin. *ibid.* 98: 2201-2208 (June 18) 1932.

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7 Privy Council Medical Research Council. Vitamins: A Survey of Present Knowledge. London, His Majesty's Stationery Office, 1932.

8 Keefer C. S. Some Clinical Aspects of Deficiency Diseases. New England J. Med. 205: 1086-1092 (Dec. 3) 1931.

9 Eusterman G. B. and Wilbur D. L. Clinical Features of Vitamin A Deficiency. J. A. M. A. 98: 2054-2060 (June 11) 1932.

10 Lowenthal, L. J. A. A New Cutaneous Manifestation in the Syndrome of Vitamin Deficiency, Arch. Dermat. & Syph. 28: 700-708 (Nov.) 1933.

11 Jeana P. C. and Zentmire Zelma. Method for Determining Vitamin A Deficiency. J. A. M. A. 102: 892-895 (March 24) 1934.

12 Moschowitz Eh. Hypoproteinemia. J. A. M. A. 100: 1086-1092 (April 8) 1933.

mechanism of chronic ulcerative colitis. We have observed indications of such conditions in 62.6 per cent of our cases. The lack of clinical signs of deprivation in the remaining cases suggests that the factor of deficiency is secondary rather than primary. The serious chronic cases have invariably presented moderate to marked grades of deficiency disease. The general clinical improvement attendant on control of this factor indicates the importance of specific therapy. The development of these conditions despite a balanced diet suggests that they result from some fundamental disturbance of physiology secondary to the diseased colon. The changes demonstrable in the small intestine may impair the absorption of the normal end products of digestion and so give rise to the paradox of deficiency in the face of adequate intake. In support of this possibility we have observed identical changes on roentgen examination of the small intestine in three cases of sprue, a disease that is characterized by blockage of the absorptive mechanism.¹⁰

We believe, therefore, that deficiency disease is not to be regarded as an occasional complication of chronic ulcerative colitis. It seems more probable that it constitutes an essential part of the underlying mechanism. With the appearance of indications of deficiency disease the pathology changes, the symptoms become more complex, the clinical picture more severe, and the prognosis more grave. In many instances the evidence does not permit definite evaluation of the role of single vitamins or specific food substances. The clinical phenomena suggest, however, that the deficiencies are multiple rather than single. Inadequate supply of vitamins A, B₁, B₂ and possibly D, together with lack of biologically complete protein, and of electrolytes, appears to contribute to the complex clinical picture in varying degree. The progression that many of the patients have shown under prolonged observation suggests that the potentially severe and untreated or imperfectly treated case tends to pass through three stages. In the initial phase clinical evidence of deficiency disease is lacking. The second stage is characterized by the appearance of early signs of deficiency. In the third stage, which is relatively rare, deficiency disease is severe and tends to dominate the clinical picture.

CONCLUSIONS

1 Evidence of deficiency states has been observed in 62.6 per cent of seventy-five cases of chronic ulcerative colitis.

2 These indications find expression in the buccal and lingual mucosa, the skin, the type of anemia and the blood chemistry.

3 When present in advanced degree they have invariably been associated with characteristic changes in the small intestine.

4 Secondary, or conditioned deficiencies appear to be important factors in the pathologic physiology of the disease.

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19 Castle W. B. and Rhoads C. P. The Etiology and Treatment of Sprue in Puerto Rico. *Lancet* 1: 1198-1199 (June 4) 1932

Defects of Current Procedures—The chief defects attending the use of the current procedures practiced in clinical medicine and particularly of course in diagnosis, may be discussed under three heads, (1) the disadvantages of specialism, (2) the effects of indolence, and (3) the results of false emphasis—Blumer George. Some Discursive Remarks on Bedside Diagnosis. *Yale J Biol & Med* 6: 571 (July) 1934

THE CRITERIA OF CURE OF GONORRHEA IN THE MALE

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There is no phase of the management of cases of gonorrhea that gives rise to more anxiety to the clinician than the period of probation preceding the decision as to cure. There are few errors that may be fraught with such disastrous consequences to the patient and his family, and to the reputation of the doctor, than an error in this important decision. Yet only too commonly it is found that, without adequate thought and without careful observation, this heavy responsibility is readily and lightly accepted.

In the time at my disposal I propose to enumerate the various points that must be considered in approaching such a decision, to give my views based on clinical observations in conjunction with certain improved pathologic tests, and to provoke discussion of those controversial points by which new light may be thrown on this old problem.

The tests of cure may with propriety be divided into two chronological groups, the classic and the modern. The classic group of tests are in the main clinical and imply a searching physical examination of the lower urogenital tract. Briefly, the requirements are an absolutely clear urine both by gross and by microscopic tests, negative endoscopic examination, absence of any evidence of inflammation in the urethra, testes, prostate and seminal vesicles, and a prostatovesicular fluid containing no organisms and not more than 5 white cells to the high power field. These requirements sound reasonable enough, yet it is my belief that a majority of patients affected with gonorrhea cease treatment before achieving these classic standards of cure. Of those who measure up to these requirements many have been found, on follow up, to develop recurrences or metastatic lesions or to infect a sexual partner. It has become more and more obvious, as apparently cured cases are followed over long periods, that the classic tests furnish a most insecure index of cure. In the past many attempts have been made in the direction of greater accuracy in diagnosis of residual or latent infection, thus, the complement fixation and cultural methods are quite old—actually the complement fixation test was introduced in 1906. It is only in recent years, however, that intensive work all over the world has led to the perfection of the complement fixation and cultural methods, thus providing a secure pathologic test of cure.

These modern tests demand a high degree of accuracy and experience on the part of the pathologist. They are of course complementary to the clinical tests and in no wise supplant them.

CULTURAL TESTS

Experience shows that cultural tests of the prostatic fluid alone are not reliable. Every effort should be made to obtain as much as possible of the contents of both prostate and seminal vesicles.

Much recent clinical and pathologic evidence points to the fact that infection of the seminal vesicles occurs in a considerably higher proportion of cases than is generally stated. A detailed discussion would be out of place here, but at least the careful microscopic and

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cultural examination of both fluids requires no extra effort and will give more accurate results

The technic of culturing the gonococcus from the vesiculoprosthetic contents in the chronic stage of gonorrhea is due to work of Dr Orpwood Price, pathologist to the Whitechapel Clinic, and has been in routine use for the last two years. The procedure is as follows. The patient passes urine and the anterior urethra is then irrigated with sterile water. The patient assumes the knee-elbow position and the prostate and seminal vesicles are massaged thoroughly. As much as possible of the expressed fluid is allowed to drop on the surface of a culture medium contained in a petri dish. The cover of the dish is replaced and the surface is slanted in all directions so that the greatest possible area of surface is inoculated. Before inoculation the medium is kept for at least half an hour in the incubator at 37.5 C and is replaced immediately after inoculation. The culture is incubated for five days, it is premature to examine for gonococci before this period has elapsed. A variety of organisms may be present but the most constant feature is a profuse growth of *Staphylococcus albus*. Owing to the strong secondary growth, the gonococcus colonies may be difficult to distinguish without the use of a differential stain. For this purpose the oxidase reaction is employed.

The oxidase reaction was first used for differential diagnosis in bacteriologic work by Gordon and McLeod in 1928 and was adapted by Price to the isolation of the gonococcus in mixed culture in 1929. Briefly, the test depends on the interaction of the oxidizing ferments in certain organisms and a reagent—in this case 1 per cent dimethylparaphenylenediamine hydrochloride in distilled water, which produces a color reaction. The solution should be freshly prepared.

This solution is poured over the surface of the medium so that it comes into contact with all the surface growth. A positive reaction is shown by certain colonies developing a pink coloration, which deepens through shades of purple to jet black in about thirty minutes. These colonies can then be picked off and stained by Jensen's modification of Gram's method, when they will be seen to consist of gram-negative diplococci morphologically indistinguishable from gonococci. These are always closely associated with staphylococci, which in the first three days of incubation mask but do not inhibit their growth. Indeed, one of the most interesting features of cultures prepared and examined in this way is the appearance that is constantly seen of the gonococcus colonies growing up through the larger colonies of *Staphylococcus albus*.

The oxidase reaction is not, of course, a specific test, and other members of the neisserian group give a positive reaction. Of these only *Micrococcus catarrhalis* gives a closely similar reaction, but this organism is rarely found in the genital tract.

False positive reactions are usually given by a thin filament type of *B. coli*, as well as by *B. subtilis*, but these are easily distinguished by microscopic examination of the organisms when picked off the plates. If difficulty arises it is possible to make an antigen from subcultures and to titrate against a known antiserum.

Culture tests carried out according to this technic have proved most reliable and most informative. Its routine use throws light on many clinical points that have been obscure hitherto, and there is no doubt that it constitutes a very considerable advance in the methods of diagnosis of gonorrhea in the chronic stage. As a test of cure it is invaluable.

It must be emphasized that one negative test is never sufficient and, although this cultural examination has proved to be the most delicate and reliable of tests, it can be accepted as a criterion of cure only in conjunction with negative clinical observations and the other negative pathologic tests.

In our test of cure we apply this test monthly during the period of observation without treatment. A series of four negative tests would be the minimum that could be regarded as satisfactory. In a series of 100 patients without symptoms the test was positive in 100 per cent. What evidence have we for asserting that the gram-negative diplococcus which we recover in our cultures is the gonococcus?

Apart from the skill and experience of our pathologist, the evidence is threefold.

- 1 The oxidase reaction within the limits I have indicated is specific for this type of organism.

- 2 The titration of an antigen made from subcultures of the organism against a known gonococcus antiserum will give a positive result to the complement fixation test.

- 3 We make every endeavor to examine and test the husbands of married women who attend our clinic for vaginal discharges which are clinically and bacteriologically gonococcal.

It is a frequent experience that the husband of such a patient has no signs or symptoms of gonorrhea but gives a history of urethritis some years previously. In such cases we are able, almost invariably, to recover this organism in vesiculoprosthetic culture.

THE COMPLEMENT FIXATION TEST

The complement fixation test for gonorrhea is an invaluable aid in all stages of the management of gonorrheal cases.

In 1933 Price introduced a new antigen and improved the technic by using more concentrated serum. As the result of his work the sensitivity of the test is much improved and its value as a criterion of cure is enhanced.

False positives by "cross-fixation" for practical purposes do not occur and we find that a positive reaction in the serum of a patient who has not been treated with gonococcus vaccine is an absolute indication of a persistent focus of infection with the gonococcus.

In a series of cases treated with gonococcus vaccine it was my experience that when cure could be established the complement fixation test became negative within six weeks of the cessation of vaccine administration. A positive result after this interval invariably indicated residual infection.

On the other hand a negative serum result to the complement fixation test, even in the symptomless patient, can never be accepted as reliable evidence of cure or anything more than a sign of good progress and efficient drainage. In many cases we are able to demonstrate the gonococcus in the secretions long after the test has become and has remained negative.

Some variation in the strength of the fixation test is to be expected in the period that precedes cure, and no single negative reaction should be regarded as conclusive serologic evidence. It is our custom to perform the test at the beginning and at the end of our period of observation and testing. It is a common experience that, when treatment is prematurely discontinued and the patient remains under observation, the fixation test will again become positive, thus indicating a persistent focus of infection.

A provocative diet including alcohol is of assistance in the final stages. I have had no satisfactory results from provocative injections of vaccine or from provocative urethral instillations.

SUMMARY

1 No investigation as to cure need be undertaken in the gonorrheal patient who has a persistent urethral discharge or whose urine shows evidence of infection. To this main principle there may rarely be exceptions.

2 Palpation of the prostate is seldom of much assistance in the treated case. Palpation of the seminal vesicles is likely to give some positive information, but this is of little value when vesiculitis has been recognized and treated.

3 The macroscopic examination of the vesicular fluid and the microscopic examination of the vesicular and prostatic fluids are of great importance. Unsatisfactory microscopic tests are strong evidence against cure.

4 Vesiculoprosthetic culture by Price's method constitutes an important advance in accurate diagnosis. The test repeated at monthly intervals over a period of time constitutes the absolute criterion of cure when all other tests have proved satisfactory.

5 Recent improvements in the complement fixation test for gonorrhea have increased its sensitivity and enhanced its value in testing for cure.

6 A positive serum result in a patient who has not received injections of gonococcus vaccine within the preceding six weeks is reliable evidence against cure.

7 Negative blood serum results on successive occasions in the course of treatment are evidence of efficient treatment but not necessarily of cure.

8 A provocative diet, including alcohol, is sometimes of value as a preliminary to the final series of tests and should be employed.

CONCLUSION

Let me review the evidence against cure in a clinically well patient. A negative complement fixation test may merely mean efficient drainage, it can and does occur when even smears are positive. What is the meaning of repeated positive cultures? I feel that while striving for accurate and infallible criteria of cure, we have arrived at the unenviable position of having apparently proved that cure is very much more difficult of achievement than is generally realized.

Further, it appears that the clinically well patient, having established a biologic equilibrium with his gonococci, retains the power of transmitting virulent infection to his sexual partner. Despite the work, time and thought given by us to this subject, I do not feel that we have arrived at conclusions which warrant more definite formulation. I do feel, however, that we have been able to establish the fallacies of previously accepted standards of cure. This paper is presented as an account of the work of the Whitechapel Clinic up to the present, so as to set forth our observations and difficulties and in the hope of enlisting cooperation and help in the work that lies ahead in the attack on the bristling problems of this ancient social menace.

ABSTRACT OF DISCUSSION

DR. MILEY B. WESSON, San Francisco. There is an aphorism in common use to the effect that "gonorrhea is no worse than a bad cold," and now our guest of honor tells us that gonorrhea is practically never cured. Somewhere in between these two extremes lies the truth. Theoretically, a man who has never had a genito-urinary tract infection should not have palpable

seminal vesicles. Practically, it is almost impossible to find a microscopic section of the prostate of an adult that does not show evidence of inflammation. A number of years ago, Dr. Hugh H. Young wanted a set of normal sections of the genito-urinary tract. Eventually in order to get a normal prostate section to complete the set he used that of a newborn baby. Most of the men who have contracted gonorrhea marry sooner or later. If the disease were not primarily self-limiting in type, a large proportion of marriages would be of the sterile or one-child type. In some states men are required by law and in others by their innate sense of decency to consult physicians when they desire to marry. The prostate gland and seminal vesicles are common sites of focal infections and from that standpoint are comparable in all ways to the tonsils or the gallbladder. Pus in the seminal vesicle does not mean that the man has had gonorrhea, although for fear that he did have it and that the gonococcus has been replaced by secondary invaders, I insist that he have the infection cleared up to protect not only his wife from a leukorrhea but himself from low backache secondary to arthritis or myofascitis. The cultural tests that Mr. King describes are intriguing. However, the strains of gonococcus prevalent in the United States will not grow on ordinary mediums but require special mediums and a decreased oxygen tension. Furthermore, there is no evidence that these are not atypical staphylococcus. Before an organism can be positively identified as the gonococcus it must be intracellular. The oxidase reaction would be valuable if a method of incorporating the dye in the medium could be worked out as suggested by Gordon and McLeod. Of course, the fact that it is not specific for any organism since *Bacillus pyocyaneus*, *B. subtilis*, *Micrococcus catarrhalis*, *M. flavus* and the neisserian group react to it impairs its efficiency. Orpwood Price reports that his antigen will give a complement fixation test that is as accurate as the Wassermann reaction. If this is so, a big advancement in the study of this disease will be made, when the test comes in general use. Vaccine treatment has not proved satisfactory in most clinics, and I believe there is far less used now than there was a few years ago. The gonococcus filtrate (Corbus-Ferry) is expected to give better results. I should like to ask Mr. King what his experiences have been with *Diplococcus crassus*. I have seen it in three patients, and the varied sizes of the gram-negative diplococci in the pus cells made a striking as well as confusing picture.

DR. JOSEPH A. HYAMS, New York. I feel that in most instances the persistence of a urethral discharge is due to complicating factors rather than to the gonococcus per se. Digital examination of the prostate with cultural and microscopic study of the expressed prostatovesicular secretion gives valuable information as to the persistence of an infectious process, but digital palpation of the seminal vesicles may be subject to erroneous interpretation, owing to the varying amount of supporting areolar tissue, and anatomic variations in the structure and relations of the seminal vesicles and ampulla of the vasa. In a study of a large series of casts of the seminal vesicles and ampulla, many showed extremely convoluted tubules. Their very tortuosity may serve to protect them from infection. It is questionable whether digital massage is adequate to express the secretion completely from these extremely tortuous vesicles. Infection of the seminal vesicles, particularly the walls, has not been noted with any degree of frequency cited by the author. In an exhaustive histopathologic and clinical study by Hyams, Kramer and McCarthy it was shown that infection of the seminal vesicles is far less frequent and not as severe as that of the verumontanum, ejaculatory ducts and prostate. A factor in the persistence of urethritis, in some instances, may be the continued infection of the submucosal glands of Alberran, located at the posterior vesicle lip and internal sphincter. As a result of extension of some of these glands into the muscular layer of the urethra, in the presence of repeated infection from the urethra, glandular adnexa, or descending infection from the upper urinary tract, various prefibrotic changes occur, ranging from early change to terminal fibrosis. In his study of a hundred cases, it would be interesting to know whether the infection was primary or secondary and the exact clinical status. Cultural and microscopic examination of the prostatovesicular secretion for the gonococcus is necessary for the determination of cure, the presence of clumped pus cells is important.

Complement fixation tests for the gonococcus have not proved satisfactory, particularly when negative. In addition to these procedures, the cause for persistence of infection can be best determined by the endo-urethral instruments of the McCarthy type. A clear demonstration of the urethra and vesical neck with or without water distention is essential for the localization and evaluation of the foci of infection. The criterion for the determination of the cure of gonorrhea, briefly, is the absence of the gonococcus.

DR. JOHN F. HOGAN, Baltimore. Some time ago I did some cultural work on the prostatic secretion, using hydrocele agar and testicular agar, and in many instances years after all clinical symptoms had subsided I found gonococci in cultures, in one man nineteen years later. I went into a very careful history with that man and he told me that he hadn't had any clinical symptoms of gonorrhea in the nineteen years. He came to me for relief of hypertrophy of the prostate. These organisms were morphologically and culturally gonococci. Of course the question comes up whether after all these years the organisms were virulent, that is, capable of producing the infection. That I don't know, but culturally and morphologically they were gonococci. I experienced no difficulty in differentiating *Micrococcus catarrhalis* and the gonococcus morphologically. Of course the meningococcus and the gonococcus look exactly alike morphologically, but I think all will admit that the urogenital tract would be a most unusual place to find meningococci.

MR. AMBROSE J. KING, London, England. I have been extremely interested in the comments, and I will take them in order. Dr. Wesson mentioned the question of sterility. I think he implied that if these persistent gonococcal infections are widespread, as I would have you believe, how is it that there are not more sterile marriages, more one-child marriages? We see a large number of sterility cases which we believe to be due to persistent gonococcal infection in the male and in which we find the gonococcus, but I think we see just as many cases in which the gonococcus is cultured in old standing infections, and yet the patient is married and has a family of children, although the wife is infected as well. As far as the complement fixation test is concerned, the claim that it is as useful in the diagnosis and treatment of gonorrhea as the Wassermann reaction is in the diagnosis and treatment of syphilis is not, in my opinion, an overstatement of its value. With regard to *Diplococcus crassus*, I know little or nothing about it. Of course, there are pseudogonococci described from time to time but I don't know that they enter into this discussion. Dr. Hyams said that a persistent urethral discharge was due usually to secondary infection, and one must agree with him. Yet in most of those cases an underlying gonococcal infection also is found. I was interested in his description of observations with the McCarthy panendoscope, and in what I saw in Dr. McCarthy's clinic the other day. I think this is a line on which more work may well be done in England. I think I have answered most of the points, and I hope to your satisfaction, and if I may be permitted a final comment it is that I have been impressed with the indifference in general of urologists toward the study of gonorrhea. The usual experience has been that the urologist has deputed the treatment of gonorrhea to his junior, or to his assistant who with his eyes fixed on the goal of his surgical ambitions considered his association with the disease a necessary but rather repulsive stepping stone to higher things. I think that, as a result, insufficient work has been done in the past and is being done on improvements in methods of diagnosis and treatment of gonorrhea. The tendency in England at present is to make a special subject of the study of syphilis and gonorrhea, and the specialist in venereology, as we call it, spends all his time and gives all his attention to these diseases. I think that in this way we may go some distance to solve the very serious problem which is responsible for innumerable individual tragedies and for considerable economic loss to the state. I am grateful for this opportunity of putting my ideas before you, and I thank you for the honor of this invitation. I bring greetings from mutual friends in London, and the assurance that the great work which has been done and is still being done by American urologists is a constant source of stimulation and enthusiasm to those who are working in the same field in Great Britain.

EXPERIENCES WITH THE GONOCOCCUS FILTRATE (CORBUS-FERRY)

AND OTHER FORMS OF INTRADERMAL THERAPY IN THE TREATMENT OF GONORRHEA

ROBERT E. CUMMING, M.D.

AND

ROBERT A. BURHANS, M.D.

DETROIT

The origin of antibodies has long been and continues to be a subject of theory and speculation. It is likely, however, that antibody formation is a widespread cellular function with all the varied types of body cells participating to some degree. The literature abounds with controversy, and untold effort has been directed toward the solution of this problem.

It has been generally recognized for some time that the skin is not merely a protective sheath for the body but an organ of vital importance in the production of immunity, recently there has been increasing recognition of this function.¹ The role of the skin in immunity has been demonstrated largely by animal experimentation, but we think that in the future it will become a factor in the clinical concept of infection and resistance. Review of the literature reveals that the intradermal administration of specific and nonspecific antigens has been concerned chiefly with the diagnosis and treatment of allergic conditions and tuberculosis until applied in our own field of endeavor.

Müller² in 1922 called attention to the fact that in gonorrheal urethritis of the male a marked increase in urethral secretion could be produced within a few hours by subcutaneous injection of small quantities of non-specific protein. Corbus and O'Connor,³ inspired by the "antivirus" hypothesis of Besredka,⁴ found gonococcus bouillon filtrates to be unsuitable for urethral treatment but capable of stimulating the production of antibodies when injected intradermally.

It is not our purpose to explain nor are we capable of explaining the rationale of the form of treatment advocated by Corbus⁵ or to enlarge on his theories of immunity. We propose to relate our experiences of the past three years with the intradermal application of specific and nonspecific antigens in the treatment of gonorrhea.

Specific and nonspecific antigen therapy has occupied the attention of this assembly on various occasions. It is our impression that American urologists have largely given up the routine use of gonococcus vaccines, in spite of favorable reports that appear from time to time

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5. (a) Corbus and O'Connor.³ (b) Corbus, B. C. *Intradermal Immunization in Genito-Urinary Diseases*. *J. Urol.* 26: 727 (Dec.) 1931.

(c) *Intradermal Immunization in Gonorrhea*. An Experimental and Clinical Report. *J. A. M. A.* 98: 532 (Feb. 13) 1932.

The only convincing evidence that we ever have obtained as to the efficacy of gonococcus vaccine is embodied in the personally expressed opinions of surgeons of the British medical corps during the Great War, who were certain that routine use of vaccine in all cases of gonorrhea in the British army reduced complications, especially epididymitis, to a negligible minimum. Manufacturers do a large business in gonococcus vaccine, however, finding a continuous market for this commodity, in contrast to the vaccines for influenza and other more or less seasonal diseases. This indicates a persistent reliance on vaccines by the general practitioner, who cannot, like the specialist, gain impressions from large series of controlled cases. We believe that, if stock vaccines are used, the dosage should be very small and that the practice of giving large doses may account for many unfavorable results. Intradermal administration of stock gonococcus vaccines in the treatment of urethritis has in our hands accomplished nothing. To improve our knowledge of vaccine therapy we are considering the preparation of a large series of autogenous antigens by a method similar to that of Burbank⁶ in other infections. We are also attempting to evaluate the gonococcus complement fixation test as a control measure for further immunologic studies on gonorrhea.

In addition to gonococcus vaccines we have used certain other preparations intradermally in the treatment of gonorrhea and gonorrheal complications. Of these, which include gonococcus filtrate (Corbus-Ferry) gonococcus immunogens, sterile milk, a commercial "solution of lactalbumin" and sterile bouillon, only gonococcus filtrate has warranted prolonged consideration.

The solution of lactalbumin that we formerly used extensively by the intradermal method advocated by Müller² gave fairly effective but not uniform results and we concluded that the intracutaneous administration was superior to intramuscular injection of large doses. Sterile bouillon identical with that used in the preparation of the specific filtrate, given intradermally, resulted in a mild but definite systemic reaction without the specific local and urethral reaction observed after the gonococcus filtrate.

Gonococcus filtrate (Corbus-Ferry) is classed as a soluble toxin⁷ and is not to be confused with vaccines (bacterial suspensions), immunogens (bacterial washings), toxoids (solution of formaldehyde detoxified toxin) or serums (antitoxins). Whereas vaccines cannot be test-controlled, gonococcus filtrate can be standardized by skin test reactions in susceptible individuals and is adaptable for routine therapeutic use.

Our early studies were complicated by unstable and inactive lots of filtrate unwittingly furnished us. This fact goes far to explain adverse results reported by some of our colleagues who are unfavorable to the gonococcus filtrate.⁸ We promptly discovered in the light of previous experiences that concentrated gonococcus filtrate as well as certain other experimental lots did not give the expected local reactions or favorable progress in the disease. We have since relied on the active and stable material originally supplied. It is interesting that our best results have been obtained with filtrate stored at room temperature in contrast to the

same material stored at icebox temperature. We have been informed⁹ that the factors causing the deterioration have been eliminated and our own experience with later lots has verified this claim conclusively.

Gonococcus filtrate (Corbus-Ferry) has been used by us for a period of more than two and one-half years. We are presenting the records of 124 cases, in more than 100 of which injections were given as the sole treatment of the gonorrheal infection or as an adjunct to the usual therapy. Records are included of some patients to whom injections were given as a possible means of provoking renewed discharge to furnish material for smears and cultures. In addition, we shall discuss cases suspected of presenting gonorrhea in which the filtrate was administered as an aid in diagnosis.

One hundred and one of these patients were men, nineteen were women and four were girls. Of the entire series, only twenty-one patients were seen promptly after the appearance of a urethral discharge, and of these fourteen made up the clinic group. Four patients had a urethral discharge for from eight months to two years prior to coming under our care. Thirty-six patients related episodes of previous gonorrheal infection.

Certain advanced conditions or complications at the time the treatment was begun are important. Of the entire series, four had epididymitis, and active involvement of prostate and seminal vesicles. Two had balanitis, two acute gonorrheal arthritis, one a jaw involvement, and twenty-one active disease of the prostate and seminal vesicles. In two cases there was epididymitis present, without evidence of adnexal disease, in both cases there was rapid improvement.

One hundred and ten of this series were private patients and the remaining fourteen were treated in a small well controlled clinic by one of us (R. A. B.). We have considered it necessary to see our private patients frequently and regularly and, in addition to weekly injections of the filtrate, use a mild local therapy for anteriorly limited diseases and our routine treatment in instances of posterior involvement with adnexitis. Women were also treated locally and children received simple washes administered at home in addition to specific therapy.

The clinic group was treated successfully with only weekly injection of gonococcus filtrate, but in our opinion such a regimen is not compatible with private practice. The clinic patients were selected from a group presenting themselves promptly on the appearance of a urethral discharge, all were males, and all reported regularly, adhering strictly to advice pertaining to general living habits. The infection in this small group remained confined to the anterior urethra in all cases, and there were no complications or recurrences, other patients under recognized treatment at the same time and in the same clinic did not show equal progress.

We have been impressed by the fact that local reactions to gonococcus filtrate vary not only with the stage of infection but with the type of individual, two points being important enough to report because of sufficient repetitions during our long period of observation. One is that the general condition of the patient is related to his reaction, if he is robust, the reaction is less severe, although his infection may be most resistant, if feeble or "run down," the reaction is likely to be more severe. The other point relates to the color of the skin, the

6 Burbank, Reginald. The Etiology and Treatment of Chronic Arthritis. J. A. M. A. 99: 1489 (Oct. 29) 1932.

7 Clark, L. T., Ferry, N. S. and Steele, A. H. Studies of the Properties of a Bouillon Filtrate of the Gonococcus. J. Immunol. 21: 233 (Sept.) 1931.

8 Personal communications and discussions.

9 Ferry, N. S. Personal communication to the authors.

blond individual shows a more intense reaction to a given dose

We grade the local skin reaction according to the degree of persistence of the skin wheal, which may remain as an intense red and slightly elevated area at the site of injection, and especially according to the extent of the reddened area surrounding the wheal. For convenience the reaction is recorded as "one-plus" if the redness is 1 inch (2.5 cm) in diameter including the wheal, "two-plus" if the extension is 2 inches (5 cm), and so on, "four-plus" meaning a 4 inch (10 cm) extension or more. Other than this, we have noted repeatedly a very definite inguinal adenitis on the side corresponding to the site of injection. Most of the latter are given in the thigh, so that the distribution advocated¹⁶ can be readily followed out, and also because injections in the arm are more likely to attract attention. This adenitis occurs only with a strongly positive reaction. We have seen only an occasional truly systemic reaction to gonococcus filtrate. We interpret a prompt fading of the wheal, lack of local soreness and lack of surrounding redness as a negative reaction.

Dosage of the earlier stock preparations ranged from 0.1 cc (2/20) to 1 cc, while the dosage of the aforementioned concentrated and unstable experimental lots was variable, depending on the degree of deterioration of the active principle. Our dosage range with the present stable and active preparation, as we now administer it, is from 0.1 cc (2/20) to 0.3 cc (6/20), and we have found no occasion to give larger doses as yet.

It has not seemed important to us to gauge the dose of gonococcus filtrate or the frequency of injection by the stage of the disease, by the intensity of symptoms or by the amount of urethral discharge. We have not practiced nor do we advocate Corbus's instructions¹⁶ of withholding injections until two weeks after the onset of the urethral discharge. Even though the immunity acquired by means of gonococcus filtrate (if such develops) is active, we can see no logic in withholding specific antigen therapy designed to foster such immunity. It has been our practice to administer gonococcus filtrate as soon as the diagnosis is established, and in some instances the discharge has ceased by the time of the second injection.

We have not seen the intensification of purely local symptoms described by Corbus,¹⁶ namely, increased urethral tenderness, swelling and inability to void, with more urethral pus. In contrast to this we have seen acute balanitis, with extreme swelling of the glans penis and local urethral bleeding, respond overnight to an injection of gonococcus filtrate. On the other hand, occasionally a patient who is making excellent progress will suddenly pass into a phase with quickly increasing symptoms and possible extension of the disease to the point, for instance, of fulminating adnexitis, proving most recalcitrant to all treatment. We have been forced to conclude, therefore, that in some instances we supply the individual with excessive antigen. Yet, in a most severe case of urethritis, vaginitis and cervicitis, with vulval swelling and strangury, the response was phenomenal and organisms were never found after the time of first examination. So, therefore, we are in the habit of starting the injections of gonococcus filtrate as soon as the diagnosis of gonococcal infection is properly established. Also we continue its use for a period, even if organisms do disappear, although usually the repeatedly negative smear is our signal for interrupting the specific treatment.

The number of injections of gonococcus filtrate ranged usually from seven to ten. One patient was given seventeen injections, and one thirteen. The average number of injections for private patients was 5.3, and for clinic patients 7.

The period of time in which organisms were found roughly corresponds to the time of active urethral discharge. This varied in the group of private patients from one day to sixteen weeks and, disregarding one or two instances in which organisms were found only once, averaged five weeks. In the clinic group the range was from three to seven weeks, with the average likewise five weeks.

Gonorrheal vaginitis of the children included in this series showed a phenomenal response to gonococcus filtrate. We hope to continue our studies and endeavor to bear out these favorable impressions. Complete cessation of vaginal discharge occurred within from one to ten weeks. In passing, we should state that the dosage of gonococcus filtrate was lessened according to the age of the child in each instance.

Twenty-two men are still under treatment for adnexitis and eight women for cervicitis. The four little girls are under inspection for any possible return of the specific vaginitis.

We state boldly that except for stubborn adnexal involvement in the male, which is really an extension and not a complication, we have seen no complications and fewer recurrent infections after gonococcus filtrate. Naturally we believe this is partially circumstantial and that complications will occur in cases treated with this or any other preparation. In our opinion gonococcus filtrate is a means of reducing the number of complications as well as attaining a safer postinfection period for victims of gonorrheal infection.

REPORT OF CASES

The following abstracts serve to illustrate our text.

CASE 1—C (clinic), a man, aged 24, admitted, Feb 21, 1933, was exposed seven days previous to examination. Dysuria started on the fifth day and a urethral discharge on the sixth day. Examination showed a profuse urethral discharge. A smear was positive for gonococci. The first injection was 0.5 cc of gonococcus filtrate. There was a four plus reaction with increased urethral discharge and adenitis. The patient was given five weekly injections ranging from 0.5 to 1 cc. There was no discharge after the fourth injection and no reaction to the fifth dose. There were no complications. The prostate was normal. The second glass of urine remained clear. The patient was examined two months after the last injection of gonococcus filtrate, all examinations were negative and there was a negative reaction to 0.5 cc. of gonococcus filtrate (provocative).

CASE 2—S, a man, aged 20, admitted to the hospital, Sept 8, 1933, had had acute urethritis three and one-half months previously, with a discharge. The diagnosis was urethritis and acute parotitis. He was given stock gonococcus vaccine. There were no irrigations or injections. The discharge was thin and watery at this time but has never ceased. A sudden rise of temperature to 104 F, with swelling of the right mandible and parotid region, was followed by swelling of other joints but no redness or inflammation. A consultation with us, September 19, resulted in a diagnosis of arthritis of the right maxillomandibular joint. Examination was positive for urethritis and vesiculitis. Vas puncture and gonococcus filtrate were advised. Vas puncture was done, September 20, relieving the arthritis. Gonococcus filtrate was started with a 0.5 cc. dose. There was a moderate reaction with increased purulent urethral discharge. Urethral injections were started. There was only a "morning drop" after five days. The second dose, 0.75 cc. of gonococcus filtrate, gave a severe reaction and more

discharge for two days. He left the hospital, September 28. Daily office visits followed with irrigations and massage of the prostate, which was very large, soft and boggy, with four plus pus in the secretion. This routine treatment was continued with weekly injections of gonococcus filtrate, of which he had nine doses, with only a mild return of the discharge after the first five injections. The arthritis subsided entirely after the first two injections. No residual disease was seen in the joints. He was last examined, May 10, 1934. There was a mild residual prostatitis present.

CASE 3—Miss J, aged 28, admitted, Sept. 20, 1933, had a profuse vaginal discharge and frequency of urination. She had been unexpectedly and unintentionally intoxicated ten days previously, with forced coitus. She had been uncomfortable ever since. She noted the discharge only the last five days. Examination showed pus from the urethra and Skene's ducts, and very angry vaginitis. The cervix was ulcerated, with a gross purulent discharge. A stained smear was positive for gonococci, the urethra and vagina were involved. The patient was given 0.3 cc. of gonococcus filtrate. Mercurochrome was applied to the cervix and urethra. She was given five weekly injections of gonococcus filtrate, ranging from 0.3 to 0.5 cc. No positive smear could be obtained after the first injection of filtrate. After the first week she was treated vaginally twice a week and with gonococcus filtrate once a week, late provocative filtrate injections were negative.

CASE 4—P, a man, aged 40, admitted Feb. 8, 1934, complained of a chronic urethral discharge, pyuria, frequency and nocturia. He had had an acute gonorrheal infection in October 1933. The discharge started seven days after exposure and he was treated elsewhere immediately. An "acid drug, and hypodermics" were given daily, then on alternate days. He did not improve, so he changed his physician in November. He was given nineteen treatments with mild silver protein. He complained of severe rectal pain and frequency requiring opiates. He went to a third physician with a "sore rectum and backache", he was given liquid petrolatum and urinary sedatives, which relieved the condition somewhat. Three days before he saw us, the discharge began again, he saw his physician, who gave him a different drug, causing extreme swelling of the penis, which was present when he consulted us. On examination, a smear showed many pus cells, a few intracellular diplococci and many extracellular diplococci. He was given 0.3 cc. of gonococcus filtrate, which made him very uncomfortable and gave a four plus local reaction but resulted in a reduction of edema and no discharge on the following day. The second day the temperature was 102 F, the edema was gone and the prostate was swollen and tender. He was given four weekly doses of gonococcus filtrate, ranging from 0.2 to 0.3 cc., there was no later discharge or edema. After three weeks the prostate was small, but the secretion showed three plus pus. The fourth week the prostate was small and fibrosed and the secretion showed pus two plus. There was no reaction to gonococcus filtrate, April 1, 1934, and only an occasional pus cell in the prostatic secretion.

CASE 5—G, a man, aged 34, admitted, Feb. 10, 1934, complained of frequency, dysuria, rectal pain and a discharge. He had a history of gonorrheal infection in November 1933, with frequency and burning on urination since. In December 1933 he had severe rectal pain lasting several days. One week previous to admission a smear was found to be positive, he was given an injection (elsewhere). Thirty hours later he had a severe chill, fever and sweats, these recurred for several days, with a temperature up to 102 F. Associated was a return of the rectal pain for the past five days and a discharge for the past week. There was frequency to every half hour. He was given 0.2 cc. of gonococcus filtrate, the reaction was three plus, with less discharge the following day and only mucoid discharge on the third day. The prostate was tender and firm. The fourth day the prostate was small but the entire rectum was tender. The fifth day very acute prostatitis was present bordering on abscess. He was hospitalized. The fever subsided and the prostate improved. There was no discharge. On the ninth day he was given 0.2 cc. of gonococcus filtrate, with a mild local reaction. The prostate was much improved and he was discharged from the hospital. He was given three

more weekly doses of 0.3 cc. of gonococcus filtrate. There was no discharge and local reaction. The prostate secretion was two plus before the last injection of gonococcus filtrate and four plus following it. He was still being treated for mild prostatitis, May 1, 1934.

CASE 6—B, a man, aged 31, admitted, Jan. 5, 1934, had had a gonorrheal infection eight years before, with mild stricture and prostatitis. An acute gonorrheal infection, Oct. 19, 1933, was treated by a physician with daily injections of 2 per cent strong silver protein until Jan. 2, 1934, then with neosilvol. A smear, January 2, was reported negative. The patient was referred to our office. A very moderate urethral discharge was found. It was positive, with intracellular gram negative diplococci. The prostate was large, hard and fixed, with definite fibrosis. Seminal vesicles fibrosed at the bases. Pus was four plus. He was given 0.2 cc. of gonococcus filtrate, followed by a severe reaction with adenitis and a profuse discharge, the condition has continued with a discharge, decreasing weekly, followed by increase and severe reaction after each injection of gonococcus filtrate. The patient has had thirteen injections in a dosage of from 0.2 to 0.3 cc., with routine treatment, massage and dilation of the urethra. Owing to continued urethritis, four endoscopies have been done, with 10 per cent silver nitrate solution applied directly to the ulcerated areas in the posterior urethra. The patient is still under treatment. The prostatic smear is positive. Diathermy to the prostate has improved the condition so that cure was apparent at the examination, June 1. This case has been resistant to gonococcus filtrate treatment and the record is given to indicate occasional failure of this additional aid in treatment.

CASE 7—C, a man, aged 32, admitted, Feb. 8, 1934, was exposed nine days previous to examination. There was no dysuria or frequency. Five days after exposure, after drinking to excess, he passed bloody urine. Four days later he noted a white discharge, a smear showed many pus cells and gram negative intracellular diplococci. He had had a gonorrheal infection in 1917 and in 1918. In his first treatment with us he was given 0.2 cc. of gonococcus filtrate, the reaction was four plus, in four days the discharge disappeared. At this time he was given 0.2 cc. of gonococcus filtrate, with no local or general reaction. Seven days later 0.3 cc. of gonococcus filtrate was given, with no reaction, discharge or organisms. He was treated by massage and washes. Six weeks after onset, after missing some treatments, he had a "morning drop", repeated smears were negative. He was having regular coitus and was drinking. The prostatic secretion was one plus pus and the smear was negative. Eight weeks later he noted that the meatus was sealed. He was given 0.2 cc. of gonococcus filtrate as a provocative test, which gave a severe three plus reaction and a positive smear. The discharge disappeared in two days. The prostate responded further under treatment and no organisms could be found. One week later he was given 0.2 cc. of gonococcus filtrate, with a three plus reaction. June 1, the prostate was normal but the patient is still under observation. Gonococcus filtrate injection on this date gave a negative reaction.

CASE 8—F, a man aged 28, admitted in November 1933, had a profuse chronic urethral discharge. A smear showed positive intracellular gram-negative diplococci. He had contracted gonorrhea from five to six years previously and had never been cured, he had chronic prostatic and seminal vesicular involvement. The present discharge started a few days before admission. He was given 0.2 cc. of gonococcus filtrate, it gave a four plus reaction with right inguinal lymphadenitis, the discharge decreased after the fourth day. He was given six weekly doses of gonococcus filtrate ranging from 0.2 to 0.4 cc. There was no discharge after the fourth dose except a profuse discharge for one day after the fifth injection. There was no reaction to the sixth injection. The patient returned four months later with an acute urethral discharge after a definite exposure. The smear was positive. He was given 0.1 cc. of gonococcus filtrate, the reaction was four plus, with adenitis. Twenty-four hours later there was very little discharge, and none after three days. The patient was still under observation, June 1. During this period routine treatment for posterior urethral involvement and adnexitis was given.

COMMENT

Early in our studies we were impressed with the possibilities of gonococcus filtrate as a provocative and diagnostic agent. We have used gonococcus filtrate in twenty-one cases as a diagnostic test or to provoke an increased specific urethral discharge as well as to locate dormant infections of the adnexa. We are not aware whether others have used gonococcus filtrate as a provocative agent. Our adoption of such a procedure has developed from the fact that a large part of our practice concerns patients who have been under treatment for varying periods elsewhere, coming to us in consultation or because of dissatisfaction. We felt that a relatively large dose (from 0.1 to 0.4 cc) of gonococcus filtrate might activate dormant organisms for a short period, enabling one to make an accurate diagnosis, this supposition has been borne out occasionally. We have come to be fairly sure that the organisms are not present if the local reaction is negative and nonproductive of discharge or other returning symptoms.

In all twenty-one cases repeated smears were negative prior to the use of gonococcus filtrate, and the patients were free from gonorrheal infection as determined by the diagnostic measures ordinarily at our disposal. Six were known to have been infected with gonococci, others were suspected of having dormant gonococcal infections of the adnexa, and a few presented themselves for examination following known exposure. One man was under treatment for prostatitis, his reaction was strongly positive after a period of several months without organisms, and the latter appeared in a fresh urethral discharge and in the secretion from the adnexa. The injection in another case, eight months after known presence of organisms, gave no reaction. Likewise, an injection in one case two years after organisms had disappeared gave no reaction. In the other three cases, in which infection was known to have occurred, while organisms were found, the local skin reaction was positive, the increase of symptoms subsided with continued use of the filtrate and other appropriate treatment. In many sluggish cases the intradermal injections have caused a transient acute phase that is a powerful stimulus to the patient in the way of compelling more careful attention to instructions as to self care and faithfulness to treatment.

To control the use of gonococcus filtrate as a diagnostic provocative agent we have given injections to several individuals who were known never to have had gonorrhea, in none was there a positive diagnostic reaction or evidence of a urethral discharge. We have also administered, intradermally, plain bouillon identical to that used in the preparation of gonococcus filtrate, to patients both with and without known infection. Other than mild, definite systemic reactions attendant to such injections, we have observed nothing suggestive of the reactions just related.

SUMMARY AND CONCLUSIONS

Gonococcus filtrate (Corbus-Ferry) intradermally is the only antigen of the several we have tried that seems to offer a specific aid in the treatment of gonorrheal infection and complications. No attempt has been made to explain the rationale of intradermal medication or to establish the role of the skin in body immunity.

We have demonstrated that the filtrate can be used alone in the treatment of gonorrhea. It is our impression that gonococcus filtrate is most serviceable as an adjunct to mild local treatment. As pointed out, the

filtrate is indicated in acute and chronic gonorrheal infections of men, women and children. It has been used freely in all types of complications and, in our opinion, has some virtue in amelioration, although other treatment, not so important in simple urethral involvement, is of prime necessity.

We have not followed the recommendation of Corbus⁶⁶ but have used the filtrate freely in all stages of the infection and complications. We have departed from the recommended dosage scheme by giving not more than 0.1 cc of filtrate (children should receive from 0.05 to 0.15 cc of filtrate), increasing weekly by from 0.05 to 0.2 cc (1/20-4/20), depending on the local skin, regional lymph gland, and systemic reactions as well as on the character of urethral discharge and the states of the infection.

Complications are today, as they have always been, of greatest importance in gonorrhea, late and unexpected transmission of the disease, sterility in both sexes, and the determination of safety in marriage are questions peculiarly in the domain of the consulting urologist. The determination of cure in gonorrhea has always been a difficult problem. We believe that our use of gonococcus filtrate in large doses (from 0.1 cc to 0.4 cc) as a diagnostic or provocative agent to demonstrate dormant infection is a milestone in progress toward the ultimate cure of obstinate gonorrhea.

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ABSTRACT OF DISCUSSION

DR. BUDD C. CORBUS, Chicago. Two years ago when I presented before this section a new method of treating gonorrheal infections in men, women and children, the experience of only a few collaborators was available. Since that time, however, more than a hundred urologists here and abroad have had an opportunity to use and evaluate this method. Last year the clinical experimental work was delayed because of the lack of potency of the filtrate. This has been corrected and there is available a bouillon filtrate the average minimum dose of which is only six twentieths of a cubic centimeter with a potency that is absolutely guaranteed. Whole gonococcus vaccine has long been recommended as an aid in the treatment of gonorrheal infections. If one takes the trouble to stain a given ampule, not a single whole gonococcus is visible, they have all autolyzed. However, a few favorable results have been reported when fresh preparations have been used. These were not used intradermally, however. The histiocytic elements in the skin are capable of being stimulated by both specific and nonspecific proteins. In the gonococcus bouillon filtrate there is a soluble specific toxin (protein) that is easily assimilated by the cytoplasm of the histiocytic cells, which in turn produce a specific antibody capable of influencing the infection in whatever part of the body it may localize. This specific antibody accumulation within the blood has been demonstrated time and again after a cure has been obtained by the complement fixation test for gonorrhea whereas in the beginning of the infection, unless severe complications are present, the complement fixation test is invariably negative. The use of the bouillon filtrate as a diagnostic procedure is new to me. However, I can see that this method of producing a urethral discharge might be productive of positive results in making a diagnosis. The question has repeatedly been asked: Will this gonococcus bouillon filtrate produce an immunity sufficiently capable of protecting an individual if exposed to infection? This experiment has never been tried, although I am anxious at some future date to see whether it is not possible to vaccinate an individual and later see if he can be inoculated with the gonococcus. When I first used the bouillon filtrate, too large a dose was often given and the reaction in the urethra was sometimes severe, causing tenesmus and inability to void. With the standardization of dosage as suggested by both Drs. Cumming, Burhans and myself, and with the filtrate that is available now, this complication should not occur. Biologic therapy is

precious Robust individuals react less severely to intradermal injections than those who are feeble or run down. However, in my experience, often a cadaverous looking individual builds his immunity faster than his robust neighbor. I have never noticed the susceptibility to blonds over brunettes. The idea of grading the size of the wheal as a guide to future dosage is admirable. Irrespective of the size of the wheal, I have not found it advantageous to continue the use of the toxin after the gonococcus has been absent from the urethra for two weeks.

DR. ROBERT E. CUMMING, Detroit. As Dr. Mathe of San Francisco was to have read a paper on this subject, I should like permission to quote two paragraphs from a letter recently received from him: 'It is my opinion that filtrate is of great benefit in the treatment of acute gonorrhea, particularly if used shortly after the appearance of the discharge. If employed during the first five days after its appearance, it will often abort the disease. In those cases in which the disease is not aborted, it seems to lessen the occurrence of the usual complications, consisting of posterior urethritis, acute prostatitis with and without abscess formation, epididymitis, arthritis, pyelonephritis and cardiac disease. I have used the filtrate according to the dosage outlined by Corbus and Ferry. It has given splendid results in more than 100 acute cases, and I am very enthusiastic in its use. In chronic cases of prostatitis and seminal vesiculitis complicated by arthritis it also gives good results. The gonococcus bouillon filtrate of Corbus-Ferry constitutes a very active definite antigenic agent, and if those who feel that they care to use such an agent have found that this particular preparation has not been successful in their hands I believe it is solely because they have unwittingly received inactive preparations, which can be included among those lots I referred to in the text as being unstable and variable.'

PRESENT STATUS OF TETANUS, WITH SPECIAL REGARD TO TREATMENT

REPORT OF FURTHER CASES FROM THE MASSACHUSETTS GENERAL HOSPITAL

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The prevention of tetanus has reached a substantially sound and reliable status, but the treatment in general is hardly more satisfactory than it was when Hippocrates handled the cases at the battle of Salamis, or when, centuries later, Frederick May advocated the use of infusions of tobacco by rectum. Our purpose in this paper is to add another series to the previously reported 116 cases from the Massachusetts General Hospital,¹ bringing the total to 149, and to deduce therefrom such conclusions as we may, also to review the current literature.

The modern conception of tetanus is that it is a disease caused by the toxin elaborated by the bacilli. The toxin circulates in the blood stream and is picked up by the motor nerve end plates and thence transmitted up the axis cylinders and perineural lymphatics till it reaches and becomes firmly fixed in the motor cells of the central nervous system, there causing irritative phenomena which result in tonic and clonic muscle contractions.² In the cases of general tetanus, or tetanus descendens (the more common form), the muscles with the shortest motor nerve trunks, the masseters, are first

affected, then the muscles of the neck, thorax and back. This form predicates the circulation in the blood stream of a considerable amount of toxin. In that rare form local tetanus, or tetanus ascendens, the toxin is not to any marked degree present in the general circulation, rather it involves, at least at first, only the motor nerves to the affected part, resulting in irritation of the motor cells of the anterior horns of the cord, with subsequent local spasm, tonic or clonic. By the nature of the process it can be reasonably assumed that the local form will be less virulent and fulminating than the general type. The largest series of cases of local tetanus is that of the British army, reported by Sir David Bruce,³ he found 201 local cases in a total of 1,458, a high percentage which was doubtless due to the universal use of prophylactic antitoxin in the army.⁴

That tetanus bacilli are frequently normal inhabitants of the intestinal tract of man, as well as of animals, is well known. Tenbroeck and Bauer⁵ found B tetani in the stools in twenty, or 34.7 per cent, of seventy-eight persons, and all twenty-six were found to contain appreciable amounts of tetanus antitoxin in the blood. This brings up the interesting suggestion, which they make, that such persons may have a potential immunity to tetanus, and such immunity may, to a degree, account for some of the very mild cases that one sees or, indeed, may furnish an absolute protection against this infection.

Since the previously mentioned phenomena of the distribution and later fixation of the tetanus toxin in the motor cells of the central nervous system are now appreciated, one is led at once to a consideration of the exact relation of the affected motor cells to the circulating fluid of the subarachnoid space, or cerebrospinal fluid, because it has been generally accepted that the introduction of the antitoxin into the subarachnoid space would doubtless afford a sound and scientific method of therapy. As a matter of fact, this assumption is without any theoretical support and with little clinical basis. The recent articles on this disease that have come to our attention have stressed the good or bad clinical results of the intraspinal use of the antitoxin, without analyzing the physiologic backgrounds.

The cerebrospinal fluid is elaborated largely by the choroid plexus, though there is evidence to show that possibly the perivascular spaces and ependymal cells lining the ventricles may produce a certain amount.

The absorption of (or fate of) the cerebrospinal fluid has been studied intensively by Weed and others.⁶ Weed used a series of experimental animals, injecting into the subarachnoid space, at normal intraspinal pressure, a ferrocyanide-citrate mixture, immediately fol-

³ Bruce David quoted by Taylor. Local Tetanus Case Report. Ann. Surg. 74:110 (July) 1921.

⁴ British Army Manual of Injuries and Diseases of War. London: H. M. Stationery Office 1918.

⁵ Tenbroeck C. and Bauer F. H. Tetanus Bacilli as an Intestinal Saprophyte in Man. J. Exper. Med. 36:261 (Sept.) 1922.

⁶ Weed L. H. Studies on Cerebrospinal Fluid. II. The Theories of Drainage of Cerebrospinal Fluid with an Analysis of the Methods of Investigation. J. M. Research 26:21 (Sept.) 1914. III. The Pathways of Escape from the Subarachnoid Spaces with Particular Reference to the Arachnoid Villi. ibid. 26:51 (Sept.) 1914. IV. The Dual Source of Cerebrospinal Fluid. ibid. 26:93 (Sept.) 1914. The Cerebrospinal Fluid. Physiol. Rev. 2:171 (April) 1922. The Absorption of Cerebrospinal Fluid into the Venous System. Am. J. Anat. 31:191 (Jan.) 1923. Weed L. H. and McKibben P. S. Pressure Changes in the Cerebrospinal Fluid Following Intravenous Injections of Solutions of Various Concentrations. Am. J. Physiol. 48:512 (May) 1919. Weed, L. H. and Hughson W. Systemic Effects of the Intravenous Injection of Solutions of Various Concentrations with Especial Reference to the Cerebrospinal Fluid. ibid. 58:53 (Nov.) 1921. The Cerebrospinal Fluid in Relation to the Bony Encasement of the Central Nervous System as a Rigid Container. ibid. 58:85 (Nov.) 1921.

Read before the Section on Surgery General and Abdominal at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

¹ The added thirty-three cases include four from our children's service previously reported by H. L. Higgins and F. A. Harrison and now in press.

² Ransom F. A Modern View of Tetanus. Lancet 2:928 (Dec. 22) 1917.

lowing this with introduction into the circulation of solution of formaldehyde, with enough hydrochloric acid to precipitate the ferric ferrocyanide (prussian blue granules), which were then studied both macroscopically and microscopically. According to Hughson⁷ his results were, in brief, as follows

In the replacement experiments the precipitation of the prussian blue was wholly localized within the subarachnoid space, and the nervous tissue was absolutely free from coloration, these facts being shown both grossly and microscopically. There was also no penetration of the perivascular spaces. The granules, however, were traced directly into the arachnoidal villi, projecting into the basilar dural sinuses, particularly the cavernous sinuses. Furthermore, the granules could be seen passing through the mesothelial cells, capping the villus and through the endothelial cells of all the dural sinuses.

Weed said in part

It seems fair to assume that the absorption of the cerebrospinal fluid is a twofold process, being chiefly a rapid drainage into the great dural sinuses and in small part a slow indirect escape into the true lymphatic vessels.

In all this conclusive work there is nothing to suggest, even remotely, that the cerebrospinal fluid, or any foreign protein which it might contain, could possibly be brought into contact with, or penetrate, the motor nerve cells in the substance of the nervous tissue, the cells that contain the tetanus toxin.

The introduction into the blood stream of a foreign serum, or antitoxin, plus the simultaneous intravenous injection of a large amount of 0.45 per cent sodium chloride solution (a hypotonic solution just strong enough to avoid hemolysis), plus continuous lumbar drainage, produces a great increase in the formation of cerebrospinal fluid, or drainage of fluid from the blood into the subarachnoid space. This is called "forced drainage" and has been employed by Kubie⁸ in the treatment of poliomyelitis, and by Fremont-Smith, Putnam and Cobb⁹ in the treatment of multiple sclerosis. Kubie says

Forced drainage may be used either (a) alone or (b) as a vehicle for the intravenous administration of serum under optimal conditions for the transfer of antibodies from the blood stream to the central nervous system or (c) as a method of preparing the central nervous system for a subsequent subarachnoid injection of serum.

The use of intraspinal injection of antitoxin plus simultaneous intravenous hypertonic sodium chloride has been suggested. We have employed the intravenous administration of antitoxin plus lumbar drainage (not continuous) in one case of tetanus with no appreciable effect.

A vast amount of work has been done on this interesting subject, though not dealing directly with tetanus antitoxin, and the sum and substance of it all is that a foreign protein, such as antitoxin, introduced into the subarachnoid space, will be almost entirely discharged into the dural venous sinuses through the pacchionian granulations and a very small portion may be absorbed by the subarachnoid vessels, in neither instance is there the slightest reason to suppose that antitoxin, so introduced, can get directly into contact with or within the affected motor cells. On theoretical grounds therefore

there is absolutely no basis for the intraspinal use of tetanus antitoxin, and clinical observations go far to support this thesis.

The comprehensive classification of tetanus, given by Courtois-Suffit and Giroux,¹⁰ may be presented here to advantage

- 1 Classic forms (descendens)
- 2 Abnormal forms
 - A Splanchnic (after abdominal operations)
 - B Cephalic (wound of head)
 - (w) Nonparalytic
 - (r) Paralytic (with facial paralysis)
 - (y) With oculomotor paralysis
 - (z) With hypoglossal paralysis
 - C Unilateral
 - D Tetanus of limbs (local)
 - (x) Monoplegic
 - (y) Paraplegic
 - E Abdominothoracic
 - F Attenuated form with long incubation

The abnormal forms, particularly the local type, are most likely to develop in those cases in which a prophylactic injection of antitoxin has been given.

Numerous articles on tetanus may be found in the literature, and brief reference to some of these will here be made, under appropriate headings.

TYPES OF TETANUS

Tetanus Neonatorum—This occurrence is not uncommon in China and the other countries of the East. Bratusch-Marrain¹¹ has seen twenty-six cases in Graz, especially in the older portions of the city, he recommends for treatment magnesium sulphate and chloral, as well as antitoxin both subcutaneously and intraspinally.

"Vaccination Tetanus"—Tetanus following vaccination against smallpox has always caused very serious concern among the medical profession, and it is interesting to note that in most cases the contaminating infection with B tetani has apparently developed some days after the vaccination, as an accidental occurrence. This fact is stressed by Armstrong,¹² who collected ninety-eight cases from thirty-two states and the District of Columbia. He advises very small areas of vaccination ("insertions") and no subsequent covering pads. Klemmer and Crosland¹³ found ten cases of postvaccination tetanus in ninety-six cases in Lancaster, Pa.

Tetanus Following Clean Operation—Several years ago there was an outbreak in Madrid of about twelve cases of postoperative tetanus, thought to be due to contaminated suture material (catgut). The contamination through intestinal contents and spores on the skin has been studied by Meyer and Spector.¹⁴

Erdman¹⁵ and Muller¹⁶ each report such cases. We are indebted to Dr. William F. Dolan¹⁷ for permission

10 Courtois-Suffit Maurice and Giroux R. Abnormal Forms of Tetanus. London: University of London Press, 1918.

11 Bratusch-Marrain A. Treatment of Tetanus of the New Born. *Munchen med Wchnschr* 70:1485 (Dec 14) 1923. Tetanus in the New born. *Arch f Kinderh* 74:45 (March 8) 1924.

12 Armstrong Charles. Postvaccination Tetanus, *J A M A* 90:738 (March 10) 1928.

13 Klemmer A P and Crosland E. S. The Treatment of Tetanus in the Hospitals of Lancaster, Pa. over a Period of Thirty Years. *Am J M Sc* 187:700 (May) 1934.

14 Meyer K A and Spector Bertha K. The Incidence in the Stools and on the Regional Skin of One Hundred Urban Herniotomy Cases. *Surg Gynec & Obst* 54:785 (May) 1932.

15 Erdman Seward. Tetanus Following Appendectomy. *Ann Surg* 97:934 (June) 1933.

16 Muller. Tetanus Following Herniotomy. *Ann. Surg* 76:646 (Nov.) 1922.

17 Dolan W F. Personal communication to the authors.

7 Hughson Walter. The Embryogenesis of the Human Cerebrospinal Fluid. *The Human Cerebrospinal Fluid*. Research Publication New York: Paul B Hoeber Inc. 1924. p. 7.

8 Retan, G M and Kubie L S. Forced Drainage in the Treatment of Poliomyelitis. *Bull Neurol Inst New York* 1:419 (Nov.) 1931.

9 Fremont-Smith Frank, Putnam T J and Cobb Stanley. Forced Drainage of the Central Nervous System. *Arch Neurol & Psychiat* 23:219 (Feb.) 1930.

to refer to three cases, following clean operations, which were seen in consultation by one of us (R H M) and several others. These cases were moderately severe, and all ended in recovery after adequate treatment. The exact source of the contamination was never determined, but it was thought to be the catgut.

TREATMENT

Hughson,⁷ in 1924, gave the opinions of eleven different authors and the British Tetanus Committee on the use of antitoxin, all advised its use, with various adjuncts, but there was no unanimity of opinion in

TABLE 1—Outcome with Regard to Portal of Entry

Portal of Entry	Recoveries	Fatalities
Head	1	2
Trunk	1	2
Arm	1	3
Hand	5	1
Leg	2	3
Foot	4	4
Total	14	15

regard to the intrathecal route. Some were highly in favor of it, some equivocal, none definitely against it. Huntington,¹⁸ whose splendid article every student of the subject should read, and Cooper¹⁹ are lukewarm in their advocacy of antitoxin. Graves²⁰ recommends large doses but does not think that the intraspinal administration is of any especial value. Klemmer and Crossland¹³ found a distinctly higher mortality in those having intraspinal antitoxin than those who did not. Wainwright,²¹ in a masterly review of the subject, says "Intraspinal injections are harmful, increase mortality, and should be abolished. Antitetanus serum is not useless. The efficiency will depend directly on the promptness with which it is given. The best sedative is chlorbutanol (chloritone)." Higgins and Harrison,¹ who have already reported and discussed four of the cases (children) included in our series, advocate the employment of smaller doses of antitoxin, favor the use of tribrom-ethanol as a sedative, and say "It would

TABLE 2.—Effect of Length of Incubation on Mortality in Thirty-Three Cases

Incubation Period	Cases	Mortality
1 From 1 to 10 days	13	76.9%
2 Eleven days or more	17	23.5%
3 Unknown	3	33.3%

seem then that, in giving tetanus antitoxin intraspinally, there is no added therapeutic value and may result in greater discomfort to the patient and perhaps some injury to the nervous tissue by increasing edema of the brain and spinal cord."

TETANUS AT THE MASSACHUSETTS GENERAL HOSPITAL

In a previous paper by one of us²² there were recorded 116 cases of tetanus, seen at the Massachusetts

General Hospital from 1872 to 1921, inclusive. The total mortality in the series was 69.9 per cent.

From 1900 to 1909 (inclusive) there were eighty-nine cases, with a mortality of 65.1 per cent, from 1910 to 1915 (inclusive) there were forty-five cases, with a mortality of 57.8 per cent, from 1916 to 1920 (inclusive) there were twenty-five cases, with a mortality of 52 per cent, and in 1921 there were five cases, with a mortality of 40 per cent. From 1922 to 1933 inclusive the diagnosis of tetanus was made thirty-three times at the Massachusetts General Hospital. Fifteen patients died and eighteen recovered, a mortality rate of 45.5 per cent for the whole group.

Diagnosis—The diagnosis was obvious clinically in all but one case²³ in which there were also signs suggestive of meningitis. In only one case was the diagnosis confirmed by culture of the bacillus from the wound. Usually the portal of entry was healed by the time the patient came under observation. Autopsy was done in eight of the fifteen fatal cases.

Portal of Entry—It was often extremely difficult to get a story of the injury from which the disease started. In four cases no portal of entry could be traced. These all happened to be cases which recovered. The location of the portal of entry in the remaining cases does not seem significant, with the possible exception of hand lesions, five recovering to only one dying.

TABLE 3—Abdominal Rigidity

	Recoveries	Fatalities
Abdomen soft	1	3
Abdomen rigid	14	6
	(3 boardlike)	(1 "boardlike")

Symptoms—The early symptoms were often rather vague and nondistinctive. General malaise, lame muscles of the back, headache, sore throat, facial asymmetry, and involuntary grimacing, for example, did not offer any clue to the true condition. These symptoms were rapidly followed, however, by discomfort in the jaws, inability to open the mouth, stiff neck, and finally convulsions. Although the incubation period in some cases had a duration of several days or weeks, once the symptoms appeared they developed in a few hours. There seemed to be no demonstrable relationship between the nature of the first symptoms and the severity of the disease.

Incubation Period—Of course, in cases in which the portal of entry was not known the incubation period could not be determined, but table 2 shows the relationship between the prognosis and the incubation period where known.

Although the figures in table 2 serve to confirm further the already familiar generalization that a short incubation period tends to be a good omen, it is well to note that this is only a tendency and that, in this series, not every case with a short incubation period ended fatally, and not every case with a long one went on to recovery.

Abdominal Rigidity—A sign that is not usually stressed in descriptions of tetanus was present a surprising number of times in this series. In nine of the thirty-three cases no note was made regarding the abdominal wall. Of the remaining twenty-four, how-

23 The reader is referred to the appended case abstracts.

18 Huntington R. W. The Treatment of Tetanus. *Yale J. Biol. & Med.* 3: 207 (Jan.) 1931.
19 Cooper N. A. Analysis of 102 Consecutive Cases of Tetanus. *Lancet* 2: 930 (Dec. 22) 1917.
20 Graves A. M. Tetanus in New Orleans. *Ann. Surg.* 92: 1075 (Dec.) 1930.
21 Wainwright J. M. Tetanus. Its Incidence and Treatment. *Arch. Surg.* 12: 1062 (May) 1926.
22 Miller R. H. Tetanus. Report of 116 Cases at the Massachusetts General Hospital. *Surg. Gynec. & Obst.* 36: 90 (Jan.) 1923.

ever, twenty showed abdominal rigidity, referred to in four instances as "boardlike," and only four presented soft abdominal walls. This is mentioned here not because of any possible significance it may have in the course of the disease but to point out the danger of being misled into a diagnosis of some acute intra-abdominal lesion in a case of tetanus in which the other symptoms are not particularly striking. With regard to the possible significance of abdominal rigidity in tetanus, table 3 is suggestive, at least on first sight.

We are not prepared to draw any conclusions from this distribution of results, however, beyond the obvious one that among the fatal cases were many patients too sick to be thoroughly examined.

Temperature and Leukocytosis—Among the patients who recovered, the temperature rarely was higher than 103 or lower than 101, and the average temperature was 102.8 F. The average white blood cell count for this group was 12,500, five patients having white blood cell counts below 10,000, and one as low as 4,000.

The fatal cases usually presented a much higher temperature, which as a terminal event often went above 105 and in two instances as high as 108, the average being 105.6. The white blood cell count, however, did not show a commensurate increase, the average being only 18,500. Not one was below 15,000, however, in the group of fatal cases.

Clinical Course—The classic course of the disease has often been described and will not be repeated here, but a few significant figures will be mentioned. The average time from onset to death in the fatal cases was three days. In only one fatal case did the patient live as long as ten days, and eight patients (54 per cent) died within two days of onset.

In marked contrast is the average duration of 3.2 weeks from onset to recovery in the nonfatal cases. The longest time was six weeks and the shortest two weeks.

TREATMENT

It will not be possible to record all the details of treatment. Typical methods used will be described and the subject discussed in a general way.

Sedatives—Many of these patients were already having convulsions on admission to the hospital, so that the most urgent problem was that of sedatives. A typical picture is as follows (case 25): "He lies still and half asleep, but on any sensory stimulus becomes cyanotic, with neck hyperextended, jaws set, spasm of the whole body, and loss of sphincter control." Another typical picture is from case 27: "Lies quietly in bed until someone enters room, when suddenly has severe spasm with marked risus sardonicus and great apparent pain. Subsides immediately, but this is repeated at each noise or movement of visitors." Still another is from case 22: "In emergency ward he went into opisthotonos, was covered with sweat, and was apparently suffering indescribable agonies."

The agents most often used were phenobarbital, 10 grains (0.6 Gm) by rectum or 3 grains (0.2 Gm) by mouth, morphine, $\frac{1}{4}$ grain (0.016 Gm) subcutaneously, chloral, 30 grains (2 Gm), paraldehyde, 5 cc, sodium amytal, 12 grains (0.8 Gm), and tribromethanol, from 80 to 100 mg per kilogram of body weight. Two patients were given repeated primary ether anesthesia to control extreme spasms. Large amounts of sedatives were sometimes needed. Patient 21, a man, aged 45, who made a complete recovery,

was given chloral, 75 grains (5 Gm), morphine, $\frac{3}{4}$ grain (0.05 Gm), phenobarbital, $7\frac{1}{2}$ grains (0.5 Gm), and paraldehyde 20 cc, all in the space of thirty-six hours. Tracheotomy was done three times in the vain hope of making respiration easier.

Antitetanus Serum—Only one of the patients (case 12) in this series had received prophylactic antitetanus serum before admission to the hospital. As soon as the diagnosis was made, every patient was given large doses. In most instances the serum was administered by several routes. Two patients had intramuscular injections alone, and five had only intravenous injections. Four patients had serum injected into the tissues at the suspected portal of entry in addition to some other method of administration. Eleven patients received intraspinal injections in addition to other routes. Six of these recovered and five died. The intravenous route was used the most often (thirty cases), intramuscular next (twenty cases), intraspinal next (eleven cases) and local least often (four cases). Table 4 shows how

TABLE 4—Methods of Administration

Method of Administration	Number of Recoveries	Number of Fatalities	Total
Intravenous alone	2	3	5
Intravenous and intramuscular	8	5	13
Intravenous and intraspinal	3	2	5
Intravenous and local		1	1
Intravenous, intramuscular and intraspinal	2	1	3
Intravenous, intramuscular and local	1		1
Intravenous, intraspinal and local		1	1
Intravenous intramuscular intraspinal and local	1		1
Intramuscular alone	1	1	2
Method unknown		1	1
Total number of cases	19	15	33
Distribution Between Fatal and Nonfatal Cases			
Intravenous with or without other methods	17	13	30
Intramuscular with or without other methods	13	7	20
Intraspinal with or without other methods	6	5	11
Local injection with other methods	2	2	4
Method unknown		2	2

these different methods of administration were combined, and how the individual methods were divided between the fatal and nonfatal cases.

So many other factors influence the outcome of each case that it would be futile to try to evaluate the different combinations of methods of administering serum from these tables. They do serve to show, however, that no one method stands out as greatly superior in results to the others, and that those patients treated without spinal injection did at least as well as those treated with it. There is no reason to infer that only the sickest patients were selected for intraspinal injections. On the contrary, one of the most serious practical objections to this method is its technical difficulty or impossibility in the presence of spastic hyperextension.

The largest amount of serum used in a single case was 310,000 units. The average amount in the fatal cases was 112,000 and in the nonfatal cases 160,000. The difference is merely a reflection of the shorter period of time during which the fatal cases were available for treatment.

Serum Reaction—Patient 12 proved to be hypersensitive to horse serum on the routine skin test, and it

is interesting to note that this was the only patient who had received prophylactic antitetanus serum. During the process of desensitization on the first day he reacted by flushing and blanching, sweating, nausea, transitory urticaria, cyanosis and mild respiratory difficulty. After the first day large doses of serum were administered intravenously and intramuscularly without incident.

Ten other patients showed serum reactions of various kinds and degrees, making a gross incidence of 33½ per cent in the whole group. These reactions were of two distinct types. The first type consisted of symptoms immediately after an injection, varying from a transitory rise in pulse to an alarming degree of collapse. The other type consisted of urticarial rash coming on several days after a serum injection. Patient 15 demonstrated both types of reaction.

The important thing is that the dangerous anaphylactic phenomena, though occasionally suggestively shown in from three to five days after the initial injection, do not usually occur until after about ten days, or later. After the lapse of ten days from the institution of the serum treatment, further administration must be carried out with caution.

The serum sickness, characterized by such conditions as urticaria and joint symptoms, develops on an average of ten days after the first injection and can be controlled by subcutaneous injections of epinephrine.

COMMENT

The mortality in cases of tetanus at the Massachusetts General Hospital has decreased, though never below 40 per cent, which was the figure in five cases in 1921. From 1922 to 1933 inclusive the mortality rate (thirty-three cases) was 47 per cent. Undoubtedly the one factor that will further lower the death rate is the more universal use of prophylactic injections, this is a desideratum hard to achieve, however, because certain apparently very trivial wounds will prove later to be the source of the disease. All compound fractures, gunshot wounds, deep punctured wounds, "street" wounds and "farm" wounds should be treated prophylactically. Ordinary wounds acquired in the home, or in clean places, free from possible fecal contamination, or while bathing at the shore, should not require the injection. A dressing should never be applied to the "insertion" area of a smallpox vaccination.

The consideration of our cases, and a review of the opinions of many others, lead us to recommend early and large doses of tetanus antitoxin given by the intramuscular and intravenous routes, while we cannot recommend the further use of intraspinal injections. The use in tetanus of intravenous antitoxin by the "forced drainage" method, as employed by Kubie and by Fremont-Smith, Putnam and Cobb in poliomyelitis and multiple sclerosis, seems to us theoretically attractive but practically impossible.

SUMMARY AND CONCLUSIONS

1 Thirty-three additional cases of tetanus are reported from the Massachusetts General Hospital, making a total of 149 cases. Since 1896, when antitoxin was first used, the mortality has declined from 80 to less than 47 per cent.

2 Prophylactic injection of antitoxin (1,500 units) is indicated in cases of deep or puncture wounds that may be contaminated. In unusually suspicious cases

this should be repeated once or even twice at intervals of ten days.

3 The wound should, when possible, be debrided and kept open.

4 After the onset of tetanus, every effort should be made to conserve the patient's strength by the maintenance of nutrition and fluid balance, and by the combating of muscle spasms.

5 Tribrom-ethanol is a useful drug for the control of spasms.

6 As soon as the diagnosis is made, serum should be given intravenously, intramuscularly or both in daily doses of from 20 to 80 thousand units up to a total of 300 thousand units.

7 In hypersensitive subjects the process of desensitization must be instituted as soon as possible.

8 There are no theoretical or practical grounds for the recommendation of the intraspinal administration of antitoxin.

9 Serum reactions may be expected in about one third of all cases treated. The immediate reactions are commonest from two to five days after the initial dose of serum, and the delayed reactions from the tenth to the fifteenth day. No fatal reactions were encountered in the present series.

ABSTRACT OF CASES

CASE 1—Girl, aged 4. Smallpox vaccination. Onset of symptoms in twenty days, headache, pain in back of neck, convulsions. Died in convulsion with temperature 108. Total antitoxin, 40,500 units, intravenous 30,000, intramuscular 10,500.

CASE 2—Man, aged 55. Cut thumb on bottle. Onset of symptoms in sixteen days. Had lame jaw, for which he went to dentist and had convulsion on way to dentist's office. Later developed trismus, and spasm of neck and leg muscles. Total antitoxin 340,000 units, intravenous and intramuscular. Recovered.

CASE 3—Boy, aged 2 years and 10 months. Wound inside nose from foreign body. Onset of symptoms in probably six days. Died in convulsion. Total antitoxin 20,500 units.

CASE 4—Man, aged 54. Wound of thumb while working around barn. Symptoms began in twelve days, with trismus. Developed convulsions. Total antitoxin 180,000 units. Recovered.

CASE 5—Boy, aged 10. Blister on heel. Onset of symptoms doubtful, probably thirty days. Developed trismus, risus sardonicus, slight opisthotonos, frequent convulsions. Total antitoxin 126,500 units. Recovered.

CASE 6—Boy, aged 6. Smallpox vaccination. Onset of symptoms in twenty-six days. First diagnosis poliomyelitis, later, with development of trismus and other signs, diagnosis changed to tetanus. Total antitoxin 70,000 units. Recovered.

CASE 7—Boy, aged 9. Nail wound of foot. Developed symptoms in twelve days, trismus, lame back and shoulders, spasm of legs. Total antitoxin 180,000 units. Recovered.

CASE 8—Man, aged 71. Skin lesions on hands attributed to a Puerto Rican parasite. Incubation period not known. Developed trismus, and B tetani found in lesions. Total antitoxin 160,000 units. Recovered.

CASE 9—Man, aged 52. Wound of hand from chicken wire. Onset of symptoms in twenty-one days. Developed trismus, spasm of neck muscles, opisthotonos and convulsions. Died in respiratory failure with temperature 106.5. Total antitoxin 310,000 units.

CASE 10—Boy, aged 16. Lacerated wound of toe from horse stepping on it. Onset of symptoms in two and two-thirds months. Developed trismus, rigid neck and convulsions. Difficulty in breathing led to tracheotomy, which gave only temporary relief. Died in convulsions. Total antitoxin 240,000 units.

CASE 11—Girl, aged 7. Lacerated wound of face. Onset of symptoms in six days. Developed trismus, spasm of neck

muscles, opisthotonos and died in convulsions Total antitoxin 30,000 units

CASE 12.—Man, aged 22 Shotgun wound causing compound fracture of femur Given prophylactic antitoxin, 1,500 units Local tetanus in twenty one days, trismus in twenty-four days Total antitoxin (following desensitization) 178,600 units Recovered

CASE 13.—Boy, aged 14 No history of trauma Onset of symptoms with trismus, facial asymmetry, stiff back, and spasm of left leg and back. Total antitoxin 100,000 units Recovered

CASE 14.—Girl, aged 3 Superficial scratches Onset of symptoms in forty-three days Developed trismus and painful spasms of back and abdomen Total antitoxin 40,000 units Recovered

CASE 15.—Man, aged 31 Lacerated wound of thumb Onset of symptoms in five days Developed trismus, painful spasm of all muscles, and opisthotonos Total antitoxin 160,000 units Recovered

CASE 16.—Woman, aged 63 Dirty laceration of leg Onset of symptoms in five days Developed trismus, stiff neck and generalized convulsions Died in respiratory spasm Total antitoxin 200,000 units

CASE 17.—Girl, aged 4 Superficial dirty wound of face Onset of symptoms in seventeen days Developed trismus, stiff neck, and frequent generalized convulsions Total antitoxin 200,000 units Recovered

CASE 18.—Boy, aged 6 "Thorn in foot" wound became septic. Also, smallpox vaccination one month later Symptoms developed one month after vaccination (incubation period thus doubtful) Had trismus, general muscle spasm and opisthotonos Total antitoxin 110,000 units Recovered

CASE 19.—Man, aged 36 Incision and drainage of septic hip joint Onset of symptoms in twelve days Chief sign was trismus Total antitoxin 210,000 units Recovered This case suggests the possible introduction of B tetani in catgut, at time of operation

CASE 20.—Man, aged 67 Punctured wound of foot (nail) Onset of symptoms in sixteen days Developed trismus spasm of neck and leg muscles Total antitoxin 113,000 units Recovered.

CASE 21.—Man, aged 45 Excision of sarcoma of leg (aseptic operation with dressing of silver-foil) Onset of symptoms in five days Developed trismus, spasm in neck, back and legs, extraordinary severe cramps in abdominal muscles Total antitoxin 145,000 units Recovered

CASE 22.—Man, aged 36 Nail wound of foot Onset of symptoms in ten days Developed trismus, spasm of neck and back muscles, convulsions and opisthotonos Total antitoxin 40,000 units Died in convulsions shortly after admission.

CASE 23.—Man, aged 57 Nail wound of foot Onset of symptoms in twelve days Developed trismus, stiff neck, general muscular rigidity, and convulsions Total antitoxin 61,500 units Died in convulsions shortly after admission

CASE 24.—Boy, aged 7 Leg crushed by automobile. Onset of symptoms in seven days Developed trismus, general muscular rigidity, opisthotonos and convulsions Total antitoxin 30,000 units Died five hours after admission.

CASE 25.—Boy, aged 13 Bullet wound (.22 caliber) of back. Onset of symptoms in nine days Developed trismus, generalized muscular stiffness and convulsions Total antitoxin 30,000 units Died five hours after admission in acute spasm of respiratory muscles

CASE 26.—Man, aged 56 Compound fracture of leg street accident Wound became septic Onset of symptoms in fourteen days Developed trismus generalized muscular stiffness and convulsions Total antitoxin 155,000 units Died in convulsions

CASE 27.—Boy aged 10 Fourth of July accident to finger, with cap-pistol. Onset of symptoms in fifteen days Symptoms were mild and subsided, on eighteenth day after injury went into opisthotonic spasm at home. Not brought to hospital till twenty-third day after injury, when he had trismus and convulsions Striking improvement on day after institution of treatment. Total antitoxin 110,000 units Recovered

CASE 28.—Boy, aged 16 Compound fracture of ankle in street, treated at home Onset of symptoms in six days Developed trismus, spasm of neck and back muscles, convulsions, opisthotonos Total antitoxin 170,000 units Died in convulsions

CASE 29.—Man, aged 56 Lacerated wound of elbow Onset of symptoms in nine days Developed trismus, stiffness of neck and back muscles, opisthotonos Total antitoxin 300,000 units Recovered

CASE 30.—Girl, aged 6 Smallpox vaccination Onset of symptoms in thirteen days Developed trismus, generalized convulsions and opisthotonos Total antitoxin 30,000 units Died in convulsions few hours after admission

CASE 31.—Boy, aged 16 Simple fracture of ankle, followed by open reduction in hospital Patient worked in stable. Onset of symptoms in eighteen days Developed trismus, generalized convulsions and opisthotonos Total antitoxin 81,500 units Recovered

CASE 32.—Man, aged 32 Lacerated wound of wrist while working in orchard. Onset of symptoms in six days Developed trismus, generalized convulsions, and opisthotonos Total antitoxin 185,000 units Died

CASE 33.—Woman, aged 51 Kidney operation (nephrectomy) Onset of symptoms in nine days Developed trismus and convulsions Total antitoxin 80,000 units Died in convulsions

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ABSTRACT OF DISCUSSION

DR FREDERIC W TAYLOR, Indianapolis As has been suggested, the local lesion must receive prime consideration. It after all, initiates the entire tetanic syndrome. That this point has been frequently overlooked is borne out by a study of any series of tetanus cases. In a small series that I had occasion to review, seventeen patients were admitted to the hospital with healed skin lesions. These wounds were not touched, were not excised, were not explored, for fear of disseminating tetanus toxin in the body. The toll of this overcautious procedure was twelve lives, a mortality in excess of 70 per cent. In the last three years I have seen five autopsies on patients dying with tetanus. In three of these cases, foreign bodies were removed from the local wound at the autopsy table. These were bathed in pus containing *Clostridium tetani* and surrounded by the usual gray necrotic tissue. In order to prevent or minimize the danger of such accidents, I believe that all tetanus cases should be admitted to the hospital only by way of the operating room. Here the local wound should be excised if possible, if not, it should be thoroughly explored and a débridement done. I am glad to hear the authors voice their protest against intrathecal administration of antitoxic serum. I am quite in accord with this view and feel not only that it is an inefficient and ineffective route by which to administer this serum but that it does harm in giving the clinician a false sense of security as to just what that serum will do. I should like to take issue with the authors on the dosage of tetanus antitoxin. Given prophylactically, the serum is a specific without a peer in the biologicals. Used in the treatment of tetanus after the disease has once developed, it certainly is not a specific and should be considered as an adjunct to any other treatment. I believe that 50,000 units or at most 100,000 units is quite amply sufficient to neutralize toxin in the tissues and blood stream. I believe moreover that huge doses of tetanus antitoxin have done harm, not because they are useless, not because they cause serum sickness and not because of immediate anaphylactic reactions. Large doses of antitoxin have done harm in giving a false sense of security to the clinician. He therefore neglects the local lesions, passes over lightly deep relaxation of his patient, and pins his hope on the specific.

DR RICHARD H MILLER, Boston I am glad that Dr Taylor emphasized the local wound, because that is of great importance. We did not say very much about it. I know that some cases of tetanus are so mild the patient will get well anyway. Some cases are so virulent that nothing can be done for them, but there is a small group in between in which careful and effective treatment will save life.

RECTAL GONORRHEA IN WOMEN

CLEMENT L. MARTIN, M.D.

CHICAGO

Gonococcic infection of the rectum decidedly is not an uncommon complication in women who harbor this infection in the cervix or the urethra. Symptoms often are absent, nearly always they are mild. As a consequence the disorder rarely is diagnosed. Years ago Jullien¹ stated that rectal gonorrhea "is a disease one sees only if one looks for it." This statement is still pertinent. The lesion commonly results from genital gonorrhea. Although not uncommon, it is not very frequently encountered in the ordinary run of examinations in women in a proctologic practice. The disease is rather uncommon in males and rare as a primary ailment in women. Of 220 men having gonorrhea in the Chicago House of Correction Hospital, a group in which the incidence would be expected to be relatively high, De Bere² found rectal gonorrhea in a little over 2 per cent of the cases.

Although many women have rectal gonorrhea, the infection has not been given much attention in the United States. A survey of current textbooks on venereal diseases discloses that it is mentioned briefly if considered at all, in numerous standard treatises on gynecology it is not even mentioned, in one of the most recent its discussion is limited to three lines. Although scant attention has been given to the subject in English literature, a number of theses have appeared on various aspects of rectal gonorrhea in continental publications, especially during the last five years in the German.

Bruno Peiser³ credits Hecker⁴ with first describing the disease (1789). Hecker considered unorthodox intercourse the common cause. Foerster⁵ (1860) called attention to "rectal catarrh," which he thought often was due to gonorrhea. After Neisser's discovery of the gonococcus (1879) there was more interest in the disease. The majority of the reports dealt with its frequency in women. In recent German literature there is general agreement that rectal gonorrhea is a common concomitant of female genital gonorrhea, that the incidence is high, that it is easily overlooked and that the gonococcus can retain its virulence in the rectum for more than a year. Bickel and Abraham⁶ state that in fifteen cases, if histories as given by the patients are accepted as correct and reinfection is ruled out, "even after gonorrhea of the genitalia has remained cured for more than ten years, gonococci still may be found in the rectum."

Hayes⁷ published the first paper in English to deal with the important rectal aspects of the disease, and Rosser,⁸ in a paper on venereal disease of the anus and rectum, discussed the disease as seen in twenty-five of his cases. He states "In the United States the disease has continued to be regarded as a rare and self-limited

complication, requiring no attention except for a short period of palliation in those cases (the minority) in which unusually severe local reactions enforce it. Adherence to the diagnostic criteria of Jullien [(c 1886) i. e., the triad purulent discharge, broad anal ulcer and condyloma], has been responsible for the failure to recognize the condition as a very small percentage of these patients present rhagades, external ulcers and condylomata."

MODE OF INFECTION

In women, gonorrheal proctitis ordinarily is secondary to genital infection. The vaginal discharge containing pus from the urethra, cervix or Bartholin's gland contaminates the anus. The normal eversion of the anus during defecation readily brings the pus in contact with the terminal rectal mucosa and infection follows. Contamination at defecation is the usual means of infection.

Other means of infection mentioned by various observers are the wearing of tight undergarments, contamination of the anus with infected urine, the partial expulsion and subsequent retraction of the final portion of a fecal mass, especially in constipated women, the backflow of a vaginal douche, contaminated rectal or vaginal syringes, rectal speculums or dilators, and rectal thermometers, the insertion of a suppository with infected fingers, rupture of a gonorrheal, prostatic abscess, peno-anal coitus, and rectal disease which brings the hands to the region of the anus.

MATERIAL STUDIED

One hundred and eleven women received treatment for genital gonorrhea. In these a positive rectal smear was obtained before the patients were examined proctoscopically. Smears were made from material obtained at the time of the proctoscopic examination as a check on the previous test. In some instances cultures were made.

INCIDENCE

Thirty per cent of the women affected with genital gonorrhea also had gonorrhea of the rectum. In 1927, 13 per cent of the women having gonococcic infection of the genitalia had symptoms of rectal involvement, in 1928 symptoms were present in 45 per cent. In 1929, when routine smears first were made from the anus and rectum, the diagnosis of gonorrheal proctitis increased immediately. It has varied since then from 25 to 42 per cent. Singer⁹ tabulates the published reports of a number of those investigators who observed the incidence of gonorrheal involvement of the rectum as shown in the accompanying table.

This investigator attributed the increase in 1922 and later "to the strong emphasis placed on routine examination for rectal gonorrhea." To digress at this point, I would mention that eight other authors report rectal infection as a complication of the vulvovaginitis of children in percentages ranging upward from 35, the incidence in Singer's own cases was 84.6 per cent. Thus, statistics show that rectal involvement is even more frequent in children than in women.

METHOD OF EXAMINATION

Smears were made from the rectum of every woman who exhibited an acute or a chronic gonococcic infection. A Kelly female urethroscope is inserted into the anus and through it a cotton-tipped applicator is passed into the rectum. Two smears are made from the mucus

9 Singer, Ludwig. Frequency of Rectal Gonorrhea in Women. *Dermat. Wechnschr.* 86: 506 (April 14) 1928.

Read before the Section on Gastro Enterology and Proctology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

1 Jullien, Louis. *Traité pratique des maladies vénériennes*. Paris: J. B. Baillière et fils, 1886.

2 De Bere, C. J. Personal communication to the author.

3 Peiser, Bruno. *Gonorrhea of the Rectum*. In Buschke, A. and Langer, E. *Lehrbuch der Gonorrhoe*. Berlin: Julius Springer, 1926.

4 Hecker, A. F. *Maladies vénériennes*. 1801.

5 Foerster, A. *Lehrbuch der pathologischen Anatomie*. Jena, 1860.

6 Bickel, L., and Abraham, L. Frequency and Importance of Rectal

Gonorrhea in Women. *Zentralbl. f. Gynak.* 56: 200 (Jan. 23) 1932.

7 Hayes, H. T. *Gonorrhea of the Anus and Rectum*. Report of

Seventy-Five Cases. *J. A. M. A.* 93: 1878 (Dec. 14) 1929. *Stricture of the Rectum*. *Tr. Am. Proct. Soc.* 1931, p. 173.

8 Rosser, Curtice. *Clinical Variations in Negro Pathology*. *J. A. M. A.* 87: 2084-2085 (Dec. 18) 1926. *Venereal Infections of the Anus*

and Rectum. *Texas State J. Med.* 26: 390-395 (Oct.) 1933.

or pus thus obtained, one slide is stained with methylene blue, the other by the Gram method. The finding of gram-negative, intracellular diplococci is accepted as evidence of gonococcic infection, gram-negative extracellular diplococci are not regarded as diagnostic. That among the rectal flora are other gram-negative diplococci, some of which may be intracellular, is well known, but that these often are confused with gonococci by an experienced bacteriologist who bases his opinion on the usual appearance, size and grouping of the gram-negative diplococci is unlikely. In our experience, cultural methods of isolation and identification have been inconclusive in too many instances to justify confidence in them. Smears containing gonococci generally were found to have 25 per cent or more of pus cells in them.

OTHER METHODS OF EXAMINATION

The Glingar method (rectal washing) is the injection of from 50 to 100 cc of tepid water into the rectum through a female catheter, the return flow is received into a narrow glass or tube and allowed to settle. Smears are made from the mucoid shreds or particles in the supernatant fluid. Temesváry¹⁰ and others obtain the specimen with a dull curet (Asch's). By some clinicians, Gauss's worm-shaped curet is used.

Singer thus summarizes his experience with the speculum-curet method and Glingar's "washing" procedure in 171 cases: "The Glingar method is most reliable but in the first examination fails in one third of the cases which are practically all diagnosed with the speculum-curet method. Inversely, nearly all cases negative with the speculum-curet method were proved positive by the Glingar method."

In my work, the simple cotton swab and endoscope method is thoroughly satisfactory, it causes the patient no discomfort. A single negative test does not rule out the infection.

SYMPTOMS

Usually symptoms are absent or manifestations of the infection are so slight that the physician's attention is not directed to the anus. In one series of eighty-eight cases which was investigated in 1931 only twelve (14 per cent) presented any rectal complaint, and 86 per cent were symptomless.

This year, among 111 patients examined with the proctoscope, thirty-six (32 per cent) on direct questioning stated that they had anal soreness, usually at bowel movement. Such soreness ordinarily was only moderate, although two patients were quite sore, six (5.4 per cent) had anal pain that was fairly severe, and three of these had anal fissures.

Bleeding, small in amount, usually just a streak on the paper or on the feces, occurred in thirty-two cases (28 per cent). Several patients noticed blood only two or three times. When internal hemorrhoids are present, blood commonly comes from these, this is especially true if the hemorrhoids become superficially ulcerated, as may occur with gonorrheal or any other type of infection. The bleeding usually is noted a few days after or accompanies the onset of the rectal infection. In a few instances it occurred from a few weeks to, in one case, three months later.

ONSET OF ANAL SYMPTOMS

In ten cases the patients stated that their rectal disturbances and gonorrhea started at the same time. That they actually did, however, is uncertain. The majority

noticed the rectal soreness or bleeding within three weeks of the onset of the genital infection, but there were a number who had no rectal trouble until after the first month, some subjects not until from two to seven months later.

From a summary of other of my data pertaining only to patients having symptoms of rectal involvement, it appears that rectal infection occurs within the first few days of the genital disease in about one third of the cases, in another third in the first three weeks, and in the remaining third at various times up to several months after the genital infection.

ANAL DISCHARGE

Pus or mucus occasionally may be seen by the physician on partial eversion of the anus by stretching the skin with the fingers, but it is not seen often enough to be of any diagnostic value. Even if present, it is not often noted by the patient because it is of small amount.

PHYSICAL MANIFESTATIONS

In a careful proctoscopic study of the 111 cases referred to there is no appearance of the rectal mucosa

Incidence of Gonorrheal Involvement

Author	Incidence
Almkvist	3.7% of cases of gonorrhea
Mattsson	3.8% of cases of gonorrhea
Scheuer	5.0% of cases of gonorrhea
Buschke	8.0% of cases of gonorrhea
Mucha	10.8% of cases of gonorrhea
Harris	14.0% of cases of gonorrhea
Boas	16.0% of cases of gonorrhea
Huber	24.5% of cases of gonorrhea
Schmidt	27.7% of cases of gonorrhea
Levy Weissmann	25.35% of cases of gonorrhea
Eichhorn	30.6% of cases of gonorrhea
Baer	38.8% of cases of gonorrhea
Busche Klopstock	43.1% of cases of gonorrhea
Birger	41.3% of cases of gonorrhea
Gauss Schultz	75.3% of cases of gonorrhea

Singer's Own Records of Gonorrheal Proctitis

Incidence	Year
3.12%	1920
5.61%	1921
23.8%	1922
12.9%	1923
13.0%	1924
31.9%	1925
32.0%	1926
33.9%	1927

or anal canal characteristic of gonococcic infection. In 28 per cent of the cases, the terminal 6 to 10 cm of rectal mucosa was reddened, in 31 per cent of the cases it was doubtfully reddened and in the remaining 41 per cent the mucosal color was within normal limits. Thus, in well over two thirds of the cases one could not say that there was definite hyperemia of the mucosa. Other types of low proctitis involving the skin junction present similar appearances.

The anal skin at the mucocutaneous juncture was somewhat reddened or the small linear vessels in it were rather prominent in seventy-five of the 111 cases (67.5 per cent), in fifty-five slightly, in sixteen moderately, in one patient severely reddened. Hence in two thirds of our series there was some reddening of the skin margin. Mucopus, generally small in amount and often found as flecks or strings adherent to the wall, was noted in seventy (63 per cent) of the patients. Yellow liquid pus was seen in only six cases and was distributed diffusely over the last inch or last few inches of the rectum. I would emphasize this. The presence of mucopus in the last inch or two of the rectum is the most suggestive finding with respect to the diagnosis

¹⁰ Temesváry, Nikolaus. Rectal Gonorrhea in Women. Zentralbl. f. Gynäk. 54: 3140 (Dec. 13) 1930.

of gonococcic proctitis. It may be the only suggestion toward the diagnosis in a patient who states that she does not have gonorrhea or its symptoms. In the ordinary proctoscopic examination in which the patient is not a gonorrheal suspect, this finding demands the examination of a smear. In the gonorrhea suspect a smear for microscopic study is demanded.

DIAGNOSIS

Diagnosis is based on finding gram-negative intracellular diplococci in the smear made from material swabbed from the bowel wall and the upper part of the anal canal. A number of cultures were made on this last series (of 111 cases) and the procedure was repeated in some cases, but the results were unsatisfactory, as already stated. It is my opinion that a properly interpreted gram stain can be relied on.

COURSE

An early acute phase may occur, but that it is often absent is apparent. The course is slow and tedious, often several months, but cure may follow adequate care in from three to six weeks. Several weeks to months probably is the usual duration, as many patients discontinue treatment before being cured. Gonococcic infection, if untreated, will persist in the rectum a long time. I have found it a year after the initial genital infection. Reinfection definitely cannot be ruled out.

Gonorrheal proctitis is a potential source of genital reinfection. Temesvary states that this does occur, Bickel and Abraham state that it occurs only rarely. My own experience confirms that of the latter authors, who state that "the significance of rectal gonorrhea lies in its being a possible source of infection of the genitalia." In itself, rectal gonorrhea is usually not serious in the white races, in exceptional cases it may cause a stricture. In Negroes, inflammatory rectal stricture is more frequent, and this is regarded by many as an aftermath of rectal gonorrhea.

COMMENT

In women, especially, rectal gonorrhea is a more frequent complication of genital gonorrhea than is generally known. The chief reason why it is regarded as rare is that it is often overlooked. The conception that the infection usually causes a severe rectal inflammation is not true, anal ulcer, rhagades or condylomas are not common concomitants. Perhaps too many students and physicians have obtained their present notions of rectal gonorrhea from the free clinic or hospital dispensary, where Negroes are treated and where proctitis obliterans patients are seen and the probable relation of gonorrhea to the stricture has been stressed.

In 111 cases, three presented superficial fissures, perianal suppurative disease was found in three cases, two presented fistulas and one a short sinus communicating with an inflamed fibrosed crypt. In four patients the mucosa of the terminal rectum had a nodular surface, i. e., the early polypoid change that results from chronic mucosal infection. Superficial erosions, in small spots 1 to 2 mm in diameter, were observed on the mucosa just above its junction with the skin in four instances. No rectal or anal ulcers were encountered. Although a number of these cases were examined with the proctoscope very early in the course of their genital and rectal infections, the very severe cases described by some writers were not observed. Some of the women had much discomfort, especially at defecation, but not

many, and the anorectal inflammation was not uniformly proportionate to the complaint of the patients.

Stuhmer,¹¹ who accidentally conveyed the infection from one patient to twenty-five others by means of an infected glove, has described four phases of the disease. Only the last two usually are seen. In the first phase the mucosa is swollen and fiery red, the mucosal folds are obliterated, the lumen is quite filled with swollen mucosa, and the central orifice is square, irregular or arch shaped. The mucosa bleeds easily and on it there is greenish yellow mucus. The anus is reddened and very sore. In the second phase the swollen redundant mucosa recedes, the normally arched lumen reappears, the redness lessens, seedlike swellings, the color of the adjacent mucosa, are seen, the pus becomes thicker and does not adhere to the wall, and inflammation still is present in the anus. The third phase appears after one or two days, this is the proctoscopic picture commonly seen. There is considerable swelling and redness of the mucosa, the seeded appearance still is generally present, and thread-like pus is noted, which is quite adherent to the bowel wall. The fourth phase is characterized by the persistence of pus on the normal mucosa.

Stuhmer's experience is quite different from that in my series. This may be accounted for in part by the fact that he watched the tissue changes right from their inception. He may have been concerned with a more than ordinarily virulent strain of gonococci, which he transferred. Then, too, the lesions observed by Stuhmer were in men, two of the most severe cases that I have seen were in men, but I am not prepared to state that gonococci cause a more severe type of inflammation in the male than in the female rectum.

TREATMENT

Various procedures have been recommended for the management of the acute stage, for example, rest in bed, a bland diet, hot sitz baths, anal douches, local medication, and the avoidance of instrumentation. However, the disease is not often seen in this stage.

The patients in my series were treated by rectal instillations of 1 ounce (30 cc.) of 5 per cent mild silver protein twice daily. If anal soreness was prominent, an ointment or suppository containing a local anesthetic was employed. The bowels were regulated. The patients were instructed to instill the mild silver protein through an 18 or 20 French soft rubber catheter. No instances were seen in which the catheter traumatized the tissues. Objections to the use of the catheter appear unfounded, it is a practical method of having the patient receive medication at proper intervals. Hayes advocates a blunt-tipped bulb syringe to inject mild silver protein or similar medication. Smears were prepared from the rectal mucosa once a week in order to determine the results of medication.

The patients having fistula in ano were operated on when the disease was chronic but while smears were still positive. The wounds healed normally.

CONCLUSIONS

1. Gonococcic infection of the rectum is a common complication of the genital infection in women.
2. Because symptoms usually are mild and often absent, frequently the lesion is not diagnosed.
3. Routine rectal smears should be made of all women who exhibit a gonococcic infection of the urethra or the

¹¹ Stuhmer, A. The Clinical Course of Rectal Gonorrhea. *Dermat. Ztschr.* 32: 12, 1921.

cervix. Such routine examination is of value in any gynecologic or urologic service.

4 Although rectal gonorrhea usually is not serious in itself it is of some importance as a possible source of reinfection. Because it persists in the rectum after the genital tract is clear, the rectum must be considered as a source of reinfection when all other possibilities have been excluded.

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ABSTRACT OF DISCUSSION

DR. HERBERT T. HAYS, Houston, Texas. Many cases of rectal gonorrhea are not found unless they are looked for, and in white women especially they may be asymptomatic. Dr. Martin reports the occurrence of gonorrheal proctitis following genital gonorrhea in women in from 25 to 42 per cent, but in my experience it has been slightly higher. The diagnosis is easily made in early cases, but in the chronic cases, which are often associated with complications such as stricture and fistula, repeated smears are necessary to discover the organisms. Dr. Martin suggests the use of 5 per cent mild silver protein in gelatin twice daily instilled with a catheter. I usually use the mildest silver solution possible and instill it with a blunt-tipped syringe placed against the anus forcing the liquid in by pressing on the bulb. I have thought this more advisable in the early cases than inserting any instruments into the rectum, as I believe any trauma to this already inflamed mucosa is likely to cause trouble. In the more advanced cases, however, I do not think there is any contraindication to the insertion of a catheter and irrigating the rectum. Gonorrheal proctitis is often very persistent, but this is the case when there are certain types of lesions which harbor the infection. Most important of these are stricture of the rectum, fistula-in-ano, hemorrhoids, cryptitis, prolapse and fissure. It seems especially hard for these cases to immunize themselves, and it is best to operate on these complicating factors and eliminate them if possible. I have had to do this in a number of chronic cases and the wound healed satisfactorily but required rigid after-care. In most instances gonorrheal proctitis in white women will clear up without any complications. If complications do arise, they can be eradicated and cured except in the few cases in which a stricture develops. However, in Negro women there is quite a different history. Treatment is exceedingly unsatisfactory and many develop a rectal stricture, the infection persists for years, and they are more or less permanently incapacitated.

DR. CURTICE ROSSER, Dallas, Texas. Dr. Martin's description of the course, symptoms and complications in his cases confirm in many details my observations in a much smaller group reported before this section in 1933. Reddening not ulceration of the mucosa, of the upper anal canal and of the skin of the lower anal canal and mucopus, occasionally yellow, were the two variations from normal most commonly seen through the proctoscope. Dr. Martin makes no mention of the role the anal crypt plays in "anal gonorrhea." I must continue to urge the use of this term as more accurate and descriptive than "rectal gonorrhea" for a condition in which the major lesions, the crypts in which the organisms secrete themselves in the chronic stage and the complications are all in and about the anal canal not in the ampulla of the rectum. My conviction that the anal crypts serve as reservoirs of infection in anal gonorrhea was first expressed before this section eight years ago. In 1933 I emphasized this contention by reporting cases in which crypt infection was directly observed. Such complications as abscess, fistula, erosions and granulations of the mucosa above and adjacent to the dentate line are best explained by the presence of a chronic infection in the anal crypts, hidden foci analogous to the urethral glands and prostate in gonorrhea of the conventional type. The work of Tucker and Hellwig reported this year is further confirmation of the fact that the gonococcus embeds itself in and about the crypts of Morgagni. While Dr. Martin like other writers, has almost studiously avoided mention of the anal crypts the lesions he relates serve as confirmatory evidence of their importance in the disease. The author called atten-

tion to the fact that chronic gonorrheal infection may persist long after all symptoms subside and be a potential source of reinfection. Vigorous treatment directed to the anal crypts in the chronic stage is the logical answer to these facts.

DR. CLAUDE C. TUCKER, Wichita, Kan. At the City and County Clinic for the past year I have asked that all persons with a positive vaginal finding of gonococci be sent to my clinic for proctoscopic examination. Many had no symptoms, but a big percentage showed positive smears with duct and crypt infection. The anal ducts are the foci of infection, the anus being constantly bathed in pus, especially at the time of defecation. The gonococci enter the ducts through the crypts of Morgagni. Gonorrheal infections in the anal ducts, periurethral and prostate, give the same microscopic picture. Embryologic studies have shown that the anal ducts, the paraurethral ducts in the female, and the prostate gland in the male develop from the same structures, namely, the embryologic cloaca. Anal ducts play apparently the same role in gonococcal reinfection as do the prostatic and paraurethral ducts.

DR. CLEMENT L. MARTIN, Chicago. One of the chief reasons for presenting this paper was to record the usual clinical and proctoscopic picture of rectal gonorrhea. I wish to avoid distortion of this picture by overemphasis of crypt and duct infection. The data in this series speak for themselves. I am following the work of Tucker and Hellwig with much interest. The anal duct phase was purposely omitted. That the anal ducts constitute an important factor in the persistence of rectal infection is a logical assumption. That such ducts exist is proved, but that they are always or even generally present has not been sufficiently demonstrated. That they are normally present is certainly possible and I hope that the work of Tucker and Hellwig and those who are trying to verify their observations will settle the point. The small percentage of this series having demonstrable lesions resulting from duct or crypt infection suggests on its face my being conservative until further pathologic data from excised tissue are available.

SYMPTOMS IN EARLY STAGES OF INDUSTRIAL PLUMBISM

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[EDITORIAL NOTE.—This paper together with the papers of Drs. Gray and Belknap which follow it concludes the symposium on lead poisoning. In the last issue were published the papers of Lanza of Aub and of Kehoe, Thammann and Cholak.]

My purpose in this paper is to review briefly, from the point of view of the industrial physician, the various signs and symptoms commonly associated with plumbism and to discuss more fully some of those observations which may usually be considered of the greatest value in its early diagnosis. It is obvious to those acquainted with this problem in industry that efforts to reduce the incidence of industrial plumbism will be greatly handicapped if emphasis is not placed on such observations as may be considered presumptive evidence of lead absorption or lead intoxication.

From an early date medical literature has been replete with reports dealing with the toxic effects of lead. With few exceptions the signs and symptoms considered in the present discussion have been fully described by early medical workers. Later scientists are to be given credit for experimental studies made to determine the action of lead on the body tissues, and definite contributions have been made by those groups studying hygienic conditions in industry and their relation to the health of the men employed.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

Many conditions may influence the reaction of the tissues to lead. Such personal factors as past and present illnesses, age, hygienic habits and constitutional development, and such physical factors as type and amount of lead absorbed, its rate of absorption or solubility in the body fluids, and the like, all affect the body's response to this metal.

A complete record of all the signs and symptoms that have been reported to be associated with plumbism would of necessity contain most of those common to all body ailments. This discussion is purposely limited to those signs or symptoms which are most frequently exhibited. Although no single sign or symptom may be considered pathognomonic of plumbism, certain interest may be attached to the characteristic grouping of these symptoms and the period in the course of the disease when they are usually manifested.

The present remarks are based on a review of the literature and on observations made on men employed in the storage battery industry.¹ In all, about 1,500 storage battery employees were observed during a period of nearly two years, from June 1928 to February 1930. These workers may be considered in two classes (A), a group suspected of plumbism reporting to the clinic for examination, and (B), a group actually on compensation for lead poisoning.

For convenience the common symptoms are considered in groups referable to the system involved. By a further classification of them within groups according to the period in the course of the disease when they are usually manifested, it is possible to offer a summary, which, in general, may serve as a basis for making a diagnosis of

- 1 Abnormal lead absorption
- 2 Incipient lead intoxication.
- 3 Definite lead poisoning

It must be borne in mind, however, that proper and valid interpretation of such signs is arrived at only after due consideration of other facts elicited through the taking of a complete occupational and past medical history.

COMMON SIGNS AND SYMPTOMS

General Appearance—Although it is possible for plumbism to develop without producing much, if any, change in the general appearance of an individual, close observation of persons possibly exposed to a lead hazard will often reveal suggestive evidence of abnormal lead absorption. Some of those changes most frequently observed are shown in table 1A. The most common may be the development of a lead line at the margin of the gums, about which much has been said. Its presence is indicative of the absorption of lead at some time. The same, however, might be due to the absorption of lead at so slow a rate as would not necessarily cause disability. Furthermore, it is often more pronounced in those cases in which mouth infections have been neglected. Less than half of the battery workers suffering from plumbism showed this sign. That it cannot be relied on as early evidence of lead intoxication is shown by the fact that many severely poisoned persons do not show any trace of a lead line, while others with no definite evidence of intoxication may exhibit marked lead lines.

One of the most significant, so far as indicating that the absorption is recent, is a perceptible change in the individual's disposition. Such persons are prone to be easily flustered and may appear moody. Because of such changes, men were sometimes ordered to the clinic for examination by their foreman.

Early suggestive evidence of incipient lead poisoning, aside from the lead line, is sometimes indicated by the sclera becoming slightly jaundiced. Aub and his co-workers² state that pallor is the most constant sign

TABLE 1—Common Signs and Symptoms Observed in Cases of Plumbism and Excessive Absorption of Lead

Suggestive Evidence of Lead Absorption	Suggestive Evidence of Incipient Intoxication	Suggestive Evidence of More Advanced or Definite Plumbism
	A General Appearance	
Restless, moody, easily excited, flustered	Pallor	Anemia
Lead line	Lead line	Lead line
	Jaundice	Jaundice
		Emaciation
		"Premature aging"
	B Digestive System	
Persistent metallic taste	Metallic taste	Metallic taste
Slight loss of appetite	Definite loss of appetite	Increased loss of appetite
Slight constipation	Coated tongue	Nausea and vomiting
	Slight abdominal colic	Coated tongue
	Constipation	Marked abdominal colic
		Rigid abdomen
		Marked constipation
		Blood in the stool
	C Nervous System	
Irritable	Slight headache	Increased headache
Uncooperative	Insomnia	Increased insomnia
	Slight dizziness	Increased dizziness (ataxia)
	Palpitation	Confusion
	Increased irritability	Marked reflex changes
	Increased reflexes	Tremor
		Fibrillary twitching
		Neuritis
		Visual disturbances
		Encephalitis (hallucinations, convulsions, coma)
		Paralysis
	D Miscellaneous Changes	
None	Muscle soreness	General weakness
	Easily fatigued	Joint pains
	Hypotension	Hypertension
	E Urine Examination	
Positive test for lead	Positive test for lead	Positive test for lead
	Trace of albumin	Increase in albumin and casts
	Few granular casts	Hematoporphyrin present
		Hematuria
	F Blood Changes	
Polycythemia	Normal red blood cell count and normal hemoglobin	Decrease in hemoglobin
Polychromatophilia	Further increase in reticulocytes	Decrease in total number of red blood cells
Increased platelets	From 50 to 100 stippled cells per hundred thousand erythrocytes	Increase in all forms of nucleophilic cells
Percentage of reticulocytes about doubled		Increase in percentage of mononuclears
		Anisocytosis and poikilocytes
		Nucleated red cells present in the peripheral circulation
		Decreased platelets

of early intoxication. In the group of battery workers, considered as a class, showing signs of incipient lead poisoning, jaundice was more often recorded than was pallor, but in the group on which a definite diagnosis of lead poisoning was made pallor was found as frequently as any early change in general appearance.

The most common subacute and chronic forms of plumbism, in addition to the symptoms noted earlier, are usually accompanied by certain changes in the physical appearance, best described by the term "premature aging." These patients are characterized by their list

¹ Russell, A. E., Jones, R. R., Bloomfield, J. J., Britten, R. H., and Thompson, L. R. *Lead Poisoning in a Storage Battery Plant*. Pub. Health Bull. 205, 1933.

² Aub, J. C., Fairhall, L. T., Minot, Anne S., and Reznikoff, Paul. *Lead Poisoning*. Medicine Monographs, Baltimore: Williams and Wilkins Company, 7, 1926.

less attitude, stooping posture, apparent loss of weight, strength and muscle tone, and general anemic condition. This premature aging and wasting may persist long after removal from exposure.

Digestive System—Some observers believe that the signs and symptoms referable to the digestive system are those most frequently found to be the earliest evidence of lead absorption and intoxication. In table 1 B are given those signs which will probably be most commonly exhibited because of changes in the normal digestive processes, arranged according to the period in the course of the disease when they are most likely to occur.

In our group of workers suspected of plumbism, such signs as a persistent metallic taste, slight loss of appetite for the morning meal, and a tendency to constipation were sometimes complained of when no other cause for their presence was elicited than that the patients might be absorbing abnormal amounts of lead. An increase in these symptoms and further evidence, such as a foul breath and coated tongue and slight abdominal colic, was noted in those cases proved to be incipient lead poisoning. All these signs were exaggerated in the moderate or advanced cases. The colic associated with plumbism is usually quite marked. It was complained of in more than 90 per cent of the battery workers in whom definite cases developed and by all those affected sufficiently to be entitled to compensation. Not only was the colic more severe in the advanced cases but also, during an attack, the abdomen would become very rigid. Another feature of this colic associated with plumbism is that the pain is somewhat lessened by pressure on the abdomen. The patient is prone to hold the hands firmly over the abdomen during an attack of colic or, if he is able to be up and about, will stop and bend over the back of a chair or some other object, since firm and continued pressure will usually bring some measure of relief. In some patients, obstipation develops which necessitates drastic measures to overcome it. Marked loss of appetite, nausea and vomiting were common. Occasionally, following severe colic, blood may be found in the stool.

Nervous System—The signs and symptoms referable to the nervous system are of special importance in the detection of early evidence of abnormal lead absorption. In table 1 C the signs and symptoms associated with nervous changes resulting from lead absorption are shown, classed in groups denoting the time when they were most often evident.

The group of workers suspected of lead poisoning all showed mild signs of increasing irritability and nervousness, usually before they offered any complaints. The group that proved to be suffering from plumbism invariably gave a history of such nervous symptoms having antedated the more severe manifestations of lead poisoning. They often remembered that they had been subject to slight headaches, which tended to clear up after they had been at work for a few hours. This, at that time, they were prone to account for by the fact that they had not slept so well or that the bowels were slightly constipated. Of course, loss of sleep and worry from any number of causes may produce like symptoms, but careful questioning will in most cases enable the examiner to judge whether there are other reasons to account for such nervous symptoms. Failing any other explanation for the exhibition of these early nervous signs by persons with a known or suspected exposure to lead, one may advantageously accept this

as presumptive evidence of abnormal lead absorption or incipient intoxication. The tremor and fibrillary twitching appearing somewhat later are comparable to that associated with alcoholism. It is more noticeable when stimulated by external irritation or fatigue. This fine fibrillary twitching was most often observed in the muscles of the face and upper extremities and was more pronounced when the person was tired. The workers presenting objective nervous signs often complained of dizziness and headache and seemed to have lost interest in their work. Occasionally, one of the earliest complaints was palpitation, more noticeable after the day's work. In my experience visual disturbances were seldom mentioned, even by those off duty because of plumbism. Wrist drop, so often reported as resulting from lead poisoning, was not observed among the group of storage battery workers, nor was there any record of the condition developing among previous employees at that plant. Reflex changes were noted in more than 70 per cent of the cases of definite plumbism. These changes are of particular interest when those examined are considered in two groups. One group, suffering from their first attack, showed increased reflex action. This increase was quite marked, especially in those cases of poisoning showing marked irritability, rigid abdomen and rapid development. On the contrary, those suffering from relapses or repeated attacks, in whom the condition had progressed to a more chronic stage, commonly showed an appreciable decrease in reflex action.

Some of the nervous signs indicating cerebral involvement, such as the development of delirium, hallucinations, maniacal tendencies, convulsions and coma, were not observed among the storage battery employees. One case was observed in which the initial diagnosis was encephalitis, however, this case was not fatal and occurred in a man who was afterward discovered to have been previously an inmate of the state insane asylum.

Miscellaneous—Those changes chiefly associated with general nutrition and muscular development, but also closely related to the neurocirculatory systems, are listed in table 1 D.

Early in cases of definite plumbism the individual will often complain that he tires easily and is aware of a vague muscle soreness, the latter affecting usually the muscles of the back and thigh. Some of the cases, possibly too few to be of statistical significance, were found in the early stages to exhibit a slight hypotension. Weakness was not an early symptom. When complained of early in the development of plumbism, it could be in part at least attributed to a lack of nourishment and rest resulting from loss of sleep and dietary restrictions. In more advanced and usually more chronic cases there is a frequent complaint of definite loss of strength and weight and a constant tired feeling even after a prolonged rest. Joint pains are particularly likely to be chronic and are often difficult to interpret satisfactorily. Hypertension, which has sometimes been reported as associated with chronic plumbism, was not shown to be more frequent among the group of battery workers than it has been shown to occur among other workers of similar ages. This may be explained by giving consideration to the relative rapidity with which many of the cases developed.

LABORATORY OBSERVATIONS

Aside from the signs and symptoms observed by questioning and by examining workers suspected of

absorbing abnormal amounts of lead, all agree that certain facts to be learned from laboratory examination of the blood and urine are almost indispensable. Some of the more common changes that may be looked for in making an examination of the urine excreted by persons who may be exposed to a lead hazard are given in table 1 E.

By spectroscopic examination of the blood and other body fluids it has been proved possible to demonstrate definite evidence of lead intake, however, such procedures are not always adaptable to routine use by the average physician. In recent years a roentgen examination of the bones also has been shown to be an aid in detecting evidence of lead absorption.

Examination of Urine—The presence of albumin and granular casts in urine excreted by persons previously well, when accompanied by other evidence of lead intoxication, may serve to indicate somewhat the degree of lead poisoning. No one will question the finding of abnormal amounts of lead in the urine as evidence of absorption. Some discussion and disagreement have accompanied the efforts of workers to establish what may be accepted as the maximum amount of lead that may be found in urine excreted by persons normally. Badham³ believes that the presence of more than 0.05 mg. of lead per liter of urine is evidence of mild lead poisoning if accompanied by other evidences of the disease. Kehoe and his associates⁴ report finding as much as 0.08 mg. of lead per liter of urine excreted by normal persons with no known exposure to lead. Aub² is of the opinion that too much weight should not be placed on the presence or absence of lead in the excreta, owing to the fact that during exposure lead is not always excreted and that its presence does not always mean intoxication. Under certain conditions, excessive lead found in the urine of persons with a known or suspected exposure to lead, who on previous examination were not found to excrete abnormal amounts, would indicate recent absorption possibly earlier than other changes. Nevertheless, from the point of view of the average physician, owing to the equipment, training and time required for making such chemical examination, this method of detecting early absorption of lead is not so practical as other laboratory procedures.

Some writers report the finding of hematoporphyrin in the urine as one positive evidence of lead poisoning. I found this to be so in but a small percentage of cases, and others report that it is not a constant finding.

Blood Changes—Many of the restrictions applicable to the acceptance of lead in the urine as an early sign of lead absorption hold also for positive blood changes. Microscopic examination of the blood, however, is much more practical, and when observations so obtained are considered in the light of knowledge gained by the history and the physical examination, they furnish information of real value in making a diagnosis. Some of the more common changes in the blood picture to be looked for in various degrees of lead absorption are given in table 1 F.

Various degrees of anemia are shown by patients suffering from chronic lead poisoning, but this has not

been proved to be an early sign of the effects of lead absorption. The changes in the morphology of the red blood cells parallel the decrease in total number and the decrease in the amount of hemoglobin. In about 5 per cent of the cases of chronic plumbism this anemia had progressed to the point at which nucleated red blood cells were found in the peripheral circulation.

Another point of interest, concerning which little mention has been made, is the fact that some of the more advanced cases of plumbism will show a decrease in the number of blood platelets. Some of the early cases, on the other hand, will show an increase in platelets at the time when a definite condition of polycythemia is present. In a group of forty-two cases of moderately severe plumbism, I found an average platelet count of 130,000 per cubic millimeter, as compared with similar counts made on controls, which ranged from 250,000 to 700,000. No case presenting a decrease in platelets showed any special tendency to hemorrhage.

The reduction of platelets in chronic cases may be explained by the other changes in the blood picture and alterations present in the bone marrow. Aub and his associates² report that the irritating effect of lead on the bone marrow ultimately produces a definite change, resulting in a decreased output of normal blood cells, the release of immature red cells and a relative increase in the number of mononuclear leukocytes.

Because considerable change must take place in the bone marrow before a reduction in the number of platelets is manifested, the finding of such a decrease is of no value in the detection of early lead poisoning. This finding assumes particular significance in determining the extent of bone marrow injury and the advisability of permitting persons presenting this sign to be subjected to further exposure.

In the group examined who were on compensation for plumbism, a relative increase of a slight degree in the number of mononuclear cells was found more often than was a decrease in platelets. However, neither of these changes was noted in those cases showing the earliest and minor signs of lead absorption or incipient intoxication.

There is one blood change that is generally considered of extreme importance as a sign of lead absorption and is very practical in its application. The cases of plumbism that show no increase in the number of basophilic cells are usually of such long standing and so far advanced that no trouble is experienced in making a definite diagnosis. While the phenomenon of stippling has never been fully explained, the presence of stippled cells in blood films made from persons suffering from plumbism has been given more consideration than any other one finding. It is true that stippled cells will be found in the blood of persons suffering from other conditions associated with various degrees of anemia, but in no other disease are stippled cells found in such numbers in the absence of other major blood changes. In cases of acute lead poisoning it is possible that their presence will be one of the earliest signs of lead absorption but since most industrial lead poisoning is of a chronic form there are other signs that will be present as evidence of basophilia before the appearance of the stippled cell.

As mentioned previously, often the early effect of lead on the marrow is of such a nature that instead of a decrease in the total number of erythrocytes there is

³ Badham, C. Lead Poisoning. Studies in Industrial Hygiene No. 7, report of the Director General of Public Health, New South Wales for the year ended Dec. 31, 1925.

⁴ Kehoe, R. A., Thammann, Frederick, and Cholak, Jacob. On the Normal Absorption and Excretion of Lead. II. Lead Absorption and Lead Excretion on Modern American Life. *J. Indust. Hyg.* 15: 273 (Sept.) 1933.

actually a condition of polycythemia Alice Hamilton⁵ states that the stippled cells are really degenerated reticulocytes. Whether these cells are degenerative forms may not be proved conclusively, but in recent years, particularly, sufficient evidence has been produced to prove that they are the juvenile red blood cell. The work of Key⁶ and earlier works of Askanazy,⁷ Biondi,⁸ Hawes,⁹ Robertson¹⁰ and others give satisfactory evidence that stippled cells are but one manifestation of polychromatophilia. The work of Schwarz,¹¹ Seiffert¹² and McCord¹³ is based on this principle. Certainly if the basophilic cells or reticulocytes are the ones eventually to become stippled, owing to the action of lead, an early increase in such cells is to be expected before stippling to any great extent will become manifest. Therefore the particular method of examining the blood for the smallest increase in these new cells should furnish the earliest evidence of any irritating or toxic action of lead, especially in those persons recently exposed for the first time who previously have shown no increase in percentage of reticulocytes. McCord's method of estimating the increase in basophilia is a distinct improvement over that of counting only the stippled cells from a fixed preparation. Owing, however, to the fact that by his technic it is not possible to measure this increase when it is slight, some of its advantage is lost. Any standard method of estimating an increase in reticulocytes should give positive evidence before that obtained by a thick drop method. In the work reported here a slightly different basic staining technic was used than the techniques described by Schwarz,¹¹ Seiffert¹² or McCord¹³. However, in principle they were all based on the method proposed by Ehrlich¹⁴ for staining the basophilic substance in the erythrocyte. By using thin films and fixing but half of the film through its long dimension, not only was I able to estimate the number of cells in which a given number of reticulocytes were found but also the fixed portion furnished a preparation from which the number of stippled cells per million erythrocytes could be estimated. Further study of this method proved that the reticulocyte counts obtained by such a technic were the same as those obtained when vital staining methods were used.¹⁵ Probably one of the clearest demonstrations of the relationship between the diffuse polychromatic cell, the punctate basophilic cell and the reticulocyte is given by the report of Whitby and Britton¹⁶. A summary of this report states that "polychromasia and stippling are both manifestations of the

phenomenon of reticulation. The polychromatic cells of Leishman stained films and the reticulocyte of supravital stained films are identical and normal. Stippling is the same chromatic substance slightly altered by lead or other poison. The alteration appears to have no effect on the efficiency or life of the cell."

In the present study a parallel increase in reticulocytes was found with the increase of stippled cells, but this increase in reticulocytes was always manifested prior to the finding of a significant number of stippled cells. In more advanced cases the reticulocyte count was always much greater than that of stippled cells. Cases were examined that showed stippled cell counts as low as 6 per hundred thousand erythrocytes, and reticulocyte estimations made on these individuals at the same time showed from two to three times as many as are normally present. To determine the stippled counts when they occur in such small numbers requires from two to three hours, while the accompanying increase in reticulocytes may be determined in a few minutes. Table 2 shows the correlation of the stippled cell and the reticulocyte count and the marked increase in the number of reticulocytes to be found early in the course of lead absorption.

TABLE 2—Correlation of Stippled Cell and Reticulocyte Count

Stippled Cells per 100 000 Red Blood Cells	Ratio of Number of Reticulocytes Found in Workers Suspected of Plumbism to the Number Found in Nonexposed (Applicants)
Applicants	
None	1 00
Workers showing:	
Less than 6	2.00
6 to 9	3.31
10 to 62	4.18
63 to 159	5.34
160 to 399	8.78
400 to 999	18.73
1,000 to 1,599	22.71
1,600 to 2,499	27.90
2,500 to 3,999	38.01

I saw men removed from exposure, or whose working environment was improved because this early change was manifested, in whom disabling plumbism did not develop, while in others who were left until greater increases were noted, plumbism developed to the extent that they lost time from work, and some actually were placed on compensation for lead poisoning. Aub² reports reticulocyte counts of from 6 to 16 per cent in two lead colic patients with erythrocyte counts of approximately $3\frac{1}{2}$ million. Fleckel and Tschernow¹⁷ reported a method of classifying the degree of lead absorption in individuals by the percentage of their red blood cells showing reticulations. Bottrich¹⁸ also reports on the usefulness of this finding in cases of plumbism. I. M. Flekel¹⁹ reports the value of reticulocyte estimation in diagnosis in cases of chronic lead enterocolitis. It must be remembered, however, that the presence of an increase in reticulocytes is due to the same cause that later leads to the presence of abnormal numbers of stippled cells in the blood, and therefore records of counts made before exposure and at intervals during exposure are of importance in judging the change produced.

5 Hamilton Alice. Industrial Poisons in the United States. New York: Macmillan Company, 1929.

6 Key J. A. Studies on Erythrocytes with Special Reference to Reticulum Polychromatophilia and Mitochondria. Arch. Int. Med. 28: 511 (Nov.) 1921.

7 Askanazy S. Ueber ein interessantes Blutbefund bei rapid letal verlaufender perniciouser Anämie. Ztschr. f. klin. Med. 23: 80-92 1893.

8 Biondi C. Alterazioni ematiche in alcuni avvelenamenti. Osservazioni preliminari sulla granulobasofilia e sulla polichromatofilia degli eritrociti. Folio haemat. 6: 443 1908 (abstract).

9 Hawes J. B. A Study of the Reticulated Red Blood Corpuscle by Means of Vital Staining Methods. Its Relation to Polychromatophilia and Stippling. Boston M. & S. J. 161: 493 1909.

10 Robertson O. H. The Effects of Experimental Plethora on Blood Production. J. Exper. Med. 28: 221 (Aug.) 1917.

11 Schwarz L. Ueber Blutuntersuchungen bei Bleikrankheitsverdacht. Med. Klin. 17: 659 (May 29) 1921.

12 Seiffert G. Zur Methodik der Blutuntersuchung. München med. Wchnschr. 69: 1595-1596 (Nov. 17) 1922.

13 McCord C. P. Minster Dorothy K. and Rehm Mathilde. The Basophilic Aggregation Test in Lead Poisoning. J. A. M. A. 82: 1759 (May 31) 1924.

14 Ehrlich Paul. Beobachtungen am anämischen Blut. Berlin klin. Wchnschr. 43, 1881 No. 3.

15 Jones R. R. The Estimation of Basophilic Cells (Reticulocytes) by Examination of Ordinary Blood Film. Pub. Health Rep. 48: 1011 (Aug. 18) 1933.

16 Whitby L. E. H. and Britton C. J. C. The Relation of the Stippled Cell and the Polychromatic Cell to the Reticulocyte. Lancet. 1: 1173 (June 3) 1933.

17 Fleckel I. and Tschernow I. Zur Frühdiagnose der Bleivergiftung. Zentralbl. f. Gewerbehyg. 7: 65-72 (March) 1930.

18 Bottrich. Die Bedeutung der basophil getüpfelten roten Blutkörperchen speziell für Begutachtung von Bleikrankheiten. Zentralbl. f. Gewerbehyg. 9: 328 (Feb.) 1932.

19 Flekel I. M. Diagnosis of Chronic Lead Enterocolitis. Presence of Reticulocytosis. Soviet vrach gaz. July 15 1932 p. 793.

DIAGNOSTIC STANDARDS

The Committee on Lead Poisoning of the American Public Health Association²⁰ has given an excellent discussion on the subject of standards of diagnosis based particularly on the degree of disability indicated by certain groups of signs. It realized that much of the confusion existing in the ranks of the medical profession regarding the diagnosis of plumbism, its degree and the amount of disability, was due to the lack of uniformity in terminology used to express opinions. Its report contains a classification of terms used and it supplies definitions applicable to their use. This report properly emphasizes the necessity of obtaining complete occupational and medical histories and the consideration of all such information as may be gained from them along with the results obtained from careful physical examination and laboratory studies.

Newman, McConnell, Spencer and Phillips²¹ devised such a standard for use in the particular study that they were carrying on among a group of pottery workers. This standard as applied to their work aided greatly in the making of an orderly analysis of their records, and some such method is often quite necessary in the making of a statistical analysis of observations from a group. However, if such standards were closely relied on in the individual case as seen by the physician, some errors in diagnosis would certainly follow.

Often one finds references to such standards as proposed by Badham³ and others, which have been suggested to be of value when necessary to express the stage or severity of initial attacks of lead poisoning.

Aub and his associates² in their monograph on lead poisoning offer helpful criticism regarding the value of such standards. In brief, it is their opinion that these standards place too much significance on a single symptom, regardless of the degree of change indicated by it. They state that in the last analysis the diagnosis of plumbism must depend on keen judgment and that no fast rules can be adopted.

For the purpose of classifying the degree of disability associated with an attack of plumbism, it may seem advantageous to outline some group of symptoms that may usually be assumed as indicative of the severity of the attack, but, as an aid in making a diagnosis before definite intoxication, these standards are less practical. In each instance, all factors must be considered and the same procedure followed in arriving at a diagnosis as is necessary in other disease presenting constitutional reactions that are so varied and extensive.

SUMMARY

In dealing with the problem of industrial plumbism, emphasis should be placed on those signs and symptoms commonly exhibited early in the course of absorption or intoxication. All observations should be considered in their relation to the entire clinical picture in order to arrive at a diagnosis, especially in the preintoxicative stage. All changes listed as presumptive evidence should be thoroughly investigated. From a practical point of view it is believed that, by careful watching for an early reticulocyte response, the physician will be able to detect evidence of lead absorption prior to the development of definite plumbism.

RECENT PROGRESS IN THE TREATMENT OF PLUMBISM

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The opportunity for studying a group of patients with lead poisoning was afforded because of the contentious situation that arose in the adjudication of their disability. In one group of individuals a diagnosis of chronic lead poisoning had been made from six months to two years prior to coming under my observation. The problem that arose was to determine whether or not protracted subjective symptoms were due to chronic lead poisoning and, if so, to institute a method of treatment. There were nine patients in this group.

In a second group, more recently exposed to either the ingestion or the inhalation of lead, a diagnosis of subacute lead poisoning had been made. The problem here was to determine the best type of treatment to bring about recovery. There were four patients in this group.

In a third group (two patients) it was alleged that subjective symptoms of recent origin were due to contact with lead over a period of many years. The problem was to determine whether or not lead was a causative factor in the production of symptoms.

LITERATURE

Recent progress in the treatment of lead poisoning has been due largely to the studies of American investigators. A knowledge of conditions hindering or favoring the liberation of lead is naturally of importance. In 1926 Aub, Fairhall, Minot and Reznikoff¹ published their observations on the excretion of lead following an exhaustive investigation on lead metabolism in man and in cats. They found that lead could be either stored or excreted by distorting the calcium metabolism. A negative calcium balance increases the rate of lead excretion, while a positive calcium balance favors the storage of lead. The rate of lead excretion can further be increased by the addition of ammonium chloride or phosphoric acid. "Deleading" treatment is to be recommended only when acute active symptoms are not present. In further studies Aub and Hunter² show that the parathyroid hormone increases the rate of lead excretion in patients suffering from lead poisoning.

Recently, Kehoe, Thamann and Cholak³ have made careful and intensive studies on the normal absorption and excretion of lead. Their studies on the behavior of lead in the human organism are important contributions to knowledge. Kehoe has advised against the administration of agents which are believed known to promote a quick release of lead from the tissues. He and his co-workers call attention to the danger of "deleading" rapidly and the possible storage of this mobilized lead in the central nervous system.

From the Department of Medicine, Jewish Hospital.
Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

¹ Aub, J. C., Fairhall, L. T., Minot, Anne S. and Reznikoff, Paul. Lead Poisoning. Medicine Monographs, Baltimore: Williams & Wilkins Company, 7, 1926.

² Aub, J. C. and Hunter, Donald. Lead Studies. XV. The Effect of the Parathyroid Hormone on the Excretion of Lead and Calcium in Patients Suffering from Lead Poisoning. Quart. J. Med. 20 (Jan.) 1927.

³ Kehoe, R. A., Thamann, Frederick, and Cholak, Jacob. On the Normal Absorption and Excretion of Lead. J. Indust. Hyg. 16:257-300 (Sept.) 1933. Kehoe, R. A. and Thamann, Frederick. The Excretion of Lead. J. A. M. A. 92:1418 (April 27) 1929.

²⁰ Report of the Committee on Lead Poisoning, American Public Health Association, presented before the Industrial Hygiene Section at the annual meeting in October 1929.

²¹ Newman, B. J., McConnell, W. J., Spencer, O. M. and Phillips, F. M. Lead Poisoning in the Pottery Trades. Pub. Health Bull. 116, May 1921.

In 1932 Shelling⁴ studied the effect of dietary calcium and phosphorus on the toxicity of lead in the animal. He states that the deposition of calcium phosphate in the course of normal ossification, or the deposition of other insoluble phosphates such as lead, can occur only when the phosphorus intake is adequate for the deposition and for the excretion of the excess cations as the insoluble salts in the feces. On theoretical grounds, he believes, it would seem logical that if the aim in the treatment of lead poisoning is to deposit or excrete the lead in an insoluble or innocuous form, such as the phosphate, an abundance of phosphorus or foods containing phosphorus should be supplied. In his experimental work on rats he showed that the introduction of large amounts of calcium without phosphorus diverts the available phosphorus to rid the body of the excess calcium as the phosphate and thus interferes with the formation of such a compound with lead. Shelling injected colloidal lead phosphate into rabbits and fed them diets very high in calcium or high in phosphorus and the results were in accord with his previous observations, i. e., that the high calcium diets are more toxic than the diets high in phosphorus. As the result of his experimental work, Shelling believes that phosphorus is important in depositing lead in the bones and also in "deleading." "Deleading" may be accomplished by giving a diet low in calcium and relatively high in phosphorus, so that the cations removed from the bones are excreted as the insoluble phosphates. It has also been shown by Bischoff⁵ and his co-workers that lead added to serum is less toxic than ordinary lead and that colloidal lead phosphate possesses the same degree of toxicity as lead in serum. Apparently the addition of lead to serum forms a colloidal lead phosphate, which is not as toxic as any other form of lead. The addition of phosphate to the diet and subsequent increase of phosphate in the blood may produce this lead phosphate combination *in vivo*.

That disturbances of metabolism play an important part in the liberation of lead stored in the system was suggested by Shie,⁶ but as early as 1861 Gussierow⁷ made the statement that the desirable condition of having lead permanently stored in the bones probably does not exist.

DIETS EMPLOYED (LOW CALCIUM, HIGH PHOSPHORUS)

In some of the cases treated early, the low calcium diet as recommended by Aub and his associates¹ was used, which consists of meat, liver, potato, rice, tomatoes (cooked without milk), canned corn, bananas, apples (peeled), tea, coffee (without milk), butter fat, bread (prepared without milk, such as salt-free nephritic bread or sodium bicarbonate biscuits or crackers), sugar, salt, pepper. In addition, at varying intervals, the patients were given phosphoric acid and ammonium chloride. Catharsis by the use of magnesium sulphate was continued during treatment. Following the report by Shelling⁴ of his experimental work a diet

was arranged so as to have a low calcium-high phosphorus content, with the ratio 1-3 or 1-4. The vitamin and caloric content is sufficient for daily need. Vitamin D, however, was deficient in the diet and 20 minims of viosterol (250 D) daily was added.

CASES ILLUSTRATIVE OF "DELEADING" IN CHRONIC PLUMBISM

These patients had been exposed to lead absorption over a period of years. Symptoms had been present in this group from six months to two years and had arisen during the period when it was reasonable to assume that lead was being absorbed. A diagnosis of chronic lead poisoning had been made in these individuals and compensation was awarded on the basis of their occupational disease.

The physical examination in all these individuals failed to show any objective evidences indicative of plumbism.

A modification of the method described by Fairhall⁸ was used in examining the excreta for lead. All cases were treated and studied under hospital supervision.

CASE 1—History—S. P., a man, aged 34, had been employed as a painter for thirteen years. In December 1931 he began to complain of abdominal cramps, occasional vomiting and increasing constipation. A diagnosis of lead poisoning was made. He stopped working and has had no exposure to lead since. He came under my observation early in 1933 complaining of weakness, poor appetite, occasional vomiting and constipation.

Examination—On physical examination he was well developed. Examination was essentially negative. The blood pressure was 126 systolic, 78 diastolic.

In the control series there was no lead present in 1,200 cc. of urine (twenty-four hour specimen) or in 30 Gm of stool.

The blood showed red blood cells, 4,350,000, hemoglobin, 86 per cent, platelets, 180,000. The red blood cells were normal in appearance, with no stippling.

Treatment and Results—The "deleading" treatment consisted of the low calcium diet of Aub and his co-workers, and phosphoric acid, 10 cc., once every hour, for ten doses daily, and magnesium sulphate, one-half ounce (15 Gm) every morning.

Forty-eight hours after treatment was instituted, daily twenty-four hour specimens of urine showed an average of from 1.4 to 2.6 mg of lead. At the end of two weeks a trace of lead too small in amount to estimate was obtained. At the end of three weeks lead could not be detected in the urine.

Amounts varying from 1.5 to 3.2 mg of lead were found in 50 Gm of stool. These examinations were made at intervals of forty eight hours.

Blood chemistry showed normal results: carbon dioxide, 59.4 volumes per cent, calcium, 10.1 mg per hundred cubic centimeters, phosphorus, 5.0 mg per hundred cubic centimeters. Repeated blood smear studies showed no stippling of the red blood cells.

Two subsequent examinations after discharge from the hospital showed no lead in the urine.

CASE 2—History—T. H., a man, aged 56, had been employed as a plumber for the past fifteen years, frequently using lead. For the past four years he had been complaining of generalized weakness, constipation, loss of appetite and gradual loss of weight. A diagnosis of chronic plumbism had been made and, although he had been removed from all exposure to lead during the past three years, he still continued to complain of constipation and weakness and it was alleged that his symptoms were due to lead poisoning.

Examination—The physical examination showed nothing abnormal. The man was distinctly underweight and had a slight secondary anemia. The blood pressure was 150 systolic, 92 diastolic.

8 Fairhall L. T. Lead Studies. 1. The Estimation of Minute Amounts of Lead in Biological Material. J. Indust. Hyg. 4:9 (May) 1922.

⁴ Shelling D. H. Effect of Dietary Calcium and Phosphorus on Toxicity of Lead in the Rat. *Rationale of Phosphate Therapy*. Proc. Soc. Exper. Biol. & Med. 30: 248-254 (Nov.) 1932.

⁵ Bischoff Fritz and Blatherwick N. R. Colloidal Lead Phosphate—A Substitute for Colloidal Metallic Lead in Cancer Therapy. *J. Pharmacol. & Exper. Therap.* 31 (Sept.) 1927. Bischoff Fritz Maxwell L. C. Evans R. D. and Nuzum F. R. Studies on the Toxicity of Various Lead Compounds Given Intravenously. *J. Pharmacol. & Exper. Therap.* 34 (Sept.) 1928.

⁶ Shie M. D. Lead Poisoning. Its Symptomatology and Diagnosis. *J. A. M. A.* 83: 580-583 (Aug. 23) 1924.

⁷ Gussierow A. Untersuchungen ueber Bleivergiftung. *Virchows Arch. f. path. Anat.* 21: 443 1861 quoted by Aub et al.¹

In the control studies there was no lead in 950 cc. of urine and 0.2 mg of lead in 62 Gm of feces. The blood showed red blood cells, 4,100,000, hemoglobin, 76 per cent. No stippling was seen.

Treatment and Results—The "deleading" treatment consisted of a low calcium diet, phosphoric acid, 5 cc. once every hour for twelve doses daily in a glass of water, and magnesium sulphate, one-half ounce every morning.

A specimen of urine forty-eight hours after treatment was instituted showed 0.1 mg of lead present. Subsequent studies every forty-eight hours showed from 0.1 to 1.2 mg of lead per thousand cubic centimeters of urine. The urine at the end of two weeks showed no lead.

Examination of 50 Gm of feces showed traces of lead too small to estimate. At the end of two weeks there was no lead present.

The blood chemistry was negative carbon dioxide, 46 volumes per cent, calcium, 84 mg per hundred cubic centimeters, and phosphorus, 77 mg. The red blood cells showed no stippling at any time before, during or after the treatment.

Two subsequent examinations of urine after discharge from the hospital showed no lead.

CASE 3—History—S. M., a man, aged 45, had been employed for sixteen years as a smelter, constantly using lead. For the

Repeated examination of 50 Gm of feces showed from 1 to 2.6 mg of lead.

Stippling of the blood was seen occasionally on repeated study. After three weeks of treatment with the high calcium therapy (as recommended by Aub and his associates¹) for the acute toxic episode, the acute symptoms subsided. The blood pressure dropped from a systolic of 190 to 120 and the diastolic from 110 to 80. At the end of three weeks the patient was clinically well, although occasional stippling of the red blood cells was found to be present. A twenty-four hour specimen of urine showed no lead.

A "deleading" treatment was then instituted for a period of three weeks by means of a low calcium diet and the administration of phosphoric acid, 10 cc. every two hours for six doses daily, and magnesium sulphate, one-half ounce, every morning.

Daily examination of a twenty-four hour specimen of urine showed the presence of from 1.5 to 2.6 mg of lead. Fifty grams of feces, examined three times weekly, showed the presence of from 2.2 to 3.6 mg of lead. The secondary anemia remained unchanged. Stippling was seen frequently but not in increased amounts.

After three weeks' treatment the patient was discharged from the hospital and was placed on a high calcium diet. He reported weekly to the office. Blood studies showed a rather

TABLE 1—Low Calcium-High Phosphorus Diet (Ratio 1-3)

Food	Weight, Gm	Protein	Calcium	Phosphorus	Calories	Vitamins			
						A	B	C	D
Applesauce	100	0.40	0.007	0.012	63.0	++	++	+	—
Grapes	103	1.36	0.019	0.032	100.1	++	+	+	—
Banana	100	1.30	0.009	0.031	99.0	+++	++	++	—
Pineapple juice	540	1.98	0.090	0.144	220.0	++	++	++	—
Shredded wheat (one)	27	3.51	0.011	0.089	100.0	+	+++	—	—
Whole wheat bread	120	11.52	0.024	0.184	258.8	+	+	—	—
Macaroni	30	3.80	0.006	0.041	101.5	—	—	—	—
Egg yolks (four)	80	12.56	0.110	0.410	290.4	+++	++	—	+
Butter	30	0.28	0.004	0.006	217.0	+++	—	—	+
Cream 40 per cent	70	1.54	0.060	0.047	266.7	+++	++	—	+
Lamb chops	160	27.20	0.020	0.274	569.0	—	+	—	—
Liver	90	17.34	0.015	0.166	109.5	+++	++	?	—
Bacon	15	1.50	0.001	0.016	88.0	—	—	—	—
Baked potato	100	2.20	0.014	0.038	83.0	++	++	++	—
Tomatoes	100	0.90	0.011	0.096	23.0	+++	++	+++	—
Green peas	100	7.00	0.028	0.127	100.0	+++	++	+	—
Mushrooms	60	1.90	0.010	0.062	23.4	—	—	—	—
Celery	30	0.31	0.022	0.010	5.2	—	++	—	—
Almonds	15	3.24	0.037	0.072	100.0	+	++	—	—
Oranges	200	1.60	0.090	0.042	102.78	+	++	+++	—
Lettuce	30	0.34	0.013	0.012	5.40	++	++	+++	—
		101.78	0.001	1.880	2,060.88				

The author is indebted to Miss Emma Baughman, chief dietitian of the Jewish Hospital, who calculated these diets. (From the Laboratory Handbook for Dietetics by Dr. Mary S. Rose.)

past few years he had had increasing constipation, occasional pain in the abdomen and increasing weakness. A diagnosis of chronic lead poisoning had been made about a year prior to his coming under my observation. However, he continued to work and was finally admitted to the hospital because of severe abdominal pain, anorexia with vomiting, marked constipation and general weakness. The abdominal symptoms, particularly the colic, had been getting progressively worse for two weeks prior to admission.

Examination—The patient was well developed, with a distinct pallor of the face and mucous membranes, a lead line on the gums and poor oral hygiene. The examination was otherwise negative. There was a distinct hypertension, with a systolic blood pressure of 190 and a diastolic of 110.

In the control studies there was a faint trace of lead, too small in amount to estimate, in 1,300 cc. of urine and 1.2 mg of lead in 50 Gm of stool. Examination of the blood showed red blood cells, 3,960,000, with hemoglobin, 76 per cent, and moderate stippling.

Treatment and Results—Treatment for the acute episode was instituted with a high calcium diet and the administration of calcium lactate, 1 drachm (4 Gm) once every two hours, calcium gluconate 10 cc., intramuscularly daily for five days, and magnesium sulphate, one-half ounce every morning.

A twenty-four hour examination of urine showed the presence of from 1 to 1.5 mg of lead (studies made every forty-eight hours). No lead was present at the end of the third week.

persistent anemia, with occasional stippling of the red blood cells. A faint trace of lead was present in the urine on three examinations. After one month of rest at home the patient was readmitted to the hospital.

Second Admission—The "deleading" treatment on the second admission consisted of low calcium-high phosphorus diets in ratios of 1-3 and 1-4, phosphoric acid, 5 cc., once every hour for ten doses daily and magnesium sulphate one-half ounce every morning.

Twenty-four hour specimens of urine showed amounts of lead varying from 2.8 to 3.9 mg. At the end of three weeks the urine still showed on an average, 1.5 mg of lead in a twenty-four hour specimen. Fifty grams of stool, examined three times weekly showed the presence of from 2.6 to 4.2 mg. of lead. Chemical examination of the blood was negative, calcium, 106 mg per hundred cubic centimeters, phosphorus, 88 mg, and carbon dioxide 57.4 volumes per cent. The blood pressure was from 118 to 130 systolic and from 70 to 82 diastolic.

During the period of the "deleading" treatment there was no return of any of the acute symptoms. The patient was discharged and placed on a high calcium diet. He did not return to work but was kept under observation. Repeated examinations of twenty-four hour specimens of urine showed faint traces of lead. At the end of three weeks no lead was present. The patient continued, however, to complain of weak-

ness and was treated for the secondary anemia. Occasional stippling of the red blood cells was noted. He was kept under observation for six weeks and then again admitted to the hospital.

Third Admission—The "deleading" treatment on the third admission consisted of a low calcium-high phosphorus diet in the ratio of 1-4 (3,000 calories) and phosphoric acid, 10 cc every hour for ten doses daily, viosterol (250 D), 5 mm every four hours, and magnesium sulphate, one-half ounce every morning.

A twenty-four hour specimen of urine showed amounts of lead varying from 18 to 27 mg. Fifty grams of feces examined three times weekly showed from 2 to 3.2 mg of lead. Examination of the blood showed red blood cells, 4,350,000 and hemoglobin 82 per cent. Occasional stippling of the red blood cells was seen.

After four weeks of the "deleading" treatment the patient was discharged. There were no subjective symptoms other than slight weakness. Subsequent studies continued to show small traces of lead in the urine with occasional stippling of the red blood cells. The patient will probably be hospitalized again for further "deleading" treatment.

These three case reports are illustrative of a group of nine individuals who were under observation and

sodes occurred in any of the patients, nevertheless I was cognizant of the danger of an active lead stream and a possible involvement of the central nervous system. The danger of active "deleading" was pointed out by Hegler,⁹ and also by Kehoe and his co-workers. Spinal fluid examinations were not done in any of the patients. In the studies by Rabinowitch and his co-workers,¹⁰ lead was found in the cerebrospinal fluid of persons known to be suffering from lead poisoning. Lead was also found occasionally in small amounts in patients not unduly exposed to the metal. More recently Cone and his associates¹¹ discussed the question of lead as a possible cause of multiple sclerosis. In my studies there was no indication that an active lead stream was responsible for an increase in subjective symptoms or the appearance of symptoms suggesting the involvement of the peripheral or central nervous system. It is reasonable to assume that during the process of "deleading" the lead stream is probably not as strong as during the period of absorption, when the individual is exposed.

TABLE 2—Low Calcium-High Phosphorus Diet (Ratio 1-4)

Food	Weight Gm	Protein	Calcium	Phosphorus	Calories	Vitamin			
						A	B	C	D
Dried prunes	60	1.2	0.030	0.060	171.00	++	++	—	—
Fresh pineapple	90	0.33	0.015	0.024	36.00	++	++	++	—
Fresh grapes	90	0.74	0.010	0.018	81.00	++	+	+	—
Pineapple juice	640	1.98	0.090	0.144	220.00	++	++	++	—
Fresh lima beans	81	5.76	0.023	0.108	160.00	+	+++	+	—
Stewed corn	99	3.06	0.006	0.102	100.00	+	++	+	—
Mushrooms	60	1.90	0.010	0.062	25.40	—	—	—	—
Fresh green peas	100	7.00	0.028	0.127	100.00	+++	++	+	—
Baked potatoes	240	3.28	0.032	0.138	200.00	++	++	+	—
Tomatoes	90	0.60	0.009	0.021	19.00	+++	++	+++	—
Tomato juice	90	0.78	0.009	0.021	19.00	+++	++	+++	—
Whole wheat bread	140	13.44	0.028	0.214	348.60	+	+	—	—
Rice	15	1.13	0.002	0.014	49.70	—	—	—	—
Shredded wheat	27	3.51	0.011	0.089	100.00	+	+++	—	—
Butter	30	0.28	0.004	0.005	217.40	+++	—	—	+
Cream, 40 per cent	60	1.24	0.048	0.038	216.00	+++	++	—	—
Egg yolks (six)	120	17.60	0.156	0.596	410.80	+++	++	—	+
Bacon (six half slices)	32	3.36	0.002	0.036	200.00	—	—	—	—
Lamb	160	27.20	0.015	0.209	319.50	—	+	—	—
Hallbut.	100	16.27	0.017	0.187	67.00	—	+	—	—
Coconut	5	1.08	0.005	0.035	24.80	—	—	—	—
Peanuts	18	4.68	0.013	0.073	100.00	+	++	—	—
		116.30	0.536	2.407	3,127.50				

treatment for chronic plumbism. Six of these patients had been exposed to the ingestion of lead for several years and had come under observation from six months to two years after a diagnosis had been made. It is reasonable to state, in view of the work of Kehoe and his associates,³ that there had been a gradual excretion of lead during this period. In these patients, as illustrated in cases 1 and 2, "deleading" for a short period of time was sufficient to show that they were not heavily "leaded." By virtue of the fact that no lead was found in the urine at the end of three weeks' treatment it could be implied that there was only a small amount of lead stored in the depots of the body. In the absence of any objective evidence of lead poisoning and in view of the laboratory examinations it was reasonable to assume that a diagnosis of chronic lead poisoning was not justified in these individuals. In the remaining three of this group, as illustrated by case 3, it was evident that a great deal of lead had been absorbed and was stored in the tissues. It was necessary to hospitalize these patients repeatedly in order to institute the "deleading." Arbitrarily from three to four weeks was set as a time limit for the active "deleading" treatment. Although no acute toxic epi-

sodes occurred in any of the patients, nevertheless I was cognizant of the danger of an active lead stream and a possible involvement of the central nervous system. The danger of active "deleading" was pointed out by Hegler,⁹ and also by Kehoe and his co-workers. Spinal fluid examinations were not done in any of the patients. In the studies by Rabinowitch and his co-workers,¹⁰ lead was found in the cerebrospinal fluid of persons known to be suffering from lead poisoning. Lead was also found occasionally in small amounts in patients not unduly exposed to the metal. More recently Cone and his associates¹¹ discussed the question of lead as a possible cause of multiple sclerosis. In my studies there was no indication that an active lead stream was responsible for an increase in subjective symptoms or the appearance of symptoms suggesting the involvement of the peripheral or central nervous system. It is reasonable to assume that during the process of "deleading" the lead stream is probably not as strong as during the period of absorption, when the individual is exposed.

CASES ILLUSTRATIVE OF "DELEADING" IN SUBACUTE PLUMBISM

CASE 4—History—M. S., a woman, aged 25, had been soldering wires using lead for approximately six months, when she began to complain of occasional abdominal pain and general weakness. A diagnosis of subacute plumbism was made on the history of exposure and the presence of occasional stippling of the red blood cells.

Examination—On physical examination the patient was in poor general condition with a distinct secondary anemia, otherwise the examination was negative.

⁹ Hegler, C. Treatment of Poisoning Caused by Heavy Metals. *Deutsche med. Wchnschr.* 59: 570 (April 14) 1933.

¹⁰ Rabinowitch, I. M., Dingwall, Andrew, and Mackay, F. H. Studies on Cerebrospinal Fluid. *J. Chemical and Spectrographic Detection of Lead.* *J. Biol. Chem.* 103: 707 (Dec.) 1933.

¹¹ Cone, William Russell C. and Harwood, R. U. Lead as a Possible Cause of Multiple Sclerosis. *Arch. Neurol. & Psychiat.* 31: 236-269 (Feb.) 1934.

Control studies showed no lead present in a twenty-four hour specimen (950 cc) of urine, a faint trace of lead present in 20 Gm of stool, and a blood count of red blood cells, 3,800,000, hemoglobin, 74 per cent, and platelets, 108,000. There was occasional stippling of the red blood cells.

Treatment and Results—"Deleading" treatment consisted of a low calcium diet and ammonium chloride 15 grains (1 Gm) every hour for ten doses daily, and magnesium sulphate, one tablespoonful every morning.

Examination of the urine forty-eight hours after treatment was instituted showed a trace of lead present. Subsequent examinations showed approximately 0.9 mg of lead in a twenty-four hour specimen. After two weeks of treatment no lead could be found. Subsequent studies were negative for lead.

There was a faint trace of lead in the feces forty-eight hours after treatment was instituted. At the end of two weeks, no lead was present. Subsequent studies at no time showed the presence of lead.

There was no stippling of the red blood cells on discharge from the hospital.

CASE 5—History—F. C. a man aged 31, had been employed as a painter at intervals during the past year and a half at which time he began to complain of occasional abdominal pain and constipation. A blood study had been done and a few stippled red blood cells were found. A diagnosis of lead poisoning had been made on this finding and on the suggestive clinical symptoms.

Examination—Physical examination was essentially negative. Control studies showed no lead present in a twenty-four hour specimen (1,400 cc) of urine and no lead present in 30 Gm of stool. The red blood cells numbered 4,800,000 with hemoglobin 92 per cent. Occasional stippling of the red blood cells was noted.

Treatment and Results—The deleading treatment consisted of a low calcium-high phosphorus (ratio 1-4) diet and sodium phosphate 4 Gm daily and magnesium sulphate one-half ounce every morning.

Forty-eight hours after treatment was instituted a trace of lead (too small to estimate) was found in the urine. At the end of ten days, after repeated studies no lead was found. In the feces 0.5 mg of lead was present in 50 Gm of stool. At the end of ten days no lead was present. No stippling of the red blood cells was seen.

There were four patients in this group in whom a diagnosis of subacute lead poisoning had been made. Exposure to the absorption of lead was for a comparatively short time (from two to six months), at which time when subjective symptoms and the finding of stippling of the red blood cells suggested the diagnosis of lead poisoning. Cases 4 and 5 are illustrative of the value of the "deleading" treatment in this type of case. Within two weeks the lead that had been absorbed was excreted and subsequent studies after discharge from the hospital failed to reveal the presence of any lead in the urine. In evaluating the results of "deleading" in this group it is important to keep in mind that these individuals had been removed from their occupation. Subjective symptoms would probably have disappeared gradually with the excretion of the metal, under treatment, however, a more rapid "recovery" followed.

"DELEADING" AS A DIAGNOSTIC PROCEDURE

CASE 6—History—R. G. a man, aged 56, had been employed as a compositor handling lead for almost forty years. At no time was there any history of an acute toxic episode. He began to complain of headaches, dizziness, occasional abdominal pain and diarrhea two weeks before admission to the hospital. A diagnosis of lead poisoning was made, based chiefly on his occupation.

Examination—On physical examination the patient was well developed and well nourished. There were no objective signs

of lead poisoning present. Muscular power was good. Neurologic examination was negative.

Examination of the urine in control studies showed no lead present in a twenty-four hour specimen (1,200 cc.), and no lead was present in 50 Gm of feces. The red blood cells numbered 4,820,000, with hemoglobin 90 per cent. The red blood cells were normal in appearance, no stippling being seen at any time.

Treatment and Results—The "deleading" treatment consisted of low calcium-high phosphorus diet in the ratio of 1-3 (2,600 calories) and sodium phosphate, from 3 to 5 Gm daily, and magnesium sulphate, one-half ounce every morning.

A twenty-four hour output of urine on repeated examination failed to show the presence of any lead. Examination of the feces every forty-eight hours failed to show the presence of lead.

As a diagnostic procedure, "deleading" may occasionally prove helpful. Two patients constituted this group and it was alleged that lead poisoning was responsible for the symptomatology. The diagnosis in both cases rested entirely on the history of occupation. The changes after "deleading" indicated that abnormal amounts of lead had not been absorbed. The value of this method as a means of diagnosis lies in the fact that one can determine whether or not abnormal amounts of lead are stored in the tissues. The exhaustive investigations of Kehoe and his co-workers³ showed that the normal adult American excretes lead at a rate of from 0.02 to 0.08 mg per liter of urine and at a rate of 0.03 to 0.1 mg per gram of ash in the feces. The mean daily output for various groups of normal individuals varies from 0.25 to 0.38 mg.

The finding of an abnormal amount of lead in this type of case does not necessarily mean that the lead is the responsible agent in producing the clinical symptoms. The finding of lead below the amount normally present or the absence of lead, is the important factor in excluding this heavy metal as the agent responsible for the symptoms.

COMMENT

The administration of a diet low in calcium and the addition of either ammonium chloride or phosphoric acid definitely causes an increased excretion of lead. The addition of a diet high in phosphorus⁴ aids in the excretion of the lead. In several cases of chronic plumbism the lead in both the urine and the feces was increased in amount after phosphate therapy was instituted. Experimental and practical experience bears out Shelling's opinion. The addition of a high phosphorus, high calory diet with sufficient vitamin content improved the general appearance, the nutritional requirements were adequate and the rate of excretion of lead was maintained. In the "deleading" treatment of our patients there is now being used the low calcium, high phosphorus diet with a ratio of 1-3 and 1-4 as already outlined.

In persons who have absorbed lead it is possible that waves of liberation occur from time to time and produce symptoms of clinical activity. This method of treatment presents a means of rapidly ridding the body of the lead that can be readily mobilized. Oliver,¹² who has had large experience, reports the finding of lead in the urine many years after the exposure has ceased. Metabolic or some other factors not yet thoroughly understood may be responsible for these occasional waves of lead excretion. The lead that has been absorbed and is released at certain periods can be much more rapidly

excreted at stated intervals with this type of treatment. Although complete "deleading" is not possible, as demonstrated experimentally,¹ nevertheless it is reasonable to assume that the lead excreted is a large fraction of the lead that has been absorbed. The "deleading" treatment may have to be repeated at intervals if there is evidence of continued excretion of abnormal amounts of lead.

It is advisable that all patients undergoing "deleading" treatment be hospitalized. Although I have observed no instance of an acute toxic episode arising during the course of treatment, such an occurrence is possible and strict supervision is therefore necessary. The failure of acute toxic symptoms to develop when there is increased lead excretion is further proof of the fact that there is no parallel between the absorption and excretion of lead and the toxic manifestations. The estimation of lead in the excreta is of aid only in proving whether or not abnormal amounts of lead have been absorbed. The "deleading" treatment furnishes a method whereby lead can be rapidly removed from the tissues. The period both of disability and of prolonged excretion can be definitely shortened.

SUMMARY

The "deleading" treatment definitely increases the rate of excretion of lead. In chronic lead poisoning it may be necessary to "delead" the patients at intervals if the rate of excretion indicates a marked degree of absorption. In subacute plumbism the treatment usually brings about a rapid recovery. The natural process of excretion is hastened and the period of disability is definitely shortened. The "deleading" process may be used as an aid in the differential diagnosis in individuals suspected of having lead poisoning. The absence of lead in the excreta or the presence of amounts that may be considered normal² excludes lead as a factor. The presence of lead in the excreta in amounts above normal is an indication of previous absorption but does not necessarily prove that the individual is suffering from lead poisoning.

As a result of my experiences, I am in agreement with Kehoe and his co-workers³ when they state that "the diagnosis of lead intoxication must continue to rest largely upon the skill and judgment in the elicitation and interpretation of clinical evidence."

41 Eastern Parkway

Body Fat and Surplus Fuel—All body fat originates as surplus fuel. The body gains fat when, and because, it takes in more fuel than it burns. Any food which has any fuel value is fattening when added to a dietary which is already sufficient. And foods are fattening just about in proportion to their fuel values, for, as we saw in the last chapter, surplus calories whether taken as carbohydrate, fat or protein in the food tend to be stored chiefly as fat in the body. The largest amount of surplus fuel which the body will store as carbohydrates (chiefly glycogen in the muscles and liver) is only enough to yield about 1,500 calories, while each pound of body fat means approximately 4,000 stored calories. In many cases the body if persistently supplied with more food than it needs will store more and more fat to an almost unlimited extent. While fashion largely determines what degree of fatness is popularly regarded as an asset and what as a liability, yet we know from good medical evidence that the problem of optimal fatness is one of health as well as style. A moderate amount of fat is undoubtedly of benefit to the body, while quite as certainly too large a surplus is a burden and may become a danger.—Sherman H. C. Food and Health, New York, Macmillan Company, 1934 page 38.

CONTROL OF LEAD POISONING IN THE WORKER

ELSTON L. BELKNAP, M.D.

MILWAUKEE

Because of the inability of engineering to eliminate lead exposure at its source, the scientifically proved method of control by Aub and his associates has been applied to lead absorption and its acute toxic episodes in the supervision and treatment of approximately 500 cases of lead exposure, 200 of absorption, and 100 of intoxication.

The present demonstration of these principles has been effected by a diagnostic division of cases into absorption (1) plus severe intoxication requiring hospitalization, (2) plus mild intoxication, not disabling, (3) plus only laboratory signs of intoxication, and (4) without even laboratory signs of latent intoxication.

Except for the first actually disabled group, the other three potentially disabled groups have been treated with the worker at work. Such treatment must (1) start before disability, (2) utilize calcium advisedly but not as a routine, and (3) consider under perfect laboratory and clinical control that artificial deleading is superior to spontaneous uncontrolled deleading.

Following my study and treatment of a few cases of lead poisoning, published five years ago¹ and based on the work of Aub and his co-workers,² I was asked in October 1930 to make a survey of a storage battery plant and to make recommendations to the officials concerning the lead hazard. At first I considered it a housecleaning job in which I had the usual problem of remedying what damage had already been done. That my survey should develop into a problem of controlling lead poisoning, a matter of prevention and in my own field of internal medicine, was beyond my hope. I still see no reason to discard any of the principles of treatment laid down by Aub and since further elaborated by him,³ although I have enlarged my experience to include about 500 cases of lead exposure, more than 200 cases of considerable lead absorption, and more than 100 cases of lead intoxication in various industries, besides this personal supervision of a group of workers in a storage battery plant. I am now convinced that these principles may even be applied as the basis for a practical control of lead poisoning.

Whether I am justified in considering this a successful solution may be judged by the following:

1 The initial study showed this to be a distinctly better than average battery plant, employing at any one time about 100 workers, exposed to considerable lead oxide inhalation in spite of relatively good engineering precautions.

2 There were six cases of real lead intoxication causing disability with compensation arising in my first three months of service. Previous to my survey of

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1 Belknap, E. L. Lead Poisoning: The Diagnosis and Treatment of Its Most Common Toxic Episode. Lead Colic. Wisconsin M. J. 28:1346-350 (Aug.) 1929.

2 Aub, J. C., Fairhall, L. T., Minot, Anne S. and Reznikoff, Paul. Lead Poisoning. Baltimore: Williams & Wilkins Company, 1926.

3 (a) Aub, J. C., Robb, G. P. and Rossmel, Elsie. Lead Studies. XVII. The Significance of Bone Trabeculae in the Treatment of Lead Poisoning. Am. J. Pub. Health 22:825-830 (Aug.) 1932. (b) Aub, J. C. Contribution on Lead Poisoning in Cecil, R. L., Textbook of Medicine. Philadelphia: W. B. Saunders Company, 1934, pp. 559-564.

(c) Hunter, Donald and Aub, J. C. Lead Studies. XV. The Effect of the Parathyroid Hormone on the Excretion of Lead and of Calcium in Patients Suffering from Lead Poisoning. Quart. J. Med. 20:123-140 (Jan.) 1927.

this plant I am told that there were about eighteen or twenty cases of lead poisoning on compensation annually

This is at least the equivalent of the annual rate of 159 per hundred for compensation of plumbism cases in a group of storage battery workers studied by the U S Public Health Service⁴

3 There are now one or two cases of disability a year in the 100 workers. In fact, in contrast to the six cases arising in my first three months, and credit

HISTORY			
NAME	BIRTHPLACE	CLOCK NO	DATE
STUDY NO		DEBERT	AGE
1. ADDRESS		PHONE	
4. M. F.	Y. B.	Y. D.	L. R. AVER. HT
5. FAMILY DR.		HT. Y. YR. AGO	CREATED BY
6. WHAT TYPE WORK APPLIED FOR			
7. HISTORY OF PREVIOUS EMPLOYMENT IN THIS PLANT			
8. HISTORY OF PREVIOUS EMPLOYMENT IN OTHER PLANTS			
9. FAMILY HISTORY			
DILATES - HEART			
DILATES			
TBC.			
DIABETES			
10. PAST HISTORY			
ILLNESS (SCARLET-FEVER)			
OPERATIONS			
ACIDITY			
TYPICAL TREATMENT			
REMARKS			

Fig 1—Form used in making examination previous to employment.

should here be given to the generous cooperation of the officials of the company, there have been only four other cases of lead intoxication severe enough to warrant actual compensation for disability in the past three and a half years. No new case has developed in the last eight months, although the lead exposure has not been entirely eliminated and in some instances has been actually increased. I now feel confident that the number of workers heavily leaded has been reduced close to a minimum by treatment and increasing but not yet perfected engineering protection. It does not seem unreasonable to expect to reach the goal of complete prevention.

A successful working technic for the control of lead poisoning remains a problem for the internist. It cannot be a matter of secondary consideration in the mind of the average industrial traumatic surgeon or reducible to a formula which a plant superintendent or a lay personnel officer can manipulate. It is not so simple as waiting until a case of lead poisoning can be diagnosed across the room because of the patient's peculiar pallor. Neither is it so simple as discharging a worker to swell the ranks of disabled veterans and county institution inmates, or even to farm them out to other industries. It surely is not so simple as hospitalizing a man for weeks for exhaustive research. In my state a man who has been unable to work for three days because of occupational disability is automatically entitled to 70 per cent compensation and necessary medical expense. The actual title of this paper should therefore be The Control of Lead Poisoning in the Worker Actually at Work.

The first precaution in our method of control is a stringent preemployment examination by the physician himself (fig 1). The family history is unusually important, since individuals with a constitutional defect of early degenerative cardiovascular disease, diabetes, thyroid or other endocrine dyscrasia are not good can-

didates for lead workers. The past history must be thoroughly investigated for indications of chronic infections such as tuberculosis and syphilis. A very important feature of this preemployment history is a detailed and complete recapitulation of the previous occupational record to rule out men who have already absorbed lead from other sources. Besides the common sources, such as painting and large storage battery plants, other sources include the following occupations: farming, if lead arsenate is used, molding, sawing and grinding of brass and, especially, the small battery repair stores where dry pasted plates may be inserted to renovate old batteries and junk shops where old batteries are pounded up and salvaged without any engineering or medical supervision. Even the best intentioned industry cannot be expected to shoulder the responsibility of labor material already loaded with lead because of the laxity or ignorance of some other employer.

The preemployment survey must of course include a very complete physical examination (fig 2). The lead line in the gums is the most obvious feature to look for. Unfortunately, many family physicians are unfamiliar with it and are likely to regard any gum discoloration as a "suggestive lead line." Although its intensity may vary, this is one finding of which one can say absolutely that it either is or is not present. With the aid of proper illumination and a lens, one can make no mistake in determining the presence of the characteristic line of dots in the gum near teeth which are carious or surrounded by active pyorrhea. I have found that the lead line usually appears when the stipple cell count is from 10 to 20 for fifty fields (from 1,000 to 2,000 per million red blood cells). The exact technic for the gum examination has been well described by Aub^{3b}. It is amusing to hear some industrial surgeons

PHYSICAL EXAMINATIONS		PRE-EMPLOYMENT	UPON DISCHARGE
DATE			
WEIGHT	HEIGHT		
PULSE	TEMPERATURE		
PALLOR			
LEAD LINE IN GUMS			
R. WRIST EXTENSION			
L. WRIST EXTENSION			
ELBOWS			
CLAVES			
B. HEART			
ABDOMEN			
REFLEXES			
NERVIA			
SPINE			
EXTREMITIES			
VISION - R	L.		
REMARKS			
12. LABORATORY EXAMINATIONS			
STIPPLES IN 50 FIELDS			
WBC (H&E)			
RBC			
URINE			
WASSERMANN			
13. DIAGNOSIS			
14. RECOMMENDATIONS			

Fig 2—Form used in making examination previous to employment.

still proclaim that one of their main methods for the prevention of lead poisoning is strict attention to dental hygiene. The fact is that poor oral hygiene merely serves as a very convenient though not desirable indicator of lead absorption. As a rough test for an emergency diagnosis, I am convinced that the absence of a lead line in a pyorrheal gum indicates that there is very little, if any, free lead circulating. I have seen this borne out by quantitative twenty-four hour urine

⁴ Lead Poisoning in a Storage Battery Plant. Pub. Health Bull. 205, June, 1933.

It is of vital importance that the physician give the reexamination history himself so that he may establish and continue a close personal relationship with the worker in order that the latter may confidently tell the doctor of his slightest physical discomfort. It is only in this way that one can discover and give prompt treatment not only to incipient lead intoxication but to the apparently mild intercurrent illness that may precipitate

PERIODIC RE-EXAMINATION

[illegible]**Item 804**

PERIODIC RE-EVALUATION

[illegible]

RECOMMENDATIONS OF RX: After Dec 21 CaCl2 Intravenous
Ca Gluc. Bas. Phos.
10gm q.d. q3 to 6h Q Gluc.
by mouth by mouth
3 Tg Sulph Disch
3 Tg A.M. from
Hosp.

Fig 4—Form used to record physical examinations

After a personnel of excellent physical quality has been developed as a result of these stringent preemployment examinations, the next precautionary step in the control is that of periodic reexaminations at least every two weeks to three months, according to the intensity of exposure. I have found the form shown in figure 3 practical. It includes symptoms grouped according to the three most important systems involved

Included in these frequent periodic reexaminations there must be a record of laboratory studies. Complete blood counts and routine urine tests as well as an estimation of lead in the twenty-four hour urine should be done at least every six months, and oftener in selected cases. Such quantitative estimation of lead in the urine may bring surprising information as to the amount of

absorption, even in the so-called insusceptible individuals. The method of Fairhall, with modifications noted in the U S Public Health Bulletin,⁵ has proved satisfactory as used by our chemist. According to the work of Dr Kehoe,⁶ the so-called normal amount of lead in the twenty-four hour urine of a worker who does not work with lead may be 0.08 mg, and even 0.15 mg may be a sign of nothing more than the expected absorption that may be safely permitted in a lead worker.⁷ I have found this limit of 0.15 mg to be safe and also that anything above 0.2 mg should be considered abnormal and requiring investigation.

Whenever a man is reexamined, a hemoglobin and a stipple cell count must always be made. I pay most attention to the stipple cell count, because, if one waits for a real anemia with hemoglobin below 80 per cent or red blood cells below four million, the patient may be on the verge of an acute episode such as lead colic, which can then hardly be avoided. The presence of a few stipple cells (from 5 to 10) in fifty fields (from 500 to 1,000 stipple cells per million red blood cells) does not necessarily indicate anything more than lead absorption. A man may continue for years with such a count without lead intoxication or acute lead poisoning. But if the stipple cell count leaps up from day to day, 20, 50, 100, 200, 400 in fifty fields, an acute episode is impending that may still be prevented. This episode is not due necessarily to any added exposure but most often to an infection disturbing the acid base equilibrium with resultant increased circulating lead. In my own experience it has been an acute infection that has precipitated every spontaneous episode of acute lead intoxication. It is at seasons when infections of the upper respiratory tract are prevalent that one must be most watchful. As I have said before, the early discovery and treatment of even the most apparently insignificant

treatment may be changed immediately, if necessary, and recommendations made for further precautions against exposure. It is advisable that the physician insist on the proper wash room and lunch room hygiene and that he suggest milk between meals, but it is more important that he himself keep the closest supervision of his men at their actual work stations so that he may visualize the exposure of each when he examines him later in the medical department. He must also be on

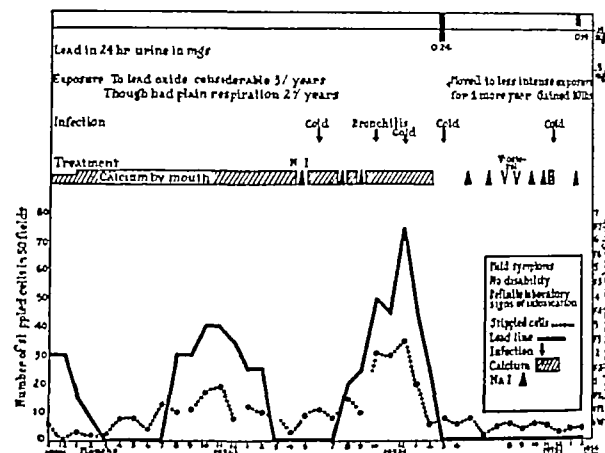


Fig 7 (case 2)—This illustrates the second type with mild symptoms of weakness, vague abdominal distress and loss of weight but no real disability but with definite laboratory signs of intoxication treated in the usual manner with calcium and iodide therapy. The man was exposed for three and one half years to heavy lead inhalation but used a plain respirator for two and a half years of this time. It shows a recurrence of lead line and stipple cells following first courses of deleading coupled with infection but he has passed through several bouts of infection since without stirring up signs of lead intoxication. He showed decided improvement a month before he was moved to less intense exposure. He has had no recurrence of symptoms or signs for the past year; he has gained 10 pounds (4.5 Kg) and his twenty-four hour urine is well below 0.15 mg, even though he is still exposed to moderate but definite lead absorption.

the alert for unexpected sources of exposure by frequent and unannounced inspection of the plant itself, so that he may be sure that adequate suction devices are being used where needed and that men have been shifted to less hazardous positions or given increased respirator protection according to his recommendations. Such broad measures for protection of the worker against industrial poisoning agree, I believe, with the principles so succinctly epitomized in the recent monograph by Hamilton.⁸ The result of my analysis of this plant inspection and of the periodic monthly medical report has proved to me, for example, that equipping a man with a positive pressure or air line respirator is equivalent to moving him from exposure to lead. This greatly simplifies but does not do away with the necessity of treatment, for I have seen many men whose lead exposure antedated the development of this protection.

The actual treatment of lead absorption and intoxication, I find, concerns itself with four types of patients. The first type (figs 5 and 6), which is now becoming rare but which was considered inevitable until recently, is that of the worker with heavy absorption plus a real intoxication with temporary disability from colic, palsy, or even encephalopathy. The treatment for this is still the one based on Aub's research and described in my earlier paper, but with certain practical modifications, such as

1 Immediate hospitalization with intravenous calcium gluconate, instead of chloride, 50 cc of the 5 per cent solution

8 Hamilton, Alice. Industrial Toxicology. New York: Harper & Bros. 1934.

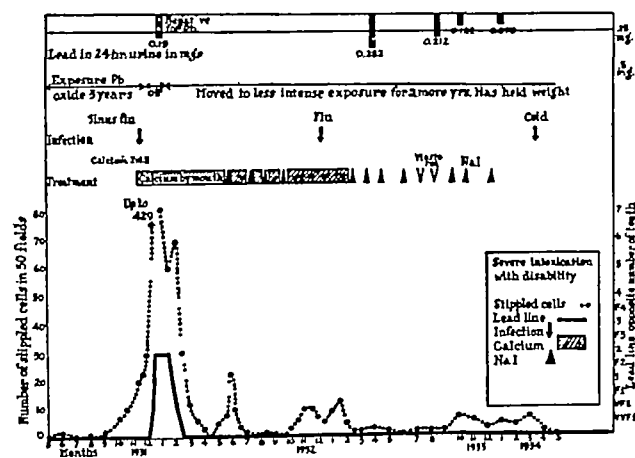


Fig 6 (case 1)—This type of severe intoxication with disability is shown graphically by a chart which includes the subsequent courses of deleading and the final decrease of lead in twenty-four hour urine to below the safe limit of 0.15 mg.

nificant infection is one of the most important methods of control.

The results on the periodic examination must be analyzed frequently by the medical consultant so that

5 The Use of Tetra Ethyl Lead Gasoline in Its Relation to Public Health. Pub Health Bull 163 June 1926 pp 23-27.

6 Kehoe, R. A. Thammann Frederick, and Cholak Jacob. On the Normal Absorption and Excretion of Lead. II. In Modern American Life. J Indust. Hyg 15 273-287 (Sept.) 1933.

7 Kehoe, R. A. Thammann Frederick, and Cholak Jacob. Lead Absorption and Excretion in Certain Lead Trades. J Indust. Hyg 15 306-319 (Sept.) 1933.

every three or four hours for the first twenty four to forty-eight hours and three to four times a day for the next two to four days, and 5 Gm of plain, powdered, calcium gluconate in milk three times a day after meals

2 Also dextrose and saline solution intravenously if there has been dehydration or serious acute infection. With such treatment men may leave the hospital in one or two weeks and return to work in three or four more weeks

The next type (fig 7) is more frequent, although it is becoming less so. It includes men with mild symptoms, i.e., slight loss of appetite, beginning constipation and fleeting abdominal distress without real disability. They may or may not show a lead line but will have laboratory evidence of absorption plus intoxication, i.e., a rather rapidly rising "stipple curve" (from 20 to 100 cells in fifty fields or from 2,000 to 10,000 per million red blood cells) and from 0.2 to 0.6 mg of lead in the twenty-four hour urine. Treatment is given while the worker remains at work and consists of intensive calcium intake by mouth and vein, and, if possible, removal from exposure by change of the work station or just as efficiently by use of the positive pressure respirator at the original work station. My use of calcium is now chiefly as a temporary emergency measure until the worker can be removed from exposure. I never use it as a routine.

The third type (fig 8) may show only a lead line, with laboratory signs of lead absorption and intoxication. This is long before there are any symptoms at all. The treatment is identical with the one just described. This group is named here because it is remarkable that there should be such unmistakable warnings of intoxication discoverable only by the laboratory without any premonitory symptoms and yet be so susceptible to prompt treatment, preventive of any disability even in the face of continued exposure.

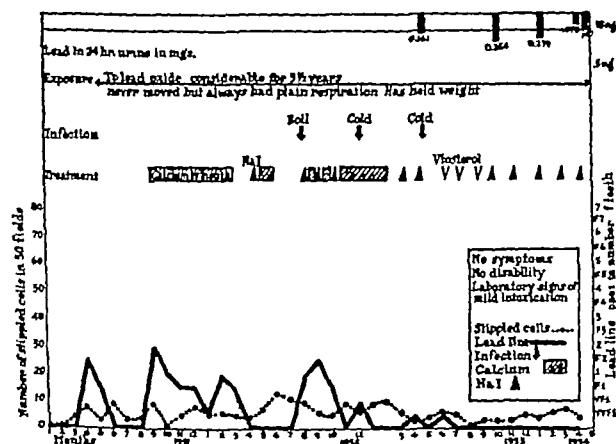


Fig 8 (case 3)—This illustrates the third type of worker with no symptoms at all no disability and only laboratory signs of mild intoxication complicating lead absorption the latter indicated in this case by a lead line. The man has been exposed to considerable lead oxide for three and one half years but has always used a plain respirator. With continued and even increased exposure the lead line has disappeared following calcium treatment while at work to reappear again with the first deleading and finally to disappear altogether paralleling the reduction of lead in the twenty four hour urine to 0.15 mg.

The fourth type (fig 9) consists of the so-called good risks, of workers who have no signs of absorption, not a clinical symptom and not even apparent laboratory signs of latent intoxication but who, I have found, may show stored lead if given provocative treatment with iodide or some other deleading agent.

With facilities for perfectly controlled conditions in laboratory and clinical examinations I now believe that it is safer to liberate stored lead at a time when this careful supervision is possible than to let nature delead the individual spontaneously by means of the acidosis of infection. Uncontrolled, this natural liberation of lead may result in an overwhelming and untimely intoxication. Controlled or artificial deleading together with as much reduction of exposure as possible seems to me

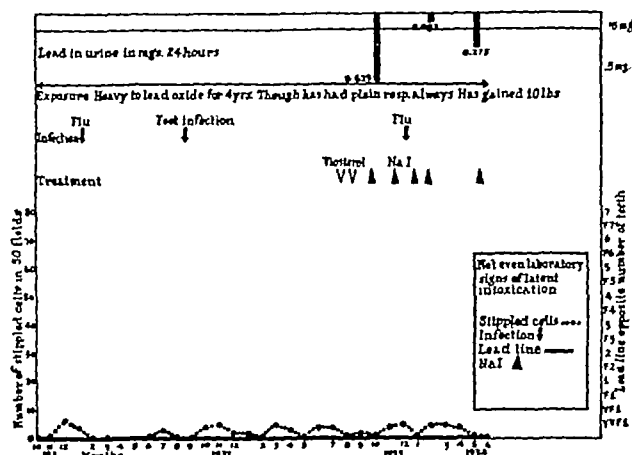


Fig 9 (case 4)—This example of preventive treatment shows not even laboratory signs of latent intoxication until lead excretion has been stimulated by prophylactic deleading. Even though it has been as yet feasible only to supply this man with a plain respirator, he has had heavy and continuous lead oxide exposure for four years in an unavoidably hazardous work station where disabling lead colic has consistently developed in other men. He has had several infections with no deleterious effects. He seems to belong to the group of apparently good risks. He has been absorbing excessive quantities of lead that should be disposed of under controlled conditions.

to be the logical final stage of treatment for all four types of lead absorption with or without intoxication.

When I speak of deleading, I do not mean to give powerful deleading agents in the midst of an acute intoxication. This might provoke an encephalopathy. Neither do I mean that an individual is to be given deleading medication and then be discharged from treatment or the factory to continue the process indefinitely and unsupervised. I have certain definite criteria for deleading. I do not consider it advisable until all acute symptoms have subsided for a month, until the hemoglobin is 80 or above, until the red blood cell count is four million or over, and until the stipple cells have dropped to 10 or below in fifty fields (from 1,000 to 5,000 per million red blood cells) and have remained there for two or three weeks, and finally until the lead in the twenty-four hour urine is 0.15 mg or lower. This insures that no great amount of lead is freshly liberated from the skeleton to be superimposed on lead still freely circulating throughout the body.

For the first two or three courses of deleading, supervision is extremely close in order to note a possible return of symptoms or of the lead line with increase in stipple cells and lead in the urine. If these should reappear I am prepared to fix the lead again in a nontoxic form by high calcium intake. That the lead line does often reappear at first is to me a striking clinical proof of the efficacy of deleading. I do not delead oftener than once in four weeks, and preferably not oftener than once in six or eight weeks, with the first two or three courses of deleading. In this way I avoid the unfortunate consequences of cumulating fresh lead on a preceding tide of loosened lead that has reached

its peak at about two to three weeks after stimulation. For the same reason I do not prolong any course of deleading over three or four days. Though I have used them successfully in a few hospital cases I have not yet found it practical to use ammonium chloride and sodium bicarbonate or a low calcium diet to delead men who are actually at work, but it is very easy to give them their iodide drops twice a day, a safe, effective dose being 15 drops of potassium iodide or 7 drops of sodium iodide in saturated solution. Such doses may seem inadequate, but I have found from experience that they just avoid symptoms of actual iodism and that they gently stimulate lead excretion without any recurrence of serious signs or symptoms of lead intoxication.

Using this technic, I have found that it may take from six to fifteen courses of deleading to free the individual of his most loosely combined and therefore most dangerous lead. After this, further prophylactic deleading or even the acidosis of acute infection usually fails to stimulate an increase of lead in the twenty-four hour urine above 0.15 to 0.2 mg. so that it is unlikely that there will be any recurrent toxic episodes of lead poisoning.

SUMMARY AND CONCLUSIONS

My own experience, then, causes me to believe that

1 This type of medical supervision is a highly specialized form of work, although it requires the broad background of internal medicine.

2 One must still have a workable course of scientific treatment of lead poisoning to care for workers until the engineers have made lead absorption impossible.

3 I have here presented a clinically proved and detailed method for the control of lead poisoning in the worker at work.

4 One should not wait for disability before one starts treatment.

5 Thoughtless and wholesale calcium treatment may be unwise, but when given advisedly it is of specific aid.

6 Even the so-called insusceptible workers may have relatively large quantities of stored lead ready to be liberated by natural or artificial means.

7 With perfectly controlled technic, in selected cases, artificial deleading of cases previously heavily loaded with lead is a benefit not only to industry but also to the worker, and it is safer than uncontrolled spontaneous deleading.

231 West Wisconsin Avenue

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS LANZA, AUB, KEHOE, THAMANN
AND CHOLAK, JONES, BELKNAP AND GRAY

GEORGE H. GEHRMANN, Wilmington, Del. The presence of lead in normal urine, well demonstrated by Kehoe, Thamann and Cholak, has been of great help to many in industry. Dr. Belknap mentioned that the cooperation of the officials of any industry is most important that without cooperation it is impossible to accomplish any real work in the prevention of lead poisoning. I agree with the author that the history is important. The man is on the spot. He wants a job and he is afraid that any information that he may give concerning himself may result in his being unable to take up that particular line of work. Too much dependence should not be placed on the history. I have had cases of active pulmonary tuberculosis, as proved by physical and roentgen examination in which any symptoms whatever were denied. The author did not mention in his discussion of lead absorption and lead intoxication frequent air analysis at the site of the operation and at various

sites in that particular operation, which will often reveal valuable information as to the source of contamination of the supply of lead dust or lead fumes. I have been taking measurements of the extensors and the flexors of the wrist but have been unable to deduce any really valuable information from this test. After going over several years of work and many thousand tests, I decided to discontinue them. I do not practice deleading in any of my cases. I make a definite attempt to mobilize all lead in those cases which show signs of lead intoxication.

DR. PAUL A. DAVIS, Akron, Ohio. The method presented by Dr. Belknap is very much in accord with the method I have used for the last ten years in dealing with lead workers. There are three important factors in this problem: (1) employing only physically fit persons on lead work and those with good dental conditions, (2) frequent examinations of blood, urine and blood pressure, and (3) maintaining a proper ventilating system and personal hygiene. The main object in all industrial toxicosis is prevention. I have kept an individual chart in some cases for the last ten years and have correlated the stippling of red cells with the symptom complex, urinary tests and general physical condition and have found that this is the most accurate method for determining the absorptive index in lead cases. If the physician can have his finger on all the data there is little excuse for the development of a case of lead poisoning, but he must be able to interpret the clinical conditions found and know when to remove an individual from exposure and when to institute treatment. The eliminative process is influenced as to the function of the various organs and especially as to whether the system is bordering on an acidosis or alkalosis. If acidosis is present, more soluble lead is present in the circulating body fluids and severe symptoms may develop if this acidosis is very high. If severe symptoms are present, the logical procedure is to produce an alkalosis and drive the soluble lead out of solution or produce insoluble compounds that are less toxic. This is done by using calcium gluconate for immediate relief and diet for further improvement. Then a mild acidosis should be produced and elimination increased until the patient is cured.

DR. MILLARD KNOWLTON, Hartford, Conn. A more harmonious view concerning governmental participation in matters of this kind can be reached if the situation is considered more closely. Instead of combining the compensation phase of the matter with the research and advisory aspects, if the research and advisory work can be kept separate from the compensation work, with legal restrictions prohibiting the use of information obtained by research and investigation, and the use of reports of occupational disease in compensation cases and court cases, the industries will seek advice and carry out recommendations for correcting conditions. We have had that experience in Connecticut, where the law provides that information obtained through investigations by representatives of the state department of health, bureau of occupational diseases, cannot be used in court action or in compensation cases, nor can the reports of occupational diseases be used in such cases. Under these conditions our bureau has been able to work on a basis that puts its service in demand. Industry is coming to it for advice and is asking the bureau, with its laboratory facilities and trained men to investigate conditions and recommend corrective measures when necessary. Working on this basis, we do not find that governmental agencies are antagonistic to industry.

DR. ELBRIDGE J. BEST, San Francisco. I wish to ask a question. If I understood correctly, it was mentioned that there were respiratory symptoms that were as important as the gastro-intestinal symptoms. If that is so, I should like to have it explained. In San Francisco, bridges are being built. The steel is covered with lead and several workers have been leaded. There have been a large number of respiratory diseases naturally precipitating a certain percentage of lead cases, and a number of them have been brought before the industrial accident commission as lead in which no lead has been found, and it would be helpful if a little could be said on that point.

DR. A. J. LANZA, New York. I will answer the doctor's question. The statement I made was that in ordinary experience of disability among working people the respiratory diseases

outnumber the gastro intestinal. That is the average experience. There are almost three times as many cases, or claims for colds, influenza, pneumonia and bronchitis as there are for diseases of the gastro intestinal tract, but if in any industrial plant absenteeism on account of illness is due more to gastro-intestinal disorders than it is to respiratory disorders, it is well to keep in mind the possibility of lead poisoning.

DR ROBERT A KEHOE, Cincinnati. Deleading as a diagnostic measure is, in my opinion, unwarranted. It is my belief, based on observations, that the average normal adult has in his tissues somewhat more than 100 mg of lead. Suppose that deleading is undertaken as a diagnostic procedure. Though lead exposure is suspected, normal quantities of lead are found in the urine and feces. An effort is made to promote excretion, and if the methods work—and I must stress the fact that in my opinion evidence for this is not very good—there is a rise in lead excretion. How, then, shall it be interpreted? In treatment of lead poisoning by deleading, one removes in a short time, comparatively, an amount representing only a small proportion of the total lead in the tissues. It takes from six to twelve or eighteen months for the abnormal amounts of lead in the leaded individual's tissues to be excreted naturally. If an attempt is made to delead in a week, two weeks, a month, the rate of excretion may perhaps be doubled or trebled, 35 or 40 mg will have been got out of the tissues, and 200-300, up to 1,000 mg will have been left behind. I don't want to stress the point in theory, but in practice I question the advisability of elevating lead excretion temporarily. One runs a certain risk of producing symptoms not only immediately but also possibly later, and one runs that risk for what seems the slight and evanescent advantage of avoiding a very slight delay. Dr Lanza spoke of the possibility of latent lead poisoning appearing two or three years after exposure had ceased. I have yet to see a case presenting a history of severe exposure and an interval of two years or more between cessation of exposure and death in which more than the normal residue of lead was found in the tissues. On the basis of such evidence as I have—confined to the study of some eight or ten leaded individuals—I have concluded that in a period of from twelve to eighteen months the total lead has been eliminated to what is practically a normal level.

DR R R JONES, Washington, D C. Some American clinics and those on the continent of Europe are stressing the fact that reticulocyte counts are more important than are stippled counts for this purpose, since the latter are but one form of the reticulocyte. Whitby and Britton have shown this experimentally. They gave lead salts intravenously and on the fourth day found a maximum rise in the reticulocytes to about 30 per cent, while later, about the sixth day, the maximum stippled cell count was reached, and it was only about 8 per cent. Second injections two weeks later gave an immediate rise in the reticulocytes again, while the stippled cells remained about constant. They also showed that the stippled cells appear in waves, an increase in them being at the expense of the diffuse polychromatic cells. There is no definite distribution of stippled cells. I have seen men with stippled cell counts of more than 3,000 not ill but later go on compensation for plumbism with stippled cell counts of but 50 or 60. It would seem therefore that this variable stippled cell count cannot be as dependable as the reticulocyte estimation. If the stippled cell is a reticulocyte and there is but 8 per cent as compared with 30 per cent of total juvenile cells, surely one gets early evidence of this increase in reticulocytes prior to that obtained by watching for stippled cell increases. Stippled cells are easily estimated, and as a manifestation of lead poisoning they are of definite value in studying a case of lead intoxication. They are evidence of a disturbance in calcium metabolism. Giving calcium intravenously will cause a disappearance of this stippling, while such treatment will not influence the reticulocyte count at once. High calcium diets exhibit the same effect on the stippled cell.

DR ELSTON L BELKNAP, Milwaukee. Dr Gehrmann has emphasized the value of air sampling in the prevention of lead poisoning. I have been doing that and expect to produce a more detailed paper on that basis. It is the ideal method as a check on one's engineering and medical control. Dr Knowlton speaks of state control. Medical societies in Wisconsin are

taking the initiative in investigating industrial conditions so that the fundamental control remains in the hands of the physician in practice. Dr Kehoe has brought up a very natural objection to the value of deleading, but I have found it safe in my own experience. I have followed cases for two and three years after deleading and have found that deleading does keep a man within safe limits even in continued exposure. The cases described today represent many others. I expect to continue deleading under definite criteria. I must repeat that if physicians do not delead workers, nature is sure to do it in an alcoholic episode or in an acute infection. It still seems wiser to attempt deleading when the process can be controlled, especially since the worker is being kept at work where he remains exposed to lead. I hope in this way to keep pace with the small amount that he absorbs from day to day. I do not attempt to get rid of any but the most loosely combined lead and only small amounts of that. I expect to use the reticulocyte count described by Dr Jones and correlate it with my stipple cell curves. I wish to repeat that the stipple count is valuable when one watches its curve for a sudden rate of rise, a sure prediction of impending intoxication. Dr Davis in his experience agrees with this. Low calcium and acid diets for deleading, described by Dr Gray, have borne out Dr Aub's research but are feasible only when hospitalization is possible, in my experience. Deleading is not to be considered other than an emergency measure while the worker continues his exposure to lead. The ideal method is to move the worker or, if that is not possible, to increase his calcium intake for a while. The physician's work in industry is to deal with the practical necessity of keeping the worker well while he continues his hazardous occupation. In this way they can best cooperate with the management for every one's benefit.

DR IRVING GRAY, Brooklyn. The two slides shown by Dr Kehoe of the amount of lead obtained respectively from the tissues of an infant after death and from a male adult after death, neither having been exposed to lead, is eloquent proof of the fact that the average normal human being absorbs and stores lead in the system. In the process of deleading, it is reasonable to assume that all the lead that can be readily mobilized is excreted. The probability is that some lead remains in the tissues, as was shown experimentally by Aub. The lead that is retained is firmly fixed in the tissues and is innocuous. In view of Dr Kehoe's observations at autopsy, it would seem logical to expect that under the deleading treatment this heavy metal would be found in the excreta of individuals not unduly exposed. My experience has shown that lead is present in urine and stool after deleading treatment only in those who have absorbed abnormal amounts. In contentious cases in which all clinical signs of plumbism are absent, the low calcium, high phosphorus diet and the institution of phosphate therapy (deleading treatment) has a definite place. Under a hospital regimen the diet can be controlled, the patient can be carefully observed and the rate of excretion can be determined. As an aid in the differential diagnosis, deleading is distinctly of value.

DR JOSEPH C AUB, Boston. I should like to say a few words in regard to the new evidence developed by Dr Kehoe in his discussion. It is important to remember that the source of readily available calcium which is easily liberated from bone is a small source. These trabeculae are easily replaced as well as easily liberated. Most of the weight of calcium in the body is in the solid cortical bone. Though lead may also be stored here, I do not think that various methods of depleting bone greatly disturb the regular metabolic replacement of this solid portion. The calcium and lead pulled from bone in acidosis, in dietetic abnormalities, or in abnormalities of the internal secretions come largely from the fine bony trabeculae scattered through the bone marrow. These trabeculae are not large but I think it is the lead stored in them that precipitates episodes such as Dr Belknap described as occurring with acute infections or metabolic upsets. The value of deleading consists of eliminating the lead in this readily available supply of bone salts, and replacing this calcium-lead mixture with uncontaminated calcium by means of milk and a high calcium-phosphate diet. If this is done, future metabolic demands on the bone salts will liberate a store that is not thoroughly impregnated with lead but has been purified by therapy.

Clinical Notes, Suggestions and New Instruments

INTERNAL DERANGEMENT OF THE KNEE AND SLIPPING PATELLA

SIMULTANEOUS OCCURRENCE IN THE SAME KNEE

FRITZ TEAL M.D. AND H. WINNETT ORR M.D.
LINCOLN, NEB.

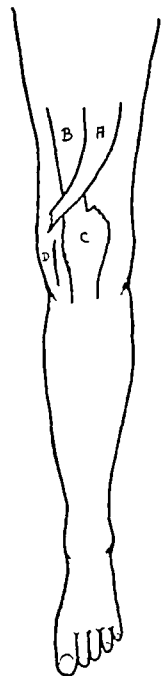
Internal derangement of the knee joint due to tearing of the internal lateral ligament and detachment of a portion of the internal semilunar cartilage is a common disability. Recurrent slipping of the patella, however, is rather unusual and, when the two conditions occur in the same knee at the same time a situation exists that calls for radical surgical relief. We report a case in which the foregoing conditions were manifest and describe the method by which an excellent cure was obtained.

REPORT OF CASE

History—C. C. S., a man, aged 37, sustained an acute injury to his left knee in August 1930. Repeated aspirations yielded bloody fluid, and after three weeks the knee assumed its normal appearance. Pain persisted in the medial side and it was evident that the patient was suffering from a tearing of the internal lateral ligament and partial detachment of the internal semilunar cartilage. Operation at that time was advised but refused. He suffered repeated injuries to the same knee in the ensuing years.

March 23, 1934 he entered the office with a swollen and painful knee telling of an injury the night before. The knee was aspirated and a compression bandage applied. The knee responded readily to treatment, but convalescence was prolonged by the presence of another disability in the nature of an outward slipping of the patella. The latter disability was painful and annoying and kept him from his work. Operation was advised and performed a few days after.

Operation and Result—Under local infiltration, the quadriceps tendon and muscle were exposed from the patella to a point 6 inches above. The outer half of the tendon was separated for 6 inches and severed from its attachment to the patella well down on the outer border. A subcutaneous tunnel was made toward the inner side of the knee. Next the usual medial incision was made and the internal semilunar cartilage removed. It was found detached at its posterior third and greatly thickened. A stab wound was then made over the internal lateral ligament and the tendon as prepared was pulled through the tunnel and its free end sutured with heavy silk to the internal lateral ligament. The



A transferred outer half of quadriceps tendon B quadriceps tendon C patella D incision for removal of cartilage

deep fascia of the thigh was sutured to the cut border of the intact quadriceps tendon with chromic gut and the skin closed with plain catgut. The knee wound was closed in layers, care being taken to repair the capsule. A cast was applied from the toes to the hip, with the knee in 10 degrees flexion. The leg was suspended in a Balkan frame for a period of two weeks, after which time the cast was removed and passive motion was started.

After nine weeks the knee is free from swelling, and flexion and extension are normal in range. The transferred tendon has become adhered to the structures on the medial side of the patella and on extension puts a direct pull on the internal lateral ligament. The fibrosis in the region of the transferred tendon is sufficiently strong to prevent lateral displacement of the patella. The pain and disability in the knee have, on the patient's own statement, entirely disappeared.

307 Sharp Building

TREATMENT OF A CASE OF CHRONIC VAGINITIS WITH PHENYLMERCURIC NITRATE

FREDERIC WADE HITCHINGS M.D., CLEVELAND

It is a matter of common knowledge that it may be extremely difficult to cure a leukorrheal condition. In attempting to do so, the first requisite is to determine the cause. This in itself may be no easy task, and success need not necessarily lead to cure. Bacterial infection, the invasion of parasites, and anatomic and even physiologic conditions all have to be considered. Often several factors from different sources act together in what may be a distressing condition for the patient. So-called remedies are numerous and too often are useless. The case reported here seems to be worth putting on record for two reasons. The first is that it resisted all efforts at treatment for five and one half years. The second is that cure finally was promptly, and apparently permanently, brought about through the use of douches of phenylmercuric nitrate.

In the fall of 1928 an unmarried woman in her late thirties had recourse to what proved to be an unfortunate expedient in using a cotton tampon instead of a menstrual pad during one of her menstrual periods. After the period was over, she removed, at least as she thought, all of the cotton. About a week later she began to have a profuse and foul vaginal discharge. As I was out of town at the time, she consulted a colleague who was caring for my patients. The colleague made a vaginal examination and found that part of the cotton had not been removed. He gave appropriate directions as to treatment, but the discharge persisted and in about a month the patient consulted me.

On further examination no particular changes were observed in regard to the condition of the uterus, fallopian tubes, ovaries and vagina beyond the fact that there was moderate reddening of the mucous membrane of the vaginal wall and the cervix. A few weeks later a rather severe acne of the face and upper part of the back appeared and persisted during the period of treatment. The question arose as to whether or not there might be any connection between the acne and the vaginitis.

Too much space would be required to give in detail all the facts connected with the case. Suffice it to say that as regards diagnosis, repeated examinations of smears failed to reveal any gonococci. *Trichomonas vaginalis* was never found. A colon bacillus infection was considered but could never be proved to be a cause. It was finally concluded that a *Staphylococcus albus* infection was responsible, owing to the predominance of this organism in the vaginal secretions and because it was found also in the acne pustules. It may be interpolated here that the pustules were deep, rather than superficial, in character.

As regards treatment, various solutions were used for douches of strength varying from very weak to as strong as could be tolerated. Physiologic solution of sodium chloride, boric acid solution, potassium permanganate, the brief use of corrosive mercuric chloride in a strength of 1:5,000, lactic acid, and compound solution of cresol were among those most thoroughly tried. Weak permanganate solution seemed to be the best, but only through affording more prolonged periods of cleanliness than the others.

Other measures consisted in application of 1 per cent mercurchrome to the vaginal wall, cervical canal, and interior of the uterus, and the use of tampons, trinitrophenol suppositories, 2 per cent iodine (tincture) on the vaginal wall and 10 per cent in the cervical canal, applications of 2 per cent glycerite of tannin and its use in tampons, and insufflations of powdered boric acid. The cervical canal was cauterized on several occasions with a saturated solution of silver nitrate or with trichloroacetic acid. Implantations of cultures of *Bacillus acidophilus* were tried over a considerable period of time, but the need of frequent douching with physiologic solution of sodium chloride to remove the foul secretions probably prevented any benefit.

As the foregoing as well as other measures utterly failed to cure, recourse was had to the use of a vaccine made from *Staphylococcus albus* from both the acne lesions and the discharge. From the facts that an injection was followed in a few hours by the acne becoming worse and the discharge more profuse, this seemed to have a certain amount of effect, espe-

cially as there was later temporary improvement in both skin and vagina. It was impossible, however, even giving a long series of injections and using local measures at the same time, to overcome the infection.

Early in April 1934 the patient's condition was as bad as ever. She was obliged to wear menstrual pads constantly. The discharge was very profuse and so foul that, unless unremitting care to douche at least twice a day was taken, the odor was noticeable. The vulva had become exquisitely sensitive. The general health was below par.

At that time, thanks to Dr. E. E. Ecker of Western Reserve University, I had already been using phenylmercuric nitrate for some months as a local antiseptic in a wide variety of conditions, and with gratifying success. Bactericidal efficiency seemed to be at a maximum, while tissue irritation was indubitably at a minimum.

The patient was instructed to take douches twice a day, using phenylmercuric nitrate in a glycerin solution of 1:1,500 diluted down to 1:20,000. From the first, the vaginal discharge began to diminish along with disappearance of the odor. It is impossible to say exactly when the discharge stopped, but at the end of three weeks it had been gone for several days. On account of the possibility of mercurial irritation of the mucous membrane and of the kidneys, the patient was told to discontinue the douches and await developments. To date and frankly, after such a history, to my surprise, there has been no recurrence of the vaginitis in six months. There has been complete restitution to normal. Moreover, the acne began to improve with the improvement in the local condition and is hardly noticeable at present. There has also been great improvement in the general health.

Judging from the fact that the discharge disappeared as a result of using the douches without any direct intracervical or intra-uterine applications, the infection was confined to the vagina. As surmised when the acne first appeared, that it was connected with the vaginitis seems apparent. It should be stated that at no time was evidence of mercurial irritation of either the kidneys or of the mucous membrane of the mouth found.

10026 Euclid Avenue.

THE USE OF SODIUM DESOXYCHOLATE FOR THE IDENTIFICATION OF PNEUMOCOCCI

EINAR LEIFSON, PH.D., BALTIMORE

During the course of a study of the effect of sodium desoxycholate on the growth of bacteria it was found that sodium desoxycholate dissolves pneumococci much more rapidly and completely than does bile. Although this observation was made entirely independently, it was subsequently found from the literature that sodium desoxycholate has been used for this purpose for some time by a number of people, especially in England.

As early as 1917, Mair¹ described a method for the preparation of desoxycholic acid and stated that its solvent action on pneumococci is very much more powerful than that of bile and the common bile salts. Some years later Mair² published a detailed discussion of the solubility of pneumococci in bile and bile salts. Swann and Cooper,³ in a publication on the use of sodium desoxycholate in the treatment of pneumococcal empyema, state that they have used sodium desoxycholate in place of bile for some years for the identification of pneumococci. Their technic is similar to that of Mair. Mair makes a stock solution of sodium desoxycholate of 10 per cent concentration in water. This solution is stable and need not be sterilized. One-tenth cc. of this solution is added to 5 cc. of the culture. Lysis usually occurs within five minutes.

In this laboratory we have used sodium desoxycholate in the diagnosis of pneumococci for a considerable length of time.

From the Department of Pathology and Bacteriology, Johns Hopkins University.

1 Mair, W. The Preparation of Desoxycholic Acid. *Biochem. J.* 11:2, 1917.

2 Mair, W. The Pneumococcus. Autolysis and Solubility in Bile. *System of Bacteriology*. Medical Research Council 2:168, 1929.

3 Swann, B. R. and Cooper, T. V. Treatment of Pneumococcal Empyema with Bile Salts. *Brit. M. J.* 2:1117 (June 23) 1934.

Our technic has been to add 2 drops of a 10 per cent water solution of sodium desoxycholate to 1 cc. of pneumococcus culture. The culture becomes perfectly clear in from two to five minutes. We have never found any streptococci that are dissolved by sodium desoxycholate, and, conversely, we have never found any pneumococci that are not dissolved by sodium desoxycholate. As stated by Mair, the p_H of the culture to be tested must not be below 6.5. Below this p_H desoxycholic acid will precipitate from the solution. The temperature at which the test is carried out is of little practical importance as long as it is kept below 50°C. Above 50°C the autolytic enzymes, according to Mair, are destroyed and without the presence of these enzymes the pneumococci are not soluble in bile or the bile salts.

This test has apparently not been used much in the United States, and since it is so far superior and convenient as compared to bile it seemed worth while to publish this notice. The only source in this country seems to be Riedel-de Haen, 105 Hudson Street, New York.

1833 East Monument Street

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE

H. A. CARTER, Secretary

THERAPEUTIC EXERCISE

J. S. COULTER, M.D.

AND

C. O. MOLANDER, M.D.

CHICAGO

(Concluded from page 120)

THERAPEUTIC EXERCISE OF THE ELBOW JOINT

The elbow is a hinge joint. The trochlear surface of the humerus articulates with the greater sigmoid cavity of the ulna, the capitellum of the humerus with the cup-like depression of the head of the radius, and the lesser sigmoid cavity of the ulna with the circumference of the head of the radius. The articular surfaces of the elbow are in an oblique position, and this, together with the position of the bones of the forearm, forms what is termed the carrying angle. This is seen with the arm in complete extension and measures about 170 degrees, varying of course in different individuals.

The head of the radius, which is in contact with the capitellum of the humerus and lesser sigmoid cavity of the ulna, makes movement possible in any direction. This articulation and the distal radio-ulnar joint make possible pronation and supination of the forearm.

The ligaments that give added strength to the joint are the capsular and the orbicular. The capsular ligament has four thickened bands, the anterior, the posterior, the internal lateral and the external lateral ligaments. The orbicular ligament around the head of the radius holds it against the ulna.

The synovial membrane is very extensive, becoming most superficial on each side of the olecranon process.

The movements of the elbow joint are flexion and extension, owing to the obliquity of the trochlear surface, these are not in a straight line. Flexion is accomplished by the brachialis anticus and biceps, assisted by the muscles arising from the internal condyle of the humerus and by the brachioradialis. Extension is performed by the triceps and anconeus, assisted by the extensors of the wrist and fingers. The arc of flexion and extension varies from 120 to 150 degrees,

extension taking place in a straight line and being limited by the olecranon process of the ulna on the posterior side of the humerus, and flexion being stopped by contact of the muscles of the anterior surface.

Pronation and supination of the forearm take place at the elbow and at the distal radio-ulnar joint, as previously described, the radius rotates at the elbow, and the ulna at the wrist. These joints make it possible to rotate the hand through nearly 180 degrees. This, together with the 90 degrees rotation possible in the shoulder joint, makes a range of 270 degrees for the hand when the elbow is fully extended.

The muscles which supinate the arm are the biceps and the supinator brevis, and those which pronate are the pronator radii teres and the pronator quadratus.

While the arm is in a sling or splint, "muscle setting" can be commenced with the biceps and triceps, and the muscles of the forearm. "Muscle setting" is the contraction and relaxation of the muscles without moving the joints.

When the tenderness has subsided, graduated extension of the elbow may be started while the arm is in a sling. The sling is slackened so that the elbow may be allowed to extend about 20 degrees, and voluntary movement can be advised within that radius. When these movements are painless, the sling can be relaxed still farther from day to day.

If the patient complains of pain following this treatment and the range has decreased rather than increased, it is a sign that too much was attempted the previous day and is an indication that the joint is too actively inflamed to undergo this treatment.

For passive motion, the patient should be placed in a sitting position at the side of a flat, padded table, and a smooth board, which has been well powdered, placed on pillows to bring the arm to a level with the shoulder. The arm is removed from the sling with care and placed on the board. The arm is grasped by the operator with one hand just above the elbow, and the other hand takes hold of the wrist. The elbow joint is then moved very gently but firmly through its complete range of flexion and extension, only once. Spasm should be avoided.

In relaxed movements of the elbow, according to Mennell, the patient should be in a sitting position, the operator should be in a position to support the part without difficulty, and the motions should be a natural combination. One hand of the operator grasps the arm of the patient at the elbow and the other hand holds the patient's hand. As the forearm is flexed, the shoulder is extended and the forearm is supinated. When the movement is reversed, the shoulder is flexed and the forearm extended and pronated. Active assistive exercise should follow as soon as possible.

When the patient's arm is out of a sling, active home exercises may be begun.

EXERCISES FOR THE ELBOW

1 Lying on the face, the forearm supported by the operator over the edge of the table, the patient bends the elbow, with the aid of gravity, to increasing angles.

2 Lying on the back, the forearm supported by the operator, straighten from increasing angles.

3 Sitting, with the inner side of the whole arm resting on the table on powdered cardboard. (a) Bend the elbow by sliding the forearm along the table. (b) Start with the elbow bent, and straighten.

4 Sitting, with the back of the whole arm resting on the table, raise the forearm until the hand touches the shoulder,

and lower. Give resistance by putting pressure in front of the wrist, then back.

5 Sitting or standing, the arm at the side, raise the forearm until the hand touches the shoulder. (a) Book in hand, lift the book to the shoulder.

6 Sitting or standing, the arm at the side, weight in hand. (a) With the palm facing forward, bring the weight to the shoulder and lower to the side. (b) With the back of the hand facing forward, bring the weight to the shoulder and lower to the side.

7 Standing, grasp the rod or the ledge at full arm's length over the head, the palms facing backward, raise the body until the chin touches the rod.

8 Sitting, the back of the upper arm resting on the table, the elbow bent to a right angle. (a) The palm facing the shoulder, turn the forearm until the back of the hand faces the shoulder. (b) The back of the hand facing the shoulder, turn the forearm until the palm faces the shoulder.

9 Sitting, the forearm resting on the table, the elbow bent to a right angle. (a) The hand resting on the little finger, turn the forearm until the palm faces down. (b) Turn the forearm until the back of the hand touches the table. (c) The back of the hand resting on the table, turn the forearm until the hand rests on the little finger. (d) The palm of the hand resting on the table, turn the forearm until the hand rests on the little finger.

Occupational Therapy—Sawing is a valuable aid to flexion and extension. With the arms held tightly to the side, weaving baskets, sewing on cards, and rope splicing are excellent.

Using a screw driver gives pronation and supination.

THERAPEUTIC EXERCISE FOR THE HAND AND WRIST

The wrist is a double hinge joint and is capable of all movements except rotation. There are three distinct joints permitting movement of the hand: the radio-carpal, between the radius and first row of carpal bones—the scaphoid, the semilunar, and the cuneiform; second, the midcarpal joint between the two rows, having the trapezium, the trapezoid, the os magnum and the unciform; and third, the carpometacarpal joint between the distal row and the metacarpals. All these joints are of the condyloid variety. They are joined by the capsular ligament and four ligamentous bands, which are anterior and posterior, and the internal and external lateral. The last two are exceedingly strong and well defined bands, while the first two are weaker and fused with the capsular ligament.

The wrist joint movements are flexion, extension, adduction, or ulnar flexion, and abduction, or radial flexion. A combination of these movements produces circumduction. Flexion of the wrist joint is performed by the flexor carpi ulnaris, the flexor carpi radialis and the palmaris longus. The extensors of the wrist joint are the extensor carpi radialis longus, the extensor carpi radialis brevis and the extensor carpi ulnaris.

Radial flexion of the wrist, or abduction, is performed by the abductor pollicis longus, the flexor carpi radialis and the two radial extensors. The ulnar flexors, or adductors, of the wrist are the extensor carpi ulnaris and the flexor carpi ulnaris.

The hand can be flexed on the forearm from a straight and extended position about 90 degrees, but part of this motion takes place in the carpal bones.

Extension takes place through a range of from 45 to 65 degrees. Ulnar flexion of the wrist is about 45 degrees, while radial flexion is less, being limited by the styloid process of the radius.

The movements of the thumb are flexion, extension, abduction, adduction and slight rotation as it flexes toward the fingers and aids in bringing the ball of the thumb to meet the ball of each finger. The range of flexion and extension, abduction and adduction is about 90 degrees.

The flexor pollicis brevis, the opponens pollicis and the adductor pollicis produce flexion and opposition, two movements that are similar in character. The two special extensors, brevis and longus, and the abductor pollicis longus, produce extension. The abductor pollicis longus and the abductor pollicis brevis produce abduction. The adductor pollicis and the first dorsal interosseous muscle produce adduction. Flexion of the distal phalanx of the thumb is performed by the flexor pollicis longus, and flexion of the proximal phalanx is accomplished chiefly by the flexor pollicis brevis. Extension of the distal phalanx is taken care of by the extensor pollicis longus, and of the proximal phalanx by the extensor pollicis brevis.

Flexion of the distal phalanges of the fingers is performed by the flexor digitorum profundus, and of the middle phalanges by the flexor digitorum sublimis. The flexors profundus and sublimis both act to a slight extent on the proximal joints. Flexion of the proximal phalanges with extension of the interphalangeal joints is produced by the interossei and the lumbricales, which at the same time extend the second and third phalanges. Extension of the proximal phalanges is performed by the extensor digitorum communis, the extensor indicis proprius, and the extensor digiti quinti proprius. Abduction and adduction of the fingers are movements of the proximal phalanx away from and toward a line through the middle finger. The abductor digiti quinti and the dorsal interosseous muscles act as abductors of the fingers. The volar interosseous muscles operate as adductors of the little, ring and index fingers. In the middle finger the second and third dorsal interosseous muscles act alternately as abductors and as adductors.

In passive exercise of the wrist and fingers, proper combinations are as follows:

1 Flexion of the fingers should be combined with extension of the wrist.

2 Extension of the fingers should be combined with flexion of the wrist.

3 Extension of the wrist with pronation of the forearm.

4 Flexion of the wrist should be given as the forearm movement passes from full pronation to a position midway between pronation and supination.

In passive movements of the wrist, the arm is placed on a smooth board. One hand of the operator grasps the hand of the patient, and the other grasps the forearm well above the wrist. The wrist is then flexed as the fingers extend and the forearm passes from full pronation to a point midway between pronation and supination. This should be done very slowly and evenly.

For ulnar and radial flexion, the arm and the forearm are gently lowered to the board, still flexed at the elbow and at right angles, with the palm of the hand touching the board. Grasp the hand of the patient under the palm and, with the other just above the wrist, carefully deviate the wrist ulnarward, for it is best to start in this direction and then proceed radialward with slight pronation and extension.

For flexion of the fingers, place the forearm in the same position. The palmar surface of the operator's

hand covers the dorsal surface of the patient's hand, and the fingers of the operator cover those of the patient. The wrist is well supported and, if possible, in a dorsiflexed position. If the individual phalanges need attention, the procedure is much the same. For extension and hyperextension, the finger tips are pulled back. The operator should bring his fingers over the end of the patient's and then slowly and evenly pull them back. The thumb is flexed and extended, abducted and adducted, and later circumducted.

For pronation, supination, wrist, finger and thumb exercises we use a Kanavel table. Construction details will be supplied on request.

For active exercises for the wrist and hand the following are suggested:

EXERCISES FOR THE HAND AND WRIST

1 The hand resting on the little finger. (a) Bend the wrist forward, keeping the fingers straight. Give resistance by putting pressure on the palm near the wrist. (b) Bend the wrist back as far as possible, keeping the fingers bent. Give resistance by putting pressure on the back of hand near the wrist.

2 The hand resting on the table, palm down. (a) Move the hand toward the thumb. Give resistance by putting pressure on the thumb near the wrist. (b) Move the hand toward the little finger. Give resistance by putting pressure on the little finger side of the hand near the wrist.

3 The hand resting on the little finger, the wrist bent back to bend the fingers, and the wrist forward to straighten. Bend the fingers at the first joint, keeping the other joints straight. Give resistance by putting pressure just above the first joint.

4 The hand resting on the table, palm down. (a) Spread the fingers, being careful that the fingers are not raised from the table. Give resistance by grasping the fingers with the other hand. (b) Bring the fingers together. Give resistance by putting the fingers of one hand between the fingers of the other.

5 The arm resting on the little finger side of the hand, bring the tip of the thumb to the tip of each finger and to the first joint of the little finger, making a circle. Give resistance by putting pressure between the tips.

6 Repeat exercise 5, grasping a towel between the finger tips, using the other hand trying to pull the towel out of grasp.

7 Close all the fingers and the thumb to a tight fist and open fully. Repeat against resistance offered by the other hand.

8 The hand resting on the little finger and the forearm on the table, the elbow bent to a right angle. (a) Turn the hand so that the palm rests on the table. (b) Turn the hand so that the palm faces up, being careful that movement is not made in the shoulder.

9 Carry a book between the thumb and the fingers flat on the book, the arm at the side.

10 Carry the book on the palm of the hand, with the fingers straight.

11 Pick up a soft rubber ball, grasping and letting go. Decrease the size of the ball.

12 Wring out different sizes of cloth.

Occupational Therapy—Curative occupational therapy in the form of basket weaving, cutting tin designs with tin shears, leather work, painting, carpentry and other forms may be used effectively. All of these are used only after the wrist, hand and fingers have secured sufficient range and strength of movement. Before this a patient with a stiff wrist and fingers may be asked to wind cord into a ball.

THERAPEUTIC EXERCISE FOR THE HIP JOINT

The hip joint is of the ball and socket variety, having greater strength and less mobility than the shoulder joint. It is situated deep and is formed by the head of the femur articulating with the acetabulum of pelvis, produced by the union of ilium, ischium and pubes.

The iliofemoral ligament, which forms the anterior part of the capsular ligament, is exceedingly strong. It checks hyperextension and is very important in maintaining the upright position.

The chief movements of the joint are flexion, extension, abduction, adduction, internal rotation, external rotation and circumduction, the last being a combination of flexion, extension, abduction and adduction.

Flexion is produced by a forward movement of the thigh until it comes in contact with the abdomen, it being less when the knee is straight, owing to the checking influence of the hamstring muscles, which are placed on tension. The range of flexion with the knee joint flexed is 150 degrees or more, with the knee extended it is difficult to bring it beyond a right angle with the trunk. The muscles that flex the thigh are the iliopsoas, the rectus femoris, and possibly the sartorius and the tensor fasciae latae.

Extension is the opposite of flexion, and the limb is moved downward and backward. When it is in a vertical line with the trunk, it is stopped by the iliofemoral ligament and the pubofemoral band. Hyperextension is caused by the pelvis tilting backward with the movement of the femur, and the range is about 45 degrees. The chief muscles that extend the thigh are the gluteus maximus and the hamstrings.

Abduction is possible by moving the limb away from the other sideways and is about 50 degrees. The muscles that abduct the thigh are the gluteus medius, gluteus minimus and the tensor fasciae latae.

Adduction is the opposite of abduction and moves the limb through the same plane toward the opposite one, being stopped by contact with it. Adduction can take place farther by moving the limb in front of or behind the other, or when the trunk is inclined to the side. The range in this way can be increased 45 degrees. The muscles adducting the thigh are the adductor gracilis, the adductor longus, the adductor brevis, and the adductor magnus.

Internal rotation is produced by turning the leg inward and is checked by the ischiocapsular and posterior capsular ligaments. The range is about 30 degrees. The muscle producing internal or medial rotation are the iliopsoas, the anterior parts of the gluteus medius and gluteus minimus, and the tensor fasciae lata.

External rotation is accomplished by turning the leg outward and is checked by the outer band of the iliofemoral ligament. The range is about 60 degrees, and the muscles responsible are the piriformis, the obturator externus and internus, the gemelli superior and inferior, the quadratus femoris, the three adductors, the pectineus, the inferior fibers of the gluteus maximus, and the iliopsoas.

The complete range of rotation is about 90 degrees. A combination of flexion, extension, abduction and adduction produces circumduction.

The patient, lying in the supine position, should be completely relaxed for passive movement. The operator stands beside the patient, grasps the heel with one hand and places the other in the popliteal surface with the palmar side up. The knee and the hip are slowly, steadily and evenly flexed, and the hand in the popliteal space is slipped over the head of the tibia, is held for the count of five and is then slowly returned to position. This movement should not proceed to the point of inducing spasm.

Active assistive movements should be started along with passive movements, provided sufficient range has been established with the latter. It is well to start with flexion and extension. The patient is assisted to a lying position on the affected side, the sound leg being placed behind it. The patient is then told to flex the thigh and the knee at the same time, the operator gently assisting the movement by pushing against the posterior part of the thigh just above the knee joint, the knee and the thigh are then extended. Thus assistive movement may be necessary in the early part of the arc of movement and also in the latter third. Spasm should be avoided. Active assistive movement is followed by free movement in the same plane.

Active movements for rotation are the last active movements attended to. For this the patient is placed in a prone position, face down. The knee is then flexed by the patient to a right angle and he is told to turn the leg outward and then inward.

When sufficient range and strength of movement have returned, weight-bearing exercises may be given, first without apparatus and then with apparatus. Construction plans for home made apparatus will be furnished on request.

EXERCISES FOR THE HIP

1 Lying face down, the leg being supported off the bed, the knee straight, the patient tries to draw the knee toward the bed with the help of gravity (no resistance being used by the operator).

2 The patient lying on the back, the operator lifts the leg (the knee straight) and the patient forces it down.

3 The patient lying on the side to be exercised, a piece of powdered cardboard under the leg, the operator holds the other leg. The patient brings the knee to the chest.

4 Same as in exercise 3, except that the patient brings the leg back.

5 Lying on the back, the leg on a piece of powdered cardboard, move the leg directly sidewise, without lifting the foot keeping the knee straight and the foot up.

6 Lying on the back same as in exercise 5, except that the patient brings the leg in.

7 The patient lying on the good side, the operator holds the affected leg up, the knee straight, and the patient brings it down to the other leg.

8 Sitting with the knees bent the lower legs hanging, raise the lower leg to the side away from the other leg keeping the knees together.

9 Sitting with the lower legs hanging, raise the lower leg across in front of the other leg to the knee.

10 Lying on the back the heels on powdered cardboard, the knees at right angles, straighten the knees and return to the first position.

11 Lying on the back, the knees straight, raise both legs to an angle of 90 degrees and move them forward and back, alternating.

12 Lying on the back, the knees straight raise both legs to an angle of 45 degrees, then 90 degrees back to 45 degrees and to position.

13 Sitting the body erect the knees straight, reach forward and touch the toes.

14 Standing, grasp a chair for support, swing the leg loosely from the hip.

Exercise in the curative workshop with the bicycle saw, which can be run with various appliances to produce different exercises, and working on a foot loom.

THERAPEUTIC EXERCISE FOR THE KNEE JOINT

The knee joint is the largest and the most complex in the body. The great strength that the knee joint possesses is due largely to the ligaments and to a less

degree to the muscles, there being no interlocking or fixation of the bony elements. The capsular ligament is strengthened by the tendons passing over it in various directions and in addition by the internal and external lateral ligaments, which add to its strength. The joint is lined with synovial membrane of great laxity.

There are two crucial ligaments, the anterior and the posterior, which cross each other and firmly bind the femur to the tibia. There are two interarticular fibrocartilages, the larger internal and the smaller external. The former is thinner and subjected to greater strain than the latter.

The patella is roughly circular in outline, its superficial surface dome shaped, to which are attached the expansions of the quadriceps extensor. Its deep surface is irregularly flat, covered with articular cartilage. It has a sliding and rolling movement and prevents the tendon of the extensors from drawing into the groove between the condyles of the femur. The patellar ligament or tendon is inserted into the anterior tibial tubercle well beyond the joint.

The movements of the knee joint are flexion, extension and, in addition, rotation, both internal and external, when the knee is flexed 90 degrees or more.

Flexion is produced by bending of the knee joint, is stopped by contact with the thigh, and has a range of about 135 degrees. The muscles that flex the knee are the hamstrings, assisted by the gracilis, the sartorius, and indirectly by the gastrocnemius. Extension is the opposite of flexion, and the degree range is the same as that for flexion. The quadriceps extensor, aided by the tensor fasciae latae, is responsible for this action.

When the knee joint is flexed to 90 degrees or more, the tension on the ligaments slackens, permitting internal and external rotation of the tibia. This rotary action in the flexed position is of great convenience in climbing, and the lack of it in extension maintains a stable position on the feet. The inward rotators are the semimembranosus, the semitendinosus, the sartorius and the adductor gracilis. The outward rotator is the biceps femoris.

For passive movement, the patient is placed on the side with the knee on a smooth, powdered, rectangular board. The operator stands to the rear of the patient, grasps the ankle with one hand, and with the other firmly takes hold of the thigh just above the knee joint. The knee joint is then slowly, steadily and evenly flexed with the thigh to the point of spasm and held to the count of five. It is then extended in the same manner, care being taken not to extend it completely if pain is present.

Active movement should be started just as soon as there is sufficient range to make it practical. The injured limb is placed in the same position as that used for passive movement. The patient is then asked to flex his knee slowly, steadily and evenly. If any fibrillation occurs, movement should be stopped immediately and the operator should bring the limb back to its former position. At this point the operator assists the patient in flexing the limb in the first third of its arc of movement by gently placing one hand just above the ankle and then gently pulling. This is performed within the limit of pain. The leg is then extended, and assistance is given if necessary in the first and last thirds of the arc of movement by gently pushing the ankle on the posterior part.

Just as soon as assistance is not needed, free and resistive exercise are added. For increased resistive

work the pulley weights, the stall bars, the rowing machine, the bicycle, the balance beam and sandbags are used. There are three methods by which it is possible to obtain true free movement, namely, underwater exercise, the roller skate and the sling suspension methods.

Our curative occupational therapy for the knee joint is the bicycle saw, treadle saw, foot loom, stationary bicycle and rowing machine.

EXERCISES FOR THE KNEE

- 1 Move the knee cap without moving the knee, by contracting the group of muscles above the knee.
- 2 Lying face down, the knee bent, the foot supported by some one, straighten from increasing angles.
- 3 Lying on the back, the heels on powdered cardboard, the knee bent, straighten from increasing angles.
- 4 Lying on the affected side, a pillow between the thighs, the leg on powdered cardboard. (a) Straighten from increasing angles. (b) Tilt the cardboard to increase gravity.
- 5 Sitting on the edge of the table, the leg hanging. (a) Straighten the knee. (b) Add weight to the leg.
- 6 Sitting on the edge of the table, the leg supported by the operator, at horizontal, bend the knee.
- 7 Lying on the unaffected side, a pillow between the thighs, the leg on powdered cardboard. (a) Bend the knee through increasing angles. (b) Tilt the cardboard to increase gravity.
- 8 Lying on the back, the heels on powdered cardboard, the knee straight, bend to increasing angles.
- 9 Lying on face. (a) Bend the knee through increasing angles. (b) Add weight to the leg.
- 10 Sitting on the edge of the table, the legs hanging, swing the legs back and forth alternately.
- 11 Standing, bend the knees, raise the heels, keep the knees close together, and return to the erect position.
- 12 Bicycle riding.
- 13 Kneeling, sit back on the heels as far as possible.

THERAPEUTIC EXERCISE OF THE FOOT AND ANKLE

There are four sets of joints in the foot when movement takes place: the ankle joint, the tarsal joints, the tarsometatarsal joints, and the phalangeal joints.

The ankle joint is a hinge joint formed by the union of the astragalus and the lower part of the tibia with its internal malleolus and the external malleolus of the fibula. This joint is bound by thick, fibrous, capsular ligamentous bands thickened on four sides by strong bands called lateral ligaments. They are the stronger internal and internal lateral, and the lesser anterior and posterior ligaments.

The subastragalar joint, which is the joint between the inferior articular surface of the astragalus and the superior articular surface of the os calcis, is a double saddle joint allowing movement of the os calcis under the astragalus when the leg is fixed, or of the os calcis on the astragalus when the foot is fixed. The midtarsal joint is of considerable importance and consists of two parts, an outer and an inner one. The outer one consists of the calcaneocuboid and is a saddle joint permitting only a limited degree of flexion, extension, abduction and adduction. It possesses greater strength and weight-bearing qualities than does the inner portion. The inner part is the astragalonavicular and forms the instep above the longitudinal arch. It is a ball and socket joint and is capable of movement in all directions, including rotation. Owing to this fact it does not possess the strength of its outer component. The scaphoid articulates with the three cuneiforms, which in turn articulate with the three inner metatarsals, the two outer metatarsals articulate with the

cuboid These joints nearly all have flat surfaces, with gliding movements, which are limited by strong ligaments. The toe joints are the fourth set of joints and are of the hunge variety

There are two arches of the foot, the longitudinal and the transverse

The longitudinal arch consists of two parts, an outer less movable portion, and an inner one, which is more mobile, because of the ball and socket astragalonavicular joint. The outer component consists of the os calcis behind, the cuboid in the middle and the fourth and fifth metatarsals in front. It is supported by the heel behind and the head of the outer metatarsal in front. The inner component or more movable portion is an elliptic dome and consists of the os calcis to the rear, the astragalus and scaphoid, which form the top of the dome, and the three cuneiforms, and it extends to the heads of the three metatarsals but is supported by the head of the first metatarsal. There is no bony key-stone to either the longitudinal or the transverse arch. Both are maintained by ligaments but depend in the last analysis on muscle action for their support.

The transverse arch fuses with the longitudinal components

The most important ligament that maintains the arch of the foot is the inferior calcaneoscaphoid. The plantar fascia is of considerable strength and corresponds to a "binding rod" of the arch. The transverse metatarsal ligament is a narrow fibrous band connecting the anterior extremities of all the metatarsal bones.

There are three strong points of support, one extending from the heel to the head of the first metatarsal, the second from the heel to the head of the fifth metatarsal, and the third between the outer and inner metatarsals. Strong ligaments bind these supports together.

The movements of the foot are plantar flexion, dorsiflexion, eversion, inversion, adduction and abduction. The terms pronation and supination also are employed, pronation representing eversion plus abduction with some rotation at the calcaneoscaphoid joint, and supination representing inversion and adduction combined with rotation at the calcaneo-astragalar joint.

Dorsiflexion is the elevation of the front of the foot toward the front of the leg. Plantar flexion is a depression of the foot in a direction just opposite to that of dorsal flexion. Dorsiflexion and plantar flexion, chiefly in the astragalotibial joint, take place through a range of from 60 to 80 degrees. With the foot held at a right angle to the leg and the knee straight, dorsiflexion occurs through 10 to 20 degrees and plantar flexion between 50 and 60 degrees, the total range of both being from 60 to 80 degrees. With the knee flexed the range of dorsiflexion of the foot increases, and with the knee straight plantar flexion increases.

Adduction is a deflection inward of the forefoot from the mediotarsal and subastragalar joints. Abduction is a movement of the forefoot outward, which is just the opposite of adduction. Both adduction and abduction take place through the mediotarsal joint.

Eversion and inversion occur as a natural sequence with abduction and adduction. However, with eversion there is a definite lifting of the outer border of the foot, and with inversion a lifting of the inner border. These movements take place through the subastragaloid joint.

The muscles producing dorsiflexion are the tibialis anticus, the extensor digitorum longus, the extensor hallucis longus and the peroneus tertius. Plantar flexion is produced by the gastrocnemius, the plantaris, the soleus, the tibialis posticus, the peroneus longus and brevis, the flexor digitorum longus and the flexor hallucis longus.

Adduction and inversion are produced by the tibialis anticus, the tibialis posticus, the extensor hallucis longus and the flexor hallucis longus. Abduction and eversion are produced by the peroneus longus, brevis and tertius and the extensor digitorum longus.

The movements of the toes are mainly flexion and extension together with some adduction and abduction. Flexion is produced by the flexor digitorum longus and the flexor digitorum brevis. The lumbricales also flex but in addition draw the second, third, fourth and fifth toes medially.

Extension is produced by the extensor digitorum brevis, the extensor digitorum longus and the extensor proprius hallucis. Abduction and adduction are accomplished by the interossei.

Passive movement in dorsiflexion and plantar flexion may be commenced. The patient, lying down, is asked to turn on the side of the involved ankle. The sound limb is flexed and placed in front of the injured one, which is put on a smooth, well powdered rectangular board. The operator then grasps the ankle just above the joint with one hand and the foot with the other hand. The foot is then steadily, slowly and evenly dorsiflexed to the point of spasm and held for the count of five. It is then plantar flexed in the same manner.

Just as soon as sufficient range has been secured, active movement may be started. For active exercise of the sprained ankle, the patient should be placed in the same position as was used for passive movement, and on the same smooth, powdered, rectangular board. The patient should dorsiflex the ankle. This is followed by free and then by light, resistive exercise.

EXERCISES FOR THE FOOT

Exercises should be done slowly, carefully and smoothly. Rest between each exercise.

All except standing exercises should be done with bare feet. Do only the exercises on this list which are marked for you. Repeat the number of times daily as instructed.

- 1 Sitting, the knees crossed, the foot slightly turned in, pull the foot up.
- 2 Same position as 1, pull the foot in and up.
- 3 Same position as 1. (a) Curl the toes under, pulling hard. (b) Curl the toes under and pull the foot up. Keep the toes curled under. (c) Curl the toes under, pull the foot in and up. Keep the toes curled under.
- 4 Sitting, the foot on a board one inch thick, curl the toes over the edge. Try to touch the floor with the toes.
- 5 Lying on the back, the knees straight, the feet against the wall, the big toes together, the heels far apart, keep the heels against the wall and bring the forefoot away from the wall as far as possible.
- 6 Sitting, the big toes together, the heels far apart, raise the forefoot off the floor as far as possible.
- 7 Sitting, pick up marbles with the toes of the right foot and place them in your left hand, with the left foot into the right hand.
- 8 Sitting, spread a bath towel on the smooth floor, put the front half of the feet, the toes turned slightly in, on the edge of the towel, the heels far apart. (a) Grasp the towel with the toes of one foot and pull toward you, then with the toes of the other foot and repeat alternately, crumpling the towel under the foot. (b) Place a weight on the towel.

9 Sitting the knees apart, the legs crossed, rise, bearing the weight on the outer borders of the foot.

10 Standing, the toes turned slightly in, the feet parallel six inches apart, lift the inner border of the feet, relax half way and repeat. The toes cling to the floor.

11 Follow a straight line on the floor, walking on the outer borders of the feet, the toes curled downward and inward. Make the forward heel meet the backward toe.

12 Standing, lift the inner borders of the feet, rock backward and forward from heel to toe. Do not let the inner borders of the feet down.

13 Walk in a straight line so that the right heel strikes the floor first and the rest of the foot pivots inward 90 degrees. Repeat with the left foot.

14 Walk in a straight line so that the toes of the right foot touch the floor first and the rest of the foot pivots outward 90 degrees. Repeat with the left foot.

15 Standing, the toes turned in and curled under, the heels far apart, face the wall the toes 28 inches from it, place the hands on the wall, lean the body forward by bending the elbows. *Keep the heels on the floor the knees, hips and back straight. Hold this position a few seconds.*

RULES

1 When one sits always cross the ankles, resting the feet on their outer borders.

2 When standing always keep the feet parallel and the weight of the body equally on the two feet.

3 Walk correctly, the toes turned slightly inward at all times. This is as important as periods of exercise.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
RAYMOND HERTWIG Secretary

NOT ACCEPTABLE

KELVITA

MAGIC OF NATURE

The product Kelvita, manufactured by the California Kelvita Company of San Francisco, is, according to the package label, a mixture of dried kelp (a seaweed), wheat embryo and certain dried vegetables.

Discussion of Label and Advertising—The label states

'A natural food from California Kelvita Magic of Nature a blend of kelp—wheat embryo—and vegetables presenting minerals and vitamins needed by the human body to maintain normal health and intelligence. Recommended in the treatment of deficiency diseases and glandular disturbances. One-half teaspoonful dry on the tongue swallowed with water twice daily. It is wise to be healthy. Calcium Copper Iron Magnesium Phosphorous Sodium.

There is nothing really unique or even extraordinary nutritionally or otherwise, about this ordinary product. The ingredients wheat embryo (a part of all whole wheat foods) and vegetables are common market and table articles. The kelp an unpalatable seaweed, has found no place in the American dietary, there is no authoritative information showing a need for kelp in the diet. True kelp is high in iodine but sufficient iodine may be obtained from the ordinary mixed diet especially when iodized salt, now everywhere available, is used. Kelvita's 'minerals and vitamins' are readily obtainable from common market foods. More than minerals and vitamins are necessary 'to maintain intelligence'. The recommendation of the product for 'the treatment of deficiency diseases and glandular disturbances' is a vague misinformative medicinal claim. This, accompanied by the statement of dosage similar in form to such statements used for medicines represents an apparent attempt to transform a food into a medicine. What is meant by the vague designations deficiency diseases and glandular disturbances is left to the imagination. This type of exploitation fosters self diagnosis and self treatment which may seriously endanger health.

The advertising not attached to the package, which is outside the jurisdiction of the federal Food and Drugs Act, assumes greater liberties. Some of the claims are

Get Healthy Increase your happiness and vitality—lengthen your life with Kelvita, magic of nature. Protect it (your body) with Kelvita. Puts pep in your step. Probably one of the greatest and most sensible aids in regaining youthful vigor with every cell of the body tingling with effervescent vitality is thru eating Kelvita a balanced blend of concentrated vegetables treated with the natural ultraviolet and infra red rays from California's magical sun. The body consists of some 12 or 16 organic minerals.

To maintain health this natural balance must be kept constant. A lack of one or more minerals results in deficiency diseases while a lack of several causes death. Constipation indigestion, worry decaying teeth lack of endurance and female disorders are sure signs of mineral deficiency.

The greatest accomplishments of Kelvita is in the treatment of CONSTITUTION ANEMIA RHEUMATISM NEURITIS LACK OF VITALITY PROSTATE GLAND TROUBLE GOITER NERVOUSNESS UNDERWEIGHT WORRY MENTAL DEPRESSION BACKWARD CHILDREN STERILITY OF BOTH SEXES and PROLONGED and PAINFUL MENSTRUATIONS in women. KELVITA is recommended as an accessory food in the treatment of these ailments is especially useful to prospective Mothers growing children and convalescents has brought gratifying relief to hundreds and was tested in a 1000 bed hospital.

'This is why KELVITA is available to you to furnish your body and those of your loved ones with vitamins and live food minerals that will so increase the resistance of each body cell as to throw off and keep out every disease. REMINERALIZE YOUR BODY.

KELVITA [is] very rich in food iodine calcium iron, phosphorous copper magnesium and traces of other minerals. IMPORTANCE OF IODINE Your thyroid gland lies astride your Adams apple is more active in women than in men. Your thyroid is perhaps the most important endocrine gland of your body it controls your emotions. Its secretion is called thyroxin 65% iodine. Possibly no life exists without iodine and normal life is impossible without 1/100 grain of thyroxin daily. Three and one half grains of thyroxin are all that lie between intelligence and imbecility. It has been observed that males fed a diet low in iodine are more difficult to arouse sexually and females fed a no-iodine diet become irritable less sex-conscious. Menstruations are more frequent and painful. Carlson says the thyroid is a specific necessity for development of reproductive glands in males and the lunar cycle in females. Food iodine as available in KELVITA is necessary for the healthy action of your thyroid.

VITAMINS B and E. Altho KELVITA contains generous amounts of Vitamins A B C and E we are here principally concerned with Vitamins B and E of which KELVITA is particularly abundant. Vitamin B as in KELVITA is especially needed by children and those desiring to gain weight, insure appetite for other foods to gain bodily growth was proven by the University of California. is essential in the mental development of children was proven by Dr. Mauer of University of Chicago. The natural oil in the wheat embryo of KELVITA aids in overcoming constipation.

'Vitamin E is needed by everyone who do not wish to become impotent (to grow old prematurely) it insures normal development of reproductive organs prevents sterility. Vitamin E and the food iodine in KELVITA go hand in hand toward this end. Needed by prospective Mothers to insure normal development of child and to lessen the chances of the Mothers body becoming mineral starved. Dr. Sherman of Columbia University proved that animals fed a no-vitamin E diet fail to reproduce their kind.

IT'S UP TO YOU MAKE YOUR DECISION TODAY DON'T LET YOUR BODY BECOME A FERTILE FIELD FOR ANY DISEASE. If you eat civilized foods you need KELVITA. There is no drugs or herbs of any nature in KELVITA. Take it freely every day notice the great change in your health. Be sure your children get their share. KELVITA is economic health assurance. KNOW THE THRILL OF BEING FULLY ALIVE—THE JOY OF VIBRANT ENERGY. The writer and his family all get their daily ration of KELVITA and for over four years have not had even a cold. He challenges anyone his age to compete in any physical contests.

Kelvita possesses no more "magic of nature" than do common foods. The advertising is of the usual false "patent medicine" quackery type apparently intended to deceive the gullible, the sick, or those with imagined ills. The artifices are clearly evident. Smatterings of facts are intermingled with falsehood giving the entire copy a semblance of truth. Names of well known authorities are inserted to give confidence. The material is pseudoscientific. The appeal of sex potency the dread of its loss, are adeptly used to captivate the morbid.

Advertising such as this is an example of the kind that is causing a growing public demand for federal legislation for the control of advertising in the interest of public welfare. The Committee on Foods vigorously opposes such deceptive advertising.

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SATURDAY, JANUARY 19, 1935

REPORT OF THE FEDERAL FOOD AND DRUG ADMINISTRATION

The recently published report of the Federal Food and Drug Administration, covering its activities during the year ended June 30, 1934, emphasizes the manner in which the administration has carried on its important work despite the limited resources and facilities provided by Congress and in the face of a notoriously deficient federal Food and Drugs Law. Approximately 54,000 samples of foods and drugs were analyzed by the bureau during the year. Nearly 1,100 criminal prosecutions were recommended and 1,729 shipments of adulterated or misbranded products were seized. Several hundred million pounds of foods from foreign sources were inspected, entry was refused to 4,223 proposed importations of foods and drugs. More than 6,000 samples of fruits and vegetables were analyzed for poisonous residues of sprays used as insecticides. Fifty-eight consignments were found to contain "dangerous" quantities and these were seized. This work the Food and Drug Administration considers its most important single activity, indeed, judging from the large number of shipments seized, spray residues must constitute an important menace to the public health, particularly in view of recent studies on chronic poisoning with heavy metals, for instance those that implicate lead intoxication in the etiology of multiple sclerosis.¹ The administration reports that state agencies have been of great assistance in this work. Fortunately the number of effective devices installed by growers to wash the spray residue from the foods has increased, but it is evident from the number of seizures reported that conditions in this respect are far from ideal.

The return of alcoholic beverages brought a number of new problems to an already overburdened administration. Alcoholic candies, still prohibited by law despite the repeal of the eighteenth amendment, were widely distributed, cases of intoxication among school children from the ingestion of these confections were

reported in the newspapers. Nineteen seizures were made and criminal prosecutions were initiated, thus with the aid of local and state authorities this traffic was quickly suppressed. Attention was directed to "products sold as medicinal whisky, but not of United States Pharmacopeial purity, to imitations sold as genuine whisky, to products clearly short in volume, and to products mislabeled as to alcoholic content." About 400 samples were analyzed, none contained ordinary denaturants. Of approximately 250 samples of products represented as medicinal whisky, over two thirds failed to meet the pharmacopeial standards, twenty-nine seizures resulted, and in other cases manufacturers relabeled outstanding stocks. Forty-nine seizures were made of products incorrectly labeled as whisky or as Scotch whisky, for example, mixtures of pomace and raisin brandies, or colored molasses spirits, or Scotch whisky diluted with neutral spirits and colored with caramel. Some products were short in volume or had false and fraudulent therapeutic claims on the labels. In the words of the report, "It is self evident that the present resources of the Food and Drug Administration are wholly insufficient to patrol the entire interstate and import liquor traffic and at the same time meet the other obligations in the way of protecting the purity of the food and drug supply imposed by the federal statute."

Seizures were made of 421 medicinal preparations bearing false and fraudulent therapeutic claims, 232 consignments were made the basis of criminal prosecution. "In the absence of a federal statute applying the same standards of honesty and fair dealing to advertising that now apply to label declarations, manufacturers and distributors of proprietary remedies have an easy method of evading the penalties of the statute by selling their products under truthful labels and continuing their extravagant claims through the medium of advertising."

Only seven cans of anesthetic ether of a total of 1,308 examined were found to be substandard, about 130 of more than 200 samples of other drugs that were analyzed justified prosecution.

A notable section of the report is devoted to the "crystal craze." "The last year or two has witnessed the development of a new type of medicinal humbug in the marketing of almost innumerable brands of so-called mineral crystals, which are essentially laxatives or cathartics and owe their physiological properties to the presence of some well known therapeutic agent, usually sodium sulphate. Medicinal claims of the most extravagant character are made for them. The more adroit manufacturers are careful to restrict such claims to radio and other advertising distributed separately from the interstate package. Where this precaution is taken, action under the Food and Drugs Act is impossible because of lack of jurisdiction. Attention to these products, however, resulted in thirty seizures directed against fourteen products."

¹ The Occurrence of Lead in Cerebrospinal Fluid editorial J. A. M. A. 102:1500 (May 5) 1934. Lead and Multiple Sclerosis *ibid* 102:1852 (June 2) 1934.

It is reassuring that the administration proposes to continue its efforts to amend the Food and Drugs Act. Thus the report says

The fight for effective food and drug legislation is not ended. The months of effort already expended have not been wasted. Constructive suggestions have been developed in the course of the hearings which will undoubtedly improve the chances for the enactment of legislation at the next session of the Congress. Most important, however, is the aroused public interest in the purity of the food and drug supply, a concern which has long been dormant. This interest, once aroused, will unmistakably grow into a united demand for effective legislation which cannot be gainsaid.

Last week THE JOURNAL emphasized the recommendations of the Council on Pharmacy and Chemistry and of the Committee on Foods relative to new food and drug legislation. Some type of control over advertising is a necessity of the times. Foods and drugs of unsatisfactory potency or purity constitute a real public health hazard.

CONSTITUTION AND HEART DISEASE

Attempts to correlate certain body types with disease states are being made with increasing frequency. Granted that such studies are in their infancy and that their significance is not yet fully appreciated, they are nevertheless of much theoretical and possible practical interest. Recently Pearl and Ciocco¹ have investigated the somatologic differences associated with diseases of the heart in white males.

Their study was based on the records of clinical and anthropometric observations made at the institute for Biologic Research of Johns Hopkins University. For the purposes of the investigation the males (all white) were divided into two groups according to the results of the clinical examinations. In one group were placed those patients who at the time of the examination gave no clinical evidence of cardiac disease, and in the other those who at the time gave clinical manifestations of cardiac disease, mild or grave as the case might be. The total number of males was 245, of whom 133 were "noncardiacs" and 112 were "cardiacs." The basic problem with which the study was concerned was what, if any, significant somatologic differences there are between the cardiacs and noncardiacs of these groups.

Because of the lack of homogeneity in age between the two groups, the final study was confined to those persons whose ages fell between 40 and 69 years. The numbers were thus considerably reduced (eighty-seven cardiacs and fifty noncardiacs) but the relative mean age difference between the groups was much smaller and probably too small to make any appreciable difference in any conclusion regarding somatologic characters. In comparing the two groups on the basis of diagnosed pathologic conditions the cardiacs were characterized as a group by a 100 per cent incidence of heart lesions together with a relatively high incidence

of arteriosclerosis, nephritis and diabetes. The noncardiac group showed no lesions of the heart or the circulatory system, practically no nephritis or diabetes, but relatively more syphilis and malignancy.

The mean, median, standard deviation, coefficient of variation, minimum observation, maximum observation and range of variation for each of twenty-two somatic variables were directly measured, tabulated and discussed. The two groups were found substantially identical with respect to mean stature, span, head length, head breadth, biacromial breadth, ear length, ear breadth, height at external auditory meatus, height at suprasternal notch, height at lower costal margin, sitting height and trunk length. The cardiac group exhibited means larger than the noncardiac group by amounts certainly or probably of statistical significance with regard to the probable error in the following dimensions: body weight, biiliac breadth, greatest hip breadth, chest depth, head girth, neck girth, chest girth at expiration, at rest and at inspiration, and girth at the umbilicus. The cardiacs tended to be more variable than the noncardiacs both absolutely and relatively in respect to those dimensions for which they had larger means.

The chest expansion index is significantly smaller, on the average, in the cardiacs than in the noncardiacs. The cardiacs as a group tend also more toward dolichocephaly, though the means place both groups in the mesocephalic class in the standard system. There is, however, no statistically significant difference between cardiacs and noncardiacs in respect to their distribution to the three standard somatologic types, asthenic, intermediate and pyknic.

The broad general result that emerges from this study appears to be that a group of white males with definite heart disease of one sort or another is characterized somatologically, on the average, primarily by greater body weight consequent chiefly on greater body girths and breadths, particularly of the trunk and chest as contrasted with a group of white males of substantially the same average stature in which there is no cardiac or circulatory disease. Accompanying this structural difference goes also a significant functional deficiency of the chest as a breathing mechanism. All the evidence points to the conclusion that these characteristics of the cardiac group are not the consequence of true innate constitutional differences in the usual sense of the words but are rather due to accumulation of body fat from relative overeating and lack of physical exercise. This conclusion is supported by much evidence as, for example, the substantially identical distribution as to somatologic types in the two groups. Furthermore, Davenport and Love's data on young cardiacs (draft recruits) show that at such relatively early ages there is no marked somatologic differentiation of cardiacs from noncardiacs. The fact remains that the individuals in the cardiac group belonging to each of the three somatologic types

¹ Pearl Raymond and Ciocco Antonio. Studies on Constitution. II. Somatological Differences Associated with Diseases of the Heart in White Males. *Human Biology* 6: 650 (Dec.) 1934.

asthenic, intermediate and pyknic tend to the heavier and of greater girth than the individuals of the same type who are noncardiacs

The investigators do not claim, as a result of their observations, that overfatness is a primary or even a significant factor in the cause of heart disease of middle age or of advanced years. Their results do show some association between the two conditions. Studies of constitution in relationship to disease demand a vast material studied under diverse conditions before final conclusions may be drawn.

ABSORPTION AND STORAGE OF VITAMIN A

The circumstances surrounding the discovery of vitamin A emphasized the indispensability of this food factor for normal nutrition. No small part of the investigative effort in the two decades since its discovery has been expended in the detection and estimation of vitamin A in food materials. Many of the puzzling features of the distribution of this factor and its behavior toward chemical manipulation have been partially explained by the recently established relationship between it and the natural pigment carotene. There is convincing evidence that the vitamin A activity of plant materials is due largely to carotene, which, when taken into the body, is transformed to vitamin A, whereas the potency of active sources of animal origin arises largely from the presence of the vitamin itself. Aside from its recognized requirement for maintenance and growth, there exists a close correlation between an adequate supply of vitamin A and the integrity of the epithelial tissues. Widespread metaplasia and infection throughout the body have repeatedly been demonstrated when this food factor is lacking in the food of experimental animals. From the point of view of pathology, therefore, the expansion of knowledge of this essential dietary constituent is justified.

In an effort to extend the knowledge concerning vitamin A, Baumann, Rüsing and Steenbock¹ have recently investigated the absorption and storage of this factor. When the colorimetric method of determination was applied to the nonsaponifiable portion of the tissue extracts, it was found in confirmation of other investigators that about 95 per cent of the total body store of vitamin A is found in the liver, the remainder being accounted for by the kidneys and lungs. When the liver contained none, the other organs likewise gave a negative test. The tissues of an animal showing the outward effects of deprivation of this factor were uniformly devoid of it. In the new-born, the store of vitamin A in the liver is small, it decreases for a short time, after which the storage proceeds at a rapid rate. The concentration of this food substance in the livers of the new-born can be increased by augmenting the diet of the mother with added vitamin

A during pregnancy or lactation. That the process of storage of this factor is extremely inefficient was shown by the observation that, when eight times the quantity necessary to cure ophthalmia was fed daily for four weeks, only a faint trace of stored vitamin was found in the liver. Likewise when a large storage had been attained there occurred a progressive loss as time passed.

The proportion of the ingested vitamin A stored in the liver is not great. Using diluted halibut liver oil as the source of the food factor, the Wisconsin group recovered only about 20 per cent in the livers of experimental animals. The speed of absorption, however, was surprisingly great, the larger part of the absorbed vitamin appearing in the liver between the third and the sixth hour after administration. The feces were then examined for vitamin A, the fact that, after a relatively large dose, none of the vitamin was excreted in this way indicates that a large part of the material was destroyed or converted into a nonactive form in the intestine. The study also showed that, in animals previously depleted, more vitamin A was required to bring about storage than if the previous intake had been adequate.

It appears that vitamin A, indispensable for normal function as well as for intact structure, is exposed to many uncertainties under ordinary circumstances of alimentation before it is stored in the body. Normal digestion and absorption of fats is a prerequisite to the utilization of this food factor. Both carotene and vitamin A can be prevented from entering the body by certain otherwise effective therapeutic agents.² Furthermore, the recent studies show that it is easier to maintain those stores than to replenish them. These various observations still further confirm the biochemist in the view that vitamin A continues to merit careful consideration.

Current Comment

SECTION ON SURGERY AT ATLANTIC CITY SESSION

At the Atlantic City session of the American Medical Association, next June, the Section on Surgery, General and Abdominal, hopes to produce a program of rather unusual character, emphasizing physiology and physiologic surgery rather than the technical aspects of the subject. The thesis of the session is the statement by Claude Bernard that "life is contingent upon maintenance of circulation, health upon an equable distribution of an adequate volume of wholesome blood and lymph, the internal environment of the body." Disease represents a disorder of the system for which the correction is sometimes medical, sometimes surgical. Study of the changes that have occurred in the blood and lymph reveals, in most instances, the efficacy of treatment. With this point of view the Executive

¹ Baumann, C. A., Rüsing, B. M. and Steenbock, Harry. *J. Biol. Chem.* 107: 705 (Dec.) 1934.

² The Utilization of Vitamin A and Carotene editorial *J. A. M. A.* 103: 1540 (Nov. 17) 1934.

Committee of the section, including Drs J L Yates, Fred Rankin and Harold Brunn, are developing three sessions pointed toward a physiologic approach to the surgical problem. These sessions include

First session, normal and morbid physiology of blood and lymph formation and distribution. Each presentation, including introduction by American chairman and summaries of medical and surgical aspects, will be limited to ten minutes. An open discussion, limited to five minutes, will follow.

Second session, address by Canadian chairman papers on diagnosis and treatment of diseases primarily due to faulty blood formation and distribution, limited to fifteen minutes and discussion limited to five minutes.

Third session, papers on prevention, diagnosis and treatment of other diseases (exclusive of those of pleurae, lung and central nervous system) with reference if possible to correlated effects on blood formation and distribution, limited to fifteen minutes, discussion to five minutes.

It will be remembered that the Atlantic City session is to be a joint session with the Canadian Medical Association, and that contributors from both countries will be recognized on the program. Those who feel that they have a contribution of merit for any of the sessions here listed may communicate with the secretary of the section,¹ the final date for submission of title and summary being February 1.

Association News

MEDICAL BROADCASTS Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next three broadcasts will be as follows:

January 24	Progress Against Arthritis	Irving S. Cutter, M.D.
January 31	Thirty Six Thousand Deaths	W. W. Bauer, M.D.
February 7	Heart Diseases	W. W. Bauer, M.D.

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next three broadcasts will be as follows:

January 22	Health in Winter	W. W. Bauer, M.D.
January 29	Organizing for Health	Morris Fishbein, M.D.
February 5	Pipes and a Pump	W. W. Bauer, M.D.

THE ATLANTIC CITY SESSION Special Exhibits by Various Sections in the Scientific Exhibit

In the Scientific Exhibit at the Atlantic City Session there will be several features sponsored by different sections of the Scientific Assembly.

The Section on Obstetrics, Gynecology and Abdominal Surgery is planning a special exhibit on "The Treatment of Obstetric and Gynecologic Hemorrhage." There will be special demonstrations and motion pictures.

The Section on Pediatrics will present an exhibit symposium on "Acute Infections of the Central Nervous System" with special reference to poliomyelitis, encephalitis and meningitis. This symposium will be composed of a group of exhibits by various individuals, covering the salient points of these diseases.

The Section on Nervous and Mental Diseases will have a special exhibit on "Incipient Nervous and Mental Disorders." It will take up especially the relation of the physician in general practice to such disorders.

The Section on Dermatology and Syphilology will conduct an exhibit symposium on the subject of "Syphilis," composed of a group of exhibits on different phases of the disease.

Persons desiring to take part in the Scientific Exhibit may obtain application blanks from the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

DELAWARE

Industrial Medical Research Laboratory Dedicated—The Haskell Laboratory of Industrial Toxicology of the E. I. du Pont de Nemours Company, Wilmington, was formally dedicated January 22. The laboratory will be operated by the medical division of the service department of the company to study the possible effect on the health of workers of new chemical products during their manufacture and on the public health. The laboratory, which is said to be the only one of its kind in the United States, has been named in honor of Mr. Harry G. Haskell, a vice president of the du Pont Company, who has long been interested in the development of the company's medical division. It will be under the supervision of Dr. Wolfgang Felix von Oettingen, medical director, who was formerly assistant professor of pharmacology at Western Reserve University School of Medicine, Cleveland. He will have five assistants in addition to other attendants. In addition to offices, the building contains laboratories for biochemistry, pathology and toxicology, with auxiliaries all completely equipped with the latest appliances and facilities. A complete library will be provided for use in studying toxicologic problems in the field of industrial hygiene.

DISTRICT OF COLUMBIA

Medical Bills in Congress—S. 31, introduced by Senator Copeland, New York, proposes to direct the Commission on Licensure to Practice the Healing Art in the District of Columbia to issue a license to practice the healing art to Dr. Chester C. Groff. S. 401, introduced by Senator Copeland, New York, has passed the Senate, proposing to substitute the corporation counsel of the District of Columbia for the United States Attorney for the District of Columbia as a member of the Commission on Licensure to Practice the Healing Art in the District of Columbia, and to put prosecutions and all proceedings under the act in the hands of the corporation counsel instead of the United States attorney.

GEORGIA

New Auditorium for District Meeting—The meeting of the Sixth District Medical Society, December 5, marked the informal opening of a new auditorium sponsored by the Macon Hospital Commission and the Bibb County Medical Society in Macon. The building, once a church, was taken over by the Public Health Board of Bibb County and remodeled. The second floor has been renovated to form the auditorium, with funds provided by the hospital commission and the county medical society. Speakers at the district society meeting included Drs. Charles N. Wasden, Macon, on iodine in the treatment of diseases of the thyroid gland, John M. Sigman, Macon, treatment of acne without scarring, Olin H. Weaver, Macon, ectopic pregnancy, Henry D. Allen, Jr., Milledgeville, iron deficiency anemia, and Guy T. Bernard, Augusta, skin cancer.

Society News—Dr. Charles W. Roberts, Atlanta, presented a paper on "Concurrent Osteogenic Sarcoma in Brother and Sisters" before the Fulton County Medical Society in Atlanta, December 6.—Dr. William T. Randolph, Winder, addressed the Jackson-Barrow Counties Medical Society, November 5, in Jefferson, on amebic dysentery.—Dr. John E. Walker, Columbus, discussed "Classification and Treatment of Anemia" before the Third District Medical Association at Cordele, November 7, a symposium on cardiovascular disease was presented by Drs. John R. Rose, Unadilla, Thomas E. Rogers, Macon, Charles H. Richardson, Macon, and James E. Paulin, Atlanta.—Drs. James M. Byne and Robert L. Miller, both of Waynes-

¹ Dr. Howard M. Clute, 605 Commonwealth Avenue, Boston.

boro, presented a symposium on gonorrhea, among other speakers, before the Burke-Jenkins-Screven Counties Medical Society at Millen, November 1

ILLINOIS

Quarantine Lifted at Veterans' Facility—The quarantine that had been in effect for ten days at the U S Veterans' Facility at Hines because of an epidemic of influenza was lifted, January 9

Vaccines Distributed by the State—Figures from the state health department for the first eleven months of 1934 indicate that the demand for preventive vaccines increased as compared with other years. Nearly twice as much typhoid vaccine was distributed as in any previous year enough to immunize 63,548 persons as compared with a previous high of 38,425. Sufficient toxoid to immunize more than 200,000 children, nearly twice the amount given out in 1933, vaccine to protect 165,490 persons against smallpox, and enough silver nitrate solution to give prophylactic treatment against eye infection to 103,708 new-born babies were distributed. Antirabic vaccine to treat 1,713 persons bitten by dogs and sufficient material to give the Schick test to 65,785 persons were furnished by the department

Tumor Clinic at Veterans' Hospital—A tumor clinic was conducted at the Veterans Administration Facility at Hines, January 14, under the direction of Dr Max Cutler, head of the tumor clinic at Michael Reese Hospital, Chicago, and consultant in tumors to the facility. Following the presentation of cases, Aristid V Grosse Ph D, professor of chemistry, University of Chicago, spoke on "Recent Advances in Radioactivity and Artificial Radioactivity". An evening program was presented by the following physicians

Charles M Griffith medical director U S Veterans Administration Washington D C The Cancer Problem in the Veterans Administration

Max Cutler Tumors of the Breast—Diagnosis and Treatment
Walter C Alvarez associate professor of medicine University of Minnesota School of Medicine Rochester Cancer of the Digestive Tract

A new specially constructed two gram radium 'bomb,' valued at \$100,000, was displayed during the meeting

Chicago

Personal—Dr Karl Meyer, medical superintendent of Cook County Hospital, has been named chief of the surgical staff of Henrotin Hospital. He will continue his duties at the county institution, with which he has been associated for twenty-one years

General Practitioner's Night—The Chicago Medical Society has designated its meeting, January 23, 'General Practitioner's Night.' Speakers will be Drs Hart C Fisher, chief surgeon, Chicago Rapid Transit Company, on "Treatment of Shock in Electrical Burns", Stanley J Seeger, head of surgical department, Milwaukee Children's Hospital "Recent Advances in the Treatment of Burns," and Sumner L S Koch, associate professor of surgery Northwestern University School of Medicine, "Surgical Repair of Tissue Defects and Deformities Following Burns"

Animal Experimentation Commended—Sir Frederick Grant Banting, professor of medical research, University of Toronto Faculty of Medicine, approved the ordinance which permits unclaimed animals at the city pound to be used for experimentation in a recent letter to the Illinois Society for the Protection of Medical Research. He stated that his research resulting in the discovery of insulin would have been impossible had he not been able to use dogs. The use of unclaimed dogs from the city pound for medical research was approved in a resolution adopted by the Chicago Heart Association at its annual meeting, January 8. The association declared itself opposed to the pending Nelson amendment, which would prohibit this use, and favored the continuance of the Arvey ordinance. Dr Anton J Carlson, professor of physiology University of Chicago, was the principal speaker at the meeting

Society News—At a meeting of the Chicago Neurological Society, January 17, W R Ingram, Ph D and Charles Fisher, Ph D, spoke on 'Relation of Hypothalamico-phophysical System to Diabetes Insipidus', Dr George W Hall and George V LeRoy, "Narcolepsy Following Head Injuries" and Dr Roland P Mackay "Simultaneous Occurrence of Ependymoblastoma and Osteoblastoma in the Fourth Ventricle"—A feature of the program before the Chicago Gynecological Society, January 18, was the report of the maternal welfare committee. Drs Charles C Rentfro on 'Incidence of Ectopic Pregnancy in the Reporting Hospitals of the City of Chicago' and William Harcourt Browne, 'Ectopic Deaths in Chicago

for 1935"—Speakers before the Chicago Society of Allergy, January 21, will include Dr Michael Zeller on 'Woods' Filter in the Diagnosis of Skin Reactions'—Dr Arnold Knapp New York, will address the annual meeting of the Chicago Ophthalmological Society, January 21, on "Present Operative Treatment of Detachment of the Retina in Europe"

INDIANA

Personal—Dr Bryce B Reeve, Whiting, chief surgeon of the Standard Oil Company of Indiana, has been placed in charge of the company's medical department—Dr John R. Miller, Indianapolis, has been named a member of the prison medical staff at Michigan City, succeeding Dr George H Brunner, resigned

Society News—A symposium on nervous and mental diseases will be presented before the Indianapolis Medical Society, January 22, by Drs Charles P Emerson, Max A Bahr and Larue D Carter. Dr Norman M Keith, Rochester, Minn., will conduct a clinic on the management of renal disease and discuss 'Types of Renal Disease and Their Clinical Significance'—The Cass County Medical Society was addressed in Logansport December 21, by Dr Caryle B Bohner Indianapolis on 'Modern Allergy'—At a meeting of the Jefferson County Medical Society in Madison, December 3, Dr Robert L. Kelly, Louisville, discussed skin diseases—Dr Kellogg Speed, Chicago, addressed the Allen County Medical Society in Fort Wayne, December 18, on fractures—At a meeting of the Madison County Medical Society in Anderson, December 17, Dr Frank F Hutchins, Indianapolis, discussed "Nervous Symptoms and Their Mechanism"—Speakers before the Knox County Medical Society in Vincennes, December 11, were Drs Walter J Leach New Albany, Heilman C Wadsworth, Washington, and Mr Thomas A Hendricks, Indianapolis, they discussed health insurance—Speakers before the nineteenth annual meeting of the Indiana Society of Mental Hygiene, December 7-8, included Drs Franz G Alexander, Chicago, and Frank F Hutchins, Indianapolis, on "Psychiatric Approach to Community Welfare Problems" and "Fear Reactions," respectively

KANSAS

Bills Introduced—S 22 and H 22 propose to repeal the laws regulating the sale and possession of narcotic drugs and to enact the uniform narcotic drug act. S 31 proposes that, before applicants for licenses to practice any form of the healing art may present themselves to their respective professional boards for examination, they must pass examinations in anatomy, physiology, pathology, bacteriology and hygiene, to be given by a board of basic science examiners, consisting of two members of the faculty of any university or college in Kansas accredited by the University of Kansas, one nonsectarian practitioner, one osteopath and one chiropractor

MASSACHUSETTS

Dr Mahoney Reappointed—Dr Francis X Mahoney, health commissioner of Boston since 1922, has been reappointed, his term to expire April 1, 1938

Bills Introduced—S 60 proposes to forbid the admittance of unvaccinated children to private schools. H 351, to amend the pharmacy practice act, proposes that the provisions of the act shall not apply to the manufacture or sale of patent and proprietary medicines, provided those intended for internal use do not contain salicylic acid, barbituric acid, acetamid, phenol, bromine, iodine, or their salts or derivatives. H 62, to amend the law prohibiting the divulging of hospital, dispensary, laboratory and morbidity reports and records pertaining to gonorrhea or syphilis proposes that the law shall not prevent a physician from informing the husband or wife of a patient with venereal disease when in the opinion of the physician that may be necessary to protect the other spouse or the children. H 447 proposes to accord to physicians, treating persons injured through the negligence of another, liens on any judgments settlements or compromises accruing to the injured persons because of their injuries. H 528 proposes (1) to require the consent of a patient before a physician may remove any organ of his body and to require the physician to submit to the patient a written explanation as to the necessity of its removal and (2) to require the preservation of any organ so removed until the patient directs its disposal. H 623 proposes that no person shall be required to submit to vaccination as a condition precedent to admission to any school or public institution or to the exercise of any right performance of any duty, or enjoyment of any privilege. H 352 proposes to repeal the laws regulating the sale and possession of narcotic drugs and to enact the uniform narcotic drug act

MICHIGAN

Bill Introduced—H 1 proposes to authorize the State Hospital Commission to establish a branch of the Ionia State Hospital at Jackson state prison

Personal—Dr Foster A Fenning has been appointed prison physician of the Michigan State Branch Prison at Marquette, succeeding the late Dr Lowell L Youngquist—Dr Frances A Ford, formerly an associate in the department of roentgenology at the Mayo Clinic, has been appointed full time director of the department of radiotherapy of Woman's Hospital Detroit, effective January 1

Society News—The Wayne County Medical Society devoted its meeting, December 17, to a discussion of medical economics problems in Detroit and Wayne County—The staff of the East Side General Hospital was host to the East Side Medical Society, December 6 the speaker was Dr Robert B Kennedy on extraperitoneal abdominal cesarean section in infected obstetric patients—Dr Arthur M Culler Dayton Ohio, addressed the Detroit Ophthalmological Club December 5 on "Fever Therapy in Syphilis"—Dr Nathan J Bicknell, Detroit showed pictures of his recent trip to Russia to the Dearborn Medical Society, January 10—A joint session of the Michigan Pathological Society and the Detroit Radiological Society will be held February 9 Tumors of Bone Marrow and Lymph Glands will be discussed—Dr Morris Fishbein Chicago, addressed the Northwestern Dental Society in Detroit January 8, on "Group Practice"—Dr Frederick A Collier Ann Arbor, discussed 'The Management of Gallbladder Disease' before the Kalamazoo Academy of Medicine December 18

Joint Program on Tumors—A joint meeting of the Michigan Association of Roentgenologists Detroit Branch of the American Urological Association the Detroit Roentgen Ray and Radium Society and Michigan Society of Pathologists was held at Harper Hospital, January 17-18 Speakers at the first session were Drs Bernard H Nichols, Cleveland, on 'Diagnosis of Tumors of the Urinary Tract' and Charles A Waters, Baltimore, "Treatment of Tumors of the Urinary Tract More Especially of Renal Tumors" The discussers were Drs Frank W Hartman, Detroit, the pathologic aspect, Hans A Jarre, Detroit, the diagnostic, and Harry W Plaggemeyer, Detroit, the surgical The morning session was given over to a symposium on malignancy Henry F Vaughan Dr PH health commissioner of Detroit, presented the introductory talk on 'Responsibilities and Opportunities of the Board of Health in Malignancy' Other speakers were

Dr Osborne A Brines Detroit, Responsibilities and Opportunities of Medical Organizations in Malignancy
Dr H Wellington Yates Detroit, and Frank L Rector, Evanston Ill The Function of the American Society for the Control of Cancer
Dr Finn F Morse Detroit Pathologic Aspects of Malignancy
Dr George T Pack, New York Surgical Aspects of Malignancy
Dr George E Pfahler Philadelphia, Roentgenologic Aspects of Malignancy

MISSISSIPPI

Personal—Dr James T Googe, health officer of Copiah County has resigned to become assistant state health director of Florida, it is reported Dr Googe has been health officer of Copiah County for only a short time, having previously occupied a similar position in Holmes County His new appointment was effective January 1 Dr John W Dugger, Jackson, has been temporarily appointed to succeed Dr Googe

MISSOURI

Society News—At a meeting of the Adair County Medical Society in Kirksville, November 16, Drs Joseph Hoy Sanford and Howard A Rusk, St. Louis spoke on 'Obscure Abdominal Pain Importance of the Urinary Tract in the Investigation and "Obesity Present Status and Management," respectively—Dr Owen H Wangenstein Minneapolis addressed a joint meeting of the Jackson County Medical Society with the Wyandotte County Medical and Kansas City Southwest Clinical societies January 8, his subject was 'Practical Aspects of the Therapeutic Problem in Bowel Obstruction'

Advisory Committee Appointed—A medical advisory committee was appointed November 27, to assist the St. Louis County League of Municipalities in dealing with such problems as sewers milk inspection, smoke abatement and coordination of the St. Louis County Hospital and Health Department, newspapers report Members of the committee include

Dr Emmett P North St. Louis president state board of health
Dr Fred W Bailey Kirkswood
Dr Leith H Slorumb Ferguson
Dr Paul E. Rutledge Kirkswood
Dr Carl C Irick, health commissioner of Webster Groves.
Dr Andrew J Signorelli, health commissioner of Clayton
Dr Oscar P Hampton Jr, health commissioner of University City
Dr John O Connell Overland president St. Louis County Medical Society

NEW HAMPSHIRE

Bill Introduced—H 12 proposes to require a physician or hospital treating a person suffering from gunshot wounds or other injuries of unusual character to ascertain from such patient the cause of his wounds and to report the facts as soon as possible to the police of the town or city in which such treatment is given

NEW YORK

Personal—The medical board of Peekskill Hospital gave a testimonial dinner, November 19, in honor of Dr Ray W Moe who retired as president of the board—Dr Brooks W McCuen, Syracuse, was elected president of the Association of New York Central Lines Surgeons at the annual meeting in New York in November—Dr Robert M Ross has been appointed superintendent of Brigham Hall Hospital, Canandaigua succeeding the late Dr Henry C Burgess

Bills Introduced—S 19 and A 19, to amend the workmen's compensation act, propose, among other things, (1) to authorize the industrial commissioner to establish a schedule of fees for medical care rendered injured employees, (2) to authorize the commissioner to establish a panel of physicians to render the medical care required by the act the employee to have the right to select any physician on that panel to treat him (3) to provide that no claim for specialists' consultations, surgical operations or physiotherapeutic procedures costing more than \$25, nor roentgen examinations or special diagnostic laboratory tests costing more than \$10, shall be paid unless such special services are rendered in an emergency or have been authorized by the employer or by the commissioner, (4) to provide that a physician rendering service to a compensation claimant may recover for his services only under the provisions of the act, and (5) to increase the industrial council from ten to fifteen members, five of whom shall be licensed physicians S 20 and A 20, to amend the workmen's compensation act, propose to make compensable any disabling disease or illness acquired in any employment covered by the act A 61, to amend the law authorizing the annulment of marriages, proposes to authorize an annulment if either spouse has been incurably insane for three years or more S 155 proposes that no municipality, water district, corporation or company shall install a water purification or treatment plant for public use nor make alterations of or extensions of any water purification or treatment plants that may affect the sanitary quality of the water supply, unless the plans are approved by the state department of health

New York City

Personal—Dr Thomas Horace Evans, formerly associate professor of anatomy at Long Island College of Medicine has been elected research professor of anatomy at New York Homeopathic Medical College and Flower Hospital—Dr Ignatz L Nascher, chief physician of the department of hospitals, retired under the age limit rule January 1 after nearly twenty years' service with the department of public welfare and hospitals—Dr Charles L Christiernin has been appointed medical director of the Metropolitan Life Insurance Company to succeed Dr Augustus S Knight, who retired, December 31, after forty-two years of service Dr Christiernin has been assistant medical director since 1916

Montefiore Hospital Celebrates Fiftieth Year—Clinical conferences were held throughout the week of December 3 at Montefiore Hospital for Chronic Diseases as part of the observance of the fiftieth anniversary of the hospital's founding A scientific exhibit of pathologic specimens, technical apparatus and photographic work was on display in the hospital's medical library and a further celebration was an anniversary dinner at the Waldorf-Astoria December 6 A group of New York citizens established the hospital in 1884 in honor of the one hundredth birthday of Sir Moses Montefiore, British philanthropist It has expanded from twenty-five beds in a rented house to its present capacity of 742 beds with a country sanatorium in Westchester County of 235 beds

OHIO

Dinner to Dr Bachmeyer—More than 250 friends and colleagues of Dr Arthur C Bachmeyer, who recently left Cincinnati to become director of the University of Chicago Clinics, gathered at the Netherland Plaza Hotel, December 11 at a farewell banquet in his honor Among those who paid tribute to Dr Bachmeyer were Major Russell Wilson, City Manager C A Dykstra Rev Frank H Nelson, President Raymond Walters of the University of Cincinnati, and Dr Alfred Friedlander who succeeded Dr Bachmeyer as dean

of the university school of medicine Dr Bachmeyer was dean for nine years and superintendent of the Cincinnati General Hospital for twenty years

Warning Against Impostor—A man calling himself Dr William H Haid, Aurora, is reported to be collecting money under false pretenses in the vicinity of Cleveland. He presents letters addressed to "Dr" Haid and gives checks on the Second National Bank of Ravenna. He claims to be working for the Portage County health department in malaria control. If such a person calls, physicians are asked to notify the Cleveland Retail Credit Men's Association, National City Bank Building, Cleveland. It seems that a man of this name appeared at various times during 1931 in Maywood, Ill., Pontiac, Mich., and Boston. On a card sent to the American Medical Association Haid claimed that he had graduated from the "University of Kentucky School of Medicine" in 1927. There is no school of this name. At other times he claimed graduation from the University of Tennessee School of Medicine and the University of Illinois School of Medicine. Inquiry of these two schools and of the University of Louisville School of Medicine revealed that no person of the name William H Haid had ever been registered at any of the schools. The newspapers reported that a William H Haid, who once held a position with the Chicago department of health, was arrested in Boston in 1931 on a charge of passing worthless checks and sentenced to serve a month in the house of correction.

OKLAHOMA

Dermatologic Meeting—The Oklahoma Dermatological Society held its semiannual meeting in Oklahoma City, December 11, with Dr Louis H Ritzhaupt, Guthrie, president-elect of the Oklahoma State Medical Association as guest speaker, on pending medical legislation. Dr Ritzhaupt is a member of the legislature. Dr Everett S Linn, Oklahoma City, gave an address on "The Relations of Calcium Metabolism to Dermatologic Manifestations." Clinics were held in the afternoon at Crippled Children's Hospital.

Society News—The Okfuskee-Okmulgee County Medical Societies were addressed at Henrietta, December 17, by Drs Leonard S Willour, McAlester, on "Medical Care for the Indigent," E Rankin Denn, Tulsa, "Conservative Treatment of Peripheral Vascular Disease," and Ned R Smith, Tulsa, "Diagnosis of the Major Psychoses."—Dr Tolbert B Hinson, medical director and owner of the Enid Springs Sanitarium and Hospital, Enid, was elected president of the Oklahoma State Hospital Association at the annual meeting in November.

OREGON

Society News—Dr William M Wilson, Portland, addressed the Central Willamette Medical Society, Albany, November 1, on "Treatment by Alcohol Injection of Pruritus Vulvae, Chronic Vulvitis and Leukoplakic Vulvitis."—Dr Lyle B Kingery, Portland, addressed the Lane County Medical Society, Eugene, November 15, on "Diagnosis and Treatment of the Commoner Skin Diseases."—Dr William W P Holt, Medford, read a paper on recent advances in pediatrics before the Jackson County Medical Society, Ashland, November 7.

PENNSYLVANIA

Personal—Dr Anne R Elliott, chief of the women's department of the Norristown State Hospital for twenty-two years, has been appointed superintendent of the hospital to succeed the late Dr Solomon Metz Miller.

Hospital News—A new building restoring the Robert Packer Hospital, Sayre, which was damaged by fire in May 1933, was opened December 6. The main building is eight stories high, with a solarium floor in addition and also a tower in which air conditioning apparatus and elevator equipment are housed. A promenade deck on the roof overlooks the Susquehanna Valley. There is also a two story portion connected to one of the older wings.

Philadelphia

Lectures for Parents of Diabetic Children—The Philadelphia Metabolic Association is sponsoring a course of six lectures for parents of diabetic children. The series, which began January 10 and will continue for six consecutive Thursday evenings, is presented by Miss Anna O Stevens, formerly of the staff of Geisinger Hospital, Danville, who has had wide experience with diabetic children.

Personal—Dr Edward Lodholz, Isaac Ott professor of physiology, University of Pennsylvania Graduate School of Medicine, received the 1934 award of honorary membership in the Philadelphia Academy of Stomatology at the society's

annual dinner recently.—Dr and Mrs McCluney Radcliffe celebrated the fiftieth anniversary of their wedding, January 1, at a tea at the Bellevue-Stratford Hotel.

Meeting of Otolaryngologists—The section on otolaryngology of the New York Academy of Medicine met with the corresponding section of the College of Physicians of Philadelphia, January 16, speakers were Drs Max M Strumia, on "Importance of the Schilling Count as a Diagnostic and Prognostic Indicator in Infections of the Ear, Nose and Throat," Oscar V Batson, "The Veins of the Base of the Skull and Their Relation to Otolaryngology," and Chevalier Jackson, "Defective Surgical Instruments as an Avoidable Cause of Foreign Body Accidents."

Society News—Dr Charles F McKhann, Boston, among others, addressed the Philadelphia Pediatric Society, January 8, on "Immune Globulin from Placentae in the Attenuation and Prevention of Measles."—Speakers at a meeting of the Pathological Society of Philadelphia, January 10, were Drs Harold L Stewart and Abraham Cantarow, "Morphologic and Functional Changes Associated with Reestablishment of Bile Flow in Cats with Experimental Common Duct Obstruction," Dr John A Kolmer and Miss Anna M Rule, "Vaccination Against Experimental Pneumococcus Infections," and Dr Thomas Francis Jr, New York, "Localization and Development of the Lesions in Experimental Pneumonia."

RHODE ISLAND

Bill Introduced—H 531 proposes to create a state board of examiners in naturopathy and to legalize the practice of naturopathy. The bill defines naturopathy as follows: "A science dealing with the diagnosis and treatment of disease through natural therapeutics. It shall embrace and include physiological, mechanical and dietetic sciences such as mechanotherapy, electrotherapy, use of diet and herbs including powdered and dehydrated foods and fruits, and other methods as taught in the various recognized schools of naturopathy, excepting, however, surgery and the prescription of compounded drugs."

TENNESSEE

Society News—Drs Peter Whitman Rowland Jr and Carrol C. Turner, Memphis, addressed the Gibson County Medical Society, Trenton, November 26, on diagnosis of rheumatoid arthritis and hemorrhage of the brain, respectively.—Dr William O Floyd, Nashville, addressed the Davidson County Medical Society, December 4, on "Surgery of the Biliary Tract in the Jaundiced Patient."

Bills Introduced—S 30, H 45 and H 48, to reorganize the department of public health, propose that the board of health shall consist of nine members, six of whom shall be licensed physicians, one a licensed dentist, one a licensed pharmacist, and one a member of the Tennessee Congress of Parents and Teachers and the Tennessee Federation of Women's Clubs. The medical members of this board are to be appointed by the governor from a list of six from each grand division of the state, certified to the governor by the house of delegates of the Tennessee State Medical Association.

Portrait of Dr McElroy—At commencement exercises of the University of Tennessee School of Medicine, Memphis, December 19, a portrait of Dr James Bassett McElroy, head of the department of medicine, was presented to the university by alumni and members of the faculty. The presentation was made by Dr James Lindsay Andrews and the acceptance address by Mr Wassell Randolph, a trustee. Dr McElroy came to Memphis in 1905 as chief of the dispensary and a lecturer in physical diagnosis at the Memphis Hospital Medical College. Later he became professor of pathology and bacteriology at the college, remaining in that capacity until the school was consolidated with the University of Tennessee.

WEST VIRGINIA

New Laboratory Ruling—The state health commissioner has recently ruled that Wassermann or Kahn tests will be made by the state laboratory hereafter only when the specimen is sent by a physician. In the past patients have occasionally been sent to the laboratory and have frequently obtained their own reports. In the future, reports will be sent directly to the physician and not given to the patient under any circumstances.

Society News—Dr Robert D Roller Jr, Charleston, addressed the Kanawha Medical Society, Charleston, December 9, on pulmonary tuberculosis.—Dr William S Middleton, Madison, Wis., addressed the Ohio County Medical Society, Wheeling, December 21 on coronary disease.—Dr Leopold Clarence Cohn, Baltimore, addressed the Eastern

Panhandle Medical Society, at Martinsburg, December 12 on 'Newer Methods for the Diagnosis and Treatment of Cancer' —Drs Walter W. Point and Roy O. Halloran, Charleston addressed the Raleigh County Medical Society, Raleigh November 22, on 'The Perineum in Labor' and 'Common Skin Conditions,' respectively —Drs Albert E. Goldstein, Baltimore and Samuel Brown, Cincinnati presented papers on 'Symptomatology and Diagnosis in Urologic Conditions' and 'Roentgenogram of the Heart and Great Blood Vessels' at a meeting of the Cabell County Medical Society, Huntington, December 13

GENERAL

Radiology and Pediatrics Examinations—The American Board of Radiology announces that an examination will be held on the West Coast about the middle of May. Candidates who wish to appear before the board at that time should send in their applications not later than March 1 to Dr. Byrl R. Kirklin, Rochester, Minn., secretary. The exact date and place will be announced later. The American Board of Pediatrics announces that an examination will be held, November 19, in St. Louis.

Prize for Research in Biochemistry—Eli Lilly and Company, Indianapolis, has established under the auspices of the American Chemical Society a research award of \$1,000 and a bronze medal to stimulate research in biologic chemistry by a young man or woman working in a college or university in the United States. Science reports. The nominee for the award must not have passed his thirty-first birthday on April 30 of the year in which the award is made and must have accomplished outstanding research in biologic chemistry. Work in immunology, pharmacology, clinical investigations and experimental therapeutics may not be included in the term biologic chemistry for the purpose of this award.

Medical Bills in Congress—S. Res. 28, introduced by Senator Black, Alabama, and referred to the Senate Committee on Education and Labor, proposes to direct that committee to make a full and complete investigation to determine the best and most effective kind of federal legislation to provide a system of health insurance throughout the United States and to report to the Senate as early as practicable the recommendations outlining the kind of legislation that will most effectively accomplish the purpose. S. 5, introduced by Senator Copeland, New York, and S. 580, introduced by Senator McCarran, Nevada, and referred to the Senate Committee on Commerce, propose to prevent the manufacture, shipment and sale of adulterated or misbranded food, drink, drugs and cosmetics, and to prevent the false advertisement of such articles. S. 142, introduced by Senator Davis, Pennsylvania, proposes to authorize the President to accept radium in an amount not exceeding \$10,000,000 worth, from the Belgian government in payment of the debt owed by that country to the United States. The radium so accepted it is proposed, will be donated to hospitals, medical clinics and medical research organizations in the United States. S. 363 introduced by Senator Capper, Kansas, proposes that for the purposes of promotion, longevity pay and retirement there shall be credited to officers of the Veterinary Corps, and former officers of the Veterinary Corps now on the retired list, all full time service rendered by them as veterinarians in the Quartermaster Department, Cavalry or Field Artillery. H. R. 16 introduced by Representative Fulmer, South Carolina, proposes to provide for federal cooperation with the several states in the care, treatment, education, vocational guidance and placement, and physical rehabilitation of 'persons under the age of 21 years who have some physical defect such as affections of the joints, affections of the bones, disturbances of the neuromuscular mechanism, congenital deformities, static and other acquired deformities that may be corrected or improved by orthopedic surgery or other surgical and medical care.' H. R. 43, introduced by Representative Rudd, New York, proposes to provide that employees of the Postal Service suffering from tuberculosis, nervous diseases or kindred occupational ailments be hospitalized by the United States without cost to the employee. H. R. 174 introduced by Representative Reece, Tennessee, proposes to provide that any veteran, not dishonorably discharged who is in need of hospitalization, and is unable to defray the expense therefor may be furnished hospitalization in any Veterans' Administration facility within the limitations existing in such facilities, on the payment of a per diem fee in an amount equal to the average cost of hospitalization per patient day at the facility for the previous month. H. R. 197 introduced by Representative Buckbee, Illinois, proposes to prohibit untrue, deceptive or misleading advertising through the use of the mails or in interstate or foreign commerce. H. R. 10 introduced (by request) by Representative Celler

New York, H. R. 2827, introduced by Representative Lundeen, Minnesota and H. R. 2859, introduced by Representative Sabath, Illinois, propose to provide for the establishment of unemployment and social insurance, conferring on the Secretary of Labor the right to provide social insurance for the purpose of paying workers insurance for loss of wages because of part time work, sickness, accident, old age or maternity. H. R. 1425, introduced by Representative Woodruff, Michigan would authorize the withdrawal of alcohol tax free 'for the use of any clinic operated for charity and not for profit, including use in the compounding of bona fide medicines for treatment outside of such clinics of patients thereof, but not for sale.' H. R. 1990, introduced by Representative Bland, Virginia, proposes to provide hospitalization for retired or disabled seamen. H. R. 2000 introduced by Representative Pierce, Oregon proposes to authorize the dissemination of information relating to the prevention of conception, and articles instruments substances, drugs and medicines designed, adapted or intended for the prevention of conception, (1) by any physician legally licensed to practice medicine or by his direction or prescription (2) by any druggist in filling any prescription of a licensed physician, (3) by any medical college legally chartered or (4) by any licensed hospital or clinic, except in any state in which such use is prohibited by the law thereof. H. R. 2018, introduced by Representative Griffin, New York, proposes to provide medals of honor and awards to government employees for distinguished service in science or for voluntary risk of life and health beyond the ordinary risks of duty. H. R. 2027, introduced by Representative Harlan, Ohio, proposes to provide additional compensation to World War veterans for the loss of use of an eye in active service in line of duty. H. R. 2773 introduced by Representative Englebright, California, proposes to authorize the erection of a veterans hospital in the inland region of California. H. R. 2824, introduced by Representative Lundeen, Minnesota proposes to reenact all laws granting medical and hospital treatment, domiciliary care and compensation to veterans that were repealed by the act of March 20, 1933. H. R. 2902 introduced by Representative Welch, California, proposes to extend the benefits of the United States Public Health Service to fishermen, trappers, net tenders and other persons subject to the laws relating to American seamen. H. R. 3024, introduced by Representative Hoepfel, California proposes to provide hospital treatment and domiciliary care to the retired personnel of the armed services.

FOREIGN

Sounding of Automobile Horns Forbidden—According to the Chicago Tribune a law forbidding the sounding of automobile horns in Rome went into effect, Dec. 17, 1934.

News of Epidemics—A report to the New York Times January 6, stated that in an epidemic of malaria in Ceylon it is estimated that 250,000 persons are ill, including many physicians. About 4,000 deaths were said to have occurred in one district. The dispatch said that fifty physicians were on their way to the island from India. An epidemic of exanthematous typhus was recently reported throughout Chile. The districts principally affected are near Santiago.

Personal—Dr. Amy M. Fleming, senior assistant in the gynecologic department of the University of Glasgow has been appointed to succeed Dame Louise McIlroy in the University of London chair of obstetrics and gynecology tenable at the London School of Medicine for Women. Dr. Otto Naegeli, Zurich, Switzerland, was made an honorary member of the American Society of Clinical Pathologists recently. Dr. Malcolm H. MacKeith, who was appointed dean of the new British Post-Graduate Medical School at Hammersmith a year ago, has been forced to resign because of ill health. The staff of the school has been completed and it is expected that it will be open for teaching purposes about April 1. Applications for the position of dean have been thrown open to the general medical profession. Sir Henry B. Brackenbury was recently reelected to the General Medical Council for a term of five years representing the general medical practitioners resident in England. Sir Henry Wellcome was decorated with the Cross of the Legion of Honor of France November 23. The Copley Medal of the Royal Society of England has been awarded to Prof. John S. Haldane in recognition of his research on human physiology. With the king's approval a royal medal has been awarded to Dr. Edgar Douglas Adrian for his work on the physiology of nerve and its application to the problem of sensation. Dr. Leslie J. Witts has been appointed professor of medicine and Dr. Geoffrey Hadfield of the University of Bristol, professor of pathology at the University of London tenable at St. Bartholomew's Hospital Medical College.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 22, 1934

Physicians Must Broadcast Anonymously

The General Medical Council (the body appointed by the government to control medical education and the conduct of physicians) made a regulation in 1932 that, when in the interest of education or information of the public, it is desirable or necessary that matter concerning medicine or public health should be broadcast, the person broadcasting and his remarks should be approved by a physician nominated for the purpose by the Ministry of Health. This regulation has now been rescinded and the council has decided that physicians must broadcast anonymously that correspondence addressed to them should not be forwarded, and that their anonymity must be strictly observed in connection with any inquiries relevant to them or their talks. Also the Council is to be furnished after the event with names of the broadcasters and the text of their matter. The basis of the Council's action is that anything in the nature of advertising by a physician is strictly forbidden. What he does in broadcasting must not be susceptible of being construed as advertising, whether directly or indirectly, for the purpose of obtaining patients or promoting his own professional advantage."

The Mortgaging of Insurance Practices

A procedure that has sprung up in the north of England, of physicians buying panel practices by mortgaging them to money lenders, has engaged the attention of the Insurance Acts Committee of the British Medical Association. The chairman, Dr H. G. Dain, has referred to the detrimental effect on the service of a commercial interest in a practice by lay people and to a scheme whereby physicians with little or no capital might obtain under proper auspices loans for the purchase of a practice. In some parts of the north of England it is said to be difficult to purchase a practice from a physician, because the financial corporations get in first and offer cash down. They also circulate newly qualified men, pointing out how easy it is to purchase a practice as they provide the money. The procedure has a bad influence on the efficiency of the service. The financial corporation makes tempting offers to sellers and therefore imposes onerous conditions on buyers who may have difficulty in fulfilling their obligations and resort to canvassing and the easy issue of certificates in order to get patients. On the other hand, it has been suggested that in such cases, when the practice is really owned by the money lender and the physician is in the position of a salaried servant, unethical transgressions are less likely because he is not seriously concerned to enlarge the practice so long as he obtains his salary regularly. The committee is endeavoring to frame a scheme with a medical insurance agency for the purchase of practices whereby, reasonable security being afforded, the whole of the money might be provided under terms not too onerous or likely to commercialize the practice. Young physicians would thus be saved from the speciously attractive propositions of financial corporations.

A Medical Trade Union

The Medical Practitioners' Union is a trade union which was formed in 1915 by physicians who thought that an organization on these lines which have never been adopted by the British Medical Association was desirable. It is a smaller body and has nearly 6,000 members. It has joined forces with the other labor unions. The General Council of the Trades Union Congress has accepted the proposal of the Medical

Practitioners' Union for affiliation. This is the first time that a medical society has been linked up with the Trades Union Congress. In a press interview the secretary of the union stated that the object of this move is mainly to protect members who are engaged by county and municipal authorities. "Where negotiations are needed," he said, "it will give added strength but it must not be taken that this affiliation means the possibility of a strike against the sick. Every union affiliated with the Trades Union Congress is governed by its own rules and that of course, applies to us. It is unthinkable that there should be a strike against people who are ill, nor would anybody expect doctors to take such a step. We are endeavoring to help many members of our union, and to do that we have had to apply wholly as a union." It is one of the objects of the trade unions to be able to declare a general strike, and one actually took place a few years ago but was unsuccessful. The government was equal to the emergency and essential services were maintained by volunteers. It is understood that the application from the Medical Practitioners' Union was accepted without qualification, no specific point being raised on the question of a general strike. The calling out of the physicians in the case of another general strike would be the *reductio ad absurdum* of trade unionism. The majority of the physicians in this country abhor this movement by a section of the profession. It is certainly due to the great increase of state interference in medical practice in recent years, of which the most important manifestation is health insurance of the wage earners. The idea is, as indicated, to confront the state or the local authorities who employ physicians by a powerful organization.

THE POSITION OF THE BRITISH MEDICAL ASSOCIATION

The question has arisen. Can these medical trade unionists retain membership in the British Medical Association, which is opposed to anything that savors of the political? In a press interview the secretary of the Medical Practitioners' Union said that they were not concerned with politics but only with medical politics—a vastly different thing. Both organizations were voluntary bodies and physicians could be members of both, just as they could be members of two golf clubs. He saw no reason why the two bodies should clash. However, Dr Anderson, medical secretary of the British Medical Association, has expressed a different view in another press interview. He agreed that physicians may still subscribe to membership in both organizations but said: "They must be men of elastic conscience. Personally I could not do it, because I do not believe in the union's methods. In affiliating with the trade unions they are trying to anticipate the political movement in this country. [He evidently refers to a possible victory of the labor party.] The union will alienate the sympathies of a good many of its members by this move. The British Medical Association does not need to be a trade union to fulfil its objects. Nearly 60 per cent of the profession are members of the association and the turn of events does not perturb us in the least."

Radiologic Examination of the Gastro-Intestinal Tract

At the section of radiology of the Royal Society of Medicine, Dr B. R. Kirklin of the Mayo Clinic, Rochester, Minn., read a paper in which he stated that only by x-rays could the earliest cancerous growths of the alimentary tract be found. Also, certain nonmalignant growths could be found and treated with greater success early than late. Hemorrhage was an urgent indication for radiologic investigation. Peptic ulcer was so often the cause that it might be the only condition considered by the clinician but as he showed by a series of cases, other conditions such as a small growth in the esophagus, might be the cause. Unless radiologic examination was carried out so as to permit direct frontal inspection, small gastric lesions would escape observation. He made a complete study of the

mucosal pattern after the first swallowings of barium. Bleeding from the rectum called for careful examination of the colon. In one case the double contrast method (air insufflation following a barium enema) showed a polypoid growth in the sigmoid, which proved to be adenocarcinoma. In every case of unexplained or idiopathic anemia a radiologic study of the gastro-intestinal tract should be made. In cases of loss of weight without other objective manifestations, radiologic examination should be one of the first tests.

PARIS

(From Our Regular Correspondent)

Jan 28 1935

French Orthopedic Congress of 1934

The French Orthopedic Congress of 1934 was held at Paris, October 12, the chief subjects for discussion being the surgical treatment of the funnel-shaped thorax and that of the paralyses due to Little's disease. The first of these two subjects was covered in the paper of Dr. Charles Garnier of Paris. Until recently this deformity had been treated by external measures, i. e., apparatus alone. The paper was based on nine cases observed in the large orthopedic service of Professor Ombredanne. The chief indications for surgical intervention were (a) dyspnea due to the fact that the expansion of the chest during respiration was limited to its upper segment and (b) cardiac symptoms due either to direct compression of the heart or its displacement toward the left with consequent torsion of the vessels.

These pulmonary and cardiac symptoms do not improve with nonoperative treatment in many cases and the lung condition predisposes to the development of tuberculosis. Such children should be operated on before the fifth year. In older children and adults the operation is much more difficult.

The sternum is mobilized in two steps. First the left costal cartilages (the third to the eighth) are resected for a distance of 2 cm. each, and six days later those of the right side. Gentle traction is applied to the sternum and a cast, which is left for two months. The functional results have been far more satisfactory than the morphologic. The mortality in nine cases has been 18 per cent. One can either resect the costal cartilages as just described or divide the sternum longitudinally.

In the discussion, Froehlich of Nancy stated that the indications for operation should be carefully considered. The operative treatment is indicated if there are evidences of serious pulmonary or cardiac lesions, if these cannot be ascribed to other causes than the funnel shaped thorax.

Mathieu reported three cases. In adults, he resects all the costal cartilages except the first and second. There was marked immediate improvement in all of the three cases. Whether this will be permanent, it is impossible to say.

Richard and Dupuis reported two cases. In one the gap in the divided sternum (second method of Ombredanne) was held open by three bone grafts from the tibia. Postoperative respiratory exercise is very important.

Perrot of Geneva also reported two cases, one in a boy of 18 and the other in a boy of 7. The functional symptoms had completely disappeared in both cases.

The second paper on treatment of spastic paralyses (Little's disease and encephalopathies) by Delchef of Brussels and Roudil of Marseilles, reviewed thoroughly the anatomy and the physiopathology. The only prophylactic measures were to treat a maternal syphilis, to avoid trauma during delivery and, as early as signs of hereditary syphilis appear, to treat this vigorously. After the lesions have developed, the only medical treatment is to administer antisyphilitic preparations. In addition to reeducation, which, when employed alone helps the milder cases, much depends on the stage of the disease. The Stoffel operation is beneficial when there is a spastic condition but is

of no avail when there is muscular retraction. Here only some form of tendon operation, either tenotomy or elongation of the tendon, preferably the latter, is indicated. The location of the spasm is an important consideration. If there is flexion-pronation deformity of the wrist and fingers, only tendon elongation or transplantation or a Stoffel operation is indicated, whereas, if there is an equinus deformity of the foot a tenoplasty is necessary to correct it. In general, the lack of mental development and the tendency to hypertonicity of the choreo-athetotic movements seriously complicate the problem of treatment. One must never forget that there is a tendency to spontaneous amelioration of the disease. Each case requires individual study.

Hygiene of Natatoriums at Seaside Resorts

At the recent hygiene congress in Paris, des Essarts called attention to the unhygienic conditions existing in the swimming pools containing water pumped directly from the ocean which now exist at some of the large seaside resorts in France. The water in these pools is not only polluted by sewage, which is discharged near the source of supply for the pools, but is also contaminated by the thousands of persons who prefer to use the pools instead of bathing in the adjacent ocean. No effort is made to change the sea water in the pools at frequent intervals and no disinfectants are employed. Hence the water acts like a culture medium especially for the colon bacillus. This explains why one so often sees individuals who have patronized the pools afflicted with conjunctivitis, otitis, gastro-enteric syndromes, typhoid dysentery and various skin diseases.

A plea was made for more rigid control of this innovation at seaside resorts. The water ought to be taken at a point where there is no likelihood of contamination, and chlorination of the water in the pools must be insisted on.

Professor Faure Retires from Hospital Service

Jean-Louis Faure, professor of gynecology at the Paris Medical School, was presented with a medal, November 18, by a large number of colleagues, friends and former patients. This event marked his retirement from many years of service at the Broca Hospital. He is one of the leaders of abdominal surgery in France, and his contributions to gynecology have made the name of Faure known all over the world. In response to many addresses by leaders of the literary and scientific world, Professor Faure stated that he had lived during the epoch of development of the technic of abdominal surgery. The coming generations will never see a more glorious period of the evolution of surgery. Perhaps surgery will be partly replaced by radiotherapy and other measures in the future. There is a tendency at present to place too much reliance on laboratory work and to neglect somewhat the clinical side. The patient should be spared from too many laboratory tests, some of which are superfluous.

Effect of High Temperatures on the Testis

An experimental study of why the testis fails to develop when retained within the abdomen, as observed in cases of experimental cryptorchidism was reported before the Biologic Society, October 20, by Jolly and Lieure. They do not agree with the theory of Moore that the scrotum is a regulator of temperature and that, as his experiments show, the testes fail to develop when placed in the abdominal cavity, where the temperature is higher. These authors employed guinea pigs (from 3 to 4 months old) the testes of which had fully matured. The testes were exposed for periods varying from ten minutes to one hour in water at a temperature ranging from 40 to 48 C. The testes were examined microscopically from fifteen to thirty-five days after such exposures. No effects were observed at temperatures from 40 to 43 C and only slight changes up to 46 C. When a higher temperature was reached, from 46 to

48 C., marked but not diffuse effects were noted. They do not believe that the intra-abdominal temperatures in experimental animals ever rise high enough to affect the development to maturity of the testis, so that one must look elsewhere for a cause to explain the nondevelopment of the testis in cryptorchidism, at least so far as experimental study is concerned

Treatment of Diphtheria

At a November meeting here the treatment of diphtheria was discussed by some of the leading clinicians and bacteriologists of Paris

Louis Martin, director of the Pasteur Institute, made an appeal for the use of antitoxin at the earliest possible moment, and not to wait for the appearance of false membranes. Intravenous injection acts more rapidly than intramuscular, and the latter more rapidly than subcutaneous. The opinion was unanimous as to the size of the doses, i. e., not more than 200 cc (50,000 units) altogether for a child of 10, 80 cc. is given the first day, 60 cc the second and 40 cc the third.

Debre did not believe that the antitoxin had lost its merited reputation, but it failed to cure malignant cases because employed too late. The physician should not wait for laboratory reports before using the antitoxin. These reports either arrive too late or may be wrong, not showing the specific bacilli when the disease is already present or revealing the presence of short bacilli, so that valuable time is lost. The clinical examination should be the attending physician's guide. Local applications are useless. When a child who has been vaccinated against diphtheria shows evidences of the disease, the antitoxin should be administered the same as though no vaccination had been performed. There are a small number of children who cannot be immunized by vaccination.

Marfan and Debré did not think that antitoxin was of any avail in paralysis, but Lereboullet and Martin did not agree with this view.

BERLIN

(From Our Regular Correspondent)

Nov. 12, 1934

The Congress of German Pediatricians

The German Society of Pediatrics held a congress in Brunswick to commemorate its fiftieth anniversary. The chairman, Professor Stolte of Breslau brought attention in his speech to the progress made in pediatrics, in that it has been recognized as a specialty by the state. About the turn of the century in Germany 19 per cent of all children died during the first year of life, whereas in 1933 only 8 per cent died. In the large cities the difference was even more striking, in Breslau the rate of infant mortality decreased from 29 to 8 per cent within the same period.

Kleinschmidt of Cologne spoke on localization of bacteria in the intestine of new-born children. Spore-forming bacilli appear frequently in meconium and regularly in melenic stools. Thanks to progress made in research on anaerobic cultures, it was found that in almost all children the anaerobes were found by the third day as precursors of *Bacteroides bifidus*. Next to already well known micro-organisms, the anaerobe *Bacterium muniticus*, which had not been described before, assumes the main role. It appears in the bacteriologic pictures in different forms. In the feces of the new-born the gas bacillus does not have the importance once attributed to it but in melenic it is found frequently and in large numbers.

Investigations of the blood iodine of rachitic nurslings made by Fasold of Göttingen showed normal results. Therefore the thyroid gland cannot have a very considerable influence in the pathogenesis of this disease. The iodine content is not even slightly influenced by the addition of vitamin B. In fact, it diminished on the addition of vitamin A. In experimental scurvy of the guinea-pig, a lack of vitamin C was accompanied

by a notable rise in the iodine content, followed by a marked retrogression.

Jochims of Kiel tested the biologic effect of isolated long ultraviolet rays on 160 rats, aged 6 weeks, under healthy living conditions and an unlimited amount of food containing salt and all the vitamins necessary to growth. When the cadmium lamp was used, the short ultraviolet rays—the antirachitic and the erythema producing rays—were held back below 315 microns. In direct irradiation of animals, the short waves had no influence. If irradiations are administered to the animals every two days for thirty minutes, they will be severely burned. If food and animals are mutually irradiated, the animals are soon exhausted. This effect is missing if a filter is not used, that is, if irradiation with polychromatic ultraviolet rays is administered. If the animals are given food with an optimal vitamin content and are irradiated for ten minutes with long ultraviolet rays, they regularly grow stronger than the control animals. This is not present if irradiation is administered with all the polychromatic ultraviolet rays. The sort of growth promoting substance is still a question none of the well known vitamins come into consideration. According to this, an isolated long wave section of the ultraviolet rays produces biologic effects which may not be suspected in mixed ultraviolet rays.

In children presenting general convulsions due to spasmophilia, Stolte observed a strikingly high rest nitrogen value 97, 63 and 48.3 mg per hundred cubic centimeters, while two other children presenting manifest spasmophilia but no convulsions showed only 37.8 mg per hundred cubic centimeters rest nitrogen. The convulsions, however, may not have conditioned the rise in rest nitrogen, for the highest value established after epileptic convulsions of long duration amounted to from 42.3 to 44.3 mg per hundred cubic centimeters rest nitrogen. If these observations really hold true, a possibility of explaining these special manifestations of spasmophilia presents itself. Since in the past shifts in the mineral metabolism had to be taken into account in this disease, the increase in nitrogen containing bodies is of interest. Kleinschmidt of Leipzig dealt with investigations on creatine metabolism in health children and in children having muscular diseases. In children as contrasted with adults a creatinuria is said to be physiologically more in evidence. Kleinschmidt, however, clearly demonstrated that a healthy child whose diet contains no animal albumin does not excrete creatine. Kleinschmidt found creatine in the urine only in the case of muscular diseases. The highest amount of creatine was found in progressive muscular dystrophy of Erb. The creatine metabolism peculiarities of this disease are said to be of differential diagnostic importance, nevertheless Kleinschmidt was able to show that, at most, conclusions may be drawn from the amount of creatine spontaneously excreted—not, however, from the glycocholic or creatine tolerance nor from the excretion of creatine—which indicate whether the dystrophy of Erb or another muscular disease is present. Kleinschmidt was able to determine the characteristic rise in creatine excretion in Erb's dystrophy after glycocholic tolerance also in a large number of healthy children. The results obtained in adults with glycocholic in progressive muscular dystrophy of Erb were not corroborated by those in children.

K. H. Bauer of Breslau spoke on congenital surgical diseases and malformations in the light of heredity. The gene is no hypothetical concept but a highly effective chemical physical entity. Even if its real nature is still unknown, the knowledge of its effect is already widespread. Chondrodystrophy and osteogenesis imperfecta serve as examples of how universal the effects of genes may be. In chondrodystrophic dwarfism it is not only a question of an epiphyseal growth disturbance but also of disturbances of the ossification center of the subchondral cartilaginous growth and of joint forma-

tion Each bone of the entire bone system had become specifically chondrodystrophic. The influence of internal secretions is contradicted by the cases of unilateral chondrodystrophy. The effects of a single gene are even more strikingly illustrated in a case of osteogenesis imperfecta. Here it is not only a question of a disease of the bone system with insufficient formation of the bony substance and predisposition to fractures, as is observed in severe cases by the involvement of other derivatives of mesenchymal tissue. Frequently effects traced to genes may be demonstrated in hereditary malformations, apparently circumscribed locally. A white forelock is, for example, frequently only a symptom of human spottedness, having short hands is only a stigma resulting from having short bones, in hereditary patellar luxation, numerous other joint disturbances are found. The so called hereditary clavicular defect especially demonstrates that such a local malformation is often only a symptom of universal constitutional anomalies. The fundamental importance of such clinical evidence pertaining to a striking genetic effect lies in the fact that its demonstration always permits binding conclusions to be drawn about corresponding normal genes.

Ibrahim of Jena discussed the importance of the diseased anlage in diseases of the nervous system of children. Alcohol, x-rays and radium rays are considered the primary damaging agents. Little definite information is available on the importance of chemical contraceptives. Whether syphilis in the form of parasymphilitic trauma can produce any nuclear damage must be determined by further observation. Fetal trauma in the form of roentgen fetal microcephalia with ocular malformations has become well known. Indirect fetal damages due to rays seem to occur on distant organs of the pregnant woman. Anomalies of the amniotic membranes and of the secretion of amniotic fluid may be called changes in nidation. In the relation of heredity to feeble-mindedness it is not easy to differentiate between endogenous and exogenous forms on the basis of clinical investigation. Recessive hereditary influences may be recognized in mongolian idiocy, but heredity alone does not explain all the known causal influences whereas the nidation theory is in harmony with all known influences. Hereditary influences are assumed in poliomyelitis here structure analyses are made of biologic heredity. Hereditary influences have been found in chorea minor and in spasmodic convulsions of infancy. Neuropathic disturbances may be produced by unfavorable environmental influences but hereditary influences are basic.

Kreuz of Berlin spoke on the special classification of typical deformities in the field of racial hygiene. There is no anatomic difference between hereditary clubfoot and that acquired within the uterus. Just as in congenital luxation of the hip, in clubfoot appropriate early treatment is extremely important because the ability of the child organism to restore the bone to complete usage diminishes with increasing age. The incidence of cure from the functional and anatomic point of view is high in cases treated early enough.

Orel of Vienna tested the influence of blood relationship of parents on children. He studied 686 children born in 305 Viennese marriages occurring during the years 1901 1902 1913 and contracted between persons related to the third or fourth degree. Although the material may be regarded as a consecutive series, it is selected, only the Aryan population was examined. The few unfavorable results found may be explained by the coincidence of recessive, morbid hereditary Anlagen. That detrimental results were produced by inbreeding could be proved no more than the theoretically correct belief that higher types may be cultivated through the joining of valuable recessive hereditary Anlagen.

W. Lehmann of Berlin-Dahlem presented a detailed report on examinations for heredity in rachitic twins. Heretofore

there has been only one statistical report in this subject. Examinations of rachitic changes were made on ninety-five pairs of twins (forty monozygotic—thus hereditarily identical, and fifty-five dissimilar pairs, of which thirty-seven belonged to the same sex and eighteen to both sexes). All were children from 3 to 6 years of age. The results are given in the table.

Heredity in Rachitic Twins

	Rachitic Behavior	
	Same	Different
In 40 identical pairs	34 times=85 per cent	6 times=15 per cent
In 55 dissimilar pairs	15 times=27.3 per cent	40 times=72.7 per cent

The results show that identical twins suffer more frequently in the same way from rickets than dissimilar twins. Since this difference may not be explained by environmental conditions, it should be accepted from these examinations that the hereditary Anlage plays an important part in the etiology of rickets.

MADRID

(From Our Regular Correspondent)

Nov. 25, 1934

A Temporary Hospital Dictator

The revolution in Catalonia last October was organized and carried out by the local authorities of the Catalan provinces, who spent the money appropriated for the public health of the provinces in preparing for the revolution, leaving the hospitals to be supported by charity. When the revolution broke out, the socialistic miners took Oviedo, the capital of Asturias, where they established their headquarters. The general hospital of Oviedo, the foremost hospital in Asturias, was placed in charge of the nurse Elias, a fanatic socialistic leader and also a tippler, who ordered the physicians of the hospital under arrest. Elias wanted the nuns to dress in modern nursing gowns if they were to continue nursing patients but the nuns would not change their clothing so he improvised a group of nurses with girls from the red light district. The water supply and electric light had been shut off the windows were closed by mattresses, and asepsis and sterilization in operating rooms were impossible. Operations were performed under these conditions on 250 seriously wounded men and of course a high rate of mortality resulted. This fact angered Elias, who summoned the physicians and told them "The fact that gangrene has taken so many victims in the ranks of the socialists and not in the ranks of the soldiers of the government proves that you are against the revolution, if today and tomorrow none of the wounded soldiers of the government die from gangrene I will have you shot." But the dictatorship lasted no longer and some hours later the republic triumphed. Elias died in the last battle. The socialists set fire to fifty buildings and blew up the institute and the University of Oviedo. In the city of Mieres the physicians, who were forced to work constantly from the fifth to the nineteenth of October, were treated as prisoners. Prescriptions could not be filled unless they were approved by a member of the revolutionary committee. The sale of food was supervised by the revolutionary committee, who gave a daily allowance to physicians and their families amounting to one peseta (about ten cents) for every person in the family. The physicians were in misery and their homes were either plundered or burned. The revolution was not justified by poverty, for the socialist miners earn the best wages for workers in Spain. They acted under poor advice.

Difficulties in Spanish Universities

In some universities of Spain, students have formed into groups under the name of university federations. The groups

consist of students of conflicting opinions, those supporting the government and those supporting the revolution. These groups have caused disturbances in the universities. Recently in the University of Madrid one of these controversies resulted in a fight during which four students were wounded, three of them gravely. In the University of Barcelona, Catalan was accepted as the official language. This caused discontent among many Spanish speaking students from South America, who decided to leave the university. When the Italians learned of this discontent, they invited the South Americans to Italy, offering them reductions in the fare of railroads and street cars. More than 200 students went from Barcelona to Genoa.

Ramón y Cajal

Dr. Santiago Ramon y Cajal, the famous Spanish histologist and anatomist, who died recently, was the author, among other works, of the *Manual de histologia y de tecnica micrografica*, *Manual de anatomia patologica general*, *Histologia*, *Textura del sistema nervioso del hombre y de los vertebrados* (three volumes) and *Trabajos de laboratorio* (twenty-eight volumes). Cajal was a professor of anatomy in the Universities of Barcelona, Zaragoza, Valencia and Madrid and later was head of the Institute Cajal, where scientists from all over the world came to learn his methods. When a statue of Cajal was unveiled in Zaragoza he declined the invitation to attend the ceremonies on account of poor health but really on account of his modesty. Shortly after the Spanish-American War he was received in the United States with great cordiality. He left 25,000 pesetas (about \$2,500) to help educate selected students. The medical society *Colegio de Medicos* of Madrid is organizing the establishment of a school in the city of Petella de Aragon which will be named after Cajal. His burial was a national manifestation of honor to him and of sorrow caused by his death.

ROME

(From Our Regular Correspondent)

Nov. 15, 1934

Congress of Medical Radiology

The eleventh National Congress of Medical Radiology was recently held at Perugia with Dr. Eugenio Milani as president and an attendance of about 400 radiologists and a large number of physicians. The first speaker was Dr. Lapenna of Belluno, who discussed roentgenology of the intervertebral disk, dislocation of the disk and also Schmorl cartilaginous nodules. He classified vertebral diseases into two large groups according to their cause, either extrinsic or intrinsic. The first group includes spondylitis and spondylo-arthritis, which attack the cartilages and the disk, the vertebral body or the ligaments. The second group includes spondylosis and spondylo-arthrosis. The so-called Kummell's spondylitis cannot be considered as a nosologic entity but rather as the terminal stage of an undiagnosed and latent fracture.

Dr. Palmieri of Bologna spoke on radiotherapy of the encephalon. He enumerated the neuropathologic conditions in which roentgen therapy is indicated and discussed the therapeutic action of roentgen irradiations, especially regulation of the interchange of cerebrospinal fluid under irradiations in internal hydrocephalus. In this connection the author refuted Marburg and Igaltzer's interpretations. He stated that roentgen treatment in encephalic tumors sometimes fails by itself to destroy the tumor but it is of value if associated with surgery. Surgery is the treatment of choice in the syndromes of intracranial hypertension and it is also advisable to resort to it in acromegalic syndromes. The collaboration between roentgenologists, neuropathologists and neurosurgeons is essential for the interest of the patient and also with the aim of clarifying many problems, even those of a theoretical nature.

Dr. del Buono of Bari spoke on roentgen therapy of the spinal cord and the peripheral nerves. Roentgen therapy is indicated in nonsuppurative acute neuraxitis of the spinal cord, in neuralgia of a certain inflammatory origin in syringomyelic gliosis, and in medullary and juxtamedullary tumors. The speaker pointed out the satisfactory results of roentgen treatment in acute anterior poliomyelitis in children, in chronic and acute poliomyelitis in adults and in other forms of poliomyelitis. It is now admitted that the direct action of the rays on the inflammatory cells, which constitute the infiltration, is explained by a double effect of the rays, causing destruction of labile cells and checking the proliferation of histiocytes of the connective tissue. In the treatment of syringomyelic gliosis, the pathogenesis of which is now related to spongioblastosis, the action of the roentgen rays seems to depend on the particular radiosensitivity of the residual immature spongioblasts in the spinal cord. After roentgen irradiations of medullary and juxtamedullary tumors, the beneficial action of the rays can manifest itself by the modifications of the cerebrospinal fluid, such as disappearance of inflammatory pleocytosis and of xanthochromia and destruction of neoplastic cells, which are sometimes present in the cerebrospinal fluid. The satisfactory results of roentgen therapy in neoplastic inflammatory diseases of the spinal cord and of the peripheral nerves have been emphasized during the last few years because of the large number of cases observed.

Dr. Guarini of Naples spoke on roentgen treatment of the sympatheticus. He stated that the roentgen irradiations have both an important action on the sympathetic nervous system and definite indications in certain diseases. Michelazzi's studies on the rich innervation of veins, showing ganglions in the adventitia of the pulmonary vessels, led one to suppose that the action depends on the effects of the irradiations on the ends of the sympathetic and other nerves.

Dr. Benassi of Parma spoke on new methods of visualization of various cavities and organs after the administration of contrast mediums. He focused his discussion on the importance of hepatolienography by colloidal thorium dioxide as a contrast medium, and on the new methods of radiologic visualization of arteries and on the method of impregnation of the mucosae with contrast mediums. Lymphography, periencephalography, amniography and placentography may yet be considered in the experimental stage and probably will not have any clinical application of importance. Hepatolienography with colloidal thorium dioxide is harmless. Neither immediate nor late untoward results were observed by the speaker in more than a hundred cases followed for about three years. Hepatolienography is indicated when it is necessary to find out the volume, shape and position of the liver and the spleen. In the diagnosis of diseases of the digestive tract the examination of the colon by the so-called impregnation of the mucosa by flocculation of colloids of thorium is of importance. The speaker closed by saying that colloids of thorium are better adapted than all the other opaque fluids for the visualization of organic cavities, either normal or in pathologic conditions.

Dr. Durante Is Dead

Dr. Francesco Durante, a senator and surgeon emeritus of the surgical clinic of Rome, died recently. He was the first surgeon to perform, in Italy, the suture of arteries and to undertake operations on the nervous system, especially on tumors of the frontal lobes. He originated a classic technique for craniotomy which was the basis for several modified techniques. He established the theory of the embryonic origin of tumors and published a description of it one year before Cohnheim. He was the founder of the large school of Italian surgery, having directed the surgical clinic of Rome for forty-five years. It is at this clinic that all the professors of Italian universities have studied.

Marriages

EDDIE HOUSTON THOMASON, Olania, S. C., to Miss Kate Goodwin Odiorne of Manning, Dec. 20, 1934

EMIL S. GODDIEAR, Kingston, N. Y., to Miss Mary Clare Archibald of Nashville, Tenn., Dec. 21, 1934

FRANK DANA WEEKS, Ashland, Wis., to Miss Frances Mary Clark in Stockdale, Nov. 30, 1934

MALCOLM E. MILLER, Ashland, Ohio, to Miss Marian Home-wood of Sullivan, Dec. 25, 1934

JAMES SLOAN ALTMAN, Pittsfield, Ill., to Miss Florence Mildred Clevin, June 5, 1934

HUGH VICTOR DU BOIS to Mrs. F. M. Latham, both of Athens, Tenn., Dec. 4, 1934

PAUL PADGET, Baltimore, to Miss Dorcas Hager of Vergennes, Vt., Nov. 30, 1934

FRANK A. DONALDSON, Long Island, N. Y., to Miss Agnes Hunt, in November 1934

ELLIS E. BAKER to Miss Opal Mankin, both of Gillette, Wyo., Dec. 25, 1934

GEORGE CRILE JR. to Miss Jane Halle, both of Cleveland, Dec. 5, 1934

Deaths

E. Rodney Fiske, New York, New York Homeopathic Medical College and Hospital, 1895 associate professor of medicine at his alma mater fellow of the American College of Physicians, associate attending physician to the Flower Hospital, consultant to the Yonkers (N. Y.) General Hospital, Brooklyn, Nursery and Infants Hospital and the Huntington (N. Y.) Hospital and chief of the department of medicine, Carson C. Peck Memorial Hospital, Brooklyn, aged 61, died, Dec. 19, 1934, of Hodgkin's disease

William Kuykendall, Eugene, Ore., Medical College of the Pacific, San Francisco, 1878, Member of the House of Delegates of the American Medical Association, 1926-1931, past president and formerly counselor of the fourth district of the Oregon State Medical Society, formerly member of the state legislature, fellow of the American College of Surgeons, on the staff of the Eugene Hospital, aged 79, died, Dec. 7, 1934

Curtis Herman Jennings, Fitchburg, Mass. Baltimore University School of Medicine, 1902 member of the American Roentgen Ray Society, the New England Roentgen Ray Society and the Radiological Society of North America, veteran of the Spanish American and World wars on the staffs of the Burbank Hospital, Fitchburg, and the Elliott Community Hospital, Keene, N. H. aged 58, died, Dec. 31, 1934

Frank Alexander Hughes, Lieut. Commander, U. S. Navy, retired Lexington, Ky., Medical College of Virginia, Richmond 1906, served during the World War entered the navy in 1921 and retired in 1932 for incapacity resulting from an incident of service, part time otorhinolaryngologist to the University Health Service, University of Kentucky, aged 51, died Dec. 23, 1934, of cerebral hemorrhage

Herbert Spencer Abel, Providence, R. I., Cornell University Medical College, New York, 1929 member of the Rhode Island Medical Society, on the staffs of the Beth Israel Hospital, Boston, the Charles V. Chapin Hospital, Rhode Island Hospital and the Miriam Hospital Providence aged 31, died Dec. 3, 1934 in the Memorial Hospital, Pawtucket, of acute rheumatic fever and acute endocarditis

Peter Alfred Bendixen, Davenport Iowa, Rush Medical College, Chicago 1905 member of the Western Surgical Association fellow of the American College of Surgeons, past president of the Scott County Medical Society, surgeon to St. Luke's Hospital and the Mercy Hospital, aged 52 died Dec. 30, 1934 at a hunting lodge near Beardstown, Ill., of coronary thrombosis

Daniel Edward Sevier, Asheville, N. C. Jefferson Medical College of Philadelphia 1895, member of the Medical Society of the State of North Carolina past president of the Buncombe County Medical Society for many years health officer of Asheville formerly county health officer and county coroner, aged 66, died Dec. 4, 1934, of coronary occlusion

Lowell Lorrimer Youngquist, Marquette Mich. University of Michigan Medical School, Ann Arbor, 1916 member

of the Michigan State Medical Society, served during the World War, physician to the Hospital of State House of Correction and Branch Prison, formerly city health officer, aged 46, died recently, of cerebral hemorrhage

Cleaves Bennett, Champaign, Ill., College of Physicians and Surgeons of Chicago, 1896, past president and secretary of the Champaign County Medical Society, formerly councilor of the eighth district of the Illinois State Medical Society, aged 64, on the staff of the Burnham City Hospital, where he died, Dec. 22, 1934, of coronary thrombosis

James Anthony Halpin, Medical Inspector, Commander, M. C. U. S. Navy, Chelsea Mass. Georgetown University School of Medicine, Washington, D. C., 1912, entered the navy in 1917, served during the World War, aged 44, chief of the medical service at the U. S. Naval Hospital, where he died, Dec. 11, 1934, of chronic nephritis

Clarence Walter Halliday, Detroit, Harvard University Medical School, Boston, 1920, fellow of the American College of Surgeons surgeon to the Evangelical Deaconess Hospital, junior pathologist to the Harper Hospital, on the staff of the Cottage Hospital Grosse Pointe, Mich., aged 41, died Dec. 17, 1934 of chronic myocarditis

Francis Huber, New York, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1877 professor of clinical medicine at his alma mater, consulting physician to the Gouverneur Hospital and consultant in pediatrics, Jewish and Beth Moses hospitals, aged 80, died, Dec. 26, 1934, of heart disease

Leland Howard Poore, Crescent Lake, Me., Medical School of Maine Portland, 1893, member of the Maine Medical Association formerly member of the state legislature aged 67, died, Nov. 29, 1934 in the Central Maine General Hospital, Lewiston, of uremia, diabetes mellitus and arteriosclerosis

Samuel William Weinberg, Louisville, Ky., Hospital College of Medicine, Louisville, 1904 clinical instructor in otology, rhinology and laryngology, University of Louisville School of Medicine on the staff of the Jewish Hospital, aged 56, died, Nov. 21, 1934, of heart disease

Thomas N. Millikan, Wilmington, Del. University of Pennsylvania School of Medicine, Philadelphia, 1893 member of the Medical Society of Delaware, also a druggist, on the staff of the Wilmington General Hospital, aged 72, died, Nov. 24, 1934, of heart disease

Albert E. Frey, Newark, N. J. College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1888, aged 70, died, Dec. 27, 1934 in the Elizabeth (N. J.) General Hospital, of pneumonia following injuries received in an automobile accident

Samuel Ewer Simmons, Berkeley, Calif. Harvard University Medical School, Boston 1899 member of the California Medical Association, served during the World War aged 60, died, Nov. 21, 1934, in the Alta Bates Hospital, of carcinoma of the lung

August C. Borchardt, New London, Wis., Milwaukee Medical College, 1905, served during the World War, for seventeen years local health officer, aged 62 medical superintendent of the Memorial Hospital, where he died, Dec. 16, 1934 of angina pectoris

David Robinsohn, New York, Medizinische Fakultät der Albertus-Universität, Königsberg, Prussia, 1887 chief consultant emeritus to the Beth Israel Hospital, consultant to the Montefiore Hospital, aged 71, died, Dec. 6, 1934, of coronary thrombosis

Max B. Gomberg, Providence, R. I., University of Pennsylvania School of Medicine, Philadelphia, 1895, on the staff of the Miriam Hospital aged 60, died Dec. 12, 1934, in the Rhode Island Hospital, of coronary occlusion and lobar pneumonia

William Joseph Herrick, Ottumwa Iowa, Keokuk Medical College 1895 member of the Iowa State Medical Society past president of the Wapello County Medical Society aged 67, on the staff of St. Joseph's Hospital, where he died, Dec. 12, 1934

Antone Byron Jensen, Menasha, Wis., College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois 1903 on the staff of the Theda Clark Hospital Neenah, aged 55 died, Dec. 14, 1934, of heart disease

Eugene Moore Fowler, Dallas, Texas, Southern Medical College Atlanta, 1885, fellow of the American College of Surgeons on the staffs of the Methodist Hospital and Emergency Hospital, aged 70 died, Dec. 27, 1934, of coronary occlusion

Charles Austin Lester, Peoria, Ill., Hospital College of Medicine, Louisville, Ky., 1897, served during the World War, aged 60, died, Dec 9, 1934, in the Veterans' Administration Facility, Hines, of arteriosclerosis and valvular heart disease

Louis David Henn, North Plainfield, N. J., New York University Medical College, 1898, member of the Medical Society of New Jersey, aged 59, died, Dec 12, 1934, in the Muhlenberg Hospital, Plainfield, of chronic endocarditis

Orson Ruez Crooks, Kansas City, Mo. Kansas City Medical College, 1897 member of the Associated Anesthetists of the United States and Canada, aged 64, died, Dec 13, 1934 of coronary thrombosis and arteriosclerosis

Harriett Belle Jennings Wagner, Victorville, Calif., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903, aged 67, died, Nov 25, 1934, in Etiwanda, of skull fracture

Elisha Whitten Tinsley, Montgomery City, Mo. Hospital College of Medicine Louisville, 1889, member of the Missouri State Medical Association aged 68 died Nov 28 1934, in Mexico of carcinoma of the pancreas

Philo Everett Jones ♂ Portland Ore. Medical College of Ohio Cincinnati, 1870, past president of the Utah State Medical Association aged 86, died Nov 22, 1934, of prostatic obstruction and purulent bronchitis

Thomas Hugh Tuten, Alameda, S. C. Medical College of the State of South Carolina, Charleston 1900 bank president aged 59 died, Nov 21 1934, in the Riverside Hospital Charleston, of cirrhosis of the liver

Fred Russell Dame, Athol Mass. Baltimore Medical College 1897 member of the Massachusetts Medical Society aged 62 died Dec 21 1934 in Orange, of skull fracture received in an automobile accident

Frank Roy Loope, Seattle College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901 aged 60, died Nov 7, 1934, of coronary thrombosis and arthritis deformans

Owen Alonzo Smith, Farmington Mo. Washington University School of Medicine, St. Louis 1892 member of the Missouri State Medical Association, aged 66 died Dec 2 1934 of carcinoma of the stomach

Lemuel Temple Waters, Savannah Ga. University of Georgia Medical Department Augusta 1914 member of the Medical Association of Georgia, aged 45 died Nov 27, 1934, of coronary thrombosis

John B. Walkinshaw, Wellsburg W. Va. Western Reserve University Medical Department Cleveland 1883 formerly county coroner, aged 74 died Nov 14, 1934, of chronic myocarditis

Percy Eugene Hofmann, Fargo, N. D. Barnes Medical College, St. Louis 1906, member of the North Dakota State Medical Association, aged 56, died suddenly Dec 18, 1934 of heart disease

John S. Allen, Keithsburg Ill. Hahnemann Medical College and Hospital, Chicago 1877, for many years bank president and president of the board of education, aged 83 died Dec 15, 1934

Nathaniel Hibbard, Danielson Conn. Harvard University Medical School, Boston, 1882, member of the Connecticut State Medical Society, aged 79, died Nov 28, 1934, of chronic myocarditis

Ulysses Samuel Wharton ♂ Altoona, Pa. Howard University College of Medicine, Washington D. C. 1913, on the staff of the Altoona Hospital, aged 49, died, Dec 2 1934, of heart disease

Joseph Grant Yocum Middletown N. Y. Columbia University College of Physicians and Surgeons New York 1901 served during the World War, aged 57 died, Dec 19 1934 of pneumonia

Michael Thomas Naughton, Chicago College of Physicians and Surgeons of Chicago 1894 aged 67 died Dec 12 1934, in the Veterans' Administration Facility, Hines Ill., of nephritis

Jacob A. Poppen, Otsego Mich. Northwestern University Medical School, Chicago 1921, aged 42, died Dec 17 1934 in the Bronson Methodist Hospital, Kalamazoo of diabetes mellitus

John Charles Whitacre, Memphis Tenn. State University of Iowa College of Medicine, Iowa City, 1897 aged 64, died, Nov 15, 1934, of a malignant tumor of the gastro-intestinal tract

Herbert Drew Snyder, Little Rock, Ark., Atlanta Medical College, 1916, served during the World War, on the staff of the State Hospital, aged 41, died, Dec 9, 1934, of heart disease

J. Louis C. Perrilliat, New Orleans, Tulane University of Louisiana Medical Department, New Orleans, 1899, aged 59, died in December 1934, of bronchopneumonia and septicemia.

Walter Pleasant Wilson, Madison, N. C., North Carolina Medical College, Charlotte, 1908 aged 56, died Dec 12, 1934, in St. Leo's Hospital, Greensboro, of bronchopneumonia

John Allen Whipple, Peoria, Ill. National Medical College, Chicago 1895 also a dentist and a lawyer, aged 79, died Nov 22, 1934, in the Proctor Hospital of acute nephritis

Alexander J. Schweichler, Milwaukee, Medizinische Fakultät der Friedrich-Wilhelms-Universität, Berlin, Prussia 1872, aged 87, died, Dec 4, 1934, of chronic nephritis

George B. Peck, Woodville, R. I., Medical Institution of Yale College 1871, Civil War veteran, aged 91, died, Nov 20, 1934, of myocarditis and arteriosclerosis

Charles F. Hubbard, Chicago, Hering Medical College Chicago, 1899, member of the Illinois State Medical Society, aged 60 died, January 1, of chronic myocarditis

Harvey Brown Bashore, West Fairview, Pa., University of Pennsylvania School of Medicine Philadelphia, 1889 aged 70 died Nov 28 1934, of coronary embolism

William F. Whitten, Columbus, Ohio, Starling Medical College Columbus, 1886 aged 72 died, Nov 15, 1934 in Lake Worth, Fla. of carcinoma of the pylorus

Fay Xavier Field, Wellsboro Pa. Medico-Chirurgical College of Philadelphia 1916, served during the World War, aged 43 died, Nov 29 1934, of acute myocarditis

Donald D. McDougall, Cincinnati Hygeia Medical College Cincinnati 1895 aged 72 died Dec 11, 1934, in the Bethesda Hospital of chronic myocarditis

John Albert Copeland, Long Beach, Calif. State University of Iowa College of Medicine, Iowa City 1900 aged 59, died, Dec 5, 1934 of cerebral hemorrhage

John Harvey Adair, Wall S. D., Eclectic Medical Institute, Cincinnati, 1877 aged 82 died Nov 20, 1934, in Rapid City of carcinoma of the hard palate.

Benjamin Feltenstein, Chicago College of Physicians and Surgeons of Chicago, 1895, aged 66, died, January 2, of coronary thrombosis and myocarditis

Thomas Benton Stutzman, Denver Bennett College of Eclectic Medicine and Surgery Chicago, 1879 aged 84, died Nov 20 1934 of heart disease

Frank Elmer Cameron, Eloise Mich. Michigan College of Medicine and Surgery Detroit 1898, aged 59 died, Dec 10, 1934 of angina pectoris

Joseph Marvin Ware, Jackson Miss., Memphis (Tenn.) Hospital Medical College 1906 aged 55 died Dec 10 1934, of cerebral hemorrhage

Edward Craig Ledman, Chicago, Starling Medical College Columbus 1903 aged 60, died suddenly Dec 3 1934, of coronary thrombosis

Harry William Sullivan, Cincinnati Medical College of Ohio Cincinnati 1901 aged 56 died suddenly, Dec 3, 1934 of coronary occlusion

Horace Eaton Potter, Clifton Kan. Homeopathic Medical College of Missouri St. Louis, 1885 aged 75 died, Oct 23 1934, of senility

William Fletcher Smith, Memphis, Tenn. Baltimore University School of Medicine 1904, aged 69 died, Nov 20, 1934 of heart disease

William Elliott, Wolseley Sask. Canada University of Toronto Faculty of Medicine 1893, aged 71 died, Oct 27, 1934, of heart disease

Mosley Stuart Chandler, Columbus Miss., Atlanta (Ga.) Medical College, 1890, aged 67 died, Dec 5 1934, of amebic dysentery

John T. Wingate, Platte S. D. Albany (N. Y.) Medical College 1908, aged 53 died suddenly Nov 17 1934 of heart disease

John H. Brower, Espanola Wash. Medical College of Ohio Cincinnati, 1877 aged 84 died Nov 30 1934, of heart disease

Howard M. Fenton, Cleveland, Cleveland Medical College, 1878, aged 86 died, Dec 15, 1934 of pneumonia

Bureau of Investigation

C R EMEY GOES TO PRISON

A Swindler Exposed by The Journal Is Once More in the Toils

In this department of THE JOURNAL for May 7, 1932, there was published a detailed article on a swindler whose real name seems to be Clarence Richard Emedy (sometimes spelled Emidy), but who has gone under such aliases as Don Miller, T Baker, Douglas Noble R D Whitman, etc. It was brought out in this article that Emedy had posed as an employee of the American Medical Association and had been victimizing alumni of Johns Hopkins University School of Medicine and especially members of the Sigma Chi fraternity. The article further told that Emedy's favorite story used in swindling physicians was one that had won him the name of 'Spare-Tire Artist'. He would represent himself as a medical student—generally from Johns Hopkins or Northwestern—and claim membership in Sigma Chi chapters at various institutions. His favorite prey were individuals whom he described as 'his father's Sigma Chi classmates,' and he specialized in alumni between the classes of 1895 and 1905. He had memorized the names, addresses and occupations of the class of the intended victim as well as two classes immediately before and after. His memory is incredibly good and he appears to have had little difficulty in collecting anywhere from \$5 to \$25 from at least two hundred Sigma Chis on the story that his spare tire had been stolen and that he was a little short of money. Emedy has been exposed repeatedly in *Sigma Chi Bulletin* and in the *Magazine of Sigma Chi*.

In 1927 he tried to swindle a Sigma Chi man at Wichita Falls, Texas, with the result that he was arrested, charged with forgery and sentenced to two years in prison. He got out after serving a year and a half. In December, 1930, he was arrested again in Tulsa, Okla., but unfortunately the individuals who had been swindled, because of the comparatively small sums involved were unwilling to spend any additional money in having Emedy put behind the bars.

In the spring of 1931 Emedy was working his scheme in the east. In September of the same year he was arrested by the police authorities of Montreal but while he was detained by the police of that city for a short time he got out under habeas corpus proceedings. From Montreal he went to Pittsburgh and in January 1932, was arrested for passing bad checks and sentenced to two years in the Allegheny County workhouse.

As already stated the Bureau of Investigation published its article on Emedy in THE JOURNAL, May 7, 1932 some weeks after he had been sent to the Allegheny County workhouse. The article closed with this paragraph:

For a year or so then the public will not be swindled by this impostor. As the man's record indicates that he is inherently crooked, it is probable that as soon as he is released from the workhouse in Pennsylvania he will resume his old trade.

The prophecy proved correct. Although he entered the Allegheny County workhouse on Jan 20 1932 and had been sentenced to two years imprisonment he was released on parole at the end of ten months—in October 1932. He had not been out more than a few weeks when Mr H C Burgan Business Manager of Johns Hopkins University reported to the Director of the Bureau of Investigation of the American Medical Association that Emedy was up to his old tricks and was swindling the families of some of the Johns Hopkins students residing in and near New York City.

Emedy then went out to the Pacific Coast and started the scheme in Los Angeles where he bilked some thirteen old grads of sums ranging from \$5 to \$25 by posing as a son-in-law of an old college classmate. He was arrested and various alumni from universities or colleges in Michigan Massachusetts Illinois Pennsylvania and California living in Los

Angeles had sufficient public spirit, in spite of the small sums out of which they had been swindled, to put themselves to some expense and considerable inconvenience to appear against this swindler. As a result, Emedy was convicted and sentenced to the state penitentiary. Dr J Morris Slemons of Los Angeles, who was written to and asked for details of the sentence, telegraphed as follows:

'Emedy transferred to Folsom Penitentiary December 27 after conviction on six counts of petty theft with prior conviction. Three sentences run concurrently three consecutively. Minimum period of imprisonment fifteen years maximum life. Parole board fixes actual sentence toward end of first year.

It is sincerely to be hoped that the parole board, when it considers Emedy's case will have before it all of the facts regarding this confirmed and inveterate swindler and will not allow any mawkish sentimentality to soften either their hearts or heads. Emedy is a past master not only at the art of swindling, but in working the sympathy racket. At the time



Here are two of the free photographs taken at state expense of C R Emedy as he appeared in Montreal in 1931 and Pittsburgh in January, 1932.

he was sentenced to two years' imprisonment in Wichita Falls, Texas, Emedy seemed to be very penitent, studying the Bible, praying over his sins, and thereby securing the sympathy of a prominent local preacher who interceded in his behalf.

The authorities in California are to be congratulated in having proceeded promptly and intelligently.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

DERMATITIS IN STEREOTYPERS

To the Editor—Have you any information on occupational dermatitis caused by using gum paper in preparing mats for casting plates for newspaper publication? A man has a case of this and I would like the latest information.

GEORGE R JOHNSON M D Calgary Alta

ANSWER—At least four methods are in use in connection with stereotyping work. Causes of dermatitis may be associated with all. Calcium chloride is sometimes employed to maintain proper moisture for the mat. Nearly always mats are lubricated with oils, which sometimes are thinned with naphtha. In older methods much paste was utilized in which white and yellow dextrin flour gum arabic and gum tragacanth were common ingredients. This paste was furnished a preservative which varied but phenol and cyanides often were used. In the past at least some mats have been treated with acid to facilitate the ready separation of the mat from the type. Lime and alum each have found some use in stereotype work. For a long time skin diseases have been attributed to flong and mat making as the source. Later, when molten metals are brought into contact with these matrices, additional sources of skin disorder arise, these, however, are not contemplated in the query. It would be difficult to establish clearly that a skin disease solely was produced by any one single factor in mat production, such as gum paper. Possibly

this may be accomplished by the making of contact tests on the skin, using paper as the test substance. In the absence of sensitization to some paper constituent and in the absence of complication due to the secondary entry of mycotic organisms, a pure chemical dermatitis may be expected to clear up in brief time with or without treatment, provided no additional exposure takes place.

AMENORRHEA

To the Editor—I would appreciate advice on treating a case of amenorrhea. A white woman aged 30 married suffered for the first time in 1924 for three months. Menstruation returned without treatment and remained regular until 1929. The second period of amenorrhea occurred in 1929 and 1930 for eleven months with an increase in body weight of about 40 pounds (18 kg). In January 1933 a lung infiltration of the left upper lobe was found which was treated and has remained inactive since that time. At present there are no physical signs of activity roentgen examination showing a clearing up of the process and there being absence of fever and cough. Gynecologic examination reveals no abnormality. The third period of amenorrhea still in progress started one year ago. During this last year the patient has lost 40 pounds. She suffers so severely under markedly changed psychic conditions that help is really urgent. I do not think that either losing in weight or the last year's amenorrhea has any connection with the lung condition which does not show any evidence of activity and I am more in favor of the opinion of a familial constitutional condition especially if one considers that two or three sisters had too at different times amenorrhea as well as dysmenorrhea, with similar changes in body weight. To check on the lung condition I would like to do a sedimentation test. Is it possible that the sedimentation time would be influenced by such an endocrinologic condition? What could be done in regard to a hormone treatment of this case of amenorrhea? Please omit name.

M D Ohio

ANSWER—Of prime importance in the treatment of this case is assurance of the patient that the repeated periods of amenorrhea in no way indicate that her health is impaired or that they will necessarily lead to trouble. Women who have intervals of freedom from menstruation in the absence of pregnancy are just as healthy as more women who have a regular monthly flow of blood. Contrary to the general layman's opinion, the blood which women lose every month does not contain harmful substances which the body must dispose of. This blood is just as healthy as the blood in the rest of the body. Recently Aschner has revived the old idea that menstrual blood rids the body of humors or toxins, but few gynecologists agree with him. Menstruation is after all only one symptom in the series of cyclic changes that take place in women during their reproductive period. Despite the absence of the flow of blood the other changes may occur. Even gestation is possible after a period of amenorrhea because ovulation may and does occasionally take place without the occurrence of menstruation.

If this information fails to convince the patient that she is not ill because of the amenorrhea, it may be necessary to try to bring about uterine bleeding. If the patient is interested in having children it is essential to determine whether she ovulates during these periods of amenorrhea, because without ovulation there can be no pregnancy. There are a number of ways of doing this. Clinically there are two signs of ovulation, namely, intermenstrual pain, or mittelschmerz, and intermenstrual spotting, but both of these signs are rare. Recently Kurzrok, Kirkman and Creelman (*Am J Obst & Gynec* 28:319 [Sept.] 1934) added what they consider to be another indication of ovulation, the sudden appearance of the follicle stimulating hormone in the urine of nonpregnant women. Knaus (*Zentralbl f Gynäk* 53:2193, 1929) maintains that in women, just as in rabbits, the uterus fails to respond to pituitary extract twenty-four hours after ovulation, and this failure to react Knaus attributes to the corpus luteum. There are other means of determining ovulation, such as the examination of the ovaries in situ, the microscopic examination of the ovaries and uterine endometrium, and the recovery of human ova from the fallopian tubes. If ovulation is present the outlook is more promising, but even without ovulation it is possible to bring about bleeding from the uterus. This may be accomplished by giving large doses of female sex hormone over a period of time and then stopping the administration abruptly. However, such endometrium is of the proliferative type only and therefore not capable of harboring a fertilized ovum. The addition of corpus luteum hormone after the administration of follicular hormone can bring about a change from the proliferative type of endometrium to the premenstrual type. However, in order to induce cyclic bleeding this treatment will have to be repeated almost indefinitely, because it is purely substitutive. Such treatment is expensive and rarely worth while.

There is no connection between the change in the patient's endocrine disturbance and the sedimentation test. The latter indicates chiefly inflammation and infection.

CHRONIC MAXILLARY SINUSITIS

To the Editor—I have two patients past 50 years of age who have chronic purulent maxillary sinusitis of many years standing. Both are greatly troubled with discharge, crusting, head pains, neuralgia, rheumatism and frequent colds. Both have had submucous resections of the septum, turbinotomies, and antrum punctures at different operations during the last fifteen years. Jackson and Coates in their recent book advise the radical operation of removing the antral mucosa entire. One of these patients consulted a well known rhinologist in Kansas City who strongly condemned the operation, saying that the Caldwell-Luc procedure usually made matters worse. He thinks that only myxomatous epithelium replaces the columnar type resulting in great crusting with bad odor and much greater discomfort. Jackson and Coates say the columnar epithelium is regenerated in dogs but how about in man? What are the facts in this matter? What treatment for these patients do you advise when they can not go to other climates? Is the radical operation ever advisable for chronic purulent maxillary sinusitis? Please omit name.

M D Missouri

ANSWER—In order to answer this question as adequately as possible, it must be assumed that the patients described have a chronic sinusitis limited solely to the antrum of Highmore. The presence of suppuration in the fronto-ethmoid group of cells with the antrum acting as a reservoir would make the whole situation much more complicated. Granting, however, that no such complication exists, it is plain that the procedures mentioned have not been sufficient to give the desired relief. It must be clearly understood that there is no one method or operative procedure that can be used after simple antrum puncture and lavage have failed to give the desired result. The operations to be considered will depend on the condition in each instance and on the experience of the operator. The character of the secretion is important. If it is thin, profuse and of foul odor, one may expect a tendency to be stubborn. Instillation of iodized poppy-seed oil with subsequent roentgenography will render valuable information as to the thickness of the sinus mucosa and the presence of polyps. It will also be necessary to make sure that there are no dental changes responsible for the chronicity.

Many surgeons feel that a large antrum window will clear up situations as described and would not care to do a more radical operation until such an antrum window had been made. There are others who feel that they can judge by the symptoms and the length of time that adequate conservative measures have already been carried out when to proceed to a more radical operation without an intervening antrum window operation.

Be that as it may, it may be stated fairly positively that the Caldwell-Luc operation cannot be categorically condemned. Properly done and for the proper indications it yields in the hands of many men a high percentage of cures or, at least, marked mitigation of symptoms.

The type of epithelium that is regenerated in man has been described by Gregor McGregor (Further Proof of the Regeneration of Mucous Membrane in the Human Antrum, *Arch Otolaryng* 14:309 [Sept.] 1931). Apart from the question of the microscopic nature of the type of epithelium encountered after operations of this character, one cannot lose sight of the fact that the epithelium now present is diseased to the point at which spontaneous cure can no longer be expected, and experience definitely shows that the new epithelium reacts in a great deal more satisfactory manner.

VASOSPASTIC DISTURBANCE OF HANDS

To the Editor—A patient complains of blueness and numbness of the hands especially when arising in the morning. This he says has been going on for about a year and is worse in damp and cold weather. During the past hot weather he had practically no symptoms but during the few days recently that have been cool his symptoms have returned. He states that this may last from thirty minutes to one hour after arising and his feet are only occasionally and slightly involved occasionally becoming numb but not changing color. The patient is a white man aged 51 of Jewish (but not Russian) faith. He is a jeweler. He stopped smoking about ten months ago. The Kahn reaction is negative. The urine is normal, the blood sugar is within normal limits, hemoglobin is 85 per cent (Tallqvist). Physical examination reveals nothing of pathologic importance. What diagnosis would you make? What treatment should be given? What is generally thought of the calcium and vitamin treatment as discussed by Bernheim and London (*Am Heart J* 7:588 [June] 1932) in Raynaud's disease? Would such treatment be of value here? Please omit name and address.

M D Missouri

ANSWER—This condition represents a vasospastic disturbance of the hands, apparently bilateral. The cyanosis is the result of abnormal constriction of the arterioles of the skin from cold with subsequent stasis and dilatation of the capillaries and small venules. It is an exaggeration of what occurs in normal subjects with exposure to cold. The problem involved is whether this is a primary vasomotor disturbance or one secondary to some other disease. The fact that the patient is a man aged 51,

mitates against the diagnosis of primary vasomotor disturbance, or Raynaud's disease. It is more likely that the condition represents a secondary form. One would first suspect, in a man, thrombo-angitis obliterans involving the hands. The race of the patient who is under consideration favors this diagnosis. Exact information should be obtained as to whether normal pulsations are present in the radial and ulnar arteries of both hands. If occlusion is present, the diagnosis of thrombo-angitis obliterans is tenable. In a small percentage of cases the occlusion is in the more distal arteries of the hands, and normal pulsations may be present in the wrists. Differences in the surface temperature of the individual digits, and arteriograms, will aid in deciding this. Other secondary forms of vasomotor disorder observed in the male are found with arteriosclerosis of the digital arteries, cervical rib, and neuritis. The crucial point in distinguishing between a vasomotor disorder and occlusive disease of the arteries rests on the presence or absence of pulsation in the palpable arteries of the wrists, or of the feet. Raynaud's disease in the male (incidence about 10 per cent in the male) at this age usually is not serious and usually does not lead to trophic disorders such as ulcers. Moderate protection, and exposure of the hands or the body to decreasing temperatures, carried out systematically, frequently will produce tolerance to cold, with amelioration of the cyanosis. In the secondary vasospastic disorders, treatment concerns solely the primary lesion. In thrombo-angitis obliterans the usual measures, such as contrast baths, postural exercises, avoidance of local infection and trauma, and cessation of smoking are important. In arteriosclerotic disease without ulcer special treatment is not indicated. Usual precautionary measures are instituted. In the progressive forms of Raynaud's disease or thrombo-angitis obliterans involving the hands, cervicothoracic ganglionectomy is efficacious.

DINITROPHENOL AND NEURITIS

To the Editor—I have under my care a woman who is suffering from peroneal and anterior tibial peripheral neuritis. During the winter of 1933-1934 she had been taking dinitrophenol for about four months. Three weeks after stopping this drug she collapsed with a high fever, sweating and profound prostration. She had a numb feeling in both legs from the knees down, and she was unable to move her toes. Her attending physicians at the time have sent a report that they attributed this to dinitrophenol poisoning. A neurologist who saw her at that time reported the presence of peroneal and anterior tibial peripheral neuritis. She was ill for two or three weeks and then these symptoms cleared up except the numb feeling in her legs and pain in the plantar and transverse arches which still persists with no tendency to recover. At the present time she has no motor symptoms and the sensory changes are still indefinite and unconvincing but she feels that her legs both are numb. The questions I should like to ask are: Have you heard of any case of peripheral neuritis resulting from dinitrophenol? Have you heard of any acute poisoning as long as three weeks after cessation of the drug? Can you refer me to any authority who would be in a position to consult with reference to dinitrophenol? I would appreciate it very much if you could throw any light on this subject.

DOUGLAS ST. J. WIGLE, M.D., Windsor, Ont.

ANSWER—All the present evidence indicates that di-nitrophenol is completely excreted from the body in about three days and that the metabolism returns to the normal level in the same length of time. This is true regardless of whether the drug has been given for a few weeks or for many months, since apparently there is no accumulation of it in the body. It is therefore highly improbable that the febrile attack suffered by the patient three weeks after stoppage of the di-nitrophenol was due to this drug.

Tainter, Stockton and Cutting reported in *THE JOURNAL* (Nov. 4, 1933, p. 1472) that six of their patients developed a disturbance of taste while taking di-nitrophenol. This was probably the manifestation of a peripheral neuritis. Several mild cases of peripheral neuritis of the extremities have been observed but not yet reported in the literature. Therefore there can be no doubt that the drug can produce this symptom in a small percentage of cases. It develops slowly, with paresthesias and delayed sensory conduction, and is characteristically limited to the sensory fibers. On withdrawal of the drug improvement begins within a week or two and is complete within from one to two months. After the symptoms clear up, treatment can be resumed cautiously without further untoward effects if a lower dosage level is used. The cases of peripheral neuritis that have been observed have generally been in patients who have taken unusually large doses of the drug over prolonged periods of time.

In the present case the peripheral neuritis may have been due to the di-nitrophenol although it is difficult to explain the delayed onset except by assuming the symptoms to have been so minor as not to have attracted attention while the drug was being taken. The present "indefinite and unconvincing" nature of the symptoms might also fit in with this suggestion.

INJECTION METHOD FOR HYDROCELE

To the Editor—Will you kindly inform me of the recent method of treating hydrocele, published by Drs. N. J. Kilbourne and Charles J. Murray in the July 1932 issue of *California and Western Medicine*? I should like to know what injection fluid is used, the frequency of injections and the relative merits of this form of ambulatory treatment as compared to operative treatment of hydrocele. Please omit name.

M.D. Massachusetts

ANSWER—The authors of the article mentioned sought to find a solution for the injection treatment of hydrocele which would avoid pain, which would make it unnecessary for the patient to stop work while under treatment, which would not be dangerously toxic and which would be bactericidal in order to avoid infection. Their studies of various solutions led to the use of quinine hydrochloride and urethane, as suggested by Pybus of England in the same strength as used in varicose veins. The injections are made after the thorough draining of the hydrocele through a 17 gage needle. It is very important not to let the needle slip out of the sac before injection. The dosage varies from 2 to 4 cc., occasionally being 6 cc. From two to five injections are needed at intervals of one to three weeks. The use of this solution by the authors in about sixty cases has brought satisfactory long run results.

DIFFERENTIAL DIAGNOSIS OF SPLENOMEGALY

To the Editor—Kindly review the treatment and diagnosis of the following case of splenomegaly. The patient is a boy aged 16 months. The family and past history is negative except for an uneventful attack of measles at the age of 15 months. There are three brothers aged 5, 4 and 3 years all of whom have had careful physical examination and showed no evidence of splenomegaly. The patient is large and pale with a rather prominent abdomen. There are no changes of the conjunctivae. The liver seems slightly large but I am not sure of this. The spleen is quite firm and extends almost to the level of the umbilicus. Urinalysis is negative. Blood examination shows 5,360,000 red blood cells, 10,150 white blood cells, color index 0.43 and hemoglobin 46.4 per cent. Sahl's There was rather marked stippling of some of the red cells. Small lymphocytes number 49 per cent, large lymphocytes 4 per cent, polymorphonuclears 46 per cent, eosinophils 1 per cent, basophils 0.

LESLIE E. MYATT, M.D., Bridgeton, N. J.

ANSWER—In a case of this description one would first want to feel certain that the tumor is due to enlargement of the spleen. It is sometimes difficult to differentiate splenic from renal tumors in infants, and an intravenous urogram may be necessary. In the second place, a little more information concerning the case would be desirable. Are the serologic tests for syphilis negative? Is the fragility of the erythrocytes normal? Should the blood count be repeated in view of the fact that the hemoglobin is low in relationship to the erythrocyte count? Have the blood smears been studied morphologically for evidence of immaturity? Is the function of the liver normal as indicated by a test for retention of dye? If the tumor is due to enlargement of the spleen and all these tests are satisfactory, the diagnosis of so-called von Jaksch's disease would be considered although almost all the cases classified as von Jaksch's disease can be said to be secondary to infection, rickets, syphilis, malnutrition or dietary deficiency. In the event that results of the foregoing tests are satisfactory and that the tumor is an enlarged spleen the treatment should consist of a balanced diet containing all the vitamins and the administration of iron, cod liver oil and calcium. It is possible that the splenomegaly may disappear as the child grows older. If this does not occur, the advisability of splenectomy should be considered at the age of 3 or 4 years.

ERYTHRODERMA DESQUAMATIVA

To the Editor—Will you kindly outline the right treatment for an infant 11 months old who is suffering from erythroderma desquamativa and has had this condition for the past five months with no relief. I am giving him Sebec, ripe bananas and quarts. No relief is in sight as yet. Please do not print my name and address.

M.D., California

ANSWER—The etiology of erythroderma desquamativa is still obscure. Intestinal intoxication has been considered the chief etiologic factor but avitaminosis, especially a deficiency in vitamin H, is given weight by Moro quoted by L. W. Hill (*J. Pediatr.* 4:436 [April] 1934). Moro recommends cow's milk, liver and carrot juice in the diet to supply the vitamin H deficiency. Hill feels that this symptom complex is favored in its development by a diet relatively high in fat and sugar and retarded by a diet low in fat and sugar and high in protein.

The use of vegetable soup, viosterol and autohemotherapy may be considered as further adjuncts to therapy. The use of oil applications and bland ointments locally is advised, together with the avoidance of water on the skin.

DIETL'S CRISIS AND PREGNANCY

To the Editor—Mrs R C., aged 27 married five years, has a child aged 3 years. The delivery was right occiputoposterior, and high forceps were used and episiotomy performed. One year after giving birth the patient had an appendectomy with freeing of many adhesions, which caused a malformation of the cecum. The patient still complained of old familiar pains in the lower quadrant on the right side even after the removal of the appendix. I recommended the patient to a well known gynecologist who said that the gynecologic examination was entirely negative. The patient has had many urinalyses all of which have been completely negative. The patient continued to complain of severe pain when on her feet. The sensation she had was one of a heavy weight bearing down and resting as low down as the pubic bone, and gradually radiating toward the inguinal region. There was no herniation. I then suggested cystoscopy. The cystoscopic examination showed no evidence of an inflamed bladder and no congestion of the ureters. A pyelogram showed the right kidney dropped as low as the brim of the pelvis thereby causing a kink in the right ureter. The urologist immediately advised that a nephropexy be performed but I advised that a kidney support be tried first. I also suggested that the patient get into a knee-chest position on retiring and on arising for fifteen minutes each day. The patient took my suggestion. She has succeeded in putting on weight. Her former spastic attacks (Dietl's crisis) are less and less frequent as well as severe showing that the support has really helped her considerably. Also the patient has a normal blood pressure as well as a normal heart. Now that I have given the history of the case with I believe as many details as are necessary for a full understanding of the case I will greatly appreciate your opinion on the following questions: 1 Do you advise nephropexy even though the patient feels greatly relieved with the kidney support? 2 Even if the support does alleviate the pain and may not entirely correct the condition is there any danger of any uterine and kidney involvement due to the descent? 3 Can this condition clear up entirely without an operative procedure? 4 Would pregnancy be advisable under such circumstances considering that the patient is solely dependent on the kidney support for comfort which I doubt she will be able to wear with a pregnant uterus distending the abdomen? 5 What other suggestion have you to help this patient along in lifting up the kidney other than that I have already advised? 6 How does the prognosis appear to you? Please omit name. M D, New York.

ANSWER—1 Although nephropexy gives satisfactory results in the majority of carefully selected cases it appears preferable to continue with the kidney support in this instance.

2 If the patient is comfortable the danger of complications is slight, perhaps no greater than one might expect after operative correction.

3 Spontaneous complete restitution will probably not occur but a clinical cure may result incident to increased body weight.

4 Pregnancy is not contraindicated although the risk of pyelitis is greater than in a normal patient.

5 Rest in various postures that mechanically favor kidney and uterine drainage may help. The urine should be examined frequently. Surgical intervention may later be the treatment of choice if the symptoms become aggravated.

6 A prognosis without examination and study of the patient would be unwarranted, even then, prolonged observation might be required.

NICITATING SPASM

To the Editor—What is the recent modern treatment of habit spasm of the facial muscle or nictitating spasm? A man aged 24 under my care has had it for the last four years. The condition was alleviated for six months after the first year by the administration of some glandular product but I cannot find out what kind. I presume that it was some thyroid or parathyroid preparation. The patient is 5 feet 8½ inches (173 cm) in height, weighs 164 pounds (74 Kg) and is heavy set. Physical and laboratory examinations are negative in all respects. The spinal fluid shows a colloidal gold curve of 122222210000. There is no increase of globulin. No cells are present. The Kahn reaction is one plus. Rechecked two months later it was negative. All neurologic manifestations are normal. He does not complain of any pain whatever. He stops the twitching at times for ten minutes this is the longest period. When he is nervous the twitching becomes very severe. The treatment he gets at the present time consists of ultraviolet rays over his face and parathyroid extract one-half grain (0.03 Gm) daily for the four months since he came under my care but I have not noticed any improvement. The food is very much selected as to fat protein carbohydrates and vitamins with all the hygienic precautions. He received high frequency therapy over his face without any success so this was stopped. What could be the glandular extract he received after the first year which alleviated his symptoms? Shall I continue the parathyroid preparations? He has not shown any harmful effect from it or good effects. What form of physical therapy should be applied? Please omit name and address. M D West Virginia.

ANSWER—There is no single cause for facial spasm, of which there are different varieties and consequently no single method of treatment. No description of the spasm is given, but since the term 'nictitating' is used one may perhaps assume that the spasm is of clonic form and belongs with the 'tics'. Various reflex causes of organic character occur, such as irritations of branches of the trigeminal nerve by such conditions as carious

teeth, and of the auditory nerve, errors of refraction should also be considered, especially if the spasm is bilateral. Many facial tics, however, seem to be of psychogenic origin and are due to emotional conflicts in persons constitutionally predisposed to neurotic manifestations. There is nothing in the facts given in this case to suggest that the administration of any glandular extract is indicated, parathyroid tetany is not limited to the face. The best advice that can be given is that careful search be made for sources of irritation in the region of the face and head and that should this give negative results the patient be referred to a psychiatrist for a study of his emotional life.

TREATMENT OF SYPHILIS

To the Editor—A young man contracted syphilis three years ago. Treatment with neosarsphenamine and a bismuth compound was instituted six weeks after the initial lesion and continued for eighteen months. Three negative Wassermann reactions were obtained following the treatment. The last course of neosarsphenamine according to the patient, was cut short because of severe gastro-intestinal disturbances. A recent Wassermann reaction was four plus and a small dose of neosarsphenamine, 0.3 Gm gave a severe reaction. Kindly suggest treatment. Please omit name and address. M.D. Kansas.

ANSWER—In the absence of sufficient data it is difficult to say whether this patient has received adequate treatment or not. Treatment was begun presumably in the early secondary, seropositive stage. The dosage, number of injections in a course, and intervals between treatments are not stated, nor are the dates given of the three negative Wassermann reactions. There is apparently a serologic relapse unless it can be shown that there is a fresh infection. In view of the patient's intolerance to neosarsphenamine, other methods of treatment will have to be used. It is suggested that the patient receive a short course of iodides by mouth followed by mercurial injections for six weeks and then a cautious resumption of arsenical treatment preferably bismuth arsphenamine sulphate intramuscularly. At the end of this course a blood Wassermann and spinal fluid examination should be made and further treatment should be based on the outcome of these tests. The correspondent should be reminded that the percentage of cures in secondary syphilis is variable.

DIFFERENTIAL DIAGNOSIS OF DYSENTERY

To the Editor—A woman aged 65 has a morning diarrhea. She has from six to eight watery stools each morning without pain. In the afternoon she is better and is able to attend social functions without inconvenience. Obesity is a family characteristic. The patient has been very obese ever since earliest infancy. She is of a high strung nervous temperament and has been under great nervous strain for several years on account of financial reverses. A mixture of camphorated tincture of opium aromatic sulphuric acid and ginger controls the diarrhea but she must keep on taking it. Rest in bed controls the diarrhea, but when she gets up it recurs. Dieting does not control the diarrhea. It has continued for nearly a year. Any suggestion as to cause and treatment will be thankfully received. Please omit name. M D., Ohio.

ANSWER—It is impossible to give a diagnosis and the treatment for the case presented without more laboratory and roentgenologic data. In cases of this type one should be sure that the stool has been carefully examined for the cyst and the motile *Endamoeba histolytica*. In addition, the blood should be studied especially for its agglutination properties for the various members of the bacillary dysentery group. It might also be of interest to know the presence or absence of free hydrochloric acid. When these facts are presented, treatment will depend, of course, on the results of these observations.

CHAULMOOGRA OIL IN ARTHRITIS

To the Editor—Please give me some information as to the rationale of the use of chaulmoogra oil in the treatment of arthritis the type of arthritis in which it is used the prognosis the dose the type of oil the frequency of treatment and the amount that may be given. Please omit name and address. M D, Texas.

ANSWER—The use of chaulmoogra oil in arthritis is entirely empirical, based on the observation made by Paul A. McIlhenny (Chaulmoogra Oil in the Treatment of Arthritis, *New Orleans M & S J* 84 182 [Sept.] 1931) at the National Leprosarium in Carville La. that secondary infectious arthritis is not encountered in leprosy patients treated with chaulmoogra oil. It has been employed in a limited number of the atrophic hypertrophic and mixed types of arthritis with allegedly good results. Gaston A. Hebert (Treatment of Arthritis with Chaulmoogra Oil, *Tri-State M J* 5 1050 [Feb.] 1933) has employed

it in chronic infectious arthritis of the atrophic type. Of the fifty-seven cases thus far reported, almost all showed some improvement during the second week of treatment, the average patient becoming symptom free in about eight weeks. To crude chaulmoogra oil is added 10 per cent of olive oil with 0.2 per cent of benzocaine, of this mixture, after an initial dose of 3 cc a dose of 5 cc is injected deep in the gluteal muscles twice a week. The treatment should be continued for some weeks after the patients have become symptom free.

FOOT AND MOUTH DISEASE—BACILLUS XEROSIS

To the Editor—About ten months ago I had a patient a white boy aged 15 years, who gradually became ill with what appeared to be an ordinary pharyngitis, lasting for three or four days without fever. About the fourth day he complained of more soreness in his throat extending out into his mouth gums and tongue. Examination at this time showed superficial ulcerations scattered over the pharynx and fauces (The tonsils had been removed completely.) The entire mucous membrane of the cheeks gums and underneath the tongue was covered with a gelatinous gray pseudomembrane. Cultures from the mouth throat and nose were at first reported as positive for diphtheria but further study showed the organisms almost a pure culture of *Bacillus xerosis*. Since he had already been ill five or six days at the time of the positive diphtheria report he was given 40,000 units of diphtheria antitoxin after which the membrane began to separate leaving ulcerated areas where it had been. There followed a period of several days during which there was a profuse thin colorless irritating secretion from the mouth necessitating his turning his face to the side so that the secretion could run out on a towel. There had also been involvement of the eyes nose and external urethral meatus. Recovery was gradual over a period of about ten days. This boy has now presented himself with a condition resembling the onset of the illness and a similar membrane is just appearing on the inside of the cheeks. Cultures from the throat have been taken but not reported on as yet. A search of medical literature available to me fails to disclose such a clinical picture by *Bacillus xerosis*. I would appreciate any information you can give me about this condition, especially as regards treatment. Please omit name. M D Alabama.

ANSWER—There is much in the picture given that suggests foot and mouth disease, but no mention is made of the usually associated cutaneous lesions. The association with diseased cows or goats or the use of milk, butter or cheese from sources where foot and mouth disease is present might aid in the diagnosis. Naturally the action of irritating agents taken into the mouth must be considered. The *xerosis bacillus* is one of a considerable group of bacteria found on normal and diseased mucous membranes and usually spoken of as pseudodiphtheria bacilli or diphtheroids. They are not believed to be pathogenic. The treatment should be cleansing with mild, nonirritating washes. Ulcerations may have applications of silver nitrate.

HEMATOMA AND SLOUGH AFTER INJECTION OF VARICOSE VEIN

To the Editor—A woman aged about 55 was treated for varicose veins of the legs and thighs by injections with sclerosing solutions. At the site of one injection a small hematoma appeared to form outside the vein and for several weeks dark, thick blood escaped from the needle puncture wound, although a fine needle (No 26) was used. After as much of the underlying thick blood as possible had been pressed out through this small opening the bloody discharge stopped but for about six weeks a tiny ulcer, 2 mm. in diameter has persisted at the site of the puncture. This ulcer has a depth of about 0.5 cm and its floor appears to be formed of blood clot. For about 3 cm distal to the puncture there is moderate induration with little redness or tenderness along the course of the vein which is now collapsed. This is the first time I have encountered this annoying complication of the injection treatment of varicose veins and I would appreciate any information you can give me as to the probability of spontaneous healing and suggestions as to treatment. Thus far treatment has consisted of a daily dressing and after cleansing painting with 5 per cent solution of mercurchrome and strapping with adhesive strips. The Wassermann reaction is negative. Please omit name and address. M D California.

ANSWER—The lesion described is a typical slough following the injection of a sclerosing solution beside the vein or into the wall of the vein. From the description given it seems probable that the sclerosing solution, the nature of which is not mentioned, has been deposited into the wall of the vein producing a necrosis of the wall and resulting in a communicating hematoma. The periphlebitis distal to the site of puncture will gradually subside, but the ulcerated area, together with its indurated margin, heals very slowly or not at all. By far the best method is to excise the entire area widely followed by primary suture. A small strip of gutta percha may be inserted for draining the wound for twenty-four hours. The excision however must not be undertaken in the presence of secondary infection.

WHY WE CAN'T DRINK SEA WATER

To the Editor—Why should a person die of thirst at sea or why is it apparently impossible to maintain the fluid needs of the human organism by sea water? Please omit name. M D Connecticut

ANSWER—The inorganic salt content of sea water is very much higher than that of the blood of man and other terrestrial animals. The salt content of the water of the Atlantic and Pacific oceans is over 3 per cent, while that of the blood plasma of man is about 1 per cent. Most of the salt in sea water is the ordinary sodium chloride as is the case with the human blood plasma, but in the salt water is proportionately more magnesium sulphate than in the human blood plasma. It is also known that excess salts in the blood are eliminated by the kidneys. This elimination requires the elimination of an increased amount of water, which, in the first instance, is taken from the blood plasma. In the case of a person, therefore, who tries to ease his thirst by drinking sea water, the following things happen.

Because of the higher salt content of the sea water there is an increase of concentration of inorganic salts of the blood. This tends to draw water from the tissues and increase the thirst sensation. At the same time the kidneys are eliminating these excess salts together with a great deal of water from the blood plasma. This further increases thirst. Lastly, the magnesium sulphate in the sea water is not readily absorbed from the intestine, and the presence of this salt in the intestine holds back a certain amount of the water from absorption. It is therefore clear that endeavoring to stop thirst by taking sea water aggravates the thirst and hastens death. People will therefore live longer and with less discomfort by taking no water at all than by drinking sea water. People can survive longer without water if they abstain from taking food.

CELLOPHANE POISONING

To the Editor—Kindly send to me information, or refer me to literature, relative to cellophane poisoning. I have a patient working in a bakery whose work consists of wrapping rolls in cellophane, which is then sealed by heat. The fumes of the heated cellophane appear to act as a toxic agent, inducing vertigo, nausea and abdominal pain.

ISADORE SANDOCK M D South Bend Ind

ANSWER—The constituents of cellophane are probably not always the same, as it is believed that variation may be introduced to meet special requirements. Somewhat speculatively it is noted that moisture-proof cellophane may be coated with a lacquer, wax or possibly tricresyl phosphate. Primarily cellophane is cellulose. It is not known that the complete combustion of this material in small quantities would give rise to harmful amounts of any such agents as nitrous gases, acid vapors or carbon monoxide. In fact, it is well known that cellophane to the amount of many tons is burned daily, sometimes in open incinerators, without the development of any body of information that the heating or burning of this material introduces any practical dangers. Thousands of workers daily seal up cellophane wrappers, either by heat or by other fixatives, without the development of injurious effects attributable to the chemical properties of cellophane. Therefore it is doubted that the condition described in this query may be attributed to cellophane as a toxic agent. In many bakeries irrespective of the presence of cellophane workers suffer from nausea, vertigo, headaches and pallor. In part, such disturbances are due to excessive temperatures in some bakeries high humidity, odors, carbon monoxide dusts, undue fatigue and physical responses to endless monotony. It is believed that this type of injury source should be considered in connection with the present situation rather than the direct attribution of the disorder to cellophane.

SHORTENING OF STUMP AFTER AMPUTATION

To the Editor—A patient had his leg amputated about five years ago. Measurement taken a few days after operation is supposed to have shown that the stump measured 6½ inches below the knee. Examination at this time shows that the stump including the pad measures about 4½ inches. The stump of the tibia measures approximately 4½ inches. I should like to know first whether it is possible for this much atrophy to take place in a period of five years. Secondly how much if any shortening of the bone of a stump will take place in that length of time? Please omit name. M D Michigan

ANSWER—It is not probable that the difference in the measured length of the stump as stated can be explained on the basis of atrophy. Little if any shortening of the bone of the stump has been noticed even after the lapse of years. Measurements of stump length are not accurate unless made by the same surgeon each time and using the same landmarks.

ICEBOX OR ELECTRICAL REFRIGERATION

To the Editor—There has been a great deal of discussion about the use of ice in domestic refrigeration as contrasted with electrical methods according to whether one talks to a member of an ice company or to a General Electric Company salesman. I have always used the old fashioned icebox with perfect satisfaction but am even chided by some of my colleagues. Beyond the mechanical conveniences of the electrical machine are there many valid hygienic advantages?

FRANK R. SMITH JR., Baltimore

ANSWER—Economy is claimed to be an advantage by both sides in the controversy. Advocates of ice claim that there is less drying out of foods than with electrical refrigeration.

When the refrigerant gas is poisonous, a health hazard may result from leaks in the mechanical refrigerator, as shown by the experience with methyl chloride in Chicago several years ago.

CHLOASMA

To the Editor—Do you have any suggestions regarding the removal of darkly pigmented blotches about the neck and upper part of the chest of a healthy mother aged 34? These occurred at the time of her second pregnancy two years ago and were called chloasma at the time. Other pigmentary changes include premature and complete graying—almost whitening—of the scalp hair and of one eyebrow and corresponding eye lashes. Please omit name.

M D Iowa

ANSWER—Clinical investigation and further advance in knowledge of the glands of internal secretion indicate that lesions such as those mentioned are usually ascribed to endocrine disturbances. No treatment is necessary. In fact, no satisfactory specific therapeutic hormone substance is as yet available.

Surgical removal of the pigmented blotches is not indicated unless for cosmetic reasons. In the event that removal of the pigmented areas is contemplated, the surgeon should avoid squeezing the lesions with tissue forceps at the time of excision (avoidance of traumatism is more important than wide excision in the prophylaxis against cancer).

TOXICITY OF LUPINES

To the Editor—A patient of mine an Italian aged 48 recently presented himself to me complaining of abdominal swelling and a feeling of tightness in the stomach with slight nausea and a history of having vomited once. On examination extreme distention of the intestines was the only positive finding. There had been no bowel movement for thirty hours. The condition was one of intestinal obstruction without obvious cause combined with a negative history for gastro intestinal trouble. On close questioning about his recent diet it developed that the day before he had eaten some lupines a beanlike legume which is a popular food with Italians and is eaten after the hard kernel has been left standing in water for a week or more. This patient had not consumed any of this food in many years. On questioning other Italians I found that they all remarked on the poisonous properties of this legume on certain occasions. The patient finally passed much flatus after several high enemas had been given but not until a surgical consultation had been held. The distention did not return and he recovered quickly. I would greatly appreciate information on the pharmacology and toxicology of lupines and should like to know if in your opinion this paralytic ileus could have been due to a toxic effect of this legume or the water in which it was soaked.

GRANT GUILLEMET M D Niagara Falls N Y

ANSWER—It is well known that many lupines have toxic qualities. Alkaloids (lupinine, lupindine, lupanine) have been isolated from them. These in general have a conium-like action. I e., they produce paralysis of the nerve endings of voluntary muscles. As they also have an action on the vegetative nervous system, there is a possibility that the results observed might have been due to insufficient soaking of this lupine or to the consumption of some of the water in which it was soaked.

ADDICTION TO COCAINE

To the Editor—In your opinion could the use twice daily over a period of years of an oily solution containing 1 grain of cocaine to the ounce applied within the nose result in cocaine addiction? Please omit name.

M D Pennsylvania

ANSWER—It could and most probably would result in a habit. Cocaine administered daily to any 100 persons for a year would make many addicts, because few, less than 15 per cent, would be satisfied with the result obtained without increasing the amount used per dose or increasing the number of doses used daily. The cocaine habit is almost always a pleasure or vicious habit, without true withdrawal abstinence symptoms as found in morphinism. The patient can be deprived of cocaine immediately with no treatment and without any serious symptoms of collapse developing. However, cocaine, like diacetylmorphine, will produce a psychosis or change in

the moral character more quickly than will morphine. If the cocaine in the solution is discontinued for a few weeks it will be possible to check how much or how little of a habit exists. Before the enactment of the Harrison Narcotic Law many cocaine addicts were made by the use of the so-called catarrhal cures (containing cocaine) advertised extensively to the public.

TREMORS AFTER THYROID ADMINISTRATION IN HYPOTHYROIDISM

To the Editor—A patient with severe hypothyroidism was entirely relieved of his symptoms by a daily dose of 4 grains (0.026 Gm.) of thyroid U S P but a definite tremor developed that was especially annoying when writing. The tremor disappeared when the medication was discontinued. While I was determining the maintenance dose which seems to be about 2 grains (0.13 Gm.) daily, the tremor returned being apparent even with 1 grain (0.065 Gm.) daily. What therapeutic maneuver would you recommend that might permit adequate medication and still avoid the tremor? Please omit name.

M D

ANSWER—A strong suspicion of the original diagnosis of hypothyroidism arises when small doses of thyroid produce toxic symptoms, such as tremor, a low metabolic rate occurs in some individuals because of fatigue, malnutrition or some other nonthyroid depressing mechanism. These patients while having a subnormal metabolic rate do not exhibit either external or internal signs of myxedema. In particular, the blood cholesterol is not elevated. Furthermore, they are not benefited by thyroid and fatigue and nervousness are often increased. It may be that the patient falls into this group. If, however, there is incontrovertible evidence that thyroid deficiency exists and thyroid is required, the tremor might be controlled by the use of tincture of stramonium, on the assumption that some underlying neurologic cause of the tremor has been activated by the thyroid medication.

BURNS OF THE LARYNX

To the Editor—Can you furnish me with any literature on external burns of the larynx especially electrical burns? I have a patient who came in contact with a high tension wire which struck him at the larynx destroying the skin and tissues down to the laryngeal cartilages. These cartilages are now sloughing. I am wondering whether there is anything in the literature of a similar occurrence.

HOWARD L. MITCHELL M D Lexington, Va.

ANSWER—The literature on this subject is almost wholly lacking, and the only reference we have been able to find is the following:

Foerster A. Changes in Tracheal Mucosa in Victim of Fire. *Deutsche Zeitsch f d ges gerichtl Med* 19: 293 1932

FRACTURE OF PATELLA AFTER MUSCLE ACTION

To the Editor—Kindly advise me concerning the rarity or frequency of fracture of the patella due to muscular action as landing on one foot forcibly with semiflexed knee, or sudden muscular action the knee semi flexed to extricate the foot when tightly held by foreign control. Kindly omit name.

M D Ohio.

ANSWER—Fracture of the patella itself is not a frequent occurrence as a result of sudden muscular action.

Rupture of the extensor apparatus is more common, especially above the patella.

MYCOTIC ABSCESS

To the Editor—Several weeks ago (THE JOURNAL, Nov 10 1934, p 1472) in replying to a query concerning the cause of a mycotic abscess following a dental operation you stated that the fungi must have been in the anesthetic solution and thus injected into the tissue. Of course this is one possibility but I do not believe that the stock anesthetic solution is in much use today by dentists. The majority of them use ampules or boil up their solutions when needed.

I wish to call attention to a very probable cause for the mycotic abscess. It must be remembered that yeast cells and other types of fungi especially of the nocardial group are common mouth inhabitants. I have demonstrated actinomyces like fungi deep in the tissues in cases of chronic and recurrent gingivitis. I have also been able to recover yeast cells from tissues covered by dentures especially in cases of so-called rubber sore mouths. Incidentally I have also recovered this micro-organism from inflamed areas covered by gold dentures. Whether these fungi are pathogenic or not has to be determined but it is a fact that they are found in diseased areas much more frequently than in normal ones.

It is my belief that these mycotic abscesses are due to inoculation by the hypodermic needle carrying fungi present in or on the mucous membrane deeper into the tissues during the course of an injection.

LESTER RICHARD CAHN DDS New York.

Associate Professor of Oral Pathology Columbia University School of Dental and Oral Surgery

Medical Examinations and Licensure

COMING EXAMINATIONS

ALASKA Juneau, March 5 Sec Dr W W Council Juneau
AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY Written (Group B candidates) The examination will be held in various cities throughout the country April 29 Oral (Group A and Group B candidates) New York June 10 Sec Dr C Guy Lane 416 Marlborough St Boston

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written (Group B candidates) The examination will be held in various cities of the United States and Canada March 23 Final oral and clinical examination (Group A and Group B candidates) Atlantic City N J June 10 11 Group B application lists close Feb 23 and Group A application lists close May 10 Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh

AMERICAN BOARD OF OPHTHALMOLOGY Philadelphia, June 8 and New York, June 10 Application must be filed at least sixty days prior to date of examination Sec Dr William H Wilder 122 S Michigan Blvd Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY New York June 8 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha

AMERICAN BOARD OF PEDIATRICS St Louis Nov 19 Sec Dr C A Aldrich 723 Elm St Winnetka Ill

CALIFORNIA Los Angeles Feb 4 7 Sec Dr Charles B Pinkham 420 State Office Building Sacramento

CONNECTICUT Basic Science New Haven Feb 9 Prerequisite to license examination Address State Board of Healing Arts 1895 Yale Station New Haven

ILLINOIS Chicago Jan 22 24 Superintendent of Registration Department of Registration and Education Mr Eugene R Schwartz Springfield

NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II The examinations will be held in medical centers where there are five or more candidates Feb 13 15 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia

NEVADA Reciprocity Feb 4 Sec Dr Edward E Hamer Carson City

NEW YORK Albany Buffalo New York and Syracuse Jan 28-31 Chief Professional Examinations Bureau Mr Herbert J Hamilton Room 315 Education Bldg Albany

PUERTO RICO San Juan March 5 Act Sec Dr Ramón M Suarez Box 536 San Juan

VERMONT BURLINGTON, Feb 13 15 Sec Board of Medical Registration Dr W Scott Nay Underhill

WYOMING Cheyenne Feb 4 Sec Dr W H Hassed Capitol Bldg Cheyenne

New Mexico October Report

Dr P G Cornish Jr secretary New Mexico Board of Medical Examiners reports the written examination held in Santa Fe, Oct 8 9, 1934 The examination covered 13 subjects and included 100 questions An average of 75 per cent was required to pass One candidate was examined and passed Nine physicians were licensed by endorsement The following schools were represented

School	PASSED	Year Grad	Per Cent
Friedrich Alexanders Universität Medizinische Fakultät Erlangen Bavaria, Germany		(1919)	88.5
School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
University of Arkansas School of Medicine		(1911)	Arkansas
College of Medical Evangelists		(1934)	N B M Ex
George Washington University School of Medicine		(1905)	Dist Colum
Northwestern University Medical School		(1928)	N B M Ex
(1934) Kansas			
Rush Medical College		(1931)	Florida
State University of Iowa College of Medicine		(1932)	Colorado
Tulane University of Louisiana School of Medicine		(1928)	Texas
Albany Medical College		(1930)	New York

Missouri Reciprocity and Endorsement Report

Dr E T McGaugh State Health Commissioner, reports 35 physicians licensed by reciprocity and 5 physicians licensed by endorsement from Jan 15 to Sept 12, 1934 The following schools were represented

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Emory University School of Medicine		(1925)	Georgia
Northwestern University Medical School		(1934)	Illinois
Rush Medical College		(1926)	Illinois
(1928) Michigan		(1930)	Washington
University of Illinois College of Medicine		(1924)	(1929) Illinois
State University of Iowa College of Medicine		(1931)	Iowa
University of Kansas School of Medicine		(1930 2)	
(1931 2) (1932 2) (1933 6)			Kansas
University of Louisville School of Medicine		(1932)	Kentucky
Tulane University of Louisiana School of Medicine		(1931)	Mississippi
Johns Hopkins University School of Medicine		(1931)	Maryland
Detroit College of Medicine and Surgery		(1933)	Michigan
University of Minnesota Medical School		(1934)	Minnesota
St Louis College of Physicians and Surgeons		(1891)	Iowa
University of Nebraska College of Medicine		(1931)	Nebraska
Jefferson Medical College of Philadelphia		(1932)	Ohio

University of Tennessee College of Medicine	(1932)	Alabama
Tennessee 2		
Baylor University College of Medicine	(1933)	Texas
University of Virginia Department of Medicine	(1932)	Virginia
University of Wisconsin Medical School	(1932 2)	Wisconsin

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Northwestern University Medical School		(1933)	N B M Ex
University of Kansas School of Medicine		(1932)	N B M Ex
Washington Univ School of Medicine (1930), (1931),		(1932)	N B M Ex

Alaska September Report

Dr W W Council, secretary, Alaska Board of Medical Examiners, reports the written and practical examination held in Juneau, Sept 10 1934 The examination covered 11 subjects and included 44 questions An average of 75 per cent was required to pass Two candidates were examined, both of whom passed Three physicians were licensed by reciprocity The following schools were represented

School	PASSED	Year Grad	Per Cent
University of Oregon Medical School		(1933)	90
University of Virginia Department of Medicine		(1932)	94
School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Minnesota Medical School		(1933)	Washington
Medical College of the State of South Carolina		(1924)	Washington
University of Virginia Department of Medicine		(1931)	Washington

Wyoming October Report

Dr W H Hassed, secretary, Wyoming State Board of Medical Examiners, reports the written examination held in Cheyenne, Oct. 1, 1934 The examination covered 16 subjects One candidate was examined and failed Five physicians were licensed by reciprocity The following schools were represented

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Colorado School of Medicine		(1924)	Colorado
Chicago College of Medicine and Surgery		(1916)	Illinois
University of Michigan Medical School		(1933)	Michigan
University of Nebraska College of Medicine (1926), (1933)			Nebraska

* Examined in osteopathy and surgery

Book Notices

A Textbook of Histology Functional Significance of Cells and Inter-cellular Substances. By E. V. Cowdry Professor of Cytology in the School of Medicine Washington University St Louis Mo Cloth Price \$5.50 Pp 503 with 242 illustrations Philadelphia Lea & Febiger 1934

Essentials of Histology Descriptive and Practical for the Use of Students. By Sir E. Sharpey Schafer FRS Thirteenth edition edited by H. M. Carleton M.A. B.Sc. D.Phil. Lecturer on Histology in the University of Oxford Cloth Price \$5 Pp 618 with 721 illustrations Philadelphia Lea & Febiger, 1934

A Textbook of Histology By Harvey Ernest Jordan A.M., Ph.D. Professor of Histology and Embryology University of Virginia Sixth edition Cloth Price \$7.50 Pp 738 with 610 illustrations New York & London D. Appleton Century Company Inc. 1934

The seemingly lucrative field of histology textbook writing has made it possible to review a number of textbooks that have been put on the market either as new books or as new editions of older textbooks Such a comparison is of interest because it shows what teachers of histology consider to be essential for medical students With the rapid accumulation of practicable knowledge in all fields within the last few years, it has become an increasingly difficult problem to know what portions of a subject to stress for beginning students and what portions to leave out Although it is impossible for the average medical student to grasp all of the subjects in his crowded curriculum in any great detail, it certainly seems necessary that students not only should be well trained from the point of view of a "trade school"—that is to say, with respect to histology, that they should be able to recognize tissues and organs for their later work in pathology—but also should learn something about the present growing points of the science, something of present-day problems and methods of investigation Students beginning

a course early in their medical curriculum should also acquire something of the scientific attitude and be trained in critical evaluation of facts. In other words, a course such as histology is of value to the medical student not only for its own sake but for the purpose of training the student to think, since it comes early in the curriculum.

Cowdry has written a textbook from a new point of view. He has omitted many structures ordinarily studied in a course in histology and has stressed particularly those of which considerable physiologic information exists. He has considered the blood vascular system as the great integrator of the body and has presented the various organic systems in relation to the body as a whole and particularly their relation to the blood vascular system. If the student is able to grasp the correlation between structure and function by means of a textbook of this kind he will have acquired much more valuable information than by merely crowding his memory with mental images of histologic preparations. Cowdry justly makes the criticism that most textbooks of histology repeatedly illustrate the obvious, and he has not attempted to illustrate structures which (according to his theory) the student can study for himself in the usual collection of microscopic material handed out in courses of histology. He has taken his references for the most part from the classic literature or from quite recent articles and on the whole has tried to be impartial in his conclusions. In many places, however, he has accepted as facts statements made in the recent literature without explaining thoroughly enough the methods by which such conclusions were reached and in a few instances has swallowed work of dubious value whole. A book of this kind, courageously written, could not help but be one sided in many subjects, but it is well to let beginning students know that there are still problems to be solved in histology, a conception they will never get from most other textbooks. Most of the illustrations are excellent, and many of the data of the various systems of the body are summarized in tables. There is too much cytologic detail to be of use to medical students. The references have been well chosen, they are references from which students who wish to do more than the minimum required amount of work in the course would get the most benefit. It remains to be seen whether freshmen medical students will be able to comprehend the text, and to learn histology from slides without some sort of atlas or picture guide. But Cowdry is on the right track, surely medical students can grasp important generalizations without cramming, parrot-like, all the insignificant details of a subject only one of many, after all, in their curriculum.

Schafer has many more illustrations, mainly from photographs, than in previous editions, most of them good, but otherwise the plan of the book remains much the same as in former editions. This textbook is primarily an objective atlas with less text than any of the other textbooks of histology and has always been a valuable laboratory manual for the students to use while they are looking at slides. It is exactly the sort of "picture book" which Cowdry has criticized. Medical schools devoting a minimum amount of time to the course in histology will probably find this book of greatest value in teaching students the essentials of the subject, as the title states. The text has always been quite conservative but it is didactic in the usual British medical school compend manner, and necessarily many of the statements are inaccurate and unjustified in the light of the most recent work in histology. This textbook contains more neuro-anatomy than the other textbooks of histology. In the United States most medical schools have a separate course in neuro-anatomy and the chapters on the nervous system in this textbook do not fill the requirements of a textbook on neuro-anatomy. This textbook then can be recommended not as the best textbook of histology but as the best short textbook for students with a minimum of time.

Jordan has gone to considerable pains to bring his best seller of previous years down to date. But many of the illustrations are quite unsatisfactory (there are too many diagrams) and the text is not concisely enough written from the standpoint of a medical student with a crowded curriculum. Just for example, the illustration labeled "active human mammary gland" on page 469 is more typical of a mammary gland of pregnancy than of a lactating gland. There are many inaccuracies in the text, mainly due to quotations from the older literature. It is

well for the students to have reference to classic papers that represent an actual advance in our knowledge of a scientific subject, but there is no point in giving space to old papers of doubtful value. If we must have quotations from the literature, let us have the most recent literature on the subject. There is insufficient reference in this textbook to the physiologic aspects of organs, although more than is to be found in Schafer.

One of the greatest difficulties that a freshman medical student has is correlating the information he acquires in his anatomic courses and his physiologic courses. From this point of view the best textbook of the series being reviewed is the one by Cowdry.

Medical students who are to meet only human tissues henceforth should acquire a familiarity with the microscopic appearance of human material primarily. There are so many differences in the histology of human material and material from the common laboratory animals that unless the student has enough time allotted to his course in histology to allow him to learn considerable comparative histology it is far wiser to restrict his time to the study of human material. To be sure much of our most valued information has been obtained from experimental animals, but there is no point in having a medical student learn the microscopic appearance of a uterus that does not menstruate of a pig's liver with its large amount of interlobular connective tissue, or of a dog's thymus, whose life cycle differs so widely from that of the human being. This statement presupposes that the human material must be adequately preserved to show the normal structure. Many of the illustrations in Schafer and Jordan, therefore are unsatisfactory—but Cowdry's fewer illustrations meet this objection.

The moral of this comparative review is that probably any textbook is good enough. Medical sciences are so interlocking that the medical student will probably compensate for the deficiencies in any one course by the information he acquires in his other courses.

Die Kinder männlicher und weiblicher Morphinisten (Frage der Kelm und Fruchtschädigung Erbgang der Psychopathie) von Prof. Dr. Kurt Pöhlisch. Boards. Price 5.80 marks. Pp. 82. Leipzig: Georg Thieme 1934.

The author reviews experimental proof of alterations of hereditary factors in animals and plants due to environment; for instance mutations characterized by changes in the eye, wings and body color in the fruit fly (*Drosophila*) following exposure to x-rays. Changes in lower life following exposure to solutions of chemicals have been less pronounced. Proof of mutations in man due to certain environmental agencies, such as alcohol is questioned. He considers morphine addiction a fertile field for this type of genetic analysis. The sexual functions are usually inhibited and the toxic period of the subject's life is sharply separated from the normal.

A total of 1929 adult addicts, 1348 male and 581 female, were genetically analyzed. The children produced before or after (115) and during the period of addiction (280) were examined for mental and physical defects. Those born during the period of addiction of one or both parents were 69.6 per cent normal, 25.8 per cent psychopathic (without psychosis), 2.9 per cent feebleminded, 1.2 per cent epileptic and 1.4 per cent physically defective. Those born before or following the period of addiction of the parents were 68.9 per cent normal, 26.2 per cent psychotic, 3.9 per cent feebleminded, 1.0 per cent epileptic and 1.8 per cent physically defective. The comparative study showed no significant difference in the two groups. Furthermore the parents and other close blood relatives showed a similar high percentage of defects. The descendants of four addicts were traced to the second and third generations with similar results. The observations indicated that the defects are inherent and transmissible and not due to the use of morphine.

Considerable space is devoted to an analysis of the course of pregnancy and confinement of sixty-two addicted mothers. An increase in fetal movements occurred when the usual dose of morphine was decreased or delayed. Premature births were frequent. Abstinence symptoms similar to the syndrome observed in adults appeared shortly after birth and increased in severity up to the third day unless morphine was administered or the mother's milk became established. The infant

mortality was high (143 per cent), usually occurring on the second or third day, owing to abstinence. There was considerable delay in development during the first month of life, but thereafter the infants progressed favorably. Certain infants were also found to develop abstinence symptoms when deprived of the mother's milk, showing that they received a sufficient amount of morphine from this source to maintain addiction.

The mental characteristics of the usual confirmed addict are described and certain general differences noted from those peculiar to the alcohol addict. The question of sterilization is discussed. The apparent decrease in the prevalence of addiction, the fact that the average age level is higher than formerly, and the comparative sterility of the morphine addict are cited as factors against the sterilization of this group in Germany.

Benign Encapsulated Tumors in the Lateral Ventricle of the Brain. Diagnosis and Treatment. By Walter E. Dandy, M.D., Adjunct Professor of Surgery, Johns Hopkins University. Cloth. Price \$4.50. Pp. 189. With 83 illustrations. Baltimore: Williams & Wilkins Company, 1934.

This monograph deals with a pathologically heterogeneous group of encapsulated tumors, which were situated in the lateral ventricle of the brain. That the author, among the thousands of brain tumors recorded in the medical literature, was able to find only twenty-five similar tumors indicates that the book deals with a great rarity. One might ask why a monograph should be written on such a rare condition, which has no constant clinical or pathologic characteristics. The answer is given in the introduction—to point again to the value of ventriculography, now generally recognized. The book abounds in dogmatic statements. That this precision in diagnosis [by ventriculography] is not only easy and certain but is attainable without risk to life or function is not strictly true. The author has been able to find in the literature only one other such tumor disclosed and removed at operation; he overlooked, among others, the case of Cushing (Studies in Intracranial Physiology and Surgery, Oxford Medical Publications, 1925, pp. 42-43), which was calcified and visible in the roentgenogram though the author states that the one of Barré and Metzger is "the only one in the literature." Many will be surprised to find that any one ever thought or taught that "every tumor below the surface of the brain is a glioma" (in quotation marks in the book but reference not given).

There are now no tumors giving signs or symptoms that cannot be accurately diagnosed, precisely localized and disclosed at operation. Perhaps, but not necessarily removed for the author goes on to say. The other invasive tumors give signs and symptoms that are all too frequently indistinguishable from those of the encapsulated type. The statement "It is far better to apply the term 'ependymal glioma' to a tumor that by practical test is sharply differentiated from all other gliomata in the brain" is simply absurd. The statement on page 30 that tumors of the choroid plexus "metastasize through the blood to all parts of the body" is unjustified by the evidence given. There is no proof that the tumor of Atlee arose from the choroid plexus. It is useless to multiply further such citations. After a consideration of small primary tumors not giving symptoms and of malignant tumors, the author begins a detailed and profusely illustrated account of his fifteen cases. The case reports are sometimes carelessly written. For example, in case I, page 9, it is stated that "there is no iron pigment, whereas the subtitle to figure 2A says 'The small black masses are iron pigment.' In case III the subtitles of figures 4A and 4B seem to be reversed. The tumor in case VII is obviously of leptomeningeal origin. Case X is not a ventricular tumor, as the author admits. The tumor in case XI is also obviously a leptomeningeoma. There follows a detailed analysis of the signs and symptoms the upshot of which is that there are no characteristic signs and symptoms. The next chapter points out that these tumors must be localized by ventriculography and states that the use of ventriculography has made it possible to overcome all the diagnostic defects in this group of tumors. Not quite all the author does not tell how many times he has been misled into performing useless explorations for malignant invasive tumors. The chapter on treatment illustrates again the well known technical virtuosity of the author. The author's cases are a welcome addition to the casuistics of brain tumors.

Considérations sur l'étiologie des maladies infectieuses. Par le Docteur Rappin, professeur honoraire de l'École de médecine. En collaboration avec M. le Docteur Doussain, médecin à Clisson (Loire Inf.). Paper. Pp. 136. With illustrations. Nantes: Imprimerie de Bretagne, 1934.

In the preface the author acknowledges that his opinions are contrary to predominating doctrines. However, he believes that even as Pasteur abandoned ancient conceptions the time will come through an evolution of ideas relating to pathology and heredity when many modern views will be abandoned and old concepts be reborn. The book philosophizes on general pathology and the etiology and pathogenesis of infectious diseases. The contents are based on observations and studies made during the life of the author. He refers to the discovery of filtrable viruses and the era before Pasteur, discusses much of Pasteur's work, and mentions the latter's impetuosity in defending his opinions. There are portrayed some of the advances made in bacteriology and this is accompanied by a discussion of the origin of disease and of epidemics. Influenza, cerebrospinal meningitis and diphtheria are among the infectious diseases considered from an epidemiologic point of view. Considerable attention is given to the spontaneous origin of infectious disease and outside influences. Cancer is referred to as an infectious disease the origin of which is within the body and is cited as an example of this theory. There are frequent quotations from many investigators, past and present. The author states that all real human science tends toward the realization of two great problems, the nature of matter and the nature of life. He places much credence in the views of the ancients concerning the influence that climatic and meteorological conditions have on disease. He says we are entering on a new era in the study of disease and must consider it in relation to exterior and cosmic elements. The book sets forth a sequence of events in the progress of bacteriology. It is attractive from a historical standpoint. It presents an interesting philosophy relating to the future study of disease by one well qualified to express his views.

Recent Advances in Allergy (Asthma, Hay Fever, Eczema, Migraine, etc.). By George W. Bray, M.B., Ch.M., M.R.C.P., Physician in Charge of Children's Department, Prince of Wales Hospital, London. With foreword by Arthur F. Hurst, M.A., M.D., F.R.C.P., Senior Physician, Guy's Hospital. Second edition. Cloth. Price \$5. Pp. 503. With 106 illustrations. Philadelphia: P. Blakiston's Son & Company, Inc., 1934.

The fact that a second edition has been called for within three years after the first one is proof of the excellence of the book. The author has the unique ability to say what he wants in a brief and lucid manner. His language is simple and readily understandable. His sayings are especially effective, for example, he says "It is interesting to note that the best results have always been obtained by the original observer and poorer results by subsequent investigators." His tables are good and after he quotes the literature, which he does extensively, he summarizes the observations briefly and then gives his own opinion in intelligent fashion. The book covers the subjects of asthma, hay fever, eczema, migraine and the other allergic diseases and has a fair dissertation on these sicknesses. The discussion of the relationship of the nose and nasal sinuses to allergy is an extremely fair one and reconciles many of the arguments between the allergists and the nose and throat specialists. Although Bray's experience has been chiefly with children and his own opinions are necessarily derived from observations on children he includes so much work on adults that the book is helpful to all those interested in allergy. On a few minor points one must disagree with the author. He favors group skin tests, a system that makes the finding of positive reactions more difficult. He includes enuresis as an allergic phenomenon, this is quite doubtful. He sterilizes his syringes and needles by running them through a sterile saline solution. He condemns the use of ultraviolet radiation in bronchial asthma (many investigators think this procedure quite valuable). In his next edition, which one hopes will be forthcoming in a few years, the author should devote much more space to the section on the elimination of the specific causes of bronchial asthma. This portion of the book is very weak and much too brief and implies a lack of success. No mention, for example, is made of the fact that it is necessary to eliminate thoroughly foods to which the child is hypersensitive. In general, however, the book is an excellent one for allergists, for general practitioners and for advanced medical students.

a course early in their medical curriculum should also acquire something of the scientific attitude and be trained in critical evaluation of facts. In other words, a course such as histology is of value to the medical student not only for its own sake but for the purpose of training the student to think, since it comes early in the curriculum.

Cowdry has written a textbook from a new point of view. He has omitted many structures ordinarily studied in a course in histology and has stressed particularly those of which considerable physiologic information exists. He has considered the blood vascular system as the great integrator of the body and has presented the various organic systems in relation to the body as a whole, and particularly their relation to the blood vascular system. If the student is able to grasp the correlation between structure and function by means of a textbook of this kind he will have acquired much more valuable information than by merely crowding his memory with mental images of histologic preparations. Cowdry justly makes the criticism that most textbooks of histology repeatedly illustrate the obvious, and he has not attempted to illustrate structures which (according to his theory) the student can study for himself in the usual collection of microscopic material handed out in courses of histology. He has taken his references for the most part from the classic literature or from quite recent articles and on the whole has tried to be impartial in his conclusions. In many places, however, he has accepted as facts statements made in the recent literature without explaining thoroughly enough the methods by which such conclusions were reached and in a few instances has swallowed work of dubious value whole. A book of this kind, courageously written, could not help but be one-sided in many subjects, but it is well to let beginning students know that there are still problems to be solved in histology, a conception they will never get from most other textbooks. Most of the illustrations are excellent, and many of the data of the various systems of the body are summarized in tables. There is too much cytologic detail to be of use to medical students. The references have been well chosen; they are references from which students who wish to do more than the minimum required amount of work in the course would get the most benefit. It remains to be seen whether freshmen medical students will be able to comprehend the text, and to learn histology from slides without some sort of atlas or picture guide. But Cowdry is on the right track; surely medical students can grasp important generalizations without cramming, parrot-like, all the insignificant details of a subject, only one of many, after all, in their curriculum.

Schafer has many more illustrations, mainly from photographs, than in previous editions; most of them good, but otherwise the plan of the book remains much the same as in former editions. This textbook is primarily an objective atlas with less text than any of the other textbooks of histology and has always been a valuable laboratory manual for the students to use while they are looking at slides. It is exactly the sort of "picture book" which Cowdry has criticized. Medical schools devoting a minimum amount of time to the course in histology will probably find this book of greatest value in teaching students the essentials of the subject, as the title states. The text has always been quite conservative but it is didactic in the usual British medical school compend manner, and necessarily many of the statements are inaccurate and unjustified in the light of the most recent work in histology. This textbook contains more neuro-anatomy than the other textbooks of histology. In the United States most medical schools have a separate course in neuro-anatomy and the chapters on the nervous system in this textbook do not fill the requirements of a textbook on neuro-anatomy. This textbook then can be recommended not as the best textbook of histology but as the best short textbook for students with a minimum of time.

Jordan has gone to considerable pains to bring his best seller of previous years down to date. But many of the illustrations are quite unsatisfactory (there are too many diagrams) and the text is not concisely enough written from the standpoint of a medical student with a crowded curriculum. Just for example, the illustration labeled 'active human mammary gland' on page 469 is more typical of a mammary gland of pregnancy than of a lactating gland. There are many inaccuracies in the text, mainly due to quotations from the older literature. It is

well for the students to have reference to classic papers that represent an actual advance in our knowledge of a scientific subject, but there is no point in giving space to old papers of doubtful value. If we must have quotations from the literature, let us have the most recent literature on the subject. There is insufficient reference in this textbook to the physiologic aspects of organs, although more than is to be found in Schafer.

One of the greatest difficulties that a freshman medical student has is correlating the information he acquires in his anatomic courses and his physiologic courses. From this point of view the best textbook of the series being reviewed is the one by Cowdry.

Medical students who are to meet only human tissues henceforth should acquire a familiarity with the microscopic appearance of human material primarily. There are so many differences in the histology of human material and material from the common laboratory animals that unless the student has enough time allotted to his course in histology to allow him to learn considerable comparative histology it is far wiser to restrict his time to the study of human material. To be sure much of our most valued information has been obtained from experimental animals but there is no point in having a medical student learn the microscopic appearance of a uterus that does not menstruate or of a pig's liver with its large amount of interlobular connective tissue, or of a dog's thymus whose life cycle differs so widely from that of the human being. This statement presupposes that the human material must be adequately preserved to show the normal structure. Many of the illustrations in Schafer and Jordan, therefore, are unsatisfactory—but Cowdry's fewer illustrations meet this objection.

The moral of this comparative review is that probably any textbook is good enough. Medical sciences are so interlocking that the medical student will probably compensate for the deficiencies in any one course by the information he acquires in his other courses.

Die Kinder männlicher und weiblicher Morphinsten (Frage der Keim und Fruchtschädigung, Erbgang der Psychopathia) von Prof. Dr. Kurt Pöhlisch. Boards. Price 5.80 marks. Pp. 82. Leipzig: Georg Thieme, 1934.

The author reviews experimental proof of alterations of hereditary factors in animals and plants due to environment; for instance mutations characterized by changes in the eye, wings and body color in the fruit fly (*Drosophila*) following exposure to x-rays. Changes in lower life following exposure to solutions of chemicals have been less pronounced. Proof of mutations in man due to certain environmental agencies, such as alcohol, is questioned. He considers morphine addiction a fertile field for this type of genetic analysis. The sexual functions are usually inhibited and the toxic period of the subject's life is sharply separated from the normal.

A total of 1,929 adult addicts, 1,348 male and 581 female, were genetically analyzed. The children produced before or after (115) and during the period of addiction (280) were examined for mental and physical defects. Those born during the period of addiction of one or both parents were 69.6 per cent normal, 25.8 per cent psychopathic (without psychosis), 2.9 per cent feeble-minded, 1.2 per cent epileptic and 1.4 per cent physically defective. Those born before or following the period of addiction of the parents were 68.9 per cent normal, 26.2 per cent psychotic, 3.9 per cent feeble-minded, 1.0 per cent epileptic and 1.8 per cent physically defective. The comparative study showed no significant difference in the two groups. Furthermore the parents and other close blood relatives showed a similar high percentage of defects. The descendants of four addicts were traced to the second and third generations with similar results. The observations indicated that the defects are inherent and transmissible and not due to the use of morphine.

Considerable space is devoted to an analysis of the course of pregnancy and confinement of sixty-two addicted mothers. An increase in fetal movements occurred when the usual dose of morphine was decreased or delayed. Premature births were frequent. Abstinence symptoms, similar to the syndrome observed in adults, appeared shortly after birth and increased in severity up to the third day unless morphine was administered or the mother's milk became established. The infant

mortality was high (14.3 per cent), usually occurring on the second or third day, owing to abstinence. There was considerable delay in development during the first month of life, but thereafter the infants progressed favorably. Certain infants were also found to develop abstinence symptoms when deprived of the mother's milk, showing that they received a sufficient amount of morphine from this source to maintain addiction.

The mental characteristics of the usual confirmed addict are described and certain general differences noted from those peculiar to the alcohol addict. The question of sterilization is discussed. The apparent decrease in the prevalence of addiction, the fact that the average age level is higher than formerly, and the comparative sterility of the morphine addict are cited as factors against the sterilization of this group in Germany.

Benign Encapsulated Tumors in the Lateral Ventricles of the Brain: Diagnosis and Treatment. By Walter E. Dandy, M.D., Adjunct Professor of Surgery, Johns Hopkins University. Cloth. Price \$4.50. Pp. 189 with 83 illustrations. Baltimore: Williams & Wilkins Company, 1934.

This monograph deals with a pathologically heterogeneous group of encapsulated tumors, which were situated in the lateral ventricles of the brain. That the author, among the thousands of brain tumors recorded in the medical literature, was able to find only twenty-five similar tumors indicates that the book deals with a great rarity. One might ask why a monograph should be written on such a rare condition, which has no constant clinical or pathologic characteristics. The answer is given in the introduction—to point again to the value of ventriculography, now generally recognized. The book abounds in dogmatic statements. That "this precision in diagnosis [by ventriculography] is not only easy and certain but is attainable without risk to life or function" is not strictly true. The author has been able to find in the literature only one other such tumor disclosed and removed at operation, he overlooked, among others, the case of Cushing (*Studies in Intracranial Physiology and Surgery*, Oxford Medical Publications, 1925, pp. 42-43), which was calcified and visible in the roentgenogram though the author states that the one of Barré and Metzger is "the only one in the literature." Many will be surprised to find that any one ever thought or taught that "every tumor below the surface of the brain is a glioma" (in quotation marks in the book but reference not given). "There are now no tumors giving signs or symptoms that cannot be accurately diagnosed, precisely localized and disclosed at operation." Perhaps, but not necessarily removed, for the author goes on to say "The other invasive tumors give signs and symptoms that are all too frequently indistinguishable from those of the encapsulated type." The statement "It is far better to apply the term 'ependymal glioma' to a tumor that by practical test is sharply differentiated from all other gliomata in the brain" is simply absurd. The statement on page 30 that tumors of the choroid plexus "metastasize through the blood to all parts of the body" is unjustified by the evidence given. There is no proof that the tumor of Atlee arose from the choroid plexus. It is useless to multiply further such citations. After a consideration of small primary tumors not giving symptoms and of malignant tumors, the author begins a detailed and profusely illustrated account of his fifteen cases. The case reports are sometimes carelessly written. For example, in case 1, page 9, it is stated that "there is no iron pigment," whereas the subtitle to figure 2A says "The small black masses are iron pigment." In case III the subtitles of figures 4A and 4B seem to be reversed. The tumor in case VII is obviously of leptomeningeal origin. Case V is not a ventricular tumor, as the author admits. The tumor in case VI is also obviously a leptomeningioma. There follows a detailed analysis of the signs and symptoms the upshot of which is that there are no characteristic signs and symptoms. The next chapter points out that these tumors must be localized by ventriculography and states that the use of ventriculography has made it possible to overcome all the diagnostic defects in this group of tumors. Not quite all the author does not tell how many times he has been misled into performing useless explorations for malignant invasive tumors. The chapter on treatment illustrates again the well known technical virtuosity of the author. The author's cases are a welcome addition to the casuistics of brain tumors.

Considérations sur l'étiologie des maladies infectieuses. Par le Docteur Rappin, professeur honoraire de l'Ecole de médecine. En collaboration avec M. le Docteur Doussaln, médecin à Clisson (Loire Inf.). Paper. Pp. 136 with illustrations. Nantes: Imprimerie de Bretagne, 1934.

In the preface the author acknowledges that his opinions are contrary to predominating doctrines. However, he believes that even as Pasteur abandoned ancient conceptions the time will come through an evolution of ideas relating to pathology and heredity when many modern views will be abandoned and old concepts be reborn. The book philosophizes on general pathology and the etiology and pathogenesis of infectious diseases. The contents are based on observations and studies made during the life of the author. He refers to the discovery of filtrable viruses and the era before Pasteur, discusses much of Pasteur's work, and mentions the latter's impetuosity in defending his opinions. There are portrayed some of the advances made in bacteriology, and this is accompanied by a discussion of the origin of disease and of epidemics. Influenza, cerebrospinal meningitis and diphtheria are among the infectious diseases considered from an epidemiologic point of view. Considerable attention is given to the spontaneous origin of infectious disease and outside influences. Cancer is referred to as an infectious disease the origin of which is within the body and is cited as an example of this theory. There are frequent quotations from many investigators, past and present. The author states that all real human science tends toward the realization of two great problems, the nature of matter and the nature of life. He places much credence in the views of the ancients concerning the influence that climatic and meteorological conditions have on disease. He says we are entering on a new era in the study of disease and must consider it in relation to exterior and cosmic elements. The book sets forth a sequence of events in the progress of bacteriology. It is attractive from a historical standpoint. It presents an interesting philosophy relating to the future study of disease by one well qualified to express his views.

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The fact that a second edition has been called for within three years after the first one is proof of the excellence of the book. The author has the unique ability to say what he wants in a brief and lucid manner. His language is simple and readily understandable. His sayings are especially effective, for example, he says "It is interesting to note that the best results have always been obtained by the original observer and poorer results by subsequent investigators." His tables are good, and after he quotes the literature, which he does extensively, he summarizes the observations briefly and then gives his own opinion in intelligent fashion. The book covers the subjects of asthma, hay fever, eczema, migraine and the other allergic diseases and has a fair dissertation on these sicknesses. The discussion of the relationship of the nose and nasal sinuses to allergy is an extremely fair one and reconciles many of the arguments between the allergists and the nose and throat specialists. Although Bray's experience has been chiefly with children, and his own opinions are necessarily derived from observations on children, he includes so much work on adults that the book is helpful to all those interested in allergy. On a few minor points one must disagree with the author. He favors group skin tests, a system that makes the finding of positive reactions more difficult. He includes enuresis as an allergic phenomenon, this is quite doubtful. He sterilizes his syringes and needles by running them through a sterile saline solution. He condemns the use of ultraviolet radiation in bronchial asthma (many investigators think this procedure quite valuable). In his next edition, which one hopes will be forthcoming in a few years, the author should devote much more space to the section on the elimination of the specific causes of bronchial asthma. This portion of the book is very weak and much too brief and implies a lack of success. No mention, for example, is made of the fact that it is necessary to eliminate thoroughly foods to which the child is hypersensitive. In general, however, the book is an excellent one for allergists, for general practitioners and for advanced medical students.

Praktische Psychiatrie Von Primarius Dr. med. et phil. Friedrich Schulhof. Paper. Price 10.50 marks. Pp. 496. Berlin & Vienna: Urban & Schwarzenberg. 1934.

This book is written for the general practitioner, it has some shortcomings and many virtues, the latter being definitely more numerous. The book is addressed to Austro-German physicians, the bulk of whose patients are still treated in their homes even under circumstances that in America are considered to render hospitalization imperative. Part of the book is consequently devoted to detailed instructions on how to administer hydrotherapy and other therapeutic measures in the home. Even this, however, is of benefit to any one not experienced in institutional work. There is also a tendency to deal dogmatically with problems of pathogenesis and etiology. Aside from these rather negligible faults, the book may safely be recommended to any one who desires to orient himself in the field of psychiatry and demands a manual that is neither too technical nor too simple. The chapters on psychopathic personality, epilepsy and alcoholism are especially well done, a feature that renders the book more valuable to the practitioner.

Essentials of Injection Treatment of Internal Hemorrhoids By Thomas F. McNamara, M.D., Staff of St. Mary's Hospital, Rochester, N. Y.; Foreword by Benedict J. Duffy, M.D., Chief of Staff of St. Mary's Hospital, Fabrikoid. Price \$3.50. Pp. 117 with 6 illustrations. Rochester, N. Y.: Medical Press. 1934.

This work covers largely the author's technique in the treatment of 1,100 cases of internal hemorrhoids. Injection methods were used exclusively. In view of the well known tendency to recurrence after such treatment, his case might be more convincing if his work included a record of a follow up to show how large a proportion of his cases recurred. The same is true of his practice of "snipping off" hypertrophied papillae. If this alone prevents their recurrence, his experience will be exceptional. There are interesting clinical anecdotes illustrating the author's tact and sagacity in handling patients and the detailed directions may prove helpful to practitioners who wish to use this method exclusively.

Grundzüge der pathologischen Physiologie Von Dr. med. Hans Lucke, Privatdozent für Innere Medizin in Göttingen. Paper. Price 0.00 marks. 1p. 195. Berlin: Julius Springer. 1934.

As the author states in the preface, the purpose of his book is not to offer a review of normal and pathologic physiology or clinical symptomatology, but to summarize for the students in a practical way the underlying processes responsible for the corresponding clinical and laboratory observations. An attempt to elucidate complicated scientific problems has been intentionally dropped. As the book is to serve merely as an introduction to the study of pathologic physiology and is not competing with more exhaustive works, bibliographic references are omitted. The text is subdivided into chapters on special organic metabolism, vitamins, hormones, total metabolism, mineral and water metabolism, formation of sediments and stones, blood, pigments, respiration, circulation, urinary organs, digestion, the nervous system, thermoregulation, infections, immunity and allergy. One finds a few omissions which for completeness should be included, for instance, bacteriophage and the patch test for allergy. The book is thoroughly modern, covering every recent advance of real value, and contains a wealth of material presented in a simple, concise manner. A perusal of the book will prove of great value not only for students but also for graduates who wish to refresh and replenish their knowledge of this important subject.

Good Food at Low Cost. By R. T. Devereux, M.D., Pediatrician, Chester County Hospital. Introduction by S. C. Schmucker, Ph.D., Chester County Emergency Child Health Committee. Under the Auspices of the Chester County Medical Society. Paper. Pp. 38. Westchester, Pa.: The Society. 1934.

This book, intended for the housewife, is a result of the nutrition program of the Chester County Emergency Child Health Committee formed under the auspices of the Chester County Medical Society and as a unit of the Emergency Child Health Committee of Pennsylvania. It states in simple and practical form some of the latest information on foods for promoting the proper feeding of people, especially children. Recipes and menus with an explanation of the essential foods and the methods for their purchase and preparation are included.

The less money to spend for food, the more important it is to spend it wisely. The booklet serves the purpose of instructing on this problem and should enable the average citizen to prepare well balanced diets at low cost. It will be especially helpful to those interested in the emergency feeding of the poor.

Medizinische Kolloidlehre Herausgegeben von Prof. Dr. L. Lichtwitz, Dr. Dr. R. Ed. Liesegang und Prof. Dr. Karl Spiro. Lieferung 17. Paper. Price 5 marks. Pp. 840. 028 with 1 illustration. Dresden & Leipzig: Theodor Steinkopff. 1934.

This instalment deals, first, with the relation between pharmacology and colloid chemistry. Starkenstein reminds us that all biologic manifestations must ultimately be referred to colloid chemical alterations. Disease, poisoning and cure are all results of such changes. Colloid chemistry has decided the age old controversy between humoral and cellular pathology in favor of both, for the entire living body is a colloidal solution. As examples of the revolutionary change in view that colloid chemistry has forced on pharmacology, the author discusses briefly the newer understanding of diastatic ferment action, of the adsorption and distribution of remedies, of diuretics and diaphoretics, of inhibition of inflammation, and of drug influences on purine metabolism. No less profound and enlightening is Liesegang's chapter on "Strahlentherapie," which attempts, by giving numerous references to recent literature, to open up the treasury of the latest views to those who have not been able to keep abreast of some of the most recent advances in the biology of irradiation. Hans Moser's chapter on dressings is as full of practical suggestions as are the others of theoretical interest. The work is maintaining in this instalment the high standards set by previous ones.

Chirurgie du pancréas Par P. Brocq, professeur agrégé à la Faculté de médecine de Paris, et G. Migoniac, professeur à la Faculté de médecine de Toulouse. Paper. Price 75 francs. Pp. 427 with 75 illustrations. Paris: Masson & Cie. 1934.

Instead of "Surgery of the Pancreas," a more appropriate title for this monograph would be "Surgical Diseases of the Pancreas," as of 427 pages only one and one half (in the chapter on injuries of the gland) are devoted to the description of the surgical approach. There are chapters on traumas of the pancreas, acute pancreatitis, chronic pancreatitis, cysts, syphilis, tuberculosis, stone formation, fistulas, malignant tumors and anatomic anomalies of the gland. In each chapter a short historical review is followed by a discussion of the etiology, pathologic anatomy, pathogenesis, clinical manifestations and treatment of the described lesion. Case reports and statistical data are abundant, illustrations scanty, numerous writers are mentioned by name, but bibliographic references are lacking, certainly an inexcusable omission in a monographic type of work. The recent trend to a more conservative treatment postponing the operation till the "shock stage" is passed, did not receive any consideration. While these shortcomings detract considerably from the value of the work, this is nevertheless a significant contribution to the French medical literature.

Hamlet. An Analytic and Psychologic Study By Fayette C. Ewing, M.D. Paper. Price 50 cents. Pp. 32. Boston: Stratford Company. 1934.

Ernest Jones, writing in the *American Journal of Psychology* (21:72 [Jan.] 1910) on the "Oedipus complex as an explanation of Hamlet's mystery, a study in motive," speaks of "those Shakespearean critics who have enjoyed no special opportunities for penetrating into the obscurer sides of mental activities and who base their views of human motive on the surface valuation given by the agents themselves—to whom all conduct whether good or evil at all events springs from conscious sources." To this category seemingly belongs the author of this short essay, which is written almost entirely in the literary style and is hardly analytic or psychologic according to the lights of modern psychopathology. Dr. Ewing, who is apparently quite well versed in Hamlet lore, having for many years collected all he could find that has been published by physicians concerning the mental stability of Hamlet, contents himself with a simple objective study to show that Hamlet was sane. The old quarrel as to whether or not Hamlet feigned a psychosis is revived by citing passages from the play, and the conclusion is offered that the prince of Denmark acted as any reasonable individual would under similar trying circumstances. Nothing new is added.

to clarify the great riddle of Shakespeare's most distinguished character for this particular ground has been gone over time and again by scores of psychiatrists. A work such as that of Jones, which penetrates deeply into the more important matters of the motivations and mechanisms of the mind and the unconscious behavior of Hamlet, lends considerably more to the unraveling of the main problem, which essentially consists in the cause of Hamlet's hesitancy in seeking to obtain revenge for the murder of his father. Dr. Ewing's venture is more a labor of love than a scientific psychological study.

Medicolegal

Medical Practice Acts Licensed Practitioner Convicted of Practicing Medicine Without a License—F B Needham and A H Bray were convicted of "practicing medicine without a license," in that they unlawfully treated a woman for a supposed cancer of the breast. They appealed to the criminal court of appeals, Oklahoma.

Needham was not a licensed physician in Oklahoma, although he had for a number of years operated the Needham Cancer Sanitarium, in Oklahoma City. Bray apparently had a license authorizing him to practice medicine in Oklahoma. The evidence on behalf of the state showed that Needham and Bray told the patient that a secret formula of Needham's, a paste, when applied to the human flesh would destroy cancerous growths, if present, but that if there was no cancer the paste would not burn the flesh. By this method, they said, it could be determined if cancer was present. At their solicitation, the woman finally submitted to the test. Shortly thereafter she felt a burning sensation in her breast and returned to the sanitarium. Needham and Bray told her that the test was positive proof that she had cancer and, for an additional fee, they gave her additional treatments. Needham applied the paste and Bray covered it with tape. Subsequently when the pain in her breast became unbearable, the woman was taken to a hospital, where physicians removed the paste and tape revealing 'a shocking physical condition.' The state chemist testified that he had made a chemical analysis of paste similar to that used on the woman and that it had a heavy test for zinc, a heavy test for chlorides and "the gummy substance had a high content of zinc chloride." Zinc chlorides, he testified, have a caustic and erosive reaction and cause burns and blisters on the human flesh whether cancerous or otherwise.

The theory of the defense was that instead of Bray assisting Needham Bray was the actual practitioner and that Needham only assisted him in emergencies. Testifying in their own behalf they both admitted the only treatment used in the sanitarium was Needham's so-called secret formula and that Needham applied the paste and Bray did the taping in the treatment administered to this particular woman. Four treatments, in all, were given to the woman; they testified Bray being present for the first two treatments and Needham applying the last two in Bray's absence. The fees received for the treatment of all patients, they testified, were divided, one third going to Bray and two thirds to Needham. Bray was employed by Needham to take charge of the sanitarium and conduct the treatments they claimed, and that while Needham sometimes assisted Bray, he never acted alone except in emergencies.

Many errors were complained of by the appellants, said the criminal court of appeals, but since their own evidence clearly showed them to be guilty of the offense charged, the judgment of the trial court must be affirmed unless the errors complained of are of such a fundamental nature as to require a reversal. Among other things, the appellants contended that the trial court erred in refusing to permit the introduction of evidence showing that Needham had consulted attorneys including the county attorney, and had been advised by them that if he employed a regular licensed physician to conduct his sanitarium he would not be violating the law. Counsel for the appellants admitted that they could find no authorities to support this contention. This was not surprising, observed the court, since there probably are no such cases. The trial court properly rejected this evidence. An accused cannot prove as a defense

that he acted on the advice of counsel in committing the act complained of, because if such were the law it would be placing the advice of counsel above the law itself. Each person charged with an offense must know what the law is, and he acts at his own peril. After examining the entire record, the criminal court of appeals concluded it to be apparent that the errors complained of were not such as to result in any material injury to the appellants and the judgment of conviction was affirmed.—*Needham and Bray v State (Okla.)*, 32 P (2d) 92.

Malpractice Judgment in Suit for Fee as Bar to Subsequent Action for Malpractice—The defendant-physician obtained in a justice's court a judgment against the plaintiffs for the reasonable value of the services rendered by him in treating their child. In contesting the payment of this fee, the plaintiffs contended that the services rendered were valueless, in that the physician did not exercise the degree of care, skill and intelligence required of physicians and surgeons in the locality. Subsequently, the plaintiffs instituted the present suit against the defendant-physician to recover damages for alleged malpractice in treating the child. The trial court gave judgment for the defendant, holding that since the question of negligent treatment had been adjudicated in the suit instituted in the justice's court and had been determined in favor of the physician, the judgment of the justice's court constituted a bar to the instant suit for damages based on alleged negligence. The plaintiffs appealed to the district court of appeal, second district, division 2, California.

The plaintiffs contended that since a justice's court was not a court of record, it was impossible to tell what matters were actually litigated and that the judgment rendered in the justice's court did not show on its face that the question of negligent or careless treatment was litigated. But, said the district court of appeal, a reporter's transcript and the pleadings and instructions to the jury did show that this question was presented to the court and jury, and even though it had not been specifically set up as a defense, the question was necessarily involved. "A physician or surgeon taking charge of a case," continued the court, "impliedly represents that he possesses, and the law places upon him the duty of possessing, that reasonable degree of learning and skill that is ordinarily possessed by physicians and surgeons in the locality where he practices." *Hesler v California Hospital Co.*, 178 Cal 764, 766, 174 P 654, 655. If he does not possess such learning and skill, or if, possessing it, he fails to use it, he is guilty of malpractice, and in every action to recover for services rendered by a physician or surgeon in which either the lack of skill and learning are necessarily involved it needs no argument to demonstrate that a physician or surgeon who does not show at the trial that he possesses such skill by proving that he is licensed to practice his profession, and at least by presumption that he used the same in performing the services rendered, would not be entitled to recover. In other words, in our opinion, such questions are actually and necessarily included in an adjudication of his right to recover even in a default case, and particularly so where, as here, an answer is filed which expressly raised an issue thereon which was presented for decision as here shown. The district court of appeal, therefore, agreed with the trial court that the adjudication on the question of negligent or careless treatment by the justice's court was conclusive on that question, and barred the plaintiffs from prosecuting the present action.—*Olney v Cavell (Calif.)* 32 P (2d) 181.

Pharmacy Practice Acts Conclusiveness of Finding That Applicant Is of Good Moral Character—In November 1927 Watkins was granted a pharmacist's license in Louisiana after examination. He subsequently moved to Mississippi and in 1931 was there licensed as an assistant pharmacist. In 1932 a law was enacted in Mississippi (Laws, 1932,

¹ Bray, although a licensed practitioner was convicted of practicing medicine without a license apparently by virtue of section 1808 Oklahoma Statutes 1931. All persons concerned in the commission of crime whether it be felony or misdemeanor, and whether they directly commit the act constituting the offense or aid and abet its commission though not present are principals. Since Bray assisted Needham unlawfully to practice medicine he himself also became liable as a principal under the Oklahoma statute quoted.

c 277) making it mandatory that the state board of pharmacy license as a registered pharmacist any person of good moral character who had, after examination, been licensed to practice pharmacy in another state prior to Dec 31, 1927. Watkins applied to the Mississippi state board of pharmacy for a pharmacist's license, but the board took no action on his application. He then brought mandamus to compel the board to issue the license. The trial court ordered the board to act on the application but it declined to command the board to issue the license, seemingly holding that the board should pass on Watkins' good moral character. Watkins appealed to the Supreme Court of Mississippi, division B.

Since the Mississippi pharmacy practice act, said the Supreme Court, requires that all applicants for assistant pharmacist licenses prove their good moral character, the issuance of such a license to Watkins in 1931 was a recorded adjudication by the board that he was of good moral character, which is conclusive on the issue. The board urged, however, that when Watkins applied for a license to practice as an assistant pharmacist, only a superficial examination was made into his moral character and that the board now intends to make a thorough investigation. But, answered the court, the board cannot be heard to say that it failed in its duty fully to investigate into Watkins' good moral character prior to issuing him an assistant pharmacist's license. Public judicial and quasi-judicial records must rest on a more secure foundation than would be the case if any such contention as the board now makes were allowed to prevail. Nor may the force of the former adjudication as to Watkins' good moral character be avoided by a suggestion that there may have been a change in that regard. The legislature has authorized a review of judgment on that issue only in proceedings to revoke a license and the only causes, stated in the statute, justifying revocation of a license is the conviction of the holder of unlawfully selling habit-forming drugs or intoxicating liquor. The court pointed out, moreover, that there was no intimation in the record that Watkins was not at present of good moral character.

The court accordingly reversed the judgment of the lower court and directed the state board of pharmacy to issue Watkins a license to practice as a registered pharmacist.—*Watkins v. Mississippi State Board of Pharmacy (Miss)*, 154 So. 277.

Workmen's Compensation Act Lymphatic Leukemia Allegedly Aggravated by Trauma—At the time of his death in January 1931, Kizer was 59 years old. Until December 1930 his general health had been good, although for several years previously he had varicose veins in both legs. Sometime in December 1930 red spots, varying in size from a dime to a quarter, appeared on both of his feet, some of his toes were swollen and at times the varicose veins pained him but he did not consult a physician. On Jan. 12, 1931, in the course of his employment, he bruised the calf of his left leg. The following day he had to cease work and go home. He never worked thereafter. January 16 he went to a clinic for examination, where it was ascertained that he had a white cell count of 119,000 per cubic millimeter and "hemorrhagic bleeding" under the skin of the calf of the left leg at or near the point where it had been bruised. On January 19, "hemorrhagic bleeding" appeared under the skin of the calf of the right leg. The following day the bruise or red blotch on the calf of the left leg was improved and was "fading out" but the blotch and "hemorrhagic bleeding" on the right leg were worse. On January 27, Kizer was found in a stupor, with partial paralysis. He was taken to a hospital where he died that day. His blood count on his entrance to the hospital was over 400,000 per cubic millimeter. After autopsy, death was attributed to acute lymphatic leukemia. Claiming that death was due to complications arising from the bruise on his left leg, received in the course of his employment, his widow sought compensation under the Nebraska compensation act. From a judgment of the district court, Lancaster County, affirming the refusal of the compensation commission to award compensation, the widow appealed to the Supreme Court of Nebraska.

For the claimant to recover compensation said the Supreme Court, she must show with reasonable certainty that the workman's death was caused by injuries resulting from an accident

arising out of and in the course of his employment. This, the court concluded, the widow failed to do. The testimony of medical experts called by the employer and his insurance carrier amply sustained the conclusion reached by the commission and by the lower court that there was no proof adduced of any relationship between the industrial injury complained of, the bruise, and the acute lymphatic leukemia of which the workman died. These experts testified that medical authorities are unanimous in the opinion that trauma can neither cause acute lymphatic leukemia nor aggravate it. These experts denied that the bruise on the calf of the workman's left leg, received on January 12, in any manner caused or contributed to his death on January 27. Only one medical expert, called by the widow, testified that the trauma was a contributing cause of the death. The Supreme Court accordingly affirmed the judgment of the lower court denying compensation to the widow.—*Beatrice Creamery Co. v. Kizer (Neb.)*, 254 N. W. 690.

Pharmacy Practice Acts Sale of Aspirin and Citrate of Magnesia—Four prosecutions were instituted under the pharmacy practice act of California. The defendants were found guilty in each case and they appealed to the appellate department, superior court, Los Angeles County, where their appeals were consolidated.

In two of the cases the defendants were charged with operating pharmacies, stores or shops where drugs were sold at retail, without having registered pharmacists in charge thereof. By section 1 of the pharmacy practice act, said the court, a store or shop where drugs are sold at retail is not a pharmacy, for the purposes of the act, unless a sign containing the words "pharmacist," "pharmaceutical chemist," "apothecary," "druggist," "pharmacy," "drug store" or "drugs" is on the store or in it. The complaints failed to allege, and there was no proof adduced to show, that one of these signs was on or in the store owned by the defendants. The court accordingly reversed the convictions in these two cases.

In the two other cases the defendants were charged with selling drugs and medicines, to wit, aspirin and citrate of magnesia, without being registered under the pharmacy practice act. The defendants contended that the complaints in their cases were defective because they did not negative the exceptions contained in the pharmacy practice act. The court held that exceptions need not be negated in a complaint. Further, the court held, it was not reversible error for the trial court to permit a certain witness to testify that aspirin and citrate of magnesia are drugs or medicines, despite the fact that the witness was not qualified so to testify. Courts take judicial notice that these two substances are drugs or medicines, said the court. The defendants also contended that the sale of aspirin and citrate of magnesia was excepted from the operation of the pharmacy practice act by section 12, which provides that the act shall not apply to "registered, trade marked or copyrighted proprietary medicine, registered in the United States Patent Office." To bring an article within this exception, said the court, two things are necessary: (1) the article must be a proprietary medicine, and (2) it must be registered, trade marked, or copyrighted. registered in the United States Patent Office. We are not required to determine whether or not the two articles are proprietary medicines, continued the court, because, even if it be assumed that they are, the record contained no evidence that the articles had been registered, trade-marked, or copyrighted in the United States Patent Office. But because of an error in assessing penalties on these defendants, the cases were remanded to the trial court with directions to impose the proper penalties.—*People v. Garcia (Calif.)*, 32 P. (2d) 445.

Malpractice Award of Compensation as Bar to Suit for Malpractice—A workman says the Supreme Court of Oklahoma, may recover from the employer under the Oklahoma workmen's compensation act not only for an industrial injury but also for any aggravation thereof due to the malpractice of the physician selected by the employer. Under such circumstances, an award of compensation under the compensation act will bar a suit for damages for malpractice that the workman subsequently institutes against the physician.—*Markley v. White (Okla.)*, 32 P. (2d) 716.

Society Proceedings

COMING MEETINGS

American Orthopsychiatric Association, New York Feb 21 23 Miss
Mary A Clarke 50 West 50th Street New York Secretary
Annual Congress on Medical Education and Licensure Chicago, Feb
18 19 Dr William D Cutter 535 North Dearborn Street Chicago,
Secretary
Pacific Coast Surgical Association, Santa Barbara Calif Feb 21 23
Dr Edgar L Gilcrest 384 Post Street San Francisco Secretary
Southeastern Surgical Congress Jacksonville, Fla March 11 13 Dr
Benjamin T Beasley 478 Peachtree Street NE Atlanta Ga
Secretary

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Seventh Annual Meeting, held in Chicago Nov 2 and 3 1934

(Concluded from page 150)

The Diagnostic Features of Acute Pancreatitis

DR. EDWIN G BANNICK, Rochester, Minn Acute pancreatitis is usually incorrectly diagnosed. The usual textbook description, since it applies to the rare fulminating hemorrhagic case, is misleading in most instances. The more common and milder cases usually are mistaken for severe cholecystic disease. These observations are confirmed by a careful study of the records of forty-seven patients whose symptoms were proved by surgery or necropsy to have been due to acute pancreatitis. Certain facts brought out in this study should result in more accuracy in the diagnosis, treatment and prognosis.

DISCUSSION

DR. S. A. SHELburnE, Dallas, Texas I wonder if Dr Bannick had the opportunity to do the dextrose tolerance test in the acute cases. I had the privilege of observing over a long period of time a man with recurrent attacks of pancreatitis the symptoms of which fit in with those mentioned here. A few hours after the worst symptoms had subsided, I did a dextrose tolerance test. This man showed the most profound changes. The blood sugar was elevated to 350 or 400 mg per hundred cubic centimeters and the urine always showed sugar. I saw him in three distinct attacks at intervals of four months and repeated the studies in each attack. Within ten days or two weeks after the attack the dextrose tolerance test was entirely normal.

DR. E. L. TUOHY, Duluth, Minn In the larger group that was proved by operation, what was the degree of fat necrosis found at operation?

DR. JOHNSON MCGUIRE, Cincinnati Was cyanosis of unusually marked degree noted in these cases? In the few cases that I have seen in which the diagnosis of acute pancreatitis was confirmed by operation or autopsy, cyanosis was extreme and out of proportion to the cyanosis that one observes in any other acute abdominal condition.

DR. EDWIN G BANNICK, Rochester, Minn As to the dextrose tolerance, I do not think there is any doubt that the results reported by Dr Shelburne would be the case. In the cases that I reported the diagnosis was unsuspected and these records show only the ordinary urinalysis, and in only a few was the blood sugar determination made. I am convinced that if blood sugar determinations were made in every suspected case of acute pancreatitis there would be a higher incidence of carbohydrate disturbance than was noted in my series of cases and, of course, a dextrose tolerance test would probably show a still higher incidence. In regard to the question concerning the conditions found at operation all of these cases were either surgical or postmortem cases. I included no case that did not show some degree of fat necrosis. In selecting these forty-seven cases I passed over a good many in which a definite pancreatitis was present but cholecystic disease, such as empyema of the gallbladder, was so severe that it would have been difficult to evaluate the symptoms and changes that were due to the pancreatitis, and this was my chief idea in collecting this group of cases. The question of cyanosis in acute pancreatitis has been raised. I don't know just what it is due to but there is no doubt that it occurs in some cases particularly the hyperacute group. I have noted it in a few cases and it has been a peculiar sort of cyanosis and particularly noticeable in the face

and abdomen. I rather doubt the diagnostic value of this observation, but it probably adds a little something to the picture when taken as a whole.

Gastroscopy Present Status and Value in Diagnosis of Gastric Disease

DR. RUDOLF SCHINDLER, Chicago The invention of the flexible gastroscope has overcome the chief difficulties of gastroscopy. The examination can be conducted on the ambulatory patient. It can be done with greater ease and less discomfort to the patient, the danger of perforation is practically eliminated, and it permits a wider field of vision than was possible with the rigid instrument. Gastroscopy is of great importance in determining the frequency of chronic gastritis, the correlation of its appearance with the clinical picture, and to evaluate therapeutic procedure. It has a wide application in observing gastric ulcer. Duodenal and pyloric ulcers are not favorably situated for this direct examination. Benign tumors of the stomach are easily seen, and in all probability beginning carcinomas can be located better by the gastroscope than with other methods now employed.

DISCUSSION

DR. WALTER L. PALMER, Chicago I am sure that the method will give much more information about gastric disease. In the beginning I had some misgivings about it. Dr Schindler has succeeded in examining every patient I have sent to him. Many patients quite willingly acquiesced to subsequent examinations for the purpose of studying the progress of the lesion.

DR. LEON SCHIFF, Cincinnati I should like to ask Dr Schindler whether he has ever observed a true jejunal ulcer through the gastroscope. This type of lesion is frequently difficult to demonstrate on roentgen examination. I should also like to know whether or not he has seen gastric ulcer in various phases of healing. Just what changes occur and how much time is required for complete healing to take place?

DR. J. A. EVANS, La Crosse, Wis Has the author been able to apply therapeutic measures through the gastroscope?

DR. RUDOLF SCHINDLER, Chicago I have observed jejunal ulcers several times, but they are not found as frequently in stomachs that have been operated on as is a very severe gastritis. I have observed the healing ulcer very often. By examining these patients weekly with the gastroscope I have observed that generally in six and one-half to seven weeks the ulcer heals completely. It is not possible to give therapeutics through the flexible gastroscope, because it is filled with lenses.

The Formation and Fate of Derivatives of Bilirubin

DR. C. J. WATSON, Minneapolis Information in this study was gained in several different experiments. 1 Feeding of a known amount of crystalline bilirubin by means of a duodenal tube to a patient with complete common duct obstruction (neoplasm). Results (a) There was no evidence for bilirubin absorption from the bowel. (b) The majority of the urobilinogen formed was reabsorbed and not accounted for in the feces or urine, with an accurate quantitative method. 2 Comparison of urobilinogen excretion in the urine with that in the feces in cases of advanced liver disease. In several of these, the amount in the urine was from two to four times that in the feces, thus bearing out the evidence obtained in the first experiment as to urobilinogen reabsorption. 3 Study of feces obtained from an ileostomy. Evidence for the formation of mesobilirubin in the transition of bilirubin to urobilinogen. 4 Study of the relationship of oxidation products of urobilinogen, evidence indicating that mesobilirubin on further oxidation gives coproporphyrin. Appearance of mesobilirubin absorption after melting of a crystalline iron chloride molecular compound of urobilin thus indicates a close chemical relationship between urobilin and mesobilirubin.

DISCUSSION

DR. M. A. BLANKENHORN, Cleveland I hope that some of the difficulties of making quantitative studies in biliary pigment is appreciated. Dr Watson has made progress. I wonder whether he has taken into consideration, when he has given 10 mg of bilirubin to a patient with common duct obstruction, the bacterial flora necessary to transform bilirubin into the preparation that is recognized as urobilinogen. In my hands,

attempting with the aid of a chemist *intra vitro* transformation of these chemicals, we found that a very careful bacterial arrangement has to be set up in which the type of organism is important. With the aid of Dr Eecke, our bacteriologist, we found it was almost impossible to set up bacterial flora from pure strains. I should like to ask how long the patient has had his intestinal acholia. If he has had it a long time I would expect him to be no longer capable of transforming urobilinogen. I think that the finding of large amounts of altered pigment is emphasized by the conditions found in human gallbladder bile. Human gallbladder bile removed at autopsy will almost always contain large amounts of a substance that can be identified as urobilinogen or urobilin. In some instances it exceeds, gram for gram, the amount of bilirubin. I have been concerned in the last few years with the ratio of urobilin and bilirubin collected from the gallbladder. This ratio is quite variable. It suggests variables in absorption as well as variables in the ability of the liver to excrete the substance.

DR C J WATSON, Minneapolis. In answer to Dr Blankenhorn's question, the jaundice in both of these instances was of fairly long duration, in one about two months and the other three months, and presumably quite complete for most of that period. In both, the jaundice was due to neoplastic obstruction of the common duct. It is realized that these patients are not normal and that the bacterial flora may be altered. The stools in these instances were carefully examined for their bilirubin derivatives and it was possible to obtain crystalline stercobilin after the administration of bilirubin. It was not possible prior to the period of the experiment to isolate any derivative of bilirubin. Following the feeding of bilirubin the amount in the serum did not increase, to indicate that there had been any resorption of bilirubin itself. This experiment should be repeated a number of times before one can say that no bilirubin is resorbed. I think that the existing evidence, to which Dr Blankenhorn's work certainly contributes a great deal, is in favor of the fact that there is no resorption of any appreciable amount of bilirubin from the bowel.

The Vascular Response to Venesection, with Observations on So-Called Bloodless Venesection

DRS WILLIAM A BRAMS and J S GOLDEN, Chicago. Patients with congestive failure were used in the experiments. Venous pressure was determined by a modified Moritz-Tabora apparatus. Readings were taken every five minutes for one hour after venesection. The blood pressure and pulse rate were determined at similar intervals. Bloodless venesection was accomplished by constricting three extremities to obstruct venous return, but not arterial. The same observations were made as with blood letting. Bloodless venesection showed little effect on venous pressure, blood pressure or pulse rate. Blood letting up to 800 cc showed little effect on blood pressure or pulse rate. Venous pressure fell rapidly, to return in part after from twenty to thirty minutes. The best results were seen in previous high venous pressure.

DISCUSSION

DR. SAMUEL B GRANT, St Louis. About ten years ago I did some arterial punctures in patients with congestive heart failure to study the oxygen saturation of arterial blood. I found after venesection that they consistently showed an increase in the oxygen saturation of the arterial blood, which is another factor not absolutely proved.

DR. W S MIDDLETON, Madison, Wis. There are three points that should be emphasized. First, the advisability of the indirect method in patients whose vascular status must be borne in mind, in other words, one has not made repeated punctures but has tried to maintain a blood way through the apparatus in the case of the Moritz-Tabora closed method. The ability to duplicate results by the indirect method in repeated observations should be brought out. The second point relates to the application of venesection, as the authors state, it should be utilized in the case showing venous hypertension and not arterial hypertension. This is the pathologic physiologic situation to be treated. Third, I think the speed of withdrawal is an important factor. One should try to do one's blood letting within five minutes. If it takes fifteen minutes to release the load on the right side of the heart, I think too much time has been expended to effect maximum benefit. The work of Eyster

and Meek at Madison showed that the blood volume must be reduced to a given degree to decrease the size of the heart. Practically, if one is after this physiologic end one will with draw enough blood, or at least 500 cc. for a person weighing 150 pounds (68 Kg.)

DR J S GOLDEN, Chicago. The puncture need not be repeated if the needle is allowed to remain in the vein and one assures oneself that no blood is allowed to stay in the needle. There were no multiple punctures in these cases. We found that, when a quantity of blood was removed in a very short period, the venous pressure did drop very rapidly. Immediately after completion of the venesection there was a rise to a secondary level, from which the total level was approached. When we took a longer time the drop was more gradual, but there was no rapid return to the secondary level.

Blood Cyanates in the Treatment of Hypertension

DR M HERBERT BARKER, Chicago. The blood level of cyanates and the urinary clearance has been studied in relation to the dosage of potassium and sodium thiocyanate in patients with hypertension. A great variation in clearance and in the blood cyanate level is noted in each case on a given dosage. In general, blood pressure reductions have been observed in all the cases studied. A significant decrease in blood pressure level together with symptomatic relief has been quite regularly noted in the cases in which the dosage was gaged by the blood cyanate level. The optimum level for the blood cyanates to effect a pressure reduction seems to be 10 to 15 mg. Toxic manifestations and vascular collapse have occurred around 50 mg.

DISCUSSION

DR. EDGAR V ALLEN, Rochester, Minn. Will Dr Barker say a few words about the mechanism by which the cyanates reduce the blood pressure?

DR J W SCOTT, Lexington Ky. I should like to ask about the measurement of the level of cyanate in the blood.

DR. W B KOUNTZ, St Louis. There has been so much criticism on the use of cyanate in hypertension that I am glad to hear a paper that says it has value. I have used it in a large number of cases of hypertension and a satisfactory response has been shown in a great many. I have not used the size dosage that Dr Barker has and have not seen any toxic manifestations but have kept the dose well down. The routine has been to give it in courses of two weeks on and two weeks off. A reduction in the blood pressure has been noted.

DR. M HERBERT BARKER, Chicago. I do not know about the action of the cyanates. So far as I know, no work has been done to prove their action. The general attitude has been that it produces muscular weakness. All of the patients complained of fatigue. In this period of readjustment, patients may complain of weakness and feeling "as though they would like to hold their own eyelids open." Their legs may be so tired that they can hardly carry themselves around. That wears off and their full energy returns and they feel stronger than ever. So I do not feel that the muscle tone is the whole answer. It is not true of the muscle tone in the vascular tree, because these patients have not regained their strength if blood pressure is an index. An attempt has been made to show the good effect to be on the nerve structure or on the suprarenals but this has not been satisfactory to date. The method of determining the cyanates is very simple. When the cyanate is combined with iron it produces a tan or wine color, which is easily read in a colorimeter. Dr Kountz's point is a good one. His experience has taught him to give cyanates on alternate weeks, which is one way of being cautious. Unless these patients are smokers, the salivary cyanate level is very low. There is virtue in the cyanates if used properly.

Coronary Thrombosis—A Follow-Up Study

DR. WARREN B COOKSEY, Detroit. Fifty-three cases of coronary thrombosis seen in private practice since 1928 have been followed. Twenty-one of the patients or 39.6 per cent, are dead, while thirty-two, or 61.4 per cent are living. Of the patients who died, 71.5 per cent were above 60 years of age, with an average age of all patients who died of 63.4 years, while the average age of living patients is 54.2 years. In the living group, one patient is living at thirteen years ten are

living at six years, two at five years, five at four years, five at three years, two at two years, and seven one year after typical severe coronary occlusions. Of the living patients, 78.1 per cent have been restored to their previous occupation. Recent electrocardiograms of the living group show evidence of coronary disease in 90 per cent. The most frequent observations are RT changes, 56.6 per cent, cove negative T_1 or T_2 , 43.3 per cent, diphasic T_1 or T_2 , 40 per cent, and a prominent Q_2 , 16.6 per cent. These data justify a much more hopeful prognosis for all cases of coronary occlusion in which the first six months has been survived.

DISCUSSION

DR. W. B. KOUNTZ, St. Louis. Has Dr. Cooksey used any vasodilator following coronary thrombosis?

DR. L. N. KATZ, Chicago. Coronary thrombosis is not always an inevitably fatal disease. As methods of diagnosis improve, earlier and milder forms become recognized. This is the merit of the four lead electrocardiogram. I recently saw a patient at Michael Reese Hospital with a stab wound of the heart in whom the lower part of the left descending branch of the coronary artery was tied at operation. The patient developed a serial electrocardiographic picture of myocardial infarct without any clinical evidence. In fact, as soon as he left the hospital he began doing hard manual labor without ill effect. As knowledge of the disease develops it will be found that coronary thrombosis ranges from extremely severe forms to what might be termed subclinical varieties.

DR. F. N. WILSON, Ann Arbor, Mich. I should like to make one or two remarks concerning the mortality in coronary occlusion. If one ties off a large coronary artery in a series of dogs, about half the animals die. The great majority of the deaths occur within the first twenty minutes and are due either to the onset of ventricular fibrillation or to contractile failure without any disturbance of the cardiac mechanism. I suspect that the majority of the patients who die as a result of coronary thrombosis are dead before the physician arrives. If death does not occur within the first half hour, the chances that the patient will survive are excellent.

DR. W. B. COOKSEY, Detroit. Concerning vasodilators, I take the attitude that one is struggling to maintain collateral circulation and that anything which will facilitate it is worth while. Whether anything is being accomplished by vasodilators I believe is hard to answer. In relieving angina pectoris they have certainly proved very satisfactory. I have used chiefly aminophylline, theobromine alkaloid or synthetic theophylline. Dr. Wilson's remarks are well taken. The mortality does vary. I would not say that, if I knew all the patients with whom I come in contact who later die of coronary occlusion, the mortality would be quite so good as it is. It depends on many factors. Much depends on the size of the vessel occluded, and it is of great importance what the patient does in the few days and weeks following the occlusion. One more interesting fact that perhaps I did not emphasize sufficiently, I believe that the older age group (60 to 70 year group) has less chance of surviving following a coronary occlusion than the younger group.

Clinical Study of Electrocardiograms in Pellagra

DR. HAROLD FEIL, Cleveland. These observations were made in thirty-eight cases of pellagra seen in the medical service at Lakeside Hospital. All cases were typical pictures of pellagra and alcoholic in origin with the exception of one boy, aged 15 years, whose diet had been inadequate. Electrocardiograms were made in all cases during the height of the disease and in most cases at weekly intervals during the convalescence. In twelve cases the phases of cardiac systole were studied by heart sounds and subclavian pulse records. In 60 per cent of the cases the electrocardiogram was normal. Of the remaining, there were the following abnormalities in the order of frequency: inversion of T_1 and T_2 or both, 16 per cent, Pardee T (13 per cent), inversion or eversion of ST, large T in at least one lead and low voltage, 18 per cent. Electrical systole was slightly lengthened and likewise mechanical systole. The isometric phase was normal. The electrocardiograms in some instances returned to normal with recovery. Teleroentgenograms in several cases were normal. Pathologic study of the hearts coming to postmortem was normal. The electrocardiogram was abnormal in about one fourth of the cases of

pellagra, and electrical and mechanical systole are prolonged in most cases, suggesting that the heart is affected.

Stimulants of Bone Marrow in Hog Gastric Contents

DR. JOHN H. FOULGER, Cincinnati. Chemical and clinical studies of concentrates of hog gastric contents, carried out in association with the late Prof. Roger S. Morris, show that, in addition to the hematopoietic agent which Morris termed addisin, there is present a distinct chemical substance which, on intramuscular administration to patients showing a neutropenia, can cause a marked and often prolonged increase in the granulocyte count. The response is most pronounced in patients who are either resistant to massive doses of pentnucleotides or who have received smaller doses of pentnucleotides than are usually of therapeutic value. A single injection of 180 mg. of a crude preparation of the granulocytopenic substance of hog gastric contents has sufficed to produce a remission.

DISCUSSION

DR. FRANK J. HECK, Rochester, Minn. I am very skeptical about the efficacy of any of the preparations on the market at present for treatment of granulocytopenia. No untreated control series has been run, so far as I know, by any of the men reporting excellent results with the various therapeutic measures now advocated. Granulocytopenia is merely a condition that occurs in any one of a considerable number of diseases. Proper classification as to etiology is important. I should like to ask Dr. Foulger whether there was any history of drug use in the cases he is reporting.

DR. RAPHAEL ISAACS, Ann Arbor, Mich. I noticed that the total white count in some cases is about twice the total polymorphonuclears. I recall that the original work of Dr. Morris and his associates showed a neutrophilic increase. Since this substance was injected into the muscle, it could have acted on the muscle and produced a new substance similar to that developed during gastric digestion. The eosinophilia is suggestive of this.

DR. C. A. DOAN, Columbus, Ohio. I would like to ask whether any animal experiments together with study of the tissues have been made.

DR. L. G. ZERFAS, Indianapolis. The injection of fresh human gastric juice intramuscularly into a patient with pernicious anemia in relapse is without hematopoietic effect. When the gastric juice is stored in the icebox for two months or incubated for four hours at 40 C. however, definite reticulocyte responses occur. An increase in white blood cells also takes place at the same time. The same is observed when potent hematopoietic substances are fed by mouth or when they are injected. Dr. Helmer, Dr. Fouts and I have felt that the general bone marrow stimulation observed as a result of the injections of incubated gastric juice was due to some protein breakdown or to an actual blood destruction process and not to a hormone in the gastric juice. We have had no other experience with the white blood cell stimulating effect reported by Dr. Foulger. The lack of knowledge concerning the physiology of the bone marrow makes it extremely difficult for us to explain many of the responses observed.

DR. JOHN H. FOULGER, Cincinnati. I agree with the remarks about the lack of control. Nothing is known about the physiology governing the output of cells by the bone marrow. Patients with an extremely low white count are usually extremely sick. The clinician in charge is anxious to do something. The real object is to save the patient. I doubt whether in this type of case one will ever have scientific control and whether any methods of stimulating bone marrow are curative. Sooner or later the bone marrow reaches a state such that it will not respond to any treatment. I am perfectly agreed on our ignorance of the cause of spontaneous remissions in these cases, but in testing many substances of this type it is necessary to accommodate oneself to the material available. With regard to the action on muscle tissue of such injections, I think that the preparations used in most cases have been fairly pure chemically, much purer than liver preparations. Some of the concentrates used in the treatment of these cases have not been irritating in any degree. The possibility of the presence of trichina must of course be thought of in all work with swine products. But the preparations used were filtered

and therefore could not have contained trichina. Coming back to the work reported by Dr. Morris and his associates, it has been claimed that all their results were obtained because the concentrates of gastric juice acted on muscle. These claims might, I suppose, be accepted in the absence of further knowledge. But the most active preparations of addisin were made by a method that seemed to me as a chemist to have excluded all enzymes. They were made by esterification and extraction with ether. I do not know of any enzyme that can be subjected to the process used, and then extracted with ether. Preparations made in this way were the most active we have obtained in the production of hematopoiesis. With regard to animal experimentation, experiments are being conducted at present on the effect of this particular concentrate of the white cell count.

The Influence of Gastric Lavage on Familial and Nonfamilial Erythremia

DRS. HARRY OERTING and JOHN F. BRIGGS, St. Paul. Following the suggestion of Morris that erythremia may be the result of hyperaddisinism, the influence of gastric lavage on the erythremic syndrome was observed in erythremia of the familial and nonfamilial types. Lavage was done in each case from four to six times daily and the time of lavage varied from day to day. In nonfamilial erythremia, lavage alleviated the clinical symptoms and there was a marked improvement in the blood picture. In familial erythremia, lavage relieved the symptoms and prevented the usual increase in the blood picture. The material obtained from the nonfamilial erythremia lavages was placed untreated in the stomachs of patients with primary anemia and was effective in producing remissions. Evidence indicates that primary anemia and erythremia are antagonistic phenomena and that they represent states of an addisinism and hyperaddisinism. It is also suggested that in familial erythremia alterations in hemolysis are the factors producing the syndrome.

DISCUSSION

DR. LEON SCHIFF, Cincinnati. Several years ago I noted a marked drop in the red cell count in a patient with polycythemia vera and duodenal ulcer who had been lavaging his stomach daily as part of a Sippy regimen. This observation suggested the possibility of an excess of hematopoietic factor in gastric juice as playing a role in polycythemia and led to the suggestion of gastric lavage as a therapeutic measure in this disease. Since then I have treated two cases of polycythemia vera with repeated gastric lavage. The gastric contents were aspirated two or three hours after each meal for a period of two months. The patients were on a low purine diet, and an attempt was made to decrease and neutralize their gastric secretion by the use of belladonna, bromides and alkalis. No effect was noted on either the symptoms or the blood count. The failure to obtain a response does not disprove the existence of an excess of "intrinsic" hematopoietic factor as two months is a relatively short period, and at best only a fraction of total gastric juice secreted can be removed. It may require years for pernicious anemia to develop after total gastrectomy in spite of the established relationship of the stomach to hematopoiesis. As Dr. Briggs stated, the report of Wilkinson that an extract made from the liver in a case of polycythemia vera contained more antianemic substance than an extract obtained from normal liver is interesting and may have some bearing on this discussion.

DR. L. G. ZERFAS, Indianapolis. The observations reported by Wilkinson relative to the gastric juice may not bear any relationship to the etiology of polycythemia vera. The theory that polycythemia may be the result of a hypersecretion of the "intrinsic factor" in the gastric juice is intriguing. However, there is another point of view to consider which seems more plausible, namely, the relationship of anoxemia to the overproduction of red cells. It is common knowledge that there occurs in this disease extensive fibrosis and thickening of the walls of the arterial vessels. Dr. Reznikoff of New York has demonstrated the marked fibrosis of the bone marrow, which may in itself produce a sufficient degree of anoxemia in this tissue to cause an overproduction of red cells. Studies made at high altitude have already shown the relationship of the reduced oxygen supply to the increased number of red cells and hemoglobin in the peripheral circulation.

DR. W. B. COOKSEY, Detroit. About a year and a half ago when Dr. Morris first mentioned this possibility, I saw a case of polycythemia vera in which there was a count of eight million. At the same time I saw a case of aplastic anemia in which many kinds of treatment, including addisin, had been administered. The patient was a very intelligent man and wanted to take more addisin. As he was willing to pay for it, I trained my polycythemia vera patient to wash his stomach twice a day and deliver the contents to the other patient. This procedure was followed for four weeks with no benefit whatever to either patient.

DR. HOWARD L. ALT, Chicago. Were any determinations of the acid-base equilibrium made in these cases?

DR. S. M. GOLDHAMER, Ann Arbor, Mich. If one follows over a period of months the red cell count in cases of polycythemia vera, there is often a variation of more than three million cells. In the figures on the board, there is a variation of half a million or a million red blood cells, which amount would fall within the limits of error. Furthermore, if a patient with polycythemia does get an excess of addisin, all the red blood cells developed should be adult rather than young cells. Also, it has never been shown that liver extract can be given to patients in sufficient amounts to produce a constant reticulocytosis which can be maintained over a period of years as one sees in cases of polycythemia. As to the protective mechanism, when one gives a patient an excess amount of the "unknown" substance, intramuscularly or intravenously, in a few hours one can find a large amount present in the urine. It seems to me that in these individuals with polycythemia the body would take care of any excess substance produced.

DR. RAPHAEL ISAACS, Ann Arbor, Mich. I should like to suggest another interpretation of this material, which is that pernicious anemia and polycythemia are not opposites of each other. In pernicious anemia the factor that matures the red cells beyond the megaloblast stage is missing. Therefore the body tries to make red cells but can never mature them beyond that stage. The bone marrow is full of megaloblasts. If there was too much "maturing substance," the red cells would mature too fast. Instead of having too many red blood cells, the patient would have an aplastic anemia. He would mature all the cells and they would stop developing. Aplastic anemia is the opposite of pernicious anemia and not polycythemia.

DR. W. S. MIDDLETON, Madison, Wis. The experience at the Wisconsin General Hospital might be of interest. After this intriguing concept of the Cincinnati group appeared, a patient with polycythemia vera came in with 9,000,000 red blood cells. Gastric lavage was instituted twice a day and there seemed to be a brilliant response, the red cells going down to 6,500,000. Apparently the lavage was kept up too long for after six weeks the count went up to 9,000,000. I think this experience has been repeated by Farrar at Ann Arbor. We considered doing a partial gastrectomy if the remission in the blood picture was repeated after a period of rest and then renewal of gastric lavage.

DR. JOHN F. BRIGGS, St. Paul. No study has been made on the acid base equilibrium following lavage. This patient was followed for two or three years with counts two or three times a week and there was no marked variation in these counts. During the time before gastric lavage was started the reticulocyte count was at its lowest. The second patient is responding to lavage. Apparently the secret of the response is frequent lavage with complete washing of the stomach. Unless 700 cc. of gastric juice is expressed daily, a drop in the blood picture is not obtained.

Clinical Study of Idiopathic Thrombosing Disease (Thrombophilia)

DRS. KAARE K. NÅGAARD and GEORGE E. BROWN, Rochester, Minn. A group of cases has been recognized and studied, in which there are episodes of thrombosis of the veins or of the arteries. Thrombosis in the vessels appears independent of intercurrent disease specific infection or operation. There is no demonstrable primary disease of the wall of the blood vessel. The primary disturbance, in some of these cases at least, seems to be of hemogenous origin, changes in the coagulability of the blood plasma, increase in the number of platelets and (or)

changes in the normal albumin-globulin ratio of the serum proteins. These changes appear with remission of thrombosis. In diagnosis, there has been confusion with thrombo-angitis obliterans. The group of cases considered represents, probably, a distinct clinical entity, which in the past has been designated idiopathic phlebitis or simple thrombosis of the vessels.

DISCUSSION

DR C. A. MILLS, Cincinnati. I should like to know whether these patients were tried on a low protein diet therapy and, if so, what effect it had. There seemed to be quite a period in which the thrombosing condition existed.

DR. EDGAR V. ALLEN, Rochester, Minn. The thesis of Drs. Nygaard and Brown is that there is a condition in which occlusion of arteries and veins is due solely or largely to intra-vascular coagulation resulting from an increased case of coagulation of the blood. This condition is different from the usual case of vascular thrombosis, in which the primary cause is in the wall of the vessels. Two questions are apparent. Why doesn't the thrombosis extend to involve the major portion of the blood vascular system, and why does it involve arteries chiefly when the slower flow in the veins is more conducive to thrombosis? A more logical explanation is that there is some localized vascular injury, which serves as a basis for thrombosis, which would not occur ordinarily. Support for the contention of the authors is offered by observations that the cases are bizarre ones clinically, that usual cases of chronic occlusive arterial disease do not show increased coagulation of the blood, and that microscopic examination of the involved vessels in the syndrome described by Drs. Nygaard and Brown does not show the usual inflammatory changes in the arteries and veins such as are seen in thrombo-angitis obliterans, or the degenerative ones such as are seen in arteriosclerosis. The clinician is greatly aided by the observations made by Drs. Nygaard and Brown as they explain bizarre types of vascular disease not satisfactorily classified heretofore.

DR. J. W. MOORE, Louisville, Ky. Has he had any instance of thrombosis in the pulmonary veins?

DR. KAARE K. NYGAARD, Rochester, Minn. We have not made use of any diet or any kind of therapy in an effort to change the coagulability factor. We have tried dyes. So far as we could make out, they have been of no value in changing the coagulability. These patients had fever at the time. In the first case that I reported a man aged 27, had fever for two weeks and then a subnormal temperature for another week, and a low leukocytosis. In one of these cases it was found that there was a thrombus in the pulmonary vein. We went over the cases from 1924 but none of them had any pulmonary emboli so I think the idea of the pathologist at the time was an occlusion in the pulmonary veins.

High External Temperatures, the Suprarenals, and Body Relaxation

DR. C. A. MILLS, Cincinnati. The heat of the past summer has brought out in striking fashion the physiologic effects of high external temperatures. Widespread declines in blood pressure levels have been noted in all types of patients, with the average being around 30 per cent. Normal pressures have declined below 100 and hypertensive cases have shown just as marked falls. These heat effects would seem to differentiate between the sclerotic and spasm factors in hypertension, for, when real sclerosis was present, the fall in pressure was halted above the normal level. Many cases of hypertension without evident sclerosis fell to within normal limits. This demonstration of natural heat effects with the resulting evidences of body relaxation, clearly bears out what I have previously written as to climatic and weather stimulation, and the importance of this factor in metabolic and arteriosclerotic disturbances. Here lies the explanation of the marked differences between tropical regions of moist heat and temperate regions of great storminess in their relative severity and frequency of metabolic and degenerative diseases. Artificial moist heat might well be tried in northern winters in an attempt to mimic this relaxing effect of summer heat waves.

DISCUSSION

DR. E. P. McCULLAGH, Cleveland. In consideration of the suprarenal glands and their relation to body temperature, it is

interesting to reflect that in suprarenal apoplexy, as seen in children or occasionally following suprarenal operations, there is a very marked increase in body temperature as part of the clinical syndrome. There are two other striking features which accompany acute suprarenal insufficiency of this type, first, a peculiar sort of drowsiness, which gradually increases to coma but is quite distinct from the sort of mental change seen in Addison's disease, and, second, a rapid respiratory rate. I wonder whether these two phenomena associated with rapid failure of the suprarenal could be correlated in any way by Dr. Mills with the changes that he has been discussing.

DR. E. L. SEVRINGHAUS, Madison, Wis. There are two things of interest in the presentation of Dr. Mills. One is that there is a well recognized critical level above or below which there is failure to get maximum vasodilatation. That critical level seems to be about the body temperature. On the basis of this fact I have been using controlled heat for vascular disease of peripheral type and from its use there is apparently better circulation in the extremities. The other point is that Dr. Mills suspects that there is decreased heat production with high environmental temperature. There is good evidence in human and animal work showing that there is also a critical minimum of heat production by the body, which is at about 30 to 32 C. As one goes to higher temperatures there is an increase in heat production. If the critical temperature level is exceeded, I wonder whether he has evidence of decreased production in hot weather.

DR. CLARENCE F. G. BROWN, Chicago. Until more is known about the quantitative clinical measurement of the suprarenal and its action, shouldn't one think of this as the direct action of an external stimulus on the vegetative nervous system itself? This can set in play all the visceral reflexes necessary to produce the results described so well by Dr. Mills. Similar clinical pictures have been produced by changes in intrapulmonary pressures both in the dog and in man.

DR. C. A. MILLS, Cincinnati. There is good evidence, I think, of an actual change in the level of heat production depending on the external temperature to which the individual or animal must accommodate itself. We did not go into this phase of animal adaptation at Cincinnati because of scarcity of funds for the purchase of metabolism apparatus. However, workers in Belgrade (S. Gelineo, Institut de physiologie general de l'Universite de Belgrade) last spring sent me copies of recent papers of theirs in which were detailed the results of experiments covering this point. They found that animals adapted to a given temperature level showed a marked increase in heat production when the external temperature was lowered. Furthermore, the lower the temperature level to which the animal was adapted, the greater was the heat production increase when a further drop in temperature occurred. Animals adapted to 35 C, for instance, showed a much less marked increase in heat production when the environmental temperature was reduced 10 degrees C than did those adapted to 25 C. The more active the metabolism of the animal, the greater seems to be his response to chilling, and the differences found are quite striking. This is what I felt sure was happening in the response of man and animals to drops in environmental temperature. I have had many scientists suggest that such response was mainly vasomotor, shifting the blood away from the cooled surfaces so as to maintain body temperature. Such vasomotor reactions I feel to be of minor importance in the body adaptation to chilling, changes in heat production playing a far more important role in this respect. I do not know just how the symptoms of suprarenal apoplexy would fit into the picture of adaptation as I have presented it. In some such cases the symptoms much resemble the exhaustion of heat prostration which I have attributed to loss of function in the suprarenal cortex. Other cases are more like heat stroke, with a complete derangement in the temperature adaptive mechanism. So far as I know, the suprarenals cannot be entirely separated from the vegetative nervous system. The talk recently given by Dr. Dale at Indianapolis brought this fact out in striking fashion. The proof seems almost complete that epinephrine or a very similar substance is liberated by impulses arriving at the sympathetic nerve endings and that it is this chemical activator which transforms the nerve impulse into tissue stimulation. I have long felt that suprarenal activity played some

definite part in the tissue response to autonomic stimulation, and now Dr Dale seems to have the detailed explanation of why this should be so. It is easily seen, then, how difficult it becomes to separate suprarenal function from that of the vegetative nervous system.

Involution of the Thyroid Under Prolonged Injections of Pituitary Thyrotropic Hormone

DR PAUL STARR, HELEN PATTON and RICHARD BRUNER, Chicago. Following the work of Collip, Friedgood and others, the thyroid gland of the dog and guinea-pig have been studied during prolonged injections of a solution of sheep anterior pituitary gland substances. The initial hyperplasia gives way to involution during these injections. Histologically, the gland does not appear to be exhausted of secretion. [Photomicrographs of such glands were shown. The important problem of the mechanism of this involution, whether induced by action of some other hormone or simple recovery after neutralization of the injected material by an antibody, were discussed.]

DISCUSSION

DR E. P. McCULLAGH, Cleveland. Were the metabolic rates determined in these animals and if so, did the levels following treatment fall to below normal? If it is true that by the Janssen method a preparation of thyrotropic hormone can be made that will be protein free, I wish to suggest that it might be possible to free such a hormone from protein substances sufficiently to preclude the possibility of immunity as the cause of antihormone effect.

DR GEORGE M. CURTIS, Columbus, Ohio. Was any investigation made of the iodine content of the glands?

DR E. L. SEVRINGHAUS, Madison, Wis. I think that the authors would like to know that there is some analogous work on the ovary at Madison. Hisaw has been carrying out that work after the plan of Collip and has transferred a passive immunity to gonadotropic extracts to other animals. The authors have described the refractory period that comes after active stimulation as Hisaw found it in the ovary. This refractory period occurs after a few weeks of treatment but disappears after a few weeks' rest without continuous injections. These changes do not seem like immune reactions.

DR PAUL STARR, Chicago. In answer to Dr McCullagh, we are working on guinea-pigs and do not find subnormal rates in the involutional period. We have not made any iodine studies, although such have frequently been made abroad both on glands and on blood. The Janssen material, is an impure protein precipitate. I doubt whether one could use its supposed freedom from proteins as an argument against immune bodies. Dr Collip reports that agglutinins cannot be obtained. It is interesting then that serum taken from these animals will inactivate the original hormone.

Calorigenic Action of Extracts of Anterior Lobe of Pituitary

DR W. O. THOMPSON, DR S. G. TAYLOR III, DR PHEBE K. THOMPSON and L. F. N. DICKIE, Chicago. The subcutaneous administration of extracts of the anterior lobe of the pituitary produced an increase in basal metabolism in twenty-four of thirty-nine patients of various types including three with hypopituitarism, seven with nontoxic goiter, three with low basal metabolism of unknown cause, four with typical myxedema, nine with mild myxedema (three of these had a nontoxic goiter) and five with exophthalmic goiter. The increase in metabolism was only temporary in spite of prolonged administration of the extracts, the greatest length of time that the metabolism was affected being about two months. No increase in metabolism was observed in the patients with typical myxedema (more data are needed to establish this point), but a well marked increase occurred in the patients with mild myxedema. During the injections in the patients with exophthalmic goiter, mild cases of the disease became moderately severe ones. This increase in the severity of exophthalmic goiter naturally raises the question of the role of the pituitary in the disease.

DISCUSSION

DR PAUL STARR, Chicago. Possibly the most valuable application of this material might turn out to be its use in the stimulation of large colloid goiters with depressed thyroid

function. The physiologic work suggests that one may be actually producing in the patient an antimechanism, which in the end may increase the disturbance for which treatment was given.

DR CECIL STRIKER, Cincinnati. I should like to ask whether, after the metabolism has dropped to normal and the thyroid is apparently exhausted, if one gives thyroid extract, the metabolism rises? If the thyroid is exhausted and one increases the pituitary, does one get another rise in the metabolism?

DR W. O. THOMPSON, Chicago. We are not drawing conclusions from this work about the treatment or about the mechanism of production of exophthalmic goiter. We are merely presenting a few observations, the precise nature of which still remains unsolved but which possibly can be explained on the basis of stimulation of the thyroid by the pituitary. I do not believe these extracts are suitable for routine clinical use at present because of their temporary action. It is possible that the active principle of the anterior lobe is linked to a complex molecule and that immunity to this complex substance results in the development of immunity to the active principle. If such a point of view should prove to be correct, isolation of the active principle may result in a substance that produces calorigenic action indefinitely.

Relation of Thyroxine to the Metabolism of Tissues

JAMES C. DAVIS, PH.D., and A. BAIRD HASTINGS, PH.D., Chicago. Experiments have shown that total thyroidectomy results in decreased metabolism of the excised striated muscle of mice. Conversely, the injection of thyroxine in mice with and without previous thyroidectomy increases the excised tissue metabolism. Attempts to demonstrate an increase in tissue metabolism by the addition of thyroxine to the excised tissue of mice in vitro have given negative results. It has been found, however, that by utilizing a technique for keeping the excised frog heart alive for several days a marked increase in the metabolism of the frog heart may be demonstrated fifteen hours after the addition of thyroxine to the nutrient fluids in vitro. This result has been confirmed on the heart of the limulus, with and without its ganglion.

DISCUSSION

DR WALTER M. BOOTHBY, Rochester, Minn. It is interesting that the latent period is the same in these experiments as it is in man.

DR GEORGE M. CURTIS, Columbus, Ohio. As a corollary to this work I should like to present results concerning the blood iodine after total thyroidectomy. It maintains a level of about one-third normal. The blood iodine has been separated into alcohol soluble and alcohol insoluble portions. Presumably the alcohol insoluble portion is the thyroid hormone. After total thyroidectomy, this portion, about two thirds of the blood iodine, falls out, and only about one third of the normal blood iodine content remains.

DR A. BAIRD HASTINGS, Chicago. I should like to emphasize that this would not be a good way of assaying thyroxine, because it takes a large number of experiments and there is a good deal of scattering in the determinations. It is only by doing a large number and waiting quite a long time that we are able to show the effect of thyroxine on tissues in vitro.

Metabolic Studies in Osteoporosis

DRS MILDRED ADAMS, WALTER M. BOOTHBY and ALBERT M. SNELL, Rochester, Minn. A prolonged metabolic study was made on a patient with a senescent type of osteoporosis, to determine the ability of such a subject to absorb calcium and phosphorus. For about five months the patient was on a constant, weighed and analyzed diet with the addition of known amounts of tribasic calcium phosphate or calcium lactate, with and without viosterol. During the control period the subject definitely lost calcium, although there was a slight, positive nitrogen balance. It was possible to prevent this loss of calcium with either calcium phosphate or calcium lactate, although, when given in equivalent amounts without viosterol, calcium lactate appeared to be more efficient. Viosterol increased the retention of calcium after feeding of calcium phosphate but had little influence on the retention after feeding of calcium lactate.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Clinical Pathology, Baltimore

4 453 544 (Nov.) 1934

- Etiology of Granulopenia (Agranulocytosis) with Particular Reference to Drugs Containing Benzene Ring R R Kracke and F P Parker Emory University Ga.—p 453
- Diagnostic Methods in Amebiasis Relative Value of Stool Culture as Compared with Other Methods C J Tripathi and M Shushan New Orleans.—p 470
- Rapid Pigment Appearance in Ohio Red Bellied Dace as Test for Intermedin Preliminary Report A M Young Cleveland.—p 485
- *Endocarditis Caused by Diphtheroid Bacillus (Pleomorphic Streptococcus) A G Foord and W J Stone Los Angeles.—p 492

Endocarditis Caused by Diphtheroid Bacillus (Pleomorphic Streptococcus)—Foord and Stone present a case of subacute bacterial endocarditis having a typical clinical course and showing typical postmortem observations. From the blood on four occasions during life and from the blood and heart valve after death a diphtheroid bacillus was recovered in pure culture. Smears and sections of the heart valve revealed large numbers of the same organism with no other organism present. The serum of the patient obtained after death agglutinated the organism in high dilution. On liquid mediums streptococci forms were produced, but only bacillary forms were found on blood agar. The case well demonstrates that diphtheroid bacilli in blood culture may be of vital importance and are not always simple contaminants. The entire clinical and pathologic picture presented by this patient and the bacteriologic studies point strongly to the view that the organism obtained is only a stage in the life cycle of a green producing streptococcus. The authors suggest that all strains of diphtheroid bacilli obtained from human cases of infection be cultured on appropriate mediums in order to demonstrate their relation to streptococci.

American Journal of Diseases of Children, Chicago

48: 1183 1468 (Dec.) 1934

- Treatment of Whooping Cough with Active Udenatured Antigen Minnola Stallings San Francisco and Valerie C Nichols Berkeley Calif.—p 1183
- Blood Picture in Experimental Whooping Cough I Inaba and S Inamori Mukden Manchuria.—p 1193
- *Typhoid Paratyphoid Therapy in Idiopathic Epilepsy Clinical and Experimental Study L Antell, New York.—p 1201
- Iodine and Thyroid Hyperplasia I Iodine Content of Human Skimmed Milk from Gouty and Nongouty Regions R G Turner assisted by Mina Z Weeks Detroit.—p 1209
- Dental Decay as Indicator of Dietary Fault N P Larsen Martha R Jones and G P Pritchard Honolulu H I.—p 1228
- External Dimensions of the New Born H Bakwin and Ruth Morris Bakwin New York.—p 1234
- Anemia of Prematurity H W Josephs Baltimore.—p 1237
- *Rickets Control with Fifty Units (Steenbock) of Cod Liver Oil Vitamin D Concentrate in Milk D J Barnes Detroit.—p 1258
- Phosphatase Studies V Serum Phosphatase as Criterion of Severity and Rate of Healing of Rickets A Bodansky and H L Jaffe New York.—p 1268
- Mumps Meningo-Encephalitis J C Montgomery Detroit.—p 1279
- *Neutralizing Value of Various Substances Against Lethal Doses of (A) Stool Emulsions from Patients with Poliomyelitis and (B) Colon Paratyphoid Organisms J A Toomey Cleveland.—p 1284
- Reflex Changes in Typhoid Fever J A Toomey Cleveland.—p 1296
- Röntgen Examination of Pyloric Canal of Infants with Congenital Hypertrophic Pyloric Stenosis T Meuwissen and J Slooff Eindhoven the Netherlands.—p 1304

Typhoid Paratyphoid Therapy in Idiopathic Epilepsy—Antell treated six epileptic patients with intravenous injections of typhoid paratyphoid vaccine as a means of producing fever. Of these five were children and one was a young adult. The results in all the children thus far have been good. There

were no recurrences of seizures after periods of from seven months to two years from the institution of treatment. The one failure was in the case of the young adult. The author states that the possible advantages of this method of treatment over that of the ketogenic diet would seem to be that it is shorter, simpler and easier to carry out. With the first patient, it was used in conjunction with the ketogenic diet. The seizures were stopped completely, whereas it was impossible to do this with the ketogenic diet alone. The technic employed and followed closely was that described by Sutton in the treatment of chorea minor. New York City Health Department typhoid-paratyphoid vaccine was given intravenously at the elbow if possible or, in rare instances, in the jugular vein.

Control of Rickets—Barnes protected thirty-two normal infants against rickets from November or December to April on 50 units of vitamin D given as a concentrate in milk. Six infants entering the study with slight roentgenographic signs of rickets showed progressive improvement on 50 units of vitamin D in milk a day. Since the rachitic lesions were slight, the healing processes were not striking, but they were nevertheless definite when traced throughout the series of roentgenograms. In no case did the patient grow worse during the study. A control group of twenty-five infants without antirachitic treatment during the winter were examined roentgenologically in April. Fourteen, or 56 per cent of these, showed active rickets, the remainder being normal. It is shown that for comparison of the various forms of vitamin D the ratio 40:240 for the vitamin D of irradiated milk and the vitamin D of cod liver oil does not hold. When both are given in milk the required units are approximately equal. Considering the relatively small number of infants, the error of biologic assay and the difficulty of quantitative clinical evaluation, it is not safe to say that one differs from the other. A standardized clinical procedure is necessary in order to make satisfactory quantitative comparisons of various antirachitic substances.

Neutralizing Value of Various Substances in Poliomyelitis—The experiments of Toomey on guinea-pigs show that serum obtained from Rosenow as well as commercial serum manufactured according to his method contained neutralizing bodies against the toxic factors present in the stools and urines of patients with poliomyelitis. Normal horse serum was equally good when used as a neutralizing agent against the same toxic factors present in the stools of patients with poliomyelitis. Serum from patients convalescing from poliomyelitis when injected intraperitoneally into guinea-pigs prolonged the life of the animals if they subsequently received injections of suspensions of coli paratyphoid organisms. In the dosage used, it did not prevent the ultimate death of the animal. The pathologic reaction of the cord was the same after injections of coli paratyphoid organisms as it was after injections of infantile paralysis stool emulsions. The spleen, and not the suprarenals, was the organ most involved after injections of coli paratyphoid organisms. Horse serum when injected intraperitoneally into guinea-pigs prolonged the lives of the animals that later received injections of lethal doses of coli paratyphoid suspensions. Unlike the animals which received injections of stool emulsions from patients with poliomyelitis, the pathologic reaction was most obvious in the spleen.

American Journal of Orthopsychiatry, Menasha, Wis

4 433 532 (Oct.) 1934

- Evaluation of Statistical and Analytic Methods in Psychiatry and Psychology F Alexander Chicago.—p 433
- Autosuggested Dreams as Factor in Therapy I S Wile New York.—p 449
- Therapeutic Results with Mentally Retarded Children Leona Chidester Topeka Kan.—p 464
- Study of Prepsychotic Personality in Certain Psychoses K M Bowman Boston.—p 473
- Behavior of Encephalitic Children R L Jenkins and L Ackerson, Chicago.—p 499
- Social Transformation of a Boy Who Had Lived His First Fourteen Years as a Girl Case History Grace H Dicks Cleveland and A T Childers Cincinnati.—p 508
- Value of Explicit Acknowledgment of Transference Temple Burling, Chicago.—p 518
- Anatomic Basis of Lateral Dominance Anomalies T H Eames West Somerville Mass.—p 524

Am. J Roentgenol. & Rad. Therapy, Springfield, Ill

32: 575 716 (Nov) 1934

- Some Reflections on the Digestive Process Caldwell Lecture 1934
W B Cannon Boston—p 575
- *Roentgenologic Study of Tuberculosis of Larynx and Neck H K Taylor and L Nathanson New York—p 589
- *Varix of Pulmonary Vein B H Neiman Chicago—p 608
- Fibrin Bodies in the Pleural Cavity Report of Three Cases A Shamaskin and J Rogoff Bedford Hills N Y—p 613
- Prognosis of Fractures of Vertebrae E W Hall, Detroit—p 617
- *Multiple Spontaneous Idiopathic Symmetrical Fractures L A Milkman Scranton Pa—p 622
- Primary Rectal Carcinoma Under Radiation Treatment Statistical Review of Five Hundred Cases H H Bowing and R E Fricke Rochester Minn—p 635
- *Radiation Treatment of Carcinoma of the Cervix W P Healy and A N Arneson New York—p 646
- Heublein's Method of Continuous Irradiation of Entire Body for Generalized Neoplasms L F Craver and W S MacComb New York—p 654
- Auditory Effects of Roentgen Rays in Dogs II E Girden and E. Culler Urbana Ill—p 675
- Legal Aspect of Identification and Interpretation of Roentgenograms I S Trostler, Chicago—p 680

Roentgenologic Study of Tuberculosis of Larynx—Taylor and Nathanson believe that laryngeal tuberculosis is a frequent concomitant of the malignant type of pulmonary tuberculosis and that it occurs often enough to warrant routine roentgen studies of the neck, in view of their diagnostic value. They obtain a sagittal view and can therefore gauge the height and width of the lesion as well as the presence of a subglottic extension. Small intraventricular lesions, which may be missed on mirror examination, are demonstrable on the roentgenogram. Small lesions situated deep in the interarytenoid area are not detected on the roentgenogram. Roentgen examination gives a permanent pictorial record of the location, extent and progress of the lesion. It is essential to have at least two roentgenograms of the larynx—one taken at rest and the other during phonation in addition to the roentgenoscopic study.

Varix of Pulmonary Vein—Neiman reports a case of varix of the pulmonary vein. The patient entered the hospital because of a sudden paralysis of the left arm and left leg. Clinically the signs and symptoms pointed toward an intrapulmonary lesion (cyanosis with some difficulty in breathing). The roentgen examination of the chest revealed a well circumscribed lobulated tumor-like shadow of even density occupying the upper lobe of the left lung. This shadow fused with the heart and diaphragm in the postero-anterior view of the chest. Roentgenoscopically it was possible to separate this tumor from the heart shadow and to show that it had no relation to the ascending aorta. These, with the conditions found on clinical examination and the fact that comparison with a roentgenogram taken three years ago showed no change in size or shape, suggested a benign tumor of the lung. The mass was too well circumscribed and of too long duration to be a primary carcinoma of the lung. It was not in the mediastinum at roentgenoscopy, therefore a mediastinal tumor could be excluded. Since the shadow that the pulmonary varix casts on the roentgenogram is sharply circumscribed in character, it serves to distinguish it from conditions that are of an inflammatory genesis. Tuberculous lesions and abscesses may be distinguished from this condition because of the presence of the irregular peripheral inflammatory infiltrations in the former. The two conditions that resemble pulmonary varices are chondroma and solitary echinococcus cyst of the lung. However, since echinococcus cysts and chondromas are the most common benign tumors of the lung, the problem of diagnosis would rest in differentiating these conditions from pulmonary varix. As regards the periphery, the pulmonary varices are invariably nodular. The chondromas are similarly nodular, even though these irregularities may be slight while the echinococcus cyst is either perfectly smooth or presents slight inflammatory infiltrations in the immediately adjacent lung tissue. Frequently present in chondromas is the patchy, irregular distribution of lime salts, due either to simple calcification of the cartilage matrix or to true ossification. Calcification of the laminated chitinous lining membrane of the echinococcus cyst is occasionally present but is a more uniform process. In pulmonary varices it has been observed in small amounts. If the nodular periphery is present on the roentgenogram together with symptoms of cyanosis, dyspnea, cough, clubbing of the fingers or

toes and intermittent hemoptyses, with an absence of serologic and clinical evidence of echinococcus infestation, one should think of a pulmonary varix.

Multiple Spontaneous Idiopathic Symmetrical Fractures—Milkman describes a skeletal disease that is progressive, fails to respond to medication and may end fatally. He presents a case history, with reports of serial roentgen examinations over a period of eight years with postmortem observations. The characteristics of the disease are the disturbance in gait, pains in the back and peculiar multiple symmetrical involvement of the skeleton. The characteristic roentgenographic appearance is bands or zones of increased transparency seen throughout the involved bones of the skeleton. They are multiple and symmetrical. In the author's case, forty-three fractures occurred. A differential diagnosis may be made between this disease, late rickets, osteomalacia and fragilitas ossium. Pathologists differing in their interpretation of the microscopic appearance show the limitation of bone pathology in its ability to differentiate obscure osseous changes. The parathyroids are not involved so far as pathologic study is able to determine. The etiology is unknown. The postmortem observations of increased vascularity at the transparent zones suggest some trophic disturbance. The author states that, while it may be a worthy aim on the part of the pathologist to try to unite diseases of the bone into certain distinct groups, as von Recklinghausen, Looser, Schmidt and Wilton, the scientific attitude is first to separate the different entities into definite, distinct, individual diseases before grouping them under one disease entity.

Radiation Treatment of Carcinoma of the Cervix—Healy and Arneson changed their usual plan of external irradiation with x-rays in twenty-five cases of squamous epidermoid cancer and one case of adenocarcinoma (all involving the cervix) in order to increase the amount of effective radiation given to the pelvic field adjoining the cervix, with the thought of controlling the disease in advanced cases for a longer period and possibly thereby to increase the proportion of permanent cures in such cases. The dosage delivered was 200 roentgens to each of two pelvic fields daily for a total of from 2,000 to 2,400 roentgens, without severe local or constitutional reactions. Clinical and histologic evidence of regression of the cancer in the cervix indicated that regression might also be reasonably expected in the disease in the parametrium for this amount of external roentgen irradiation. It would seem possible through these observations to plan a roentgen pelvic cycle that will deliver a tissue dosage adequate for control of cancer in the parametrium and outlying pelvic field without severe damage to normal structures. The authors believe that the opportunity offered to observe the coincident changes in the primary lesion may be utilized to advantage to follow the effects taking place in the parametria. Radium, however, should always be used for treatment of the primary lesion. In the earliest cases, with a small lesion limited to the cervix and without gross enlargement of the cervix, the radium treatment should be carried out before the roentgen cycle is given.

American Journal of Tropical Medicine, Baltimore

14 497 592 (Nov) 1934

- Natural and Experimental Infection of *Triatoma Protracta* Uhler and Mammals in California with American Human Trypanosomiasis. F D Wood San Francisco—p 497
- *Protective Power of Yellow Fever Serums and Dengue Serums Against Yellow Fever Virus E P Snijders S Postmus and W Schaffner Amsterdam the Netherlands—p 519
- Laboratory Infections with Virus of Rift Valley Fever S F Kitchen New York—p 547
- Direct Development of Hookworms After Oral Infection A O Foster and S A Cross Baltimore—p 565
- Dextrose Tolerance Test in Leprosy D G Lai Shanghai China—p 575

Protective Power of Yellow Fever and Dengue Serums Against Yellow Fever Virus—Snijders and his associates discuss the hypothesis that under special conditions dengue might provoke a certain immunity to yellow fever. A more sensitive adjustment was devised in Theilers as well as in Sawyer's mouse protection test in order to avoid the risk of missing moderate and lower degrees of immunity. The modifications applied to the technic are described. As a control for the technic five serums of former yellow fever patients were

examined By Theiler's method a distinct protection could be demonstrated in all cases, by Sawyer's method protection was evident in three cases The examination of the serums of five assistants working more or less regularly in the yellow fever laboratory revealed a weak protective action in two of them, both by Theiler's method and by the modification of Sawyer's test Considering that these two persons came into the most intimate contact with the yellow fever material, it is believed that they must have had mild (abortive) attacks of yellow fever at some time in the past The serums of twenty volunteers, who had been experimentally inoculated with virus of Sumatran and Javanese dengue, were tested by both methods, in several instances the tests were repeated Despite the sensitive adjustment of the tests, a protective action against yellow fever virus could not be demonstrated A comparison of the immunity in dengue and in yellow fever indicates that in dengue the immunity shows considerable individual variation with regard to intensity and duration, and specific antibodies cannot be demonstrated in the serum In yellow fever the immunity is almost absolute and antibodies are almost always present in the serum in high concentration

Annals of Medical History, New York

6: 475 568 (Nov) 1934

- Sir Francis Seymour Haden Estelle C Bick New York —p 475
Sinhalese and South Indian Ceremonials in Prevention and Treatment of Disease C A Wood Chicago —p 483
Baron Shibasaburo Kitasato H Fox Philadelphia —p 491
History of Stomach Tube R H Major, Kansas City Mo —p 500
Rejuvenations and Satyricons of Yesterday P S Codellas San Francisco —p 510
Aesculapius Among the Augustans Minna Lewinson New York —p 521
Medicine Among the Iroquois E Stone Providence R I —p 529
Tuberculosis and Genius Robert Louis Stevenson L J Moorman Oklahoma City —p 540

Annals of Surgery, Philadelphia

100 1043 1212 (Dec) 1934

- Results of Operations on Painful Hips W R Bristow London England —p 1043
*Anterotheracic Esophagoplasty for Impermeable Stricture of the Esophagus A Ochsner and N Owens, New Orleans —p 1055
Treatment of Empyema J F Connors New York —p 1092
Observation on Chronic Empyema W Martin New York —p 1096
Putrid Empyema Ruptured Putrid Abscess of Lung H Neubof New York, and S Hirschfeld Los Angeles —p 1105
Diverticula of Small Bowel F W Rankin Lexington Ky and W J Martin Jr Louisville Ky —p 1123
Polycystic Disease of Kidney G D Oppenheimer New York —p 1136
*Postoperative Wound Complications E L Eliason and C McLaughlin Philadelphia —p 1159
*Abdominal Wall Defects Following Appendicectomy G A Carlucci New York —p 1177

Esophagoplasty for Stricture of the Esophagus—Ochsner and Owens feel that anterotheracic esophagoplasty should be used only in cases of absolutely impermeable benign stricture of the esophagus or in cases of carcinoma in which the tumor has been extirpated The best results have been obtained in those cases in which the operation has been accomplished by using a segment of colon and those in which a newly formed esophagus has been constructed out of a loop of jejunum and a skin tube In mobilizing a jejunal loop the attempt should never be made to secure a loop of such length that the blood supply of the intestine will be in jeopardy This has been responsible for the high incidence of failure and fatalities in the jejuno-esophagoplasties in which an attempt was made to form the esophagus entirely from the jejunum The first stage of the jejunoentero-esophagoplasty should consist of the mobilization of the jejunal segment This should be brought up through the lesser sac, completely mobilized, and the distal end anastomosed to the stomach care being taken not to have a dependent loop The proximal end should be brought up through a skin tunnel anterior to the thorax The upper end of the jejunum which is brought out through a small transverse incision is sutured to the skin edges without the intestine being opened The second stage should consist of the formation of the skin tube and the immediate completion of the junction between the skin tube and the jejunum This is accomplished by extending the lateral incision for the formation of the skin tube down and round the jejunal opening In this way a flap is produced which can be mobilized upward

to be anastomosed to the skin tube, covering over the opening of the jejunum Following this, the newly formed skin tube, the anastomotic site and the defects produced by the mobilization of flaps are covered by mobilizing skin flaps on either side Relaxing incisions are necessary Sufficient time is allowed to elapse between completion of this stage and the third stage of the esophagoplasty for the wound to heal completely As a third stage the cervical esophagus is mobilized after a curved incision has been made, the incision passing along the anterior border of the sternocleidomastoid to a point just above the clavicle and then coursing laterally The esophagus is mobilized well into the mediastinum The upper end of the previously formed skin tube is freshened by a transverse incision, and the skin forming the lining of the tube is separated from the skin covering it The esophagus is mobilized well down into the mediastinum, doubly clamped by means of right-angled clamps and divided transversely The lower end is closed blindly by means of inverting sutures The upper end is brought up into the wound and the distal segment of the upper end is invaginated into the upper end of the skin tube The suture of the esophagus with the skin tube is accomplished by interrupted sutures passing through the subcutaneous tissue of the skin tube and barely catching the wall of the esophagus, care being taken not to penetrate into the lumen of the esophagus or to pass through the epidermis of the skin tube In this way salivary secretions are discharged into the lumen of the skin tube without any danger of their coming in contact with the suture line The skin flap is then replaced over the suture line, after a drain has been placed in the mediastinum Because of the possibility of mouth contamination, Vincent's infection should be looked for, and, even if it is not found, it seems advisable to give neosarsphenamine as a prophylactic procedure

Chronic Empyema—Martin believes that the cause of chronic pyogenic empyema lies in the reaction of the tissue to repeated slight infection of the pleura that such infection can be avoided by careful supervision of the treatment of the empyema cavity during the subacute stage, that a secondary operation with the removal of rib, and free drainage, will prevent extensive later operations, that when chronic empyema has developed surgical measures result in the starting of healing and the gradual obliteration of the cavity by making to some extent the rigid walls yielding, and finally that the residual thickened pleura resolves and becomes thin when the cavity is obliterated

Postoperative Wound Complications—In 9,155 general surgical procedures Eliason and McLaughlin observed 351 imperfect wounds, an incidence of 3.81 per cent Reduction of the amount of catgut under the subcutaneous tissue has been the most important factor in reducing the incidence of serum collections Contamination of the wound by infectious material handled at operation is one of the most frequent causes of superficial wound infection Drainage of the superficial layers of all wounds in which soiled material is handled will materially reduce the incidence of wound infections that do not interfere materially with convalescence 'Wide open' drainage with adequate separation of the wound edges is the most logical and satisfactory method of handling a wound infection No effort should be made to close amputation stumps following operations for infected diabetic gangrene in which pretibial edema, extending halfway to the knee, is demonstrable A definitely stormy postoperative course usually precedes the development of a wound rupture This was true in 88 per cent Wound disruption is usually observed between the fifth and eighth postoperative days, 80 per cent being diagnosed during this period The treatment of ruptured wounds with packing and adhesive straps is the safest method for the patient Peritonitis is the most common cause of death following wound disruption

Abdominal Wall Defects Following Appendicectomy—In 700 cases of appendicitis operated on through an incision in the right lower quadrant of the abdomen, Carlucci found that eighty-three, or about 12 per cent, had some postoperative abdominal wall defect These ranged from a simple weakness to hernias involving the whole length of the incision The value of accurate and repeated follow-up examinations is defi-

nately brought out by a study of this type. It is well demonstrated that cases in which the operation has been performed through a split rectus incision are followed by approximately twice as many defects as the intramuscular ones. It is also proved that the defects are about double in men as compared to women. Respiratory complications following the operation apparently have no bearing on the development of these weaknesses. In cases of appendical abscess in which the abdominal wall was not sutured or was only loosely approximated, many incisional hernias followed. On the other hand, fecal fistulas alone did not seem to produce any defect. Pregnancy and parturition even in cases in which drainage has been done apparently did not cause the incision to give way. That weaknesses and even hernias disappear as time goes on was well brought out. The records also proved that hernias could develop suddenly a year or more after the original operation. Only thirty-two were classified as incisional hernias. It is the author's impression, however, that a fair number classified as bulges are hernias with a large opening. In conjunction with this thought there is the possibility also that some of the bulges may be incomplete disruptions of the wound, that is, the external oblique fascia or anterior sheath has held, but the peritoneum and the overlying muscle have given way. To clear up this point it seems that more care should be given to the description of the pathologic changes found at operation when these defects are repaired.

Archives of Ophthalmology, Chicago

12 805 1002 (Dec.) 1934

- Lectures on Motor Anomalies of the Eyes. I. Physiologic Introduction. A. Bielschowsky, Breslau, Germany—p. 805.
Role of Gonococcus in Purulent Ophthalmia in Warm Climates. A. F. MacCallan, London, England—p. 819.
Surface Anesthesia in Ophthalmology. Comparison of Some Drugs Used. J. G. Bellows, Chicago—p. 824.
*Action of Epinephrine on Normal Human Eye. Use of Stronger Solutions for Instillation. S. C. Howell, Atlanta, Ga.—p. 833.
Detachment of Retina. Treatment with Electrolysis Needle. A. Vogt, Zurich, Switzerland—p. 842.
Orthoptic and Surgical Management of Strabismus. Report of Sixty Cases. J. P. Lordan, Los Angeles—p. 843.
Adenocarcinoma of Meibomian Gland. A. Hagedoorn, Amsterdam, The Netherlands—p. 850.
Method for Study of Retinal Circulation. R. K. Lambert, New York—p. 868.
A Family of Squinters. F. H. Rodin, San Francisco—p. 874.
*Unilateral Ophthalmoplegia Totalis. Parasellar Osteochondroma. Report of Case. J. M. Levitt, Brooklyn—p. 877.
Practical Details in Orthoptic Treatment of Strabismus. G. P. Guibor, Chicago—p. 887.
Pellagra as Cause of Optic Neuritis. Report of Case. J. Levine, New York—p. 902.

Action of Epinephrine on Normal Eye—Howell states that the instillation of a 2 per cent solution of epinephrine into the conjunctival sac of the normal eye is usually, though not always, followed by a reduction in the intra-ocular tension. The drop in pressure may occur within one hour, but in most cases it is not obtained until later. A similar lowering of tension, though of much less degree, may be seen in the opposite eye. Mydriasis usually occurs within one hour and disappears within twenty-four hours. Following dilatation of the pupil of the normal eye, there is no tendency toward a sustained or material increase in the intra-ocular tension. Absorption of epinephrine from the ocular conjunctiva may produce systemic effects in susceptible persons. Solutions of epinephrine, since they do not produce an increase in intra-ocular tension, are a suitable mydriatic for use in studies of the fundus and media of eyes in which atropine or its derivatives might be dangerous.

Unilateral Ophthalmoplegia Totalis—Levitt reports the case of a woman, aged 20, who complained of left-sided headache and other symptoms referable to loss of motility and paralysis of accommodation of the left eye. Ocular examination revealed moderate ptosis, almost complete ophthalmoplegia totalis and slight exophthalmos of the left eye and a bilateral corneal hypesthesia. General physical and neurologic examinations and laboratory studies yielded negative results. Roentgenograms of the skull served to localize a calcified parasellar neoplasm on the left side. Operation disclosed a tumor at the junction of the left sphenoid ridge and the anterior clinoid process. Microscopic examination showed an osteochondroma with secondary changes. The tumor was probably derived

from the sphenoid bone. The ocular changes were the result of compression of the trunks of the third, fourth, first division of the fifth and the sixth cranial nerves coursing in the left cavernous sinus. Two months after operation the upper lid of the left eye returned to a normal position, and the functions of the external and internal rectus muscles were partly restored. The case represents an early type of basal intracranial tumor and illustrates the clinical syndrome of the external wall of the cavernous sinus in a pure form without masking features.

Arch. of Physical Therapy, X-Ray, Radium, Chicago

15 641 704 (Nov.) 1934

- Temperature Determinations During Local Application of Diathermy. Preliminary Report. W. Bierman, New York, and L. A. Tarbell, New Haven, Conn.—p. 645.
Newer Concepts in Colon Therapy. W. W. Worster, San Gabriel, Calif.—p. 650.
Physicochemical Basis of Physical Therapy. R. Beutner, Louisville, Ky.—p. 654.
Treatment of Bazin's Disease with Mercury Quartz Lamps. J. Echtman, New York—p. 659.
Physical Therapeutic Measures in Sound Conduction Impairment. E. G. Linn, Des Moines, Iowa—p. 663.
Rachitic Diathesis in Infant and Adult Life. G. J. Warnsbuijs, Milwaukee—p. 668.
Occupational Therapy in Traumatic Conditions. Sue P. Hurt, New York—p. 673.
Ultraviolet Rays in Vincent's Stomatitis. A. T. Rasmussen, La Crosse, Wis.—p. 676.
Tonic Effects of Combined Light and Air Baths. A. B. Olsen, Battle Creek, Mich.—p. 680.
Place of Physical Therapy in Organization of a General Hospital. R. Kovacs, New York—p. 685.

Archives of Surgery, Chicago

29: 895 1082 (Dec.) 1934

- Factor of Spasm in Etiology of Peptic Ulcers. M. E. Steinberg and P. H. Starr, Portland, Ore.—p. 895.
Malignant Lymphoma of Gastro-Intestinal Tract. A. C. Pattison, Iowa City—p. 907.
Spasm of the Orbicularis Oculi in Local Tetanus. K. P. A. Taylor, Havana, Cuba—p. 923.
Undifferentiated Mullerian Duct in Man. Unusual Congenital Anomaly as Complication of Inguinal Hernia. J. H. Heyl, New York—p. 929.
Anomalies of Intestinal Rotation as Cause of Intestinal Obstruction. Report of Two Personal Observations. Review of One Hundred and Three Reported Cases. C. E. Gardner, Jr. and D. Hart, Durham, N. C.—p. 942.
General Sensations in Pedunculated Flaps of Skin. J. S. Davis and E. A. Kittowski, Baltimore—p. 982.
Gastric Acidity as Influenced by Pyloric Closure and Stenosis. R. Elman and C. T. Eckert, St. Louis—p. 1001.
*Acute Pancreatitis. H. Koster and L. P. Kasman, Brooklyn—p. 1014.
Cerebral Blood Flow. III and IV. C. Pulcher and C. Thuss, Nashville, Tenn.—p. 1024.
Absorption of Dextrose from Colon. W. W. Ebeling, Philadelphia—p. 1039.
End Results of Operation on Thyroid Gland. C. O. Rice, Minneapolis—p. 1047.
Influence of Exposure to Cold and of Deprivation of Food and Water on Development of Shock. A. Blalock, Nashville, Tenn.—p. 1055.
*Therapeutic Use of Concentrated Antistreptococcus Serum of New York State Department of Health in Cryptogenic Streptococcemia and Osteomyelitis of Children. Adele E. Sheplar, Martha Jane Spence and W. J. MacNeal, New York—p. 1069.
Fifty-Fifth Report of Progress in Orthopedic Surgery. J. G. Kuhns, E. F. Cave, S. M. Roberts and J. S. Barr, Boston; J. A. Freiberg, Cincinnati; J. E. Milgram, New York, and R. I. Stirling, Edinburgh, Scotland—p. 1076.

Acute Pancreatitis—Koster and Kasman cite twenty-two cases of acute pancreatitis with a total mortality rate of 22.7 per cent. Seven of the cases presented the typical picture of a sudden onset of severe epigastric pain followed by continuous vomiting and associated with prostration and cyanosis. In two cases presenting a similar picture there was an indefinite previous history of a condition simulating gastric ulcer, which was diagnosed as such. In another case diagnosed as acute pancreatitis accompanied by obstruction of the common duct by calculi and cholangitis of a duration of two weeks there was no shock or cyanosis, but the patient was deeply jaundiced. The remainder of the cases presented a less precipitous onset, which was suggestive of acute disease of the biliary tract. Attention is drawn to the fact that this last group of cases occurred most commonly in persons less than 36 years of age. It is suggested that in making the diagnosis acute pancreatitis should be suspected in every case presenting a history and symptomatology suggesting an acute exacerbation of disease of the biliary tract. Immediate and complete operation, which

includes cholecystectomy if the gallbladder is diseased or contains calculi, probing of the ducts to assure freedom from calculi or to allow for their recognition and removal, drainage of the biliary tract and examination of Wirsung's duct, in addition to treatment of the pancreatic lesion and the associated peritonitis, is advocated.

Therapeutic Use of Concentrated Antistreptococcus Serum—Sheplar and her associates treated twenty-six patients with the special concentrated antistreptococcus serum of the laboratory of the New York State Department of Health. There were five patients with generalized or metastatic infection without a clinically recognizable port of entry. These patients were brought under observation in the hospital after invasion of the blood stream had taken place. It is uncertain whether the site of the initial invasion could or could not have been recognized at an earlier time. The ages of the patients ranged from 2 weeks to 5 years. In the first case the first dose of serum was administered two days after a blood culture was recognized as positive. This was on the day before death at a time when meningitis must have already been present, according to necropsy. The second patient became ill with fever and the serum was administered ten days later when the blood culture taken two days before had shown positive growth. Necropsy revealed an acute vegetative mitral endocarditis with associated septic complications. In the fourth case the serum treatment was initiated eight days after the positive blood culture was taken and four days after the recognition of meningitis. In the third case, seven days after an operation for osteomyelitis the surgeon asked for the assistance of bacteriotherapy because of the impression that the disease was due to the staphylococcus. When the bacteriologic studies disclosed the true etiology, the streptococcus serum was administered in two days. There was a moderately severe serum rash four days later, but in other respects the behavior of the patient left little to be desired for nearly a month. The fifth patient had already suppressed the original invasion of the blood stream. The serum was employed as a safeguard against lighting up a streptococcal infection still persisting in the arm. The actual result was all that had been desired. Whether the patient would have done as well without the serum remains undetermined. In the authors' experience specific bacteriotherapeutic measures are most often instituted after too much delay. Their first, second and fourth cases represent examples. In the third case the earlier administration of the serum came about through a misapprehension. The bacteriologists were called in consultation in the hope of treating a staphylococcal infection with bacteriophage and, once this contact with the patient had been made, the early administration of streptococcus serum became possible. The authors conclude that, in vegetative endocarditis due to the hemolytic streptococcus and in meningitis coupled with bacteremia due to the same organism, the therapeutic use of antistreptococcus serum, in their hands has not been successful.

Arkansas Medical Society Journal, Fort Smith

31: 109 126 (Dec.) 1934

- Uterine Hemorrhage I F Jones Fort Smith—p 109
 *Agranulocytic Leukopenia with Multiple Peripheral Neuritis F J Scully Hot Springs National Park—p 113
 Five Unusual Paralytic Cases Following Gastro-Intestinal Disturbances W B Grayson and G Hastings Little Rock—p 114

Agranulocytic Leukopenia with Multiple Peripheral Neuritis—Scully reports a case of agranulocytic leukopenia in which multiple peripheral neuritis developed during the course of the disease. There was no history of the use of any barbiturate and amidopyrine preparations. Pentnucleotide was used in the treatment of the neutropenia because of the favorable results that had been reported by Jackson and his associates and because of the lower mortality rate that was noted by Doan in comparison with other methods of treatment. The case presented the typical appearance of an agranulocytic angina but was unusual because of the complicating multiple peripheral neuritis. The marked inflammation of the throat was evidently the source of the toxins that produced the neutropenia while at the same time affecting the peripheral nerves. It is possible that if the condition had been recognized earlier and treatment instituted at that time, the damage to the peripheral nerves might have been avoided.

Illinois Medical Journal, Chicago

66 501 588 (Dec.) 1934

- Diagnosis and Treatment of Infection of Urogenital Tract in Childhood I A Abt, Chicago—p 521
 *Chronic Cicatrizing Enteritis Regional Ileitis (Crohn) D C Cushway Chicago—p 525
 Physiologic Effects of Vitamin Deficiencies as Summarized Briefly from Recent and Authenticated Research Experiments Mildred Oncken Chicago—p 533
 Allergic Diseases in Childhood W L Crawford Rockford—p 535
 Darkfield Diagnosis of Infectious Syphilis H E McDaniels Chicago—p 541
 Improperly Directed Birth Control Propaganda Effie L Lobdell Chicago—p 545
 Radiation Therapy of Gas Bacillus Infection J J Faust, Decatur—p 547
 Sanitation of the Country Home R Oden Chicago—p 551
 Modern Conception of Cancer of Larynx M R Guttman Chicago—p 553
 Cardiac Functional Diagnosis F M Meixner Peoria—p 559
 Fetal Peritonitis in a Premature Infant Operation and Recovery G L Davenport and S L Goldberg Chicago—p 563
 Folliculin Cyst of Ovary Presenting Symptoms of Pregnancy W W Voigt Chicago—p 565
 Cyst of the Epiglottis and Other Laryngeal Cysts G H Woodruff Joliet—p 569
 Hypertensive Heart Disease R S Berghoff Chicago—p 573
 Some Civil Legal Aspects of Christian Science I H Rubenstein Chicago—p 579

Chronic Cicatrizing Enteritis—Cushway presents a brief review of the literature of so-called "infectious granuloma" together with recent reports of this condition under the name "regional ileitis" and "cicatrizing enteritis." It seems to him that the term "cicatrizing enteritis" describes this condition best. Three cases are reported, two of which have been proved by definite pathologic changes. The third case is doubtful as to pathologic classification but showed the clinical and roentgenographic observations of "cicatrizing enteritis." The author believes that this pathologic condition may occur with a fair degree of frequency. The diagnosis can be made preoperatively only from roentgenologic studies. Crohn Ginzburg and Oppenheimer, in isolating this condition from the confusion of benign inflammatory lesions, have demonstrated a new disease entity. Harris Bell and Brunn have further clarified the situation by suggesting what seems to be a more descriptive term. The disease occurs mostly in young adults with symptoms of ulcerative colitis. Often these cases may be mistaken for appendicitis and operation may be performed. The disease eventually leads to obstruction of the small intestine with characteristic symptoms of obstruction. The physical observations are those of a tumor mass in the region involved with quite commonly the formation of a fistula. There is no definite known etiology. The pathology is constant both macroscopically and microscopically. The disease is benign and is most commonly found in the terminal ileum. The author hopes to stimulate an interest in this pathologic condition so that the roentgenologist will be on the alert and ready to recognize it.

Indiana State Medical Assn. Journal, Indianapolis

27 505 554 (Nov. 1) 1934

- The Indiana State Medical Association as Factor in Medical Education E E Padgett Indianapolis—p 505
 Relief of Pain in Sinusitis W C Reed Bloomington—p 508
 Hypertension Observations on Two Hundred and Ninety Three Examinations of Fifty Cases of Essential Hypertension A G Moore Decatur Creek—p 509
 Lung Tuberculosis in Children I C Barclay P D Crimm C C Johnson H Lynch, Evansville and C C Wilson New Haven Conn—p 512
 Gas Gangrene Treated by Antiserum Case Report P T Holland and R D Smith Bloomington—p 515
 Indications for Operation in Gallbladder Disease H S Leonard Indianapolis—p 515
 Indigent Relief Work W Coy Indianapolis—p 518

27 555 604 (Dec. 1) 1934

- The Problems of Acute Appendicitis I S Ravdin Philadelphia—p 555
 Diagnosis and Treatment of Uterine Bleeding L E Burch Nashville Tenn—p 560
 Undulant Fever (Brucellosis) with Reference to One Hundred and Forty Eight Cases Encountered in and About Dayton Ohio W W Simpson Dayton Ohio—p 564
 Fundamentals of Infant Feeding H D Lynch Evansville—p 571
 Ocular Manifestations of Systemic Disease B J Larkin Indianapolis—p 574
 The Tuberculin Test W H Mytinger Lafayette—p 579

Iowa State Medical Society Journal, Des Moines

24 549 602 (Nov.) 1934

- The Relationship of Otolaryngology to General Medicine J J Shea, Memphis Tenn.—p 549
 Lacrimal Duct Stenosis R F French, Marshalltown—p 555
 Headaches Their Etiology and Differential Diagnosis C C Jones, Des Moines.—p 559
 Painful Shoulder Syndrome T B Throckmorton, Des Moines—p 565
 Early Rupture of Membranes E. B. Woods Des Moines—p 571
 Acute Intestinal Obstruction B R. Weston Mason City—p 573
 Possibilities for Race Betterment Eleanor Hutchinson, Belle Plaine—p 577
 Prevention of Rocker Sole in Club Foot Correction V A Ruth Des Moines—p 580
 Intestinal Obstruction Due to Gallstone M C Hennessy, Council Bluffs—p 581

Journal of Infectious Diseases, Chicago

55 243 414 (Nov Dec.) 1934

- Survey of Workers in Packing Plants for Evidence of Brucella Infection Lucy S Heathman Minneapolis—p 243
 Staining of Processes (Flagella) of Human Erythrocytes W W Oliver Brooklyn—p 266
 *Precipitinogenic Action of Human Plasma and Its Constituents L Hektoen and W H Welker Chicago—p 271
 Paratyphoid B in Western Norway Bacteriology Symptomatology Morbid Anatomy and Epidemiology of Infection with Bacillus Paratyphosus B T M Vogelsang Bergen Norway—p 276
 Infectious Dermatitis of Certain Marine Fishes C E ZoBell and N A Wells La Jolla Calif—p 299
 *Relationship of Morphology of Diphtheria Bacillus to Its Virulence Josephine J Jarema and L W Smith New York—p 306
 Experimental Sumatran Mite Fever in Guinea Pigs W Kouwenaar and J W Wolff Medan Dutch East Indies—p 315
 Dissociation of the Gonococcus Clara Raven Chicago—p 328
 *The Cultural and Agglutinative Relationships of Intestinal Streptococci J C Torrey and Elizabeth Montu New York—p 340
 Selective Action of Gentian Violet on Enzymes A. Y. Wells and N P Sherwood Lawrence Kan—p 356
 Determination of Minute Amounts of Tetanus Antitoxin in Serum R P Knerr and G A Hottle, Philadelphia—p 360
 Streptococcus Food Poisoning E O Jordan and W Burrows Chicago—p 363
 Dissociation and Filtration of Lactobacillus Acidophilus N Kopeloff New York—p 368
 Experimental Production of Abscesses with Fusiform Bacilli by Aid of Scillaren B Ruth Tunnichiff and J Klein Chicago—p 380
 Serologic Relationship of Brucella and Pasteurella. L E Starr and G E Snider Blacksburg Va—p 384
 Salmonella Aertrycke Variant as Etiologic Agent of Paratyphoid in Pigeons E. Jungherr and K S Wilcox Storrs Conn—p 390
 Bordet Gengou and Lowenstein Mediums in Detecting Tubercle Bacilli in Sputum Substitute for Guinea Pig Inoculation Lucy Mishulow Marie Romano Mildred Melman and Camille Kereszturi New York.—p 402

Precipitinogenic Action of Human Plasma and Its Constituents—Hektoen and Welker found that the intramuscular injection of human plasma or human serum into rabbits, especially when absorbed by aluminum hydroxide, results in a production of specific precipitins which may be continued for months. The precipitin reaction of human plasma or serum appears to result from the single or conjoint action of individual specific precipitins against the various antigens in the plasma or serum.

Relation of Morphology to Virulence of Diphtheria Bacillus—During the course of the routine examination of 592 nose and throat cultures for virulent diphtheria bacilli, Jarema and Smith observed the following relationship between the morphology and the virulence of the organism. A greater percentage of virulence was obtained from mixed cultures of the diphtheria bacillus than from cultures of pure types. Cultures of diphtheria bacilli that were morphologically of the BT type, that is, bacilli which showed a tendency to bulge at one or both poles or anywhere along the body of the bacillus, were always found by inoculation of animals to be virulent. Of the virulent strains of diphtheria bacilli isolated, 59 per cent were of the BT type. Very distinct types of BT—a meta-chromatic granular bulging type and a blue mixture bulging type—may be considered virulent without the inoculation of animals. The elimination of the inoculation of animals with the BT type of the diphtheria bacillus would result in a saving of time and material. A clinical correlation was found between the presence of the BT type and the severity of the course of the disease in patients. Repeated virulence tests on cultures from diphtheria carriers and from patients with clinical diphtheria showed an apparent definite relationship between the morphology and the virulence of the diphtheria organism.

Cultural and Agglutinative Relationships of Intestinal Streptococci—According to Torrey and Montu, no specific serologic type of enterococcus or diplostreptococcus was found associated with the lesions of nonspecific ulcerative colitis. Although one or more serologically related groups may be demonstrated by agglutination tests among enterococci isolated from the intestine showing structural changes, members of such groups show differences in antigenic constitution as revealed by reciprocal agglutinin absorption inconsistencies. No correlation is apparent between fermentative activities, resistance to heat and other biologic characteristics of enterococci and serologic relationships. Micrococcus zymogenes is a variant of the enterococcus. Strains of enterococci serologically related to the type reported by Saunders as specific for gastric and duodenal ulcers were found in the intestine but more frequently in patients showing intestinal lesions than in normal adults.

Journal of Nervous and Mental Disease, New York

80 629 756 (Dec.) 1934

- The Brain Changes in Chronic Alcoholism and Korsakow's Psychosis F J Warner Elgin Ill—p 629
 Constructive Apraxia Psychologic Views on Conception of Space. L van der Horst Amsterdam Holland—p 645
 Pseudotabes Pituitaria W Needles, New York—p 651
 Clinical Studies on Particular Types of Depressive Psychoses Their Differential Diagnosis from Schizophrenic Pictures and Some Remarks on Psychology of Depressions P Schilder New York—p 658

Journal of Urology, Baltimore

32 541 728 (Dec.) 1934

- *The Etiology of Stone J S Joly London, England—p 541
 Method of Hemostasis During Nephrotomy for Large Kidney Calculi G C Prather Boston—p 578
 Treatment of Bilateral Renal and Ureteral Calculi R. E. Cumming Detroit—p 600
 *Calculus Anuria in Acquired Single Kidney L Herman and L B Greene Philadelphia—p 623
 *Horseshoe Kidney and the Relation of Nephritis and Calculous Formation to Anomalous Circulation Report of Twenty Five Cases H Sangree D Morgan, T Klein and R Tran, Philadelphia—p 648
 Prostatic Calculi H H Young Baltimore—p 660
 Filariasis of Spermatid Cord and of Epididymis J C Ferrer, San Juan Puerto Rico—p 710

The Etiology of Stone—Joly, in his discussion of the etiology of calculus, believes that the hypothesis that stone is a deficiency disease is the most plausible and probable that has been advanced. It not only explains all the principal features of the condition known today but also gives a reason for the changes in its incidence during past years. He believes that the vitamin starvation acts primarily on the renal epithelium and through it on the colloid mechanism of the urine and that, once this mechanism is deranged, formation of stone must follow as a direct result of the laws of physical chemistry.

Calculus Anuria in Acquired Single Kidney—Herman and Greene discuss calculus anuria occurring in single kidneys of surgical origin. The literature of the last five years contains reports of nineteen cases, to which the authors add four personal cases. The nephrectomized person, with few exceptions is in little danger of calculus anuria, but this immunity is far greater in patients nephrectomized for conditions other than calculus pyonephrosis and those in whom the remaining kidney is normal at the time of operation. The available reports concerning the condition of the remaining kidney are meager. The authors have encountered a few anuric cases in which a stone was known to be present in the remaining kidney at the time of nephrectomy, but there were several, including one of their own cases, in which the remaining kidney had been operated on previously for stone. From their study they conclude that anuria with acquired single kidney is less fatal if properly treated than other types of obstructive anuria. Calculous anuria seldom occurs after nephrectomy for conditions other than calculus pyonephrosis. It apparently is rare if the remaining kidney is normal at the time of the original operation. It is prone to occur in the nephrectomized cystinuric patient. In the majority of cases the indwelling catheter should be employed to overcome the anuria in preparation for removal of the obstructive stone or stones. Certain small ureteral calculi, especially if impacted in the lower ureter, may be removed by cystoscopic methods. The primary purpose of operation is to establish free urinary drainage. This may be accomplished by

operation on the kidney or ureter as circumstances dictate, but primary ureterolithotomy is especially indicated in the case of large ureteral stones. In serious cases and especially those in which operation has been previously performed, nephrotomy with or without removal of the obstructive stone or stones is the method of choice. In the majority of cases the obstructive stone or stones may be removed without the infliction of too much damage to the kidney.

Horseshoe Kidney—Sangree and his co-workers state that symmetrical horseshoe kidneys most commonly fuse by the lower pole, constituting the long kidney. They rarely fuse by the upper pole. Various degrees of dystopia and inclination to one side or the other may occur, represented by the 'caked' kidney, the 'sigmoid' and the L shaped kidney, these are classed as asymmetrical types. Fused kidneys are more commonly the seat of pathologic changes especially those incident to urinary stasis, than are normal kidneys. All surgical procedures on horseshoe kidneys should consider the possibility of anomalous vessels, often multiple in number and variable in position. The wedge shaped arrangement of calculi in a urographic examination should suggest the presence of a fused kidney. Concomitant congenital anomalies should always be investigated in a study of a case of horseshoe kidney. Horseshoe kidney disease should be considered in every patient with an abdominal mass and the triad of symptoms of umbilical or lumbar pain, gastro-intestinal disorders and urinary disturbances.

Laryngoscope, St. Louis

44:847-926 (Nov.) 1934

- How to Obviate Failures in Results of Surgery in Otolaryngology
I How to Obviate Failures in Results of Tonsillectomy D H Jones New York—p 847
Id II How to Obviate Failures in Results of Paranasal Sinus Surgery R E Buckley, New York—p 853
Id III How to Obviate Failures in Results of Simple Mastoidectomy M F Jones, New York—p 857
Id IV How to Obviate Failures in Results of Radical Mastoidectomy J R Page New York—p 861
Id V How to Obviate Failures in Results of Blood Vessel Surgery D Macpherson New York—p 864
Id VI How to Obviate Failures in Results of Surgery of Brain Abscess L M Davidoff New York—p 871
Part Played by Tonsils and Adenoids in Etiology of Rheumatic Fever G M Coates and W Gordon Philadelphia—p 876
Pathology of Chronic Sinusitis in Children W Spielberg New York—p 885
Practical Application of Voice Dynamics L Felderman Philadelphia—p 902
Unusual Location of Aberrant Thyroid H Sporn and H Bolker Brooklyn—p 920
Cured Carcinoma of Nose and Antrum M H Shutes Oakland Calif—p 924

Michigan State M. Society Journal, Grand Rapids

33:649-704 (Dec.) 1934

- Surgery in the Management of Heart Disease E C Cutler Boston—p 649
*The Common Cold P H Long Baltimore—p 655
Edema and Water Balance W A Thomas Chicago—p 663
Management of Occiput Posterior W C Danforth Evanston Ill—p 668
Advances in Neurosurgery L Davis Chicago—p 672

The Common Cold—Long, in discussing the common cold states that there is no specific remedy for the treatment of colds. His observations have led him to believe that the only rational treatment is to put the patient to bed at the onset of the infection and make him remain there for two or three days. Diet has little effect in the treatment of colds, but it is wise to force fluids moderately. A mild laxative is of value if constipation exists and it is a good plan to treat the distressing features of the disease symptomatically. If such a regimen is followed many infections will be aborted, many complications averted and many contact infections avoided. The multiplicity of the measures designed to prevent colds attests their lack of reliability. At present hardening exercises, vitamin feeding, ultraviolet radiation and bacterial vaccines occupy the first rank of popularity as prophylactic measures designed to protect one against colds. When, however, the relation of the hardness of persons is correlated with their resistance to infections of the upper respiratory tract it is found that the degree of hardness

or softness of an individual has nothing to do with susceptibility to colds (Gafafer). Carefully controlled observations on the use of vitamins A and D are disappointing, and in a recent report Clausen suggested that too much vitamin A may predispose a child to respiratory tract infection. The clinical studies of Colebrook and of Doull and his associates have demonstrated quite definitely that ultraviolet radiation does not reduce the incidence of infections of the upper respiratory tract nor does it decrease the duration or severity of such diseases. The failure of vitamin therapy as a prophylactic measure in colds can be understood if one bears in mind that in general the national dietary is not lacking in these essential substances. Early reports seemed to show that the incidence, severity and duration of infections of the upper respiratory tract were materially lessened in subjects inoculated with bacterial vaccines. During the last fifteen years, however, carefully controlled studies have demonstrated that there is but little basis for the claims of the enthusiastic exponents of bacterial vaccines. The failure of bacterial vaccines in the prophylaxis of colds can be explained on the basis that the ordinary bacteria of the rhinopharynx have nothing to do with the initiation of the primary infection of the upper respiratory tract known as the common cold. That these vaccines have little effect in reducing the severity or duration of the infection can be understood if it is remembered that in man there is little evidence of pathogenic activity by the so-called secondary invaders in uncomplicated common colds. At present the only prophylaxis against colds is the avoidance of contact with infected persons. There is no other method.

Nebraska State Medical Journal, Lincoln

19:401-440 (Nov.) 1934

- Use of Morphine in Treatment of Acute Peritonitis T G Orr Kansas City Kan—p 401
Transportation and First Aid in Fractures of Extremities C F Perciot Lincoln—p 404
Correcting Deformities of Velum and Mesopharynx to Ensure Better Speech Following Cleft Palate Surgery H N Boyne Omaha—p 407
Account of Influenza as It Appeared in Philadelphia in the Autumn of 1789 in the Spring of 1790 and in the Winter of 1791 B Rush Philadelphia—p 410
Treatment of Chronic Empyema Thoracis J D Bisgard Omaha—p 413
Artificial Impaction of Fractures in Neck of Femur H F Johnson Omaha—p 416
Postoperative Care H S Andrews Minden—p 419
Rheumatic Fever in Children J H Murphy Omaha—p 424
Acute Mastoiditis Bilateral Lateral Sinus Thrombosis Cerebellar Abscess Operation and Recovery H E. Kully Omaha—p 427

New England Journal of Medicine, Boston

211:949-992 (Nov. 22) 1934

- Incisional Hernia Analysis of Three Hundred Cases C D Branch Boston—p 949
The Failure of Roentgen Ray Therapy of Pituitary and Adrenals in Essential Hypertension P C Baird Boston J R Lingley Belmont Mass and R. S. Palmer Boston—p 952
Vital Function Studies. VII Analysis of a Group of Children with Impaired Hearing A W Rowe Boston—p 954
Exhibit of Fungi Pathogenic to Man Shown at the One Hundred and Fifty Third Anniversary of the Massachusetts Medical Society J G Downing Boston and S M Cousins Cambridge Mass—p 963

211:993-1038 (Nov. 29) 1934

- Thrombosis of Deep Veins of Lower Leg Causing Pulmonary Embolism J Homans Boston—p 993
Carcinoma of the Tonsil Statistical Study of Two Hundred and Thirty Cases L A Schall Boston—p 997
*The Heterophile Agglutination Test in Diagnosis of Infectious Mononucleosis A C Van Ravenswaay St. Louis—p 1001
Industrial Surgery F J Cotton and G M Morrison Boston—p 1004
The Austin Flint Murmur and Its Differential Diagnosis C B Leach Providence R I—p 1007
Observations on Certain Phases of the Health of Sixty Two Normal Boys Over Period of a Year Together with a Description of a Method of Routine Physical Examination J H Blodgett Bellows Falls Vt and W I Mayo Jr Westminster Vt—p 1009

The Heterophile Agglutination Test in Diagnosis of Infectious Mononucleosis—Van Ravenswaay points out that two possible explanations have been suggested for the presence of sheep cell agglutinins in the serums of patients with infectious mononucleosis, the more obvious one being that the etiologic

agent of the disease, whether bacterial or virus in nature, serves as a heterogenic antigen in their production. As a precedent in such an assumption is the fact that the Shiga dysentery bacillus has been demonstrated to contain Forssman's antigen. An additional example of such a mechanism has been furnished recently by Buchbinder, who describes heterophile antibodies produced by organisms of the genus *Pasteurella*, which agglutinate avian erythrocytes. In contrast to this hypothesis, Meyer believes that the agglutinins normally present are merely increased in infectious mononucleosis. A similar type of increased serologic reaction has been noted in Berlin, where it has been found that frequently the serums of pregnant women agglutinate the Y dysentery bacillus in high titer. In attempting to determine whether other antibodies in the blood are increased in infectious mononucleosis, the author determined the diphtheria antitoxin content of the serums in four cases in which the heterophile agglutination test was strongly positive by intracutaneous titration in guinea-pigs. In none of them was the antitoxin content so high as is usually present in the serums of Schick negative persons. Until the cause of infectious mononucleosis and the details of its pathologic process are known, it is impossible to proceed further in explaining the reaction and the latter must be used as an empirical procedure. It is similar in this respect to the Wassermann reaction in syphilis and to the Weil-Felix reaction in typhus.

New Orleans Medical and Surgical Journal

87 355-424 (Dec.) 1934

- Clinical Aspects of Amebiasis S K Simon New Orleans—p 355
Review of One Hundred and Twelve Cases of Amebiasis M D Hargrove Shreveport La—p 359
*Diagnosis of Typhoid Fever in Infancy and Childhood Study of Seventy Five Cases C H Webb Shreveport La—p 362
*Simplified Treatment of Infantile Diarrhea Eleanor Cook Lake Charles La—p 367
Treatment of Acute and Subacute Infection of Pelvis with Especial Reference to the Elliott Treatment J T Sanders and T B Sellers New Orleans—p 368
Appendicitis During Pregnancy J P Culpepper Jr Hattiesburg Miss—p 370
The Rational Treatment of Diabetes Mellitus U Giles New Orleans—p 373
Dietary and Glandular Deficiencies in Eye Ear Nose and Throat Diseases D W Hamrick Corinth Miss—p 378
Jaundice Associated with Hyperthyroidism. H R Mahorner New Orleans—p 382
Simple Continuous Flow Blood Transfusion Instrument M DeBakey New Orleans—p 386
Mikulicz's Syndrome Case Reports W H Browning Shreveport La—p 389

Diagnosis of Typhoid in Childhood—Webb observed seventy-five cases of typhoid in children in which the manifestations were quite different from the adult type. Sudden onset is the rule in young children the most frequent early symptoms are fever, headache and abdominal pain. The disease usually follows one of these courses: (1) mild disease of short duration and variable symptoms, (2) a more severe attack with predominant nervous symptoms or (3) an occasional severe gastro-intestinal upset. A palpable spleen, a red tipped tongue and abdominal tenderness or distention were the predominant physical symptoms. Bradycardia and dicrotic pulse were seldom observed in younger children. Leukopenia is unusual in the child less than 5 years of age. An attitude of suspicion toward all fevers and an alert clinical study are necessary for the diagnosis of typhoid in the young child.

Simplified Treatment of Infantile Diarrhea—Cook points out that the reaction of stools in diarrhea gives the indication for the treatment and that the simple litmus paper test can be made easily not only by the physician but by the nurse or other attendant. It is an accepted procedure in urinary infections, but is not, she thinks, used sufficiently and appreciated in the diagnosis and treatment of intestinal infections, and too often patients with alkaline stools are put as a routine on a skimmed milk diet, sometimes with alarming and disastrous consequences. She has found a nonprotein diet effective in diarrhea of typhoid in which the stools are alkaline and in the diarrhea from improper food in which the stools are alkaline. In cases in which there are loose acid stools there is usually a ready response to an easily assimilated protein diet with plenty of fluids, after a preliminary cleansing of the intestinal tract with castor oil.

Philippine Islands Med. Association Journal, Manila

14: 373-420 (Oct.) 1934

- Treatment of Acute, Nontuberculous Empyema of Pleura R Demerutis Vienna Austria—p 373
Cancer Manifestation of Extraordinary Cellular Activity Caused by Metabolic Disorders M M Gallardo Dumaguete Occidental Negro—p 381
Electrocoagulation of Hemorrhoids R L Blanco Cebu Cebu—p 390

Philippine Journal of Science, Manila

54 1 220 (May) 1934

- Retothel Sarcoma Among Filipinos in the Tropics C M Hasselmann Manila—p 1
Experimental Studies on Curative Treatment of Surra in Native Horses in the Philippines, I L M Yutuc Manila—p 9
Studies in Surra II Pseudoreactions in Complement Fixation Test for Trypanosomiasis R Randall Manila—p 29
Malaria and Anopheles Reconnaissance in the Philippines II P F Russell New York—p 43
Vitamin Content of Philippine Foods III Vitamin B in Various Fruits and Vegetables A J Hermano and G Sepulveda Jr Manila—p 61
Philippine Pinao (Dipterocarp) Resin Simeona Santiago Tanchico A P West and J Fontanoza Manila—p 75
Lane-Eynon Volumetric Method for Determination of Lactose in Milk F T Adriano, S B Oliveros and L G Miranda Manila—p 83
Mutillidae of the Philippine Islands C E Mickel Minneapolis—p 91

Southern Medical Journal, Birmingham, Ala.

27 983 1074 (Dec.) 1934

- The Foundation of Longevity H L Moore Dallas Texas—p 983
*Dissociation of Thyroid from Sympathetic Nervous System and Reduction of Blood Supply to Thyroid in Angina Pectoris Preliminary Report J A Lyon and E Horgan Washington D C—p 983
Bichloride of Mercury Poisoning Sodium Formaldehyde Sulphoxylate as an Antidote L A Monte and E Hull, New Orleans—p 988
Leukopenia in Tuberculosis Report of Case Showing Complete Neutropenic Episode for One Week with Recovery C H Cocke Asheville N C—p 990
Trend of Tuberculosis Mortality in Baltimore and Eight Other Cities 1812-1932 J Collinson Baltimore—p 992
Whooping Cough Its Early Diagnosis Prevention and Treatment L Lane-Eynon Evanston Ill—p 1002
Physical Methods in Treatment of Diseases of Skin G M MacKee New York—p 1006
Some Unsolved Problems in Ophthalmology and Otolaryngology D Roy Atlanta Ga—p 1011
Obstetric Progress During the Past Twenty Five Years W T Pride Memphis Tenn—p 1014
Need for Broader Connections in Medicine W W Young Atlanta Ga—p 1017
Epidemic Pleurodynia J L Callaway Durham N C—p 1019
Raw Apple Diet in Treatment of Diarrhea of Children W H McCaslan Union Springs Ala—p 1021
The Pathology of Avitaminosis H S Thatcher Little Rock, Ark—p 1023
Fractures of Neck of Femur Recent and Old Report of Six Hundred and Thirty One Cases M S Henderson Rochester Minn—p 1032
Medical Education and the Public E B McKinley Washington D C—p 1039
Role of the Small General Hospital in the Reduction of Maternal Mortality W Z Bradford Charlotte N C—p 1044
How May the Health Officer Determine an Effective Prenatal Service? M H Jensen Louisville Ky—p 1047
The Physician as Ruler E Podolsky Brooklyn—p 1053

Dissociation of Thyroid from Sympathetic Nervous System and Reduction of Blood Supply to Thyroid in Angina Pectoris—Lyon and Horgan observed that the division and ligation of both superior and inferior thyroid arteries, when a subtotal thyroidectomy was performed, prevented the recurrence and persistence of hyperthyroidism and produced a beneficial effect on the hearts of the patients in a large series of cases. These observations led them to believe that the division and ligation of the thyroid arteries in cases of angina pectoris and congestive heart failure would produce correspondingly beneficial effects on the hearts of the patients and relieve them of symptoms. They performed the operation in two cases of angina pectoris, one with anginal failure and the other accompanied by aortic regurgitation and congestive failure. The operation relieved both patients of anginal attacks and the one of his congestive failure. It has enabled the patients to lead relatively active lives. The division of both superior and inferior thyroid arteries decreases the amount of blood entering the thyroid and cuts off all stimuli from the sympathetic nervous system to the gland. The effect of thus curtailing thyroid activity is to lower the metabolic rate, to decrease the circulatory demands and, therefore, to lessen the work of the heart.

The operation produces no change in the eyes (Horner's syndrome), lowers the basal metabolic rate, but does not produce myxedema, and will not, the authors believe, disturb calcium metabolism.

Southwestern Medicine, Phoenix, Ariz

18 359 390 (Nov.) 1934

- Common Sense About Medical Ethics M I Leff Glendale Ariz—
p 359
Problems of the Claims Department of the Industrial Commission
C L Guynn Phoenix Ariz—p 370
Allergic Reaction Important Cause of Abdominal Pain F D Garrett
El Paso Texas—p 376
Pulmonary Syphilis Report of Case R B Homan Jr El Paso
Texas—p 379

Surgery, Gynecology and Obstetrics, Chicago

50: 841 972 (Dec) 1934

- *Gelatinous Carcinoma of the Breast B J Lee, H Hauser and G T
Pack New York—p 841
Relation of Recovery of Different Sensory Branches of Peripheral
Nerves to Motor Recovery L J Pollock, Chicago—p 858
*Experimental Bone Regeneration Using Lime Salts and Autogenous
Grafts as Sources of Available Calcium W J Stewart Columbia
Mo.—p 867
Use of Small Dosages of Pituitary Extract in Obstetrics Review of
Last Twenty Two Years A Stein, New York—p 872
Adamantine Tumors of the Jaws S G Major J R Bell and R. S
DeWaters Pittsburgh—p 876
Effect of Mechanical Stimulation of Nipples on Ovary and Sexual Cycle
H Selye and T McKeown, Montreal—p 886
Funnel Pelvis Its Incidence and Importance and New Pelvimeter for
Outlet Mensuration R J Pieri Syracuse N Y—p 891
Sterility of Surgical Catgut Sutures with Particular Reference to
Foreign Made Catgut R O Clock New York—p 899
Operation for Phimosis E Pólya Budapest Hungary—p 904
Exploration of Common Duct in Gallstone Surgery H M Clute and
N W Swinton, Boston—p 906
Factors Influencing Variety and Position of Occipital Presentation and
Mechanism of Engagement W C Stude, St Louis—p 913
*Treatment of Varicose Veins Anatomic Factors of Ligation of the
Great Saphenous Vein E A Edwards Brookline, Mass—p 916
Roentgenologic Diagnosis of Meckel's Diverticulum G E Pfahler
Philadelphia—p 929
End Result Study of Humeral Shaft Fractures H Rogers Boston—
p 934

Gelatinous Carcinoma of the Breast—Lee and his associates point out that gelatinous carcinomas occur in many organs of the body which normally secrete mucus. A rare type is that occurring in the breast. Its incidence ranges between 1 and 2 per cent of all cancers of the breast. Gelatinous carcinoma of the breast occurs in two main forms (1) primary gelatinous carcinoma, in which the gelatinous features predominate, and (2) ordinary carcinoma of the breast with secondary gelatinous degeneration. The latter type may be divided into the myxoid or mucoid carcinoma, depending on whether the gelatinous changes arise by metaplasia in the connective tissue or by secretion directly from the carcinoma cells respectively. In the majority of cases the epithelial cells of the tumor are the source of the gelatinous material by a secretory process. Less frequently the connective tissue assumes myxoid characteristics by a degenerative process. Gelatinous carcinoma of the breast is usually slower in growth than the ordinary carcinoma. One of the reasons given for this fact is that the tumor arises on the basis of a preexisting benign mammary adenoma in many instances. No essential differences are observed in age, sex and race distribution and history of lactation and of trauma between the gelatinous and ordinary mammary carcinomas. The diagnosis of gelatinous carcinoma of the breast is made on the slow growth of the tumor, Halstead's sign, the usual signs and symptoms of ordinary breast carcinoma and the aspiration or punch biopsy. Metastases from it occur late in the course of the disease as compared with the usual type of mammary carcinoma, are usually confined to the axillary lymph nodes and do not necessarily show gelatinous changes. The end results of the authors' thirty cases indicate a considerably higher percentage of cures than in the usual types of carcinoma of the breast. The degree of malignancy is lower than in other carcinomas of the breast as evidenced by 57 per cent of five year cures as compared with 41 per cent in a control group.

Experimental Bone Regeneration—Stewart in his experimental study, in an attempt to verify the observations of Murray

on bone degeneration, found that boiled bone grafts died and, when inserted into defects of the radius, there was no production of new bone about or within them. The only source of new bone formation was from the ends of the radius. Small fragmented live grafts used similarly were the sources of large amounts of new bone growth in each instance. Throughout the entire series of experiments, whenever a small bone chip was left behind at operation there was evidence of active bone growth from it. In all cases in which lime salts were implanted in the radial defects there was failure of regeneration of the shaft. The only effect of mixing traumatized muscle and lime salts in the radial defects was to create a few areas of calcification in necrotic tissue. No regeneration of the shaft took place. The only constant effect of implanting lime salts in carpal and tarsal defects was the production of a definite proliferative arthritis. No bone was laid down in the defects.

Treatment of Varicose Veins—Edwards gives the criteria used in any given case of varices at the Circulatory Clinic at the Boston City Hospital. At the patient's first visit the actual presence of varices and whether they occur in the distribution of the greater or lesser saphenous, the condition of the great saphenous vein and whether there is a positive Trendelenburg test, the condition of the valves of the perforating veins and the condition of the deep veins are determined. If the varices are limited to the distribution of the lesser saphenous vein, the injection treatment alone is used. The solutions employed are quinine ethyl carbamate for the small or medium sized varices, a 20 per cent solution of sodium chloride for the large varices, and a 5 per cent solution of sodium morrhuate for angiomas. If the varices are in the distribution of the great saphenous vein but the vein is not widened and the Trendelenburg test is negative, the injection treatment alone is used. If the Trendelenburg test is positive, the patient is hospitalized for ligation at the saphenofemoral junction, and the distal segment is injected with invert sugar and sodium chloride and then followed up in the outpatient department with injections as in the cases with negative Trendelenburg tests. If the Trendelenburg test is doubly positive, the saphenous is ligated, the incompetent perforation is excised and the remainder is injected in the outpatient department. These cases are relatively uncommon. In cases of obliteration of deep veins, it is a good rule not to disturb the superficial varices. The author has injected the varices in the lower leg in a case of occlusion of the inferior vena cava, with much improvement. In this case, however, the original deep phlebitis had not involved the deep veins of the leg proper. Patients with ulcer are treated according to the foregoing criteria, but injection is given cautiously far away from the ulcer until it is free from infection and, sometimes, the injection is not given until the inflammation is reduced by ligation alone or by supportive dressings. It has not been found necessary to excise an ulcer. If there is an incompetent perforator beneath the ulcer, the ulcer can be healed temporarily by ligation and injection. The perforator may then be excised several weeks after the ulcer is healed. Patients with phlebitis are treated as are patients with ulcer. The progress of the phlebitis is stopped by the ligation or small injections far from the phlebotic focus.

Wisconsin Medical Journal, Madison

33 797 868 (Nov.) 1934

- Reducing Hazards in Treatment of Intestinal Obstruction E H
Mensing Milwaukee—p 807
Common Duct Obstruction Case Report L Milson Green Bay—
p 817
Roentgenologic Diagnosis of Congenital Dislocation of Hip S A
Morton and W P Blount, Milwaukee—p 821
Bilateral Paralysis of Recurrent Laryngeal Nerve Following Thyroidectomy J B Hitz Milwaukee—p 825
Splenomegaly and Anemia Diagnostic Problem J E Goncz Jr,
Madison—p 831
Lateral Sinus Thrombosis Complicating Acute Mastoiditis A G Dunn
and W F Cowan Stevens Point—p 836
Biliary Peritonitis Without Apparent Perforation A R Tormey,
Madison—p 839
Treatment of Tetanus Case Report M Trautmann Prairie du Sac,
—p 840
Primary Carcinoma of Liver Clinically Simulating Empyema of Gall
bladder Report of Case B H Schlomovitz and L G Glickman,
Milwaukee—p 841

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Radiology, London

7 513 576 (Sept.) 1934

- Marie Skłodowska Curie 1867 1934 C Regaud—p 522
Bronchiectasis P Kerley—p 531
Wall Absorption and Buckling Strength of Cylindric Radium Containers G W C Kaye G H Aston and W E T Perry—p 540

British Medical Journal, London

2 929 976 (Nov 24) 1934

- Causation and Treatment of Edema T I Bennett—p 929
Chronic Cervicitis Its Influence on Urinary Tract and Its Treatment by Diathermy Cutting Current Curet J C Ainsworth Davis—p 935
Gas Gangrene Restricted to Subcutaneous Tissues Report on Case Margaret Moore White—p 937
*Interference in the Schick Test by Diphtheria Antitoxin Injection in the Human Subject R B Mayfield—p 938
*Evipan Paralysis Case J V Landor and M Sallah—p 940

Interference in Schick Test by Diphtheria Antitoxin Injection—In an investigation as to how soon an injection of antidiaphtheric serum may be given in a suggestive case of diphtheria after the performance of a Schick test without invalidating the result of that test, Mayfield found that two hours is sufficient to get a reliable result to that test. It has been demonstrated that antidiaphtheric serum is much more efficient in inhibiting a positive Schick reaction when introduced by the intravenous route than by the intramuscular.

Barbituric Acid Paralysis—Landor and Sallah report a case of widespread paralysis following the use of a derivative of barbituric acid (evipan) for general anesthesia with no premedication. It was suggested that the case was one of acute beriberi, but the prolonged unconsciousness after the injection and the great loss of power in the trunk muscles were against such an explanation. The authors think that it was an undoubted case of late paralysis due to the administration of the anesthetic. Caution needs to be taken regarding dosage in patients already toxic.

Journal of Physiology, London

82 393 520 (Nov 12) 1934

- Action of Adrenalin on Serum Potassium J L D Silva—p 393
Toxemia and Carbohydrate Metabolism A B Corkill and S Ochoa—p 399
Actions of Insulin and Adrenalin in Young Adrenalectomized Rabbits O Cope and A B Corkill—p 407
Gaseous Interchanges Through Visceral Pleura of the Cat M Kremer A T Wilson and S Wright—p 414
Repetitive Stimulation by Commutator and Condenser A V Hill—p 423
Curariform Activities of Strychnine Methosalts and Curarine Chloride S L Cowan and H R Ing—p 432
Renal Elimination of Phenol Red H L Sheehan and H Southworth—p 438
Temperature Changes and Winter Sleep of Bats R C Burbank and J Z Young—p 459
Glycogen Content of the Rat Heart G Evans—p 468
Observations on Composition of Alveolar Air on Everest 1933 R Greene—p 481
Experiments on Variations in Blood Composition S J Folley and G L Peskett—p 486
Apparent Change of Hydrogen Ion Concentration on Stretching a Muscle R Margaria—p 496
Output of Fetal Heart in the Goat J Barcroft L B Flexner and T McClurkin—p 498
Relation Between Total and Initial Heat in Single Muscle Twitches L Bugnard—p 509

Lancet, London

2 1031 1088 (Nov 10) 1934

- Hemochromatosis J H Sheldon—p 1031
Treatment of Tetanus H W Florey H E Harding and P Fildes—p 1036
*Diagnosis and Treatment of Doubtful Mammary Tumors M C Tod and E K Dawson—p 1041
Treatment of Postoperative Retention of Urine N R Barrett—p 1046

Diagnosis and Treatment of Mammary Tumors—Tod and Dawson group benign and doubtful mammary lesions that give rise to considerable difficulty in diagnosis into (1) benign tumors, (2) chronic infections, (3) cystic changes, (4) early carcinoma, (5) acute carcinoma, simulating infection, (6) pregnancy and lactation tumors and (7) fat necrosis. They discuss

the characteristics of each type and point out that, before deciding on the extent of treatment necessary in these benign and doubtful mammary tumors, the surgeon should consider various points in the history—age, duration of the growth, previous pregnancy and lactation, presence or absence of pain, discharge from the nipple, infection—and, in the examination, mobility or fixation, fluctuation, size, consistency and definition of the lump, retraction of the nipple and the condition of the axillary lymph nodes. None of these signs or symptoms are in themselves diagnostic, but a careful evaluation of each may provide a signpost that points to a benign or malignant growth. Age is an important factor, for no tumor of the breast in a woman more than 35 years of age can be regarded as certainly benign. The surgeon who decides to operate on a doubtful tumor has several roads open to him—local excision of the tumor, simple mastectomy and radical operation. The authors' analysis of a large series of doubtful tumors, with known later history, suggests that the two-stage operation is not dangerous but is undesirable. In women more than 35 years of age, simple mastectomy with immediate gross examination of the breast and submission of the tissue for microscopic examination is the method of choice for diagnosis. Should the tumor appear malignant to the naked eye the radical operation should be completed at once. Diagnostic mastectomy should be performed as the best initial stage of treatment in women of cancer age with a doubtful tumor of the breast, except in cases of acute (inflammatory) carcinoma and pregnancy and lactation tumors.

Medical Journal of Australia, Sydney

2: 469 500 (Oct 13) 1934

- The Development of the Australian People J H L. Cumpston—p 469
Medical Men as Pastoral Pioneers E A Mackay—p 476
Some Aspects of an Influenza Epidemic (1933) K W Starr—p 483

2 501 530 (Oct 20) 1934

- Civilization's Food as the Possible Origin of Dental Disease. T T Alkin—p 501
Periodontitis and Its Genesis Notes H Sutton—p 506
Etiology of Dental Caries F S Hansman and F Marshall—p 511

2 531 566 (Oct 27) 1934

- Part Played by Focal Infections in Medicine Today S Pern—p 531
Cutaneous Moniliasis J C Belisario—p 538
Local Anesthesia in Operations on Mastoid and on Maxillary Antrum R E Buckingham—p 542
Special Methods in Diagnosis of Subacute Obstruction of Small Intestine C Craig—p 545

2 567 596 (Nov 3) 1934

- Principles of Treatment of Acute Infections of Lungs S A Smith—p 567
Estimation of Glucose in One-Tenth Milliliter of Blood by a Modified Folin Malmros Method H S H Wardlaw and Elizabeth M A. Pire—p 571
Dermatitis Caused by Mite (*Pediculoides Ventricosus*) and Its Occurrence in Australia D C Swan—p 573
History of Tuberculosis Notes C Harvey—p 578

Medical Press and Circular, London

189: 383-404 (Oct. 31) 1934

- Modern Treatment in General Practice Fractures Around Elbow Joint in Children A L d'Abreu—p 386
*Treatment of Habit Vomiting in Infants. E Pritchard—p 390
Achlorhydria Its Clinical Significance and Treatment. S J Hartfall—p 393
Intramuscular Injection of Quinine in Pneumonias T Thomas—p 396

Treatment of Habit Vomiting in Infants—Pritchard states that the cure of habit vomiting differs with the cause but in all cases it consists essentially in the reeducation of a faultily acquired motor function and in the breaking of a pathologic or a conditioned reflex. In those cases in which the pyloric reflex is at fault, that is to say when a hypertonic sphincter refuses to relax in obedience to the inhibitory impulses of the vagus, the rational treatment is to remove the cause or causes that excite hypertonicity and combine this with the use of sedative drugs. The author usually commences treatment by giving one teaspoonful of some simple fluid and if that is retained he then gives two teaspoonfuls at the next feeding, and so on at intervals of two hours until the quantity reaches from 2 to 3 ounces (60 to 90 cc.) He then adds dry whey powder to the fluid, at first in small amount but always in increasing quantity, until it reaches three teaspoonfuls at each feeding. If up to this point the food has been well retained

he adds 10 drops (0.6 cc.) of cream at a time, gradually increasing the amount until 1 drachm (4 Gm) is used. Dry milk is next substituted for the foregoing mixture, beginning with 10 grains (0.65 Gm) and working up to the full amount indicated by the age and weight of the baby. By these means an operation may generally be avoided. In combination with this dietetic treatment the pyloric sphincter may be coaxed into submission by the simultaneous administration of sedative or anodyne drugs. Undiluted condensed milk is suited to the requirements, for no matter how concentrated it may be it is digested easily and its caloric value is five times that of undiluted cow's milk, so that small quantities will supply the required number of calories.

Tubercle, London

16 49 96 (Nov) 1934

- Report on Example of Congenital Bronchiectasis with Results of Post mortem and Pathologic Investigation W B Wood—p 49
Forlanini's Original Communication on Artificial Pneumothorax S Lojaccono—p 54
Contribution to Surgical Therapy of Phthisis Ablation of Lung? Artificial Pneumothorax? C Forlanini—p 61

Japanese Journal of Experimental Medicine, Tokyo

12 333-410 (Aug 20) 1934

- Virus of Pemphigus Pruriginosus T Taniguchi S Kuga S Okamoto and Z Masuda—p 333
Studies on Mechanism of Wassermann Reaction J Nakayama—p 339
Method for Measuring Antigenity of Diphtheria Toxoid T Tanaka—p 363
Studies on Bacterium Tularensis II Improved Culture Medium for Bacterium Tularensis (Egg Yolk Serum) M Kudo—p 371
Id III Experimental Examination on Immunity Against Infection with Bacterium Tularensis M Kudo—p 377
Studies on Ricin First Report H Morioka—p 395

Japanese Journal of Obstetrics and Gynecology, Kyoto

17: 255 324 (Aug) 1934

- Influence of Albino Rat Body Fluid in Deficiency Disease of Vitamin B on Continuance of Vitality of Spermatozoa J Ueno—p 256
Deficiency of Vitamin B and Endocrine Glands of Female White Rats J Ueno—p 267
Clinical Observation on Early Detachment of Normally Situated Placenta Study on Treatment I Katsu and H Yamamura—p 279
Cytologic Study of Living Body Irradiated with Hard Ray Part I Influence of Hard Ray on Development of Beans and Abnormality of Nuclei and Cell Division T Saito—p 285
Study of Appendicitis in Gynecology K Mitsui—p 291
Experiment of Lead Poisoning in Pregnancy K Mitsui—p 304
Functional Biologic Study of Statistics of Ectopic Gestation N Kawashima S Tsunoka and Y Ebara—p 309

Experimental Lead Poisoning in Pregnancy—Mitsui produced lead poisoning in ninety-four pregnant rabbits (most passed more than twenty days of pregnancy) and carried out the histologic and the histochemical tests by the method of Iwahashi on the fetuses, livers kidneys and placentas. He compared the relation between the distribution and the histologic changes in the organic tissues to find what disturbance took place in the pregnancy as a result of the poisoning. As soon as lead was administered to the pregnant rabbits, intense anemia developed. The blood obtained by perforating the auricular vein presented a bright red watery appearance and decreased markedly in coagulability gastric dysfunction, a decrease in body weight, often stillbirth and premature delivery were observed.

Journal of Oriental Medicine, South Manchuria

21: 39 66 (Oct) 1934

- Distribution of Parasites and Parasitic Diseases in Manchoukuo K. Hyeda—p 39
Investigations on Amebic Dysentery II Experimental Studies on Amebic Dysentery in Rats Part I Amebic Dysentery of Rats in Acute Stage. E Kitabatake—p 57
Influences Exerted by Anesthesia on Temperature of Skin Cutaneous Temperature During Local and Spinal Anesthesia G Ine—p 59
Toxin Production on Semisynthetic Medium Studies on Diphtheria Toxin I T Komiyama—p 60
Purification of Diphtheria Toxin by Calcium Phosphate Studies on Diphtheria Toxin II T Komiyama—p 61
Rapid Method of Hyperimmunization of Horses Against Diphtheria Toxin K. Kurauchi T Komiyama and E. Ando—p 62
Pathologic Study of Nerve Center System in Morphism Part III Experiments on Dogs A Hayashi—p 63
Distribution of Kala Azar in the Southern District of Manchoukuo Part I Distribution in Shusuishi District M T Sei—p 65

Paris Médical

2: 289 320 (Oct 20) 1934

- Medical Diseases of Kidneys in 1934 Annual Review F Rathery and M Derot—p 289
*Application of Concept of Filtration Reabsorption to Study of Renal Pathogenesis P Govaerts—p 305
Etiology and Pathogenesis of Renal Lithiasis F Rathery and P Froment—p 309
Urology in 1934 Annual Review R Dossot and A Béchét—p 314

Filtration-Reabsorption Theory in Renal Pathogenesis—Govaerts believes that the filtration reabsorption concept clarifies many of the obscure points in renal physiopathology. He states that he has been able to confirm the work of Poulsen on the elimination of dextrose in phlorhizinized animals. The theory states that the glomerular tufts eliminate creatinine, urea and dextrose in the same concentration as in the blood, but that normally the dextrose is entirely reabsorbed. Under the influence of phlorhizin the reabsorption of dextrose is prevented so that, if this action is pushed to the limit, all the dextrose filtered at the glomerular level should be found in the urine. The elimination of creatinine allows the quantitative estimation of this filtrate. In considering the diabetic subject and the supposed variation of the threshold in the same person, he feels, as a result of observations on seven patients, that the excretion of dextrose varies in the same sense as that of the creatinine and has no relation to the elimination of water. Finally, in considering the various forms of Bright's disease, he concludes that the pure dropsical syndrome is based on a glandular lesion that renders the capillaries permeable to the proteins but does not affect the circulation. The changes in the tubules, which may be anatomically marked are nothing but the sign of a cellular degeneration. In the uremic and hypertensive syndromes the situation is different. The usual alteration in the uremic syndrome is an inflammatory process involving glomeruli and interstitial kidney tissue. He believes that these anatomopathologic and clinical differences are more easily explained on the basis of the filtration reabsorption concept of kidney function.

Policlínico, Rome

41 579 646 (Nov 15) 1934 Surgical Section

- *Influence of Suprarenals on Formation of Callus G Lucchese—p 579
Experimental Surgery of Inferior Vena Cava G Montemartini—p 593
Treatment of Parathyroprival Tetany B Paggi—p 639

Influence of Suprarenals on Formation of Callus—Lucchese made observations on the evolution of experimental fractures in three groups of rabbits (1) those previously subjected to either unilateral total or bilateral partial suprarenal-ectomy, (2) normal rabbits given subcutaneous injections of cortical extract and (3) normal rabbits, for control, that did not receive any treatment before or after the fracture was caused. Rabbits subjected to bilateral suprarenal-ectomy died. The osteogenesis was poor in the survivors of the first group, good in controls and excellent in the animals receiving the injections of cortical extract. The author says that the results of his experiments prove that suprarenal insufficiency retards the formation and favorable evolution of callus in comparison with the results observed in control animals, while the repeated injections of cortical extract provoke the accelerated evolution of an exuberant callus formation.

Prensa Medica Argentina, Buenos Aires

21 1947 1996 (Oct 17) 1934

- Anatomic Basis for Treatment of Trigeminal Neuralgia by Neurolytic Injections J Pereyra Kafer—p 1947
Medico-forensic Aspects of Hernias B B Spota—p 1970
*Alkali Reserve in Tuberculosis S Gutman—p 1974
Anterosuperior Pleuromediastinal Pneumatocele in Course of Artificial Pneumothorax A P Heudtlass O Garré and J Schicht—p 1985

Alkali Reserve in Tuberculosis—Gutman made determinations of the alkali reserve in two groups of patients suffering from pulmonary tuberculosis: eighteen from chronic, stationary, incipient and unilateral forms, and thirty-four from grave acute tuberculosis in rapid evolution and in the preagonal stage. Some patients in this group had unilateral or bilateral artificial pneumothorax or pleurisy as a complication. The determinations were made by the method of Van Slyke with

the patients fasting and again after eating. The alkali reserve proved to be normal in patients of the first group and greatly diminished and tending to the development of acidosis in the second group. In these the organs concerned with the functions of neutralization of acids in the blood, especially the liver and the kidney, are in a decadent condition and the bulbar center, owing to chronic intoxication, is prevented from fulfilling its functions of elimination of the carbon dioxide and acids in the blood. Thus a vicious circle is established. The acid milieu of the blood prepares and favors the development of tuberculosis, which in turn provokes acidosis. Volumes of alkali reserve as low as 44, 42 and even 34 in one case, such as those observed by the author in patients having grave forms of tuberculosis, have not been previously reported, although all authors agree to the fact that the alkali reserve decreases as tuberculosis progresses and that the acidosis reaches its highest figures in preagonal stages of the disease.

Semana Medica, Buenos Aires

41: 1149 1224 (Oct 18) 1934 Partial Index

*Glycemia in Pulmonary Tuberculosis Without Diabetes R A Izzo and M Sagastume—p 1149

*Transaplacental Heredity of Tuberculosis N Palacios Costa and M V Falsia with Collaboration of Collillas and Marchisio—p 1156
Physiopathogenesis of Cyanosis in Tumors of Mediastinum F C Arrillaga and A C Taquini—p 1160

Etiology of Senile Cataract Paulina Satanowsky and P Kurlat—p 1163

Transfusion of Preserved Blood R Palazzo and J Tenconi—p 1179

Glycemia in Pulmonary Tuberculosis Without Diabetes—In a group of 752 patients having pulmonary tuberculosis in different stages of evolution Izzo and Sagastume performed 1200 determinations of the glycemia according to the method of Folin-Wu and of provoked hyperglycemia according to Escudero's technic (oral administration of 2 Gm of a 20 per cent solution of dextrose per kilogram of theoretical weight). The authors conclude that in patients with pulmonary tuberculosis glycemia during fasting oscillates within physiologic limits. There is neither true hypoglycemia, even in dying patients nor hyperglycemia. No case of glycosuria (Benedict and Fehling reagents) was observed during provoked hyperglycemia. The curves of provoked hyperglycemia in patients suffering from simple and moderate forms of pulmonary tuberculosis showed an almost identical aspect characterized by a terminal glycemia, three hours after the onset of the test, with figures near those given by the initial glycemia. The figures of maximal glycemia in these patients are the same as those observed in normal persons, and the return of glycemia to normal is somewhat retarded. In patients suffering from grave forms of pulmonary tuberculosis the return of glycemia to normal conditions after the test, is greatly retarded. Frequently the figures of terminal glycemia, three hours after the test are higher than those given by the initial glycemia. The absence of glycosuria and the behavior of the glycaemic curves during the test in patients suffering from moderate forms of pulmonary tuberculosis are explained as being caused by an insular hypofunction due to the hypo-alimentation of the patient, as well as to the general effects of the coexisting febrile and infectious conditions. The authors deny any specific influence of tuberculosis on the glucose metabolism.

Transaplacental Heredity of Tuberculosis—Palacios Costa and Falsia report the results of their experiments with the inoculation of amniotic fluid or macerated placenta from tuberculous women to guinea pigs. They conclude that the transaplacental infection by the tuberculous ultravirus is proved and that tuberculous infection of the amniotic fluid in cases in which the placenta is normal and, conversely, tuberculous infection of the placenta without contamination of the amniotic fluid are possible. Two patients, out of the group of three patients from whom the amniotic fluid was obtained, have corticopleural lesions and live in satisfactory conditions. The other patient in this group had fibrocereous lesions and died twenty-three days after delivery of a living child. The woman who expelled the placenta used in the experiments had fibrocalcereous lesions. She lives also in satisfactory conditions. The four infants were separated from their mothers immediately placed under good care and fed by wetnurses and are in good general condition and developing satisfactorily.

Archiv fur Dermatologie und Syphilis, Berlin

170 521 622 (Nov 10) 1934 Partial Index

Formation of Porphyrin by Pathogenic Fungi of Skin. C. Carrie and A S von Mallinckrodt Haupt with Introduction by H T Schreus—p 521

Exanthems Caused by Arsphenamine Which Simulate Pityriasis Rosea and Lead to Atrophy D Steiger Kazal—p 530

Benign Acanthosis Nigricans R Bernhardt—p 533

Hematologic Biochemical Changes in Blood in Administration of Neoarsphenamine J R Bachromejew and L N Pawlowa—p 543

*Changes in Teeth of Patients with Congenital Syphilis J Guszman—p 572

*Treatment of Epidermophytosis of Feet and Hands H O Loos—p 602

Transmission Experiments on Lichen Ruber Planus by Transplantation into Cornea of Rabbits R Bezceny—p 615

Anomalies of Teeth in Congenital Syphilis—Guszman describes his observations on the teeth of 116 adults with congenital syphilis. He points out that there are a number of anomalies of the teeth the presence of which is considered suggestive of or characteristic for congenital syphilis. He mentions the following: (1) late second dentition, (2) microdontism, (3) absence of certain groups of teeth, particularly of the upper lateral incisors, (4) dystrophic crowns, that is, hypoplasia of the dental enamel with its numerous variations (apical and surface erosions, small circular or bowl-like erosions, "stair" teeth or the so-called cloves teeth), (5) atrophy of the chewing surfaces, particularly of the first molars, (6) abnormal position of the teeth, (7) "amorphic" teeth (so-called fish teeth), and (8) Hutchinson's teeth. The author considers Hutchinson's teeth the most important of the dental anomalies of congenital syphilis but admits that they are not frequent. He observed them in 12 per cent of his patients with congenital syphilis. In spite of opinions to the contrary he asserts that really typical Hutchinson's teeth are found only in persons with congenital syphilis. Further he gives illustrations of fifteen different dental anomalies that he observed in his material: microdontism, absence of the two upper lateral incisors, large gaps between the teeth, hypoplasia of the upper median incisors, hypoplasia of the proximal portion of the crown of the upper median incisors, hypoplasia of the incisors and the canine teeth, crooked position of the teeth, misplacement of a tooth (so-called gum tooth), fish teeth, pointed teeth, typical Hutchinson's teeth, pivot tooth, teeth with half moon shaped erosions, wedge shaped cutouts on the upper median incisors and long amorphic teeth. The author admits that with exception of Hutchinson's teeth the anomalies are not a sufficient basis for a diagnosis of congenital syphilis, but they should be an inducement for further search for other symptoms, and in this manner they may lead to the discovery of the otherwise entirely latent congenital syphilis.

Epidermophytosis of Feet and Hands—Loos studied the mode of infection, treatment and prophylaxis of epidermophytosis. In order to clarify the widely accepted belief that the pathogenic agent of mycotic eczema is mostly transmitted in public baths, sport institutes and similar establishments the author inspected a number of baths and conducted a careful search for pathogenic fungi of the skin. He thinks that the negative results of these investigations do not entirely refute the belief, since in the cultures the disturbing growth of mold fungi could not be excluded. In studying the treatment he tested a number of antimycotics. He determined their growth inhibiting action by adding them to the culture mediums and their fungicidal action by letting them act on fungous material. He found that an entirely satisfactory substance, one that is effective in all cases, is still lacking. However, the tests permitted a comparative evaluation of the various substances that are now available. He found brilliant green the most effective substance, then follow in the order of their effectiveness: acridine, flavine hydrochloride, oxycyanate and solution of formaldehyde. Less effective are salicylic acid, benzoic acid and sulphur, and tar and alcohol have only a slight effect. Corrosive mercuric chloride, iodine and chlorine were especially fungicidal, while thymol inhibited the growth considerably. The metals were virtually ineffective. As most effective for the treatment he recommends brilliant green, benzoic acid and sulphur. The problem of prophylaxis is still unsolved. Nevertheless, it is possible to obtain certain successes. The author advises addition of chlorine to the bath water, cleaning the floors with phenol.

(carbolic acid) and disinfection of bath sponges and other bath accessories with solution of formaldehyde, thymol or alcohol. He thinks that acid foot baths, alcohol rubs and the use of disinfecting powders (sulphur) are to be recommended for personal prophylaxis.

Deutsche medizinische Wochenschrift, Leipzig

DO 1743 1782 (Nov 16) 1934

- Development of Detachment of Retina and New Methods of Treatment
F. Poos —p 1743
Pneumonia During Childhood G. Fanconi —p 1746
Asthmatic Attacks and Dyshidrosis Caused by Arspenamine Preparations A. Szarias —p 1751
*Acanthosis Nigricans in Gastric Carcinoma K. Dambke —p 1752
Practical Application of Law for Prevention of Defective Offspring
O. Pedersen —p 1753
*Cephalic Index Kruse —p 1755

Acanthosis Nigricans in Gastric Carcinoma —Dambke points out that acanthosis nigricans has been considered a complication of carcinomatosis, although there have been cases in which a malignant neoplasm was not demonstrable. Since acanthosis nigricans is still an object of discussion and is a rather rare condition, the author feels justified in reporting the history of a man who had carcinoma of the stomach and who developed acanthosis nigricans. In the bend of the elbows, in the axillae, on the dorsal surfaces of the hands and feet, in the back and especially on the inner surface of the thighs there were pigmented areas, about the size of lentils deep black, slightly raised above the surface, segmented indented and almost wart-like. In contradistinction to the otherwise rough skin, these areas felt like velvet. The scrotum and penis were almost black. The localizations of the pigmented areas tallied with those described in other reports, but the histologic aspect corresponded only to a certain extent with those formerly described. The author thinks that the differences in the microscopic aspects are due to the fact that the cutaneous changes had existed only a few weeks when the patient died.

Cephalic Index —Kruse points out that Walcher, an obstetrician in Stuttgart, many years ago called attention to the fact that the shape of the head is largely determined by the fact whether the head of the young nursing is placed on a hard or a soft pillow. The author and his collaborator, M. Fischer, were able to corroborate this six years ago and Catel recently came to the same conclusion. He maintains that "environment" plays a much more important part in shaping the head than does heredity and concludes that the cephalic index is changeable and consequently cannot be considered a reliable indicator of race.

Klinische Wochenschrift, Berlin

13: 1561 1592 (Nov 3) 1934 Partial Index

- *Influence of Wavelength on Heat Distribution in Body in Case of Ultra short Wave Therapy A. Gebbert —p 1563
*Modification of Regeneration of Erythrocytes by Follicular Hormone T. Minouchi and H. Schwalm —p 1565
Heat Regulation During Fever D. Laszlo and M. Wachstein —p 1568
Iodine Metabolism in Hyperthyroidism L. Scheffer —p 1570
Does Intracutaneous Reaction in Gonorrhea Have Diagnostic Significance? M. Thomas and L. Waldeyer —p 1572
Fifth Primitive Arterial Arch in Roentgenogram F. Kublmann and G. von der Weib —p 1578
Diagnosis of Pregnancy by Means of Histidine Reaction in Urine. M. Weiss —p 1579

Heat Distribution in Ultrashort Wave Therapy —Gebbert describes experiments on the influence of wavelengths on the heat distribution in the body during ultrashort wave therapy. It is advisable to see that the distances between the electrodes are considerable, in order to produce a favorable percental depth action. The best medium between the electrodes and the body is air; however, for practical reasons other mediums may be interposed so that the effect of distance is attained. A good glass or a loose felt of sufficient thickness has been used. The thickness of the interposed medium is determined by the size of the electrodes. There were no sharply defined heat maximums in the various substances that served as test materials (bread, meat, leg of a hog), and on which different wavelengths were tried. To effect a uniform absorption of heat by the different mediums —skin, flesh, muscles, bones and marrow—it proved necessary to use rather short wavelengths (between 3 and 6 meters). The author advises that, before resorting to ultrashort wave

therapy of internal organs the relative heating of which is not known as yet, experiments should first be made on tissues that are stratified in a similar manner in order to determine the heating of the tissue in relation to the tissues in front and behind it. He suggests that these preliminary tests be made on a cadaver or on a phantom and thinks that this is the only way in which it can be determined how the ultrashort waves are best utilized.

Regeneration of Erythrocytes and Follicular Hormone —Since certain clinical observations indicate a connection between blood regeneration and the function of the gonads, Minouchi and Schwalm decided to investigate this problem experimentally in rabbits. The counting and the differentiation of the reticulocytes served as a criterion for the regeneration. It was found that even the spontaneous regeneration following venesection takes a different course in normal mature rabbits from that in rabbits castrated for some time. In normal animals regeneration is effected by flooding out of an increased number of all forms of reticulocytes, and more young reticulocytes begin to appear only if the bone marrow is taxed again and again, so that it becomes exhausted. In castrated animals venesection is followed at once by a considerable increase in the younger forms, while the total number of reticulocytes is not greatly increased. The administration of estrogenic substance alone, without other stimulation of the erythropoiesis, effects only slight changes in normal animals; an increase in the younger forms, which lasts only a short while, but in castrated animals an increase that persists slightly longer. The combination of venesection and administration of estrogenic substance, however, has effects that differ considerably from those which appear after venesection alone. In normal animals there appears, in addition to an increase in the total number, also a considerable increase in the young forms which may be interpreted as an intensive regeneration, a mobilization of all reserves. Castrated animals in which the function of the bone marrow is apparently impaired, react to this combined stimulation no differently than without the estrogenic substance. The authors conclude from this that estrogenic substance exerts a stimulating influence on the regeneration of the erythrocytes. To what extent these experimental studies can be applied to human subjects is yet to be determined.

Monatsschrift f. Geburtshilfe u. Gynäkologie, Berlin

88: 129 192 (Nov.) 1934

- *When Is It Permissible for a Woman Who Has Had Eclampsia and Severe Pregnancy Nephropathy to Conceive Again? L. Seitz —p 129
*Birth Injuries of the Nose L. Birke —p 144
Infundibular Pregnancy Case P. Singer —p 153
*With What Exactness Does Sedimentation Speed of Erythrocytes Permit Estimation of Inflammatory Genital Disorders? H. Guthmann and W. Neubaus —p 157
Clinical Aspects of Ruptures of Uterus W. Maljowsky —p 167

Advisability of Renewed Conception After Eclampsia and Nephropathy —Seitz shows that observations so far have proved that renal lesions resulting from eclampsia and nephrosis as a rule disappear within several weeks. To preclude a too early severe taxing of the organ and thus its prolonged impairment, the author considers it advisable to prevent a new conception for from six months to one year. As long as there exists a rather severe hypertension, or if casts and protein are excreted in considerable quantities by a woman with eclampsia or nephrosis who formerly had normal blood pressure, the physician should advise against a new pregnancy. If conception should take place an expectant attitude should be taken. An interruption of the pregnancy is advisable only if it is found that a great exacerbation has set in and that threatening symptoms have appeared. The persistence of albuminuria, in which casts appear only in small numbers or are entirely absent in which the blood pressure is normal and in which the functional tests of the kidney reveal fairly normal conditions, is no reason to advise against a new pregnancy. If, following a pregnancy nephrosis, there should actually develop a chronic nephritis or a contracted kidney, it is reasonable to take steps to prevent a new pregnancy. If under these conditions conception has taken place and severe disturbances in the compensation have set in, the pregnancy should be interrupted. The author points out that there are cases in which the most exact functional tests

no longer disclose an impairment of the kidney and in which a renewed pregnancy again leads to nephrosis and eclampsia. All methods known so far do not permit a definite evaluation of such cases during the period when the woman is not pregnant, and consequently nothing remains but to take a chance with a new pregnancy.

Birth Injuries of the Nose—Birke observed nine cases of birth injury of the nose among 542 newly born infants. A connection with the process of birth was considered definitely established only in cases in which noticeable lesions of the skin existed over the injured area. In four of the nine cases the delivery had been complicated (forceps, twins, frontal presentation), and in the other five cases there existed first or second occipital positions together with a considerable disproportion between the fetal head and the birth channel. The nose injury was not treated in any of the cases. The author points out that fractures of the nasal bones heal more quickly than any other fractures. He calls attention to the fact that asymmetries of the nose of newly born infants are almost the rule (519 out of 542) but that a connection with the process of birth can be proved in but few cases.

Estimation of Genital Disorders by Sedimentation Speed of Erythrocytes—Guthmann and Neuhaus determined the reliability of the sedimentation speed in the evaluation of inflammatory genital disturbances on the basis of 1,892 tests that were made in 1,138 cases. They determined the occurrence of certain values (10, 20, 30 cm and so on after one hour) in various inflammatory disorders of the genitalia and found that the conformity between the severity of the disorder and the value of the sedimentation speed is most pronounced if the process is either severe or light. In processes of average severity there are considerable fluctuations, and the reliability is therefore correspondingly reduced. The authors compared the reliability of the sedimentation reaction and of the leukocyte count and found that the latter is more reliable in new processes, whereas the former is of greater importance in the estimation of subacute and chronic processes. In cases in which the inflammatory processes of the genitalia concurred with syphilis, it was found that the existence of syphilis does not noticeably diminish the reliability of the sedimentation reaction.

Munchener medizinische Wochenschrift, Munich

81 1753 1788 (Nov. 15) 1934 Partial Index

- Tonsils as Nutritive Medium for Bacteria and Etiology of Tonsillar Infections. V. Gundel—p. 1753
- *Difficulties in Differentiation Between Syphilis and Tuberculosis of Upper Air Passages. J. Berendes—p. 1755
- Necessity of Prevention of Gout by Use of Iodized Salt in Germany and Its Relation to Eugenics. F. Fischler—p. 1756
- What Is Best Method of Manual Artificial Respiration and in What Manner Is It Best Accomplished? C. J. Mynlieff—p. 1758
- *Dangers of Chemical Contraceptives. K. E. Fecht—p. 1764

Differentiation Between Syphilis and Tuberculosis—Berendes calls attention to the similarity between the external manifestations and the histologic aspects of syphilis of the upper air passages and those of tuberculosis. Moreover, it has been observed that in cases of lupus of the skin or of the mucous membranes the Wassermann reaction is occasionally positive, in spite of the fact that syphilis is absent. The positive outcome of this reaction is thus not always a reliable indicator of the real nature of the disorder. On the other hand, it has been known that syphilis and tuberculosis existed together. However, it is much more frequent that in the upper air passages there occur disturbances in which syphilis is masked by tuberculosis. The microscopic examination of the lesions may reveal changes of a tuberculous character but if they are in reality of a syphilitic nature much valuable time may be lost, for the lesions of tertiary syphilis may lead to ugly disfigurements in the face and to dangerous cicatrizations in the larynx and esophagus which can be prevented if antisyphilitic treatment is begun early enough. The author describes four cases the histologic aspects of which suggested tuberculosis, but, since the serologic tests gave positive syphilis reactions, antisyphilitic treatment was instituted and judging from the results obtained with this treatment it must be concluded that the lesions were syphilitic rather than tuberculous. The author knows of no definite reason why the differentiation of syphilis and tuberculosis is difficult especially when the upper air passages are

concerned, but he assumes that the strongly lymphatic character of the lining membrane may be responsible.

Dangers of Chemical Contraceptives—Numerous observations indicating the danger involved induced Fecht to call attention to chemical contraceptives, which are supposed to paralyze the motility of the spermatozoa. If the chemicals are rather concentrated, there is danger that they will injure the mucous membrane of the vagina and the uterus, particularly if used for long periods. Severe leukorrhea may develop, or erosions of the cervix and of the vagina. Chronic inflammation of the endometrium may spread to the uterine tubes, which may become obstructed and thus cause sterility. Since 1925 the author has observed 150 cases of primary and 200 cases of secondary sterility that could be traced to the use of chemical contraceptives. In addition to this he treated 275 cases of chronic endometritis and approximately 200 cases of inflammation of the tubes traceable to the continuous use of chemical contraceptives. Moreover, since chronic irritation may favor the development of carcinoma, he considers it possible that the chronic inflammations and erosions produced by contraceptives on the cervix and in the vagina may eventually lead to carcinoma, and he observed a number of cases of cancer in which this etiology seemed probable. The greatest danger of chemical contraceptives lies in the possibility that the spermatozoa may be damaged, although still remaining able to fertilize the ovum, and eventually lead to the development of defective offspring. He observed two cases, one with physical defects and another with both mental and physical defects, in which a causal connection with the effects of contraceptives was almost certain, while in three others there were indications that they were contributory factors in the development of defective offspring.

Wiener klinische Wochenschrift, Vienna

47 1377 1408 (Nov. 16) 1934 Partial Index

- *Animals as Carriers of Paratyphoid Bacilli. Significance for Human Beings. H. David—p. 1377
- Experiences with General Anatomic Modeling Exercises. G. Sauer—p. 1378
- Tuberculosis of Mediastinal Glands in Aged Persons. A. Arnstein—p. 1383
- Elimination of Gonadotropic Hormone of Anterior Lobe of Hypophysis and of Female Sex Hormone (Follicle Hormone) in Manias, Depressions and Schizophrenia. W. Oesterreicher—p. 1385
- Treatment of Osteomyelitis During Childhood. H. Salzer—p. 1389
- Nutrition of Tuberculous Patients. W. Neumann—p. 1390

Animals as Carriers of Paratyphoid Bacilli—David points out that there are different types of paratyphoid bacilli with distinct morphologic, biochemical, serologic and pathogenic characteristics and that the type determines to a large extent the symptoms of the disorder. Thus paratyphoid, the symptoms of which resemble typhoid, is generally caused by types A and B Schottmüller, whereas Breslau, Gärtner, Newport or similar strains of bacilli are usually detected in the gastro-intestinal forms. In animals paratyphoid is caused either by types the pathogenicity of which for human subjects has not been proved as yet or by strains that cause the acute form in human subjects and are designated as the enteritis types (Breslau, Gärtner, Newport and others). After calling attention to the fact that these bacilli may not only cause disorders in the intestine of these animals but also invade the internal organs and the muscles the author points out that the ingestion of meat from animals that have had an enteritis infection may cause meat poisoning in human subjects. Animals may become carriers of enteritis bacilli without showing symptoms of disease, and foods may become contaminated with their excretions or their meat may not be recognized as a possible source of disease. Moreover, cows that are carriers may produce contaminated milk and milk products may likewise become infected. The author calls attention to the increasing incidence of food poisoning caused by meat from infected poultry and by eggs. Reports about eggs as sources of infections with Gärtner and Breslau bacilli have come from England, France and, particularly, Germany. Breslau and Gärtner infections have been traced also to rats and mice as carriers. In discussing the measures for the prevention of paratyphoid-enteritis infections the author stresses the necessity of eliminating animal carriers, and he recommends periodic examinations of live stock in order to detect them.

Zeitschrift f Geburtshülfe u Gynäkologie, Stuttgart

110:1104 (Nov 20) 1934

- *Beat Volume and Minute Volume of Heart at End of Pregnancy and Following Delivery A J Anthony and R Hansen—p 1
- *Pulse Wave Velocity in Aorta in Femoral Artery and in Brachioradial Artery at End of Pregnancy and After Delivery A J Anthony and R Hansen—p 8
- Reactions of Gonadotropic Substances in Urine of Pregnancy to Acids and Bases A Westman E Jorpes and S Linde—p 11
- Diagnostic and Prognostic Value of Aschheim Zondek Reaction in Extra Uterine Pregnancy L Morillo—p 18
- External Measurement of Uterine Contractions and Course of Delivery H Kolbow—p 38
- *Question Whether Puerperal Women Are Endangered by Enterococci P Hauptstein—p 54
- Aspects of Acid Base Equilibrium During Pregnancy J Botella Llusia—p 74

Heart Action in Pregnancy and Following Delivery

—Anthony and Hansen point out that respiration and circulation are taxed more severely during pregnancy but that the disturbances in the heart action cannot be estimated properly unless the behavior of the normal heart during pregnancy is understood. They studied the beat volume and the minute volume in a number of women before and after delivery, employing the physical method of Broemser and Ranke. They found that tests on different days revealed differences that may be observed also in healthy subjects. The beat volume is hardly ever changed by the delivery. A reduction of the systole during pregnancy is noticeable in but few cases. The diastole and the pulsation are always shorter at the end of pregnancy. Since the pulse frequency is greater during pregnancy than after delivery, the minute volume is likewise greater.

Pulse Wave Velocity in Pregnancy and After Delivery

—Anthony and Hansen determined the pulse rate before and after delivery with the method of Broemser and Ranke in the aorta, in the brachioradial artery and in the femoral artery. A tabular report shows the results of these tests, listing the systolic blood pressure, and the pulse rate in the three examined vessels before and after delivery. During pregnancy and the puerperium the pulse rates of the brachioradial artery and the femoral artery are about the same. This indicates that the elasticity of the vessels of the extremities is not noticeably changed during pregnancy, and there is no reason to assume that the tonus of the vascular muscles is changed during pregnancy. In the aorta, the velocity of the pulse wave is slightly reduced during pregnancy. The authors think that this may be due to the pressure of the enlarged uterus.

Enterococci During the Puerperium—Hauptstein points out that, morphologically considered the enterococcus is an oval, lancet-shaped diplococcus. He describes his studies on the significance of the enterococcus in puerperal women. He comes to the conclusion that the enterococcus is normally present in the lochia without endangering the puerperal woman. As regards its pathogenicity, it apparently takes a position intermediate between the virulent streptococci and the avirulent organisms, perhaps similar to that of the colon bacillus. Thus the uterus may harbor the enterococcus and yet puerperal fever need not develop. However under certain conditions (long duration of delivery, stasis of the lochia and retention of the fetal membranes) enterococci may cause febrile disorders and if the enterococci have found in the uterus conditions that favor their growth and if the natural protective devices of the organism fail, the development of a hysterogenic enterococcal general infection is possible.

Zeitschrift für klinische Medizin, Berlin

127:371-498 (Oct. 24) 1934 Partial Index

- Utilization of Oxygen in Periphery in Various Degrees of Experimental Stasis O Klein and E Spiegel—p 371
- Absolute Arrhythmia J. Lühr—p 392
- Specific Dynamic Action of Foods in Endogenic Forms of Obesity and Their Modification by Thyrotropic Hormone A Sylla—p 396
- Formation of Gibbus in Tetanus G Nagy—p 434
- *Cutaneous Manifestations in Caisson Disease K Mellinghoff—p 457
- Aspects of Günther's Congenital Porphyrin A H Müller—p 460

Specific Dynamic Action of Foods in Obesity—Sylla says that by determining the basal metabolism two forms of obesity may be differentiated, one with a subnormal metabolic rate and one with a normal or supernormal rate. The obesity with lowered basal metabolism is considered of thyrogenic

origin, while the form in which the metabolism is normal or supernormal is considered hypophyseal in origin. In most of the patients with thyrogenic obesity the action of the foods is not greatly impaired, but hypophyseal obesity is characterized by a reduction in the action of the food. Deviations from this rule must be considered polyglandular disturbances. The hypophyseal action on the metabolism probably takes place largely by way of the thyroid. The active principle is contained in the "thyrotropic" hormone. The author demonstrates in five cases how the reduced food action may be normalized by means of the thyrotropic hormone. The body weight of these patients decreases and thus this treatment gives prospects of a causal therapy of endocrine obesity.

Cutaneous Manifestations in Caisson Disease—Mellinghoff observed on the extremities and to a lesser degree on the trunk of a patient with severe caisson disease a clear marmoration of the skin. When the patient coughed or was subjected to Valsalva's experiment, the marmoration became more noticeable. It disappeared gradually, but at first it had a tendency to recur while the patient was coughing. The author attempts an explanation of these cutaneous manifestations and in the conclusion he points out that only in the severest cases, in which the skin is dark blue and swollen, does the cutaneous stasis play an important part in the course of caisson disease for in this event considerable quantities of blood may be stored in the skin so that there is, so to speak, a bleeding under the skin, a process that may exacerbate the circulatory collapse of patients with severe caisson disease. The cutaneous symptom is significant also, because fine marmoration may develop quite early at a time when all other signs of caisson disease are still absent. The patient likewise had noticed these signs but had paid no further attention to them. In looking for this sign, one may recognize persons who are likely to develop caisson disease. Such patients should avoid work that leads to caisson disease or they should receive special medical attention.

Aspects of Günther's Congenital Porphyrin—Müller reports the history of a man now aged 63, who from early youth had suffered from skin eruptions in the form of blisters that existed for from eight to ten days and then disappeared again. At first the eruption appeared on the hands, but later also on the face. The eruption did not cause itching, but the rupture of the blisters was accompanied by a burning pain. The blisters used to be the size of a bean but in recent years they reached the size of a silver dollar (38 mm). After the blisters rupture they dry up and a white tissue forms at their base. This remains for several months, is shed and sores form which discharge a yellowish white fluid. These heal slowly but leave deep tissue defects and brownish spots. The skin appears tightly drawn over the bones and in some portions it is hard. The auricles have been partly destroyed and the neck shows scars and depigmentation, as do also the hands. The patient noticed that the blisters developed with greater frequency during the spring and summer. He had a hypersusceptibility of the skin to exposure to the sun and to rays from artificial light sources, but he never protected himself against sun rays. For years he had excreted large amounts of porphyrin. In the urine the uroporphyrin and the coproporphyrin were increased and in the blood even more so. At times the porphyrin concentration of the blood surpassed that of the urine. The feces likewise contained excessive amounts of coproporphyrin. Moreover, coproporphyrin and uroporphyrin were found in the gastric juice and in the hepatic bile, and the porphyrin was increased in the gallbladder. The sputum was free from porphyrin. Examination of the nervous system revealed no abnormalities, and the digestive tract was free from changes traceable to the primary disease. However, the calcium and iron metabolisms were highly abnormal. The changes in the calcium metabolism became manifest primarily in the bone structure. Whereas roentgenoscopy disclosed a considerable increase in thickness and density on the cranial bones other portions of the skeletal system proved deficient in calcium. To prove that there is a connection between porphyrin and the calcium metabolism the author calls attention to the experimental porphyrin deposits in growing bones and in callus and to efforts to cure rickets by porphyrin. The patient also had a hypochromic anemia with a decrease in the

resistance of the erythrocytes, an eosinophilia and disturbances of the renal function. On the basis of these observations the author concludes that it cannot be doubted that this is a case of congenital porphyria. He attempts a uniform explanation of all disturbances that are accompanied by a disturbance in the porphyrin elimination. Among other things he points out that the clinical aspects of porphyrin diseases make the relations between porphyrin and calcium or a disturbance in the calcium metabolism, the probable cause of disturbances in the neuroregulation of the sympathetic functions.

Zentralblatt für Gynäkologie, Leipzig

58 2705 2768 (Nov. 17) 1934

- Ovarian Tumor of Thyroid Tissue O. Frankl—p. 2706
 Resumption of Atmoscausis of Uterus H. Fuchs—p. 2711
 Tubal Pregnancy Following Implantation of Uterine Tubes C. Brunner—p. 2715
 Eclampsia Problem P. Goldschmidt-Furstner—p. 2716
 *New Method of Obtaining Secretion from Puerperal Uterus L. Bublitschenko and E. Dertschinsky—p. 2722
 Medicinal Treatment of Asphyctic New Born K. E. Fecht—p. 2725
 *Formation of Vagina by Means of Modified Skin Graft Method F. P. Matwejew—p. 2727

Method of Obtaining Secretion from Puerperal Uterus
 Bublitschenko and Dertschinsky think that the detection of bacteria in the uterus of healthy women can perhaps be explained by mistakes in the withdrawal of specimens from the uterus. They maintain that neither Döderlein's cannula nor Walther's rod precludes the transfer of an infection from the cervix into the uterus, and for this reason they devised a new technic. The lochia are withdrawn from the uterine cavity by means of a syringe to which a Braun catheter has been attached. The opening of the latter has been made wider for this purpose. The syringe is covered with a sterilized condom. Following disinfection of the external genitalia the vagina is opened by spoonlike specula. The cervix is cleansed with sterile cotton, and Braun's catheter together with the covering condom is introduced into the cervical canal up to the internal os. A wire mandrin perforates the condom so that owing to its elasticity it glides downward. At the same time Braun's catheter is pushed into the uterine cavity, the syringe is operated and a specimen of the uterine content is obtained. The authors are convinced that this technic makes impossible a transfer of the contents of the cervix into the uterus and they conclude that in the greatest majority of puerperal women, in whom the temperature did not increase, the uterine contents were sterile.

Formation of Vagina by Means of Skin Grafts
 Matwejew, after calling attention to the disadvantages of artificial vaginas formed from the small or large intestine, describes an operation that he employed successfully in eight patients in whom vagina and uterus were completely absent. In the last operation of this type, which he performed in 1932, he modified his original method slightly in that the flaps were removed from the thigh in such a manner that the lower freshened edge of the lateral flaps, at the site of their connection with the matrix, was not at the lower freshened edge of the upper flap but 0.75 cm higher. If this is done the upper flap is cut from the skin and the mucous membrane of the vaginal introitus and of the perineum in the form of a rectangle, 4 cm in width and from 6 to 7 cm in length, so that its upper edge is 3 mm. below the urethral opening. This flap is lifted and underneath it, partly with a knife and partly by blunt methods, a canal, from 10 to 11 cm in length and 5 cm in width, is formed between the rectum and the urethra. Following this two flaps, from 10 to 12 cm in length and 5 cm in width, are cut from the inner surface of the thighs almost parallel to the labia majora. A thin layer of fat is removed with the flaps. At the lower edge the flaps remain connected with the skin of the thigh. The flaps are sutured together in such a manner that they form a tube, this is placed in the preformed canal and is sutured into position. Then a loose gauze tampon is introduced into the newly formed vagina and is left there for four or five days. Care must be taken that the tampon is neither too tight nor too loose, for in the first instance necrosis might result and in the second event displacement is likely. He suggests that instead of the gauze tampon a sponge cylinder may eventually be used. He asserts that the immediate as well as the late results of his method are favorable.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

78: 5433 5524 (Dec. 1) 1934

- Nasopharyngeal Fibroma C. E. Benjamins—p. 5434
 *One Thousand One Hundred and Forty Seven Examinations of Syphilis According to New Cataphoretic Serum Reaction L. J. Delbaere—p. 5442
 Influence of Xerophthalmia and Other Frequent Ocular Diseases on Amount of Blindness in a Country J. Tijssen—p. 5452
 Possibility of Pregnancy After Inflammation of Both Ovaries H. Heymans Van Amstel—p. 5459

Cataphoretic Serum Reaction in Syphilis—Delbaere describes a serologic reaction for syphilis based on the lowered electrical charge carried by antigen particles suspended in a syphilitic serum. The amount of this decrease of charge is measured by means of the cataphoretic displacement rate of these particles, which is compared to that of a lipid dye, simultaneously suspended in the serum. By means of the results obtained with this reaction in 1,147 serums, which were at the same time submitted to the Wassermann reaction and two of the usual flocculation reactions, it proved that this reaction is more sensitive than the extremely sensitive Müller reaction. The author, therefore, does not doubt its specificity.

Ugeskrift for Læger, Copenhagen

96: 1201 1228 (Nov. 8) 1934

- *Traumatic Fat Embolism E. H. Hansen—p. 1201
 Urticaria Factitia K. H. Baagø—p. 1211

Traumatic Fat Embolism—Of the eight cases of respiratory and cerebral forms of fat embolism reported, the first presented clinically and anatomopathologically a characteristic picture of the cerebral form and is described in detail by Hansen. A free interval of about eighteen hours followed fracture of the femur, humerus, radius and patella in an automobile accident. The patient then became unconscious during sleep, there were involuntary urination and accelerated pulse and somewhat later rise of temperature and bloody, coffee ground vomit. Death occurred about fifty-eight hours after the accident. Microscopically fat emboli were seen in the lesser and the greater circulation. The author says that in the respiratory form of fat embolism diagnosis is sometimes impossible and in other cases difficult, especially when the picture resembles that of wound shock. A free interval and rise of temperature should suggest fat embolism. In bronchopneumonias after trauma, fat embolism should be considered. The symptoms of the cerebral form of fat embolism should be borne in mind in puzzling and unexpected general cases after fractures and other traumas. In fatal cases following traumas, especially fractures, fat embolism should be looked for, particularly in the absence of lesions which in themselves satisfactorily explain the outcome. Prophylaxis seems to be of doubtful value and no treatment has given convincing results. Attempts to avoid the entrance of more fat into the blood stream are regarded as rational. A case is cited to illustrate probable spontaneous recovery after fat embolism.

96: 1229 1252 (Nov. 15) 1934

- *Intestinal Invagination in Childhood L. Ø. Christensen—p. 1229

Intestinal Invagination in Childhood—Of fifty-four cases reported in fifty-two children, thirty-four in boys and eighteen in girls, thirty occurred in children less than 1 year of age, the oldest child was 12. The mortality was 16.6 per cent. In Christensen's opinion bloodless treatment is indicated in fresh cases, particularly in the first year of life, when the general condition is greatly affected. If observation in the following hours shows reposition to have failed, there is a possibility that improvement in the general condition will afford a better outlook for operative intervention. The normal operative method used was laparotomy through incision of the right side of the rectus. The author says that while the importance of rapid operation has frequently been emphasized, the greatest care in treatment of the intestine is a factor no less important. Resection in small children should be a last refuge, and recovery is seen after conservative treatment of apparently grave cases. Eventration of the intestine should be avoided as far as possible. Reposition can often be done intraperitoneally. The lines of treatment for invagination are not yet fixed, but the tendency is in the direction of surgical treatment as the normal method.

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PERORAL GASTROSCOPY

INCLUDING EXAMINATION OF THE SUPRADIAPHRAG-
MATIC STOMACH

CHEVALIER JACKSON M D

AND

CHEVALIER L JACKSON, M D
PHILADELPHIA

Endoscopic examination may be said to be indicated for the diagnosis of every disease of the stomach, though not necessarily in every case of such disease. It does not replace nor lessen the necessity for any other method of diagnosis nor does it replace other methods for treatment except for the removal of foreign bodies.¹

There has been fully realized the prophecy made seventeen years ago by one of the early workers in this field, who said "Gastroscopy is not simply a feat. It has a field of usefulness that will increase as our skill, and knowledge increase."²

Broadly speaking, there are three methods of gastroscopy: one by using an open tube, another by using a lens system and a third by combining both the open tube and the lens system. Each of these methods has its uses and its limitations.

METHODS OF GASTROSCOPY

Open-Tube Gastroscopy—This is the method required for the removal of foreign bodies and the taking of specimens of tissue for histologic examination. It has all the advantages of looking directly at tissues examined rather than at a lens-projected or prism-deflected image.³ Its limitations are (a) It requires a straight and rigid instrument, (b) much training and skill in the introduction of the instrument are necessary for the safety of the patient and (c) the explorable area is limited even with the aid of the very important external abdominal manipulation.⁴ It is perfectly safe so far as the stomach is concerned, but serious and even fatal trauma of the esophagus may occur if its passage is attempted by the untrained. These dangers are eliminated by skill and an especial element of safety arises from the fact that the esophageal lumen ahead is always followed. The tube is never

advanced until a lumen is found.⁵ A lumen ahead cannot be seen with a lens system.

Lens System Gastroscopy—The advantage of a lens system is that a much larger field of vision is available. The limitation is the danger of introduction of an instrument presenting no esophageal lumen ahead. This danger is obviated by the introduction of an open tube through which a lens system is passed. The development by Wolf and Schindler of a flexible distal half for the lens-system gastroscope has eliminated much of the difficulty and danger of blind passage, provided there is no disease of the esophagus.

Danger—Almost all the danger in gastroscopy is associated with the insertion through the esophagus, especially at the cricopharyngeal and diaphragmatic pinchcocks. Even the flexible gastroscope, if put into the mouth and ruthlessly pushed, is more likely to enter the mediastinum or pleural cavity than the esophagus.⁶

Complications—Pneumothorax, mediastinal emphysema, mediastinal abscess, gaseous cervical cellulitis and subcutaneous emphysema are all possible complications of ill advised or unskilled instrumentation. None of these need follow careful, gentle insinuation of a gastroscopic tube by the technic of finding the lumen.⁷

Technic has been already minutely described⁸ and hence need not be given here. The watchword of safety is "find the lumen." In finding it anatomic knowledge is useful and even essential but it must never be taken for granted that the lumen is where it ought to be, the lumen must be found wherever it may be. With the open-tube gastroscope it is found by sight, with the semiflexible gastroscope it is found by sense of touch. If it cannot be found by touch, it may be strictured or compressed or deflected. Skilful open-tube gastroscopists will always examine the esophagus with the open tube first, not only to determine the presence or absence of adequate lumen unweakened by disease but to exclude esophageal disease as a cause of the patient's symptoms. Roentgen study will help, but its negative results are not always conclusive, in some cases a radiographically and fluoroscopically adequate lumen will not permit the blind passage of the flexible gastroscope because the lumen is not as large as it looks to be in the roentgenogram, or because there are webs, shelves or offsets in the axis that are not revealed by the roentgen examination.

Read before the Section on Gastroenterology and Proctology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

¹ Jackson, Chevalier and Jackson, C. L. *Bronchoscopy, Esophagoscopy and Gastroscopy*. Philadelphia: W. B. Saunders Company, 1934.

² Jackson, Chevalier. *Tracheobronchoscopy, Esophagoscopy and Gastroscopy*. St. Louis: Laryngoscope Publishing Company, 1907.

³ Jackson, Chevalier. *Peroral Endoscopy and Laryngeal Surgery*. St. Louis: Laryngoscope Company, 1914.

⁴ Jackson, Chevalier. *Statistics of Seventy Cases of Gastroscopy*. *Am J M Sc* 136: 72 (July) 1908.

⁵ Jackson, Chevalier. *Gastroscopy Reports of Additional Cases*. J A M A 49: 1425 (Oct 26) 1907.

⁶ Jackson, Chevalier. *Esophagoscopy and Gastroscopy Reference Handbook of the Medical Sciences*. New York: William Wood & Co., 1914.

⁷ Jackson, Chevalier. *Endoscopic textbook*, Paris: Octave Doin, 1923.

⁸ Jackson and Jackson.¹ Jackson (footnotes 3 and 7).

NORMAL GASTROSCOPIC APPEARANCES

The appearances of anything are made up of color, form and movement

Color—This is in the eye of the observer and hence subject to a personal equation. Individual variations within the normal are almost as great as in the pharynx. It may be pale and anemic or red and engorged. Another variable is the degree of illumination. A brilliantly overilluminated electric lamp will blanch the apparent color, a weakly illuminated lamp will deepen the color and render it more reddish in tint. Therefore it is essential that the degree of illumination be always the same. Still another variation may come from the presence of even a small amount of food, this deepens the color.² Under proper illumination the color of the gastric mucosa is a deep pink as seen in the open-tube gastroscope, a pale orange red as seen in the lens-system rigid gastroscope, and a somewhat deeper red as seen in the flexible gastroscope. In going down with the open-tube gastroscope the esophageal mucosa is noted as a pale rather bluish pink, the transition to the deeper yellowish pink on passing through the hiatal pinchcock into the stomach is readily noted (for gastroscopic purposes the abdominal esophagus does not exist). When a lens system is put in through the open tube, even with a much greater illumination, the color is usually some-



Figure 1



Figure 2

Fig. 1—Bleeding round ulcer of the gastric mucosa in a woman aged 28. The blood trickled from the erosion on the fold and formed a little pool in the lower posterior part of the stomach (patient recumbent). Open tube gastroscope. Usually the bed of the ulcer is yellowish but if bleeding as in this case the bed of the ulcer is crimson with blood. The surrounding mucosa is usually not as inflammatory in appearance as one would expect. There are in some cases subepithelial hemorrhages in spots.

Fig. 2—Carcinoma involving the lesser curvature in a man aged 33 as seen through the flexible lens system gastroscope. The window of the gastroscope is directed toward the pylorus. The extensive infiltration seen at the right of the field was a pale lavender mottled with white and violet. Both color and form of image of malignant tumors vary widely.

what deeper and more orange in tint. This is in great contrast to the color of the esophagus by the open tube and especially to the pale pink color normally seen through the lens-system cystoscope. Branching vessels are visible with the open-tube gastroscope.

Form—The form of the structures seen through the gastroscope varies greatly with the region, the movements and the degree of inflation, if used. Folds crowd in on the mouth of the open tube. They are not ordinarily seen on the proximal part of the lesser curvature, but increase in prominence beyond, they are not conspicuous on the anterior wall. In other regions the folds crowd in until driven back by a few strokes of the handball. With a window plug and increased pressure they may be made to disappear almost completely from any part. It is difficult to see the pylorus because of the mounding forward of the posterior gastric wall caused by the spine. With the flexible gastroscope and moderate inflation, folds are not usually noticeable on the anterior wall, on the lesser curvature they are visible toward the antrum. In other regions of the

stomach, folds are conspicuous unless flattened by inflation, in some regions they can be obliterated by inflation pressure. After passing a distance of a few centimeters from the cardia, one gets the impression of a trend of the direction of the folds toward the pylorus. There are folds, however, that seem to run in any direction. Branching of folds is noted. The forms of the pylorus and the antrum vary with movement and position but may be identified by general average form. The left end of the antrum may be contracted so as to lead an inexperienced observer to believe that he is looking at the pylorus. All anatomic forms seen through the open tube are actual size, through a rigid lens system they are magnified, with a flexible lens system they are diminished.

Movement—The stomach is in constant movement, yet this is not troublesomely in evidence at gastroscopy except as it causes a great variation in the images seen and recorded. Under the influence of movement the images give the impression of prominence, recession and even disappearance of folds. The most constant form of fold, as noted many years ago,² is one of horseshoe shape seen at the right as the stomach is entered with the open tube. At times a puckering of the folds may give the impression of numerous narrow folds at the pylorus (fig. 3).

NEGATIVE OBSERVATIONS

Though negative observations are of less value than positive ones, they are of more importance today than they were in the earlier days of the work.⁹ It is possible for a small isolated lesion to be overlooked, but, if the observer's eye is educated to gastroscopic vision, normal mucosa can be recognized and gastritis or other diffused lesions can be excluded. With the flexible gastroscope the larger explorable area renders a negative opinion still more valuable, but it must be remembered that no image is received from the distal end. It comes through a side window. To give importance to negative observations this side window must be turned to face successively in all possible directions. This is done by rotation, and a full free swing around the theoretical 360 degrees is not always practically attainable because of the mounding forward of the posterior gastric wall by the spine. Careful search and repeated examinations with the flexible gastroscope will yield valuable data even in a negative way.

Contraindications—When clearly indicated in a patient free from cardiovascular disease, there are no absolute contraindications to open-tube gastroscopy except lack of skill in performing it. If obstructive disease of the esophagus prevents entering the tube all the way to the stomach no harm is done and the esophageal malady is positively diagnosed. The same may be said of the combined open tube and lens-system gastroscope in which the open tube is first passed by sight. For lens-system gastroscopes, rigid or flexible, disease of the esophagus is a contraindication because of the special danger of a blindly passed instrument in such cases.

INDICATIONS FOR GASTROSCOPY IN DISEASE

Every patient with gastric symptoms should have a gastroscopic examination for diagnosis, unless there

9 Jackson (footnotes 27). Jackson, Chevalier. Esophagoscopes and Gastroscopy. *Laryngoscope* 21:923 (Sept.) 1911. *Gastroscopy*. New York: M. Rec. 71:549 (April 6) 1907. *Recent Progress in Endoscopy of the Larynx, Trachea, Bronchi, Esophagus and Stomach*. Proc. Internat. M. Cong. London 1913, sec. 15. *Laryngoscope* 23:721 (July) 1913.

are overbalancing contraindications. Today this seems a radical statement, but the examinations with the gastroscope in so many cases have made such important additions to the pathologic data that one cannot but feel that a full study of a case of suspected gastric disease has not been made if gastroscopy has been omitted. It should be repeated for emphasis, however, that gastroscopy is not indicated in any case as a substitute for other methods of examination, therefore, no other method should be omitted. Gastroscopy reveals the pathologic changes, it gives little informa-



Figure 3



Figure 4

Fig 3—The pyloric antrum showing the open pylorus beyond the overhanging fold. The form of the antrum varies widely in form and movement so that no one image can be regarded as characteristic but the pylorus itself when normal varies little and is always easily presented and identified.

Fig 4—Gastrosopic view showing chronic gastritis in the herniated stomach in a man aged 54. The surface is mottled and superficial erosions are visible on the three folds toward the left. The color was bright orange red.

tion, except inferential, as to function. Persistence of symptoms after gastro-enterostomy calls urgently for gastrosopic examination not only of the stomach in general but of the anastomotic orifice especially. Localized gastritis and erosions are often found in such cases.

Hematemesis is a strong indication for gastroscopy whether the vomited or regurgitated blood is bright red or brownish.¹⁰ In all such cases the open-tube gastroscope or at least the standard esophagoscope should be passed first to exclude disease of the esophagus. If this is negative, the flexible gastroscope may be passed for more complete exploration of the stomach. A bleeding point may be seen corresponding to a slight erosion, but care is necessary to avoid mistaking for the source of hematemesis the slight bleeding sometimes noted from tubal contact, this comes from minute, bulging capillaries, is only a few drops in amount, and does not reappear when wiped away. The wiping test can be applied only if the open tube is used. In some cases a bleeding point and fresh blood can be found, and a lake of it may be seen in the dependent part of the stomach (fig 1). Older brownish blood may be present, but it may not always be possible to recognize the dark interplical streaks of fluid through the flexible gastroscope, and because of the angle of vision a lake may not be presented to view. In such cases these evidences of bleeding may be obtained with the open tube, and after aspiration the source may be found. If not, the examination should be repeated at a number of subsequent seances with the flexible gastroscope.

Chronic gastritis is very commonly associated with a moderate amount of bleeding. Larger hemorrhages are, of course, usually found in ulcer, cancer and breaking down gumma. In these conditions biopsy with the open-tube gastroscope is indicated. The following

abstract of a case is illustrative of the value of gastroscopy in locating the source of hemorrhage.

CASE 1—Hematemesis from erosion of the gastric mucosa. A neurotic, anemic, emaciated woman, aged 28, with a fearful dread of cancer, brought up considerable quantities of blood, spattering it about over the bed or walls or furniture as it was projected from the mouth during almost daily attacks of choking, coughing and strangling. The department of diseases of the chest had referred the patient with a negative report to the gastro-enterologic clinic. All examinations, including gall-bladder, gastric analysis and roentgen-ray, had been negative except that the examinations of the vomited blood indicated that it had been in the stomach, though it was never of "coffee ground" character. Gastrotaxis was considered a possibility. The patient was referred to us to determine the source of blood, first by esophagogastrosopy, and if that was negative we were to do a tracheobronchoscopy also. The esophagus was found free of lesions, but longitudinal streaks of blood were noted. Passing downward in the stomach, three separate bleeding points were noted. With each of them the blood reappeared promptly when wiped away, in the moment before reappearance it was noted that the first and third points were erosions and that the intermediate one was a small ulcer. The latter is sketched in figure 1. The hematemesis ceased after treatment by a dietary regimen and the administration of bismuth subnitrate dry on the tongue.

Neurotic Patients with Gastric Symptoms.—A tentative diagnosis of hysterical gastric neurosis is a clear indication for gastroscopy. Over and over again in such cases a lesion, most often a chronic gastritis, has been found, and appropriate treatment has yielded good results. In many instances of supposed hysterical gastric symptoms we have found the stomach normal, but the symptoms fully accounted for by a chronic esophagitis, a peptic ulcer of the esophagus or other entirely unsuspected esophageal lesions. Treatment directed to the gullet caused the supposed gastric symptoms to disappear. The following abstracts from our records are examples.

CASE 2—Peptic ulcer of the esophagus mistaken for hysteria. A woman, aged 23, had had various unquestionably hysterical manifestations since she was 15 years of age. For two years she complained of fulness, pressure, weight epigastric pain and distress after eating, at times to get relief she would induce

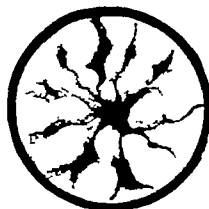


Figure 5



Figure 6

Fig 5—Chronic edematous nodular gastritis of the supradiaphragmatic stomach as seen through the open tube gastroscope in a woman aged 47.

Fig 6—Edematous hypertrophic gastritis with polypoid formations as seen through the open tube gastroscope in a woman aged 37. Biopsy demonstrated that the tumor like masses were not truly neoplastic they were made up of hypertrophic, edematous gastric mucosa.

vomiting by putting her finger in her throat. Burning pains would persist for half an hour or less, after this she would be comfortable until she ate again. Medicines and special food formulas produced no discomfort. "Hunger pains" were often noted. Functional, roentgen and all other studies were essentially negative. A tentative diagnosis of hysteria was made and the patient referred to us for gastroscopy. The stomach by direct inspection was normal, but there was a small peptic ulcer in the lower third of the esophagus surrounded by the usual extensive area of peptic esophagitis.

CASE 3—Chronic gastritis treated for hysteria A girl, aged 16 years, had had a number of hysterical attacks accompanied by complaints of a lump in the throat, vague pains in various regions and severe "blinding" headache that disappeared after it was too late to go to school. Recently, during summer vacation, she had paroxysms of colicky pain, eructation, and a feeling of pressure vaguely referred to "the pit of the stomach." The patient had been treated as hysterical. All functional tests and laboratory examinations including roentgen studies were negative. Gastroscopy revealed an intensely red mucosa, swollen folds that obliterated valleys between them, small erosions and rather large patches of tightly adherent secretions. Treatment by the gastro-enterologist caused a disappearance of these objective evidences of chronic gastritis, and general medical care and management cured all the psychic manifestations.

INDICATIONS FOR GASTROSCOPY FOR FOREIGN BODY

Any foreign body that has reached the stomach spontaneously by natural passages may be brought back



Fig. 7—Toy watch in stomach of a child aged 4 years illustrating the indications for gastroscopic removal. The toy watch had been in the stomach for more than a month. Gastroscopic removal through the mouth was indicated partly because of doubt as to passage out of the stomach but chiefly because of the probability that the length of the foreign body would cause it to jam in the turns of the duodenum even if it did pass through the pylorus. No anesthetic general or local was necessary.

up by the same route. The indications for doing so, however, may or may not be present. Briefly, they are as follows: (1) a foreign body too large or a pylorus too small¹¹ to permit passage of the intruder through the pylorus, (2) a foreign body of character rendering its passage through the intestine dangerous, this danger may arise from sharp points or edges (fig. 7),^{11b} size (figs. 7 and 8),¹² or toxic qualities, as radium capsules.¹³ Pins and needles may penetrate the pyloric ring. There

are many borderline cases, as for instance open safety pins. Many have been known to pass through the intestine harmlessly, but some have lodged and perforated. A large safety-pin, if not too large to pass the pylorus, may lodge in the turns of the duodenum.^{11b} If it passes these it will go through ring-end first and the spreading point will prevent the keeper hooking anywhere, on the other hand, a very small pin may turn over and try to pass onward, point and keeper leading, this is almost certain to cause lodgment. Peroral pyloroscopy has been found necessary for removal of an open safety-pin hooked in and propping open the pylorus.¹⁴ These contingencies render it advisable to remove open safety-pins by peroral gastroscopy. Foreign bodies impacted in the supradiaphragmatic stomach require removal by peroral gastroscopy.^{11b} Before a gastroscopy for foreign body is done in the subdiaphragmatic stomach, a lateral roentgenogram is required to make sure that the foreign body really is in the stomach and not in the colon anteriorly or the duodenum posteriorly nor in the costophrenic sulcus of the left lung.¹ A foreign body may rap many times at the pyloric door before it is permitted to pass the threshold. A month is long enough to wait for any foreign body to pass out of the stomach. Gastroscopic removal is too simple and safe a procedure to justify waiting longer. During the waiting period no cathartics should be given and no change in diet should be made, normal intestinal contents and normal peristalsis afford the best conditions for safe passage. The subject of gastroscopy for foreign bodies is elsewhere discussed more fully.¹⁵

Gastritis—It is in uncomplicated gastritis that the generally invaluable diagnostic aid of the roentgen ray is least helpful. It is therefore in this disease that gastroscopy has one of the largest fields of usefulness in supplementing the diagnostic work of the gastro-enterologist. A tentative diagnosis of gastritis calls for diagnostic gastroscopy, and the call is very urgent when treatment based on the inferential working diagnosis has not resulted in a satisfactory degree of improvement. In many of our cases gastritis was associated with preventriculosis (so-called cardiospasm). In most of these, so far as determined by objective demonstration, the gastritis was limited to the left two thirds of the stomach, complete exploration of the stomach was not made. All study and treatment were concentrated on the preventriculosis to which the gastritis was assumed to be secondary. It seems justifiable to infer that the constant trickling of acrid fermented foods from a preventriculous esophagus caused the gastritis. In most cases the gastritis improved as the esophageal stasis was eliminated.

The following is an abstract of the history of a typical case of gastritis mistaken for cancer.

CASE 4—Chronic gastritis with symptoms suggesting cancer A man, aged 62, had been under treatment during nearly two years on a diagnosis of cancer based on pain, anemia, emaciation, color of the skin, absence of hydrochloric acid, and a small palpable mass. Gastroscopy revealed an old chronic gastritis with scarring and a tiny spot of recent ulceration.

The gastroscopic appearances of chronic gastritis vary greatly, especially as seen through lens-systems. The

11 (a) Jackson and Jackson.¹ (b) Foreign Bodies in the Air and Food Passages textbook and atlas New York Paul Hoeber Inc. pp 115 161 162 164 170 210 and 246

12 Jackson Chevalier Safety Pins in Stomach Peroral Gastroscopic Removal Without Anesthesia J. A. M. A. 76:577-579 (Feb. 26) 1921

13 Clerf L. H. Radium Capsules in Stomach Gastroscopic Removal Am. J. Roentgenol. 17 635-636 (June) 1927

14 Jackson Chevalier Gastroscopic Arch. internat. de laryngol. 23 785-800 1907 Pyloroscopy S. Clin. North America 4 2 (Feb.) 1924

15 Jackson Chevalier and Jackson C. L. Les maladies de l'oesophage. Monographies Paris Presses Universitaires de France, 1932 footnotes 1 and 11 b

gastroscopic appearances in the open tube are easily recognized by any one familiar with the appearances of mucosal inflammation. They look very much like similar processes on other mucosal surfaces. The same cannot be said of the lens-system and flexible gastroscopes. It is necessary for the observer to acquire familiarity with the modifications imposed by the lens-system, especially the darkening and reddening effect, as elsewhere herein mentioned. In some cases of gastritis the mucosa is a still deeper red, in other cases it is pale, anemic almost cicatricial, and one gets, sometimes, the impression of a deep violet tinge. The

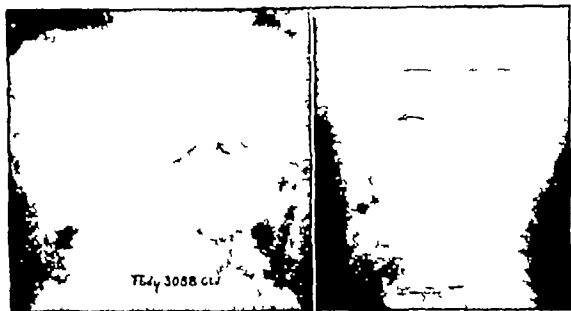


Fig 8—Bobette pin in the stomach of a child aged 2 years removed through the mouth by gastroscopy. Removal was indicated because of the length of the pin in relation to the age of the child. It was determined that the pin was too long to make the turns in the duodenum, involving great risk of transfixion. Cases of gastroscopic removal and of duodenal transfixion of bobette pins of this kind and size in children of this age have been elsewhere reported by us (footnotes 1 and 11 b). The lateral roentgenogram was necessary to determine positively that the foreign body was in the stomach.

presence of a little food deepens the color. Through a lens system the swollen folds or rugae give the impression of crowding together, obliterating the open spaces between ridges. There is blurring of the sharp outlines. In parts of the stomach where there are no ridges the mucosa is mottled, dark and velvety in appearance. Purulent or mucopurulent secretions, when due to gastritis, are tightly adherent. Swallowed discharges from the throat and nose are usually not adherent to the walls of the stomach.

The appearances of gastritis vary to a much greater extent than pathologic studies based on postmortem gross and histologic examinations would lead one to believe. It would seem that a reclassification of the varieties of gastritis based on gastroscopic observations will be necessary. Localized as distinct from diffused gastritis is much more commonly seen gastroscopically than one would suppose from autopsic records.

It must be remembered that the presence of inflammation does not exclude malignant or benign ulcer or other lesion, because once the epithelial barrier is passed in any disease the mixed secondary infections produce inflammatory conditions.

Gastroscopy of the Supradiaphragmatic Stomach—Hiatal hernia of the stomach is a rather common condition in our records. Most of these patients came with a tentative diagnosis of esophageal disease, in many instances cancer of the esophagus. In all these cases a definite diagnosis was reached by gastroscopic examination.

The open tube is best for this purpose because the cavity of the supradiaphragmatic stomach is not suffi-

ciently large or distensible to get away from the walls a sufficient distance to obtain a good image in a lens-system instrument. Moreover, the folded walls collapsing over the distal end of the open tube gives an ideal opportunity for minute inspection. After the folds have thus passed minute inspection before the mouth of the tube, a handball is attached in place of the aspirating rubber tube and the folds are gently pushed back. To prevent the escape of air, the proximal mouth of the tube is covered with the thumb. When the thumb is removed from time to time the cavity of the herniated stomach is demonstrated, and the folds are seen slowly to regain their collapsed positions more or less influenced by the negative intrathoracic pressure created by inspiration. Our gastroscopic observations indicate that the esophagus in some of these cases is not congenitally short but fails to grow in length. We believe that the vertical growth of the esophagus depends on the downward drag of the diaphragm and abdominal viscera. When the hiatus is congenitally large, this drag on the growing esophagus is lacking. The primal factor is therefore not a congenitally short esophagus but a congenitally large hiatus esophageus. Our observations in other cases indicate that the hernia was acquired in adult life during violent continued vomiting.

Gastritis of the Supradiaphragmatic Stomach—

Chronic inflammation of the mucosa is commonly present in the herniated part of the stomach. Erosions often accompany the inflammation, the usual site of erosion is at the entrance of the herniated stomach, in other words the part that properly belongs in the grasp of the hiatal pinchcock of the diaphragm (figs 9, 10 and 11). These erosions and the form of gastritis limited to the supradiaphragmatic stomach often give rise to symptoms suggestive of ulcer of the subdiaphragmatic stomach in cases in which the latter is normal. This form of gastritis limited to the herniated stomach does not seem to have been recognized (figs 4

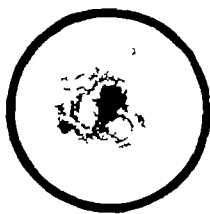


Figure 9

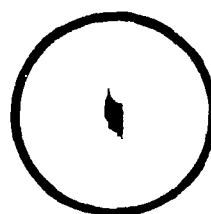


Figure 10



Figure 11

Fig 9—Superficial erosive evanescent type of ulcer with inflammatory zone on the mucosa at the esophagogastric junction in a patient with hiatal hernia of the stomach. The stenosis the ulcers and the inflammatory zone are typical of hiatal hernia and are probably due to contact of regurgitated acid gastric juice with this esophageal mucosa.

Fig 10—Appearance in same patient as in figure 9 three weeks later. The ulcers have healed but the stricture remains. It is oval.

Fig 11—Appearance in same patient as in figures 9 and 10 a month later. A new crop of ulcers has developed and they are in new locations.

and 5). The following is an abstract of an unusual case.

CASE 5—Chronic aphthous or herpetic gastritis of the supradiaphragmatic stomach. A woman, aged 50, complained of intermittent attacks of burning and pain in the epigastrium extending through to the back, sometimes coming on immediately at other times within a few hours, after eating. Eructations were noted occasionally. The symptoms would all disappear for a few weeks at a time and seemed more severe for a few days when they recurred. The recurrent attacks

were regularly periodic, though menstruation had ceased. The patient was referred for gastroscopy, with negative reports from the gastro-enterologic and gynecologic departments. Passage of the open tube revealed the hiatal part of the esophagus somewhat narrowed and located at a much higher level than normal. On three of the folds there were superficial yellow erosions. Each time these erosions were touched with the lip of the mouth of the tube the patient flinched. The tube (8 mm) met with slight resistance but passed on downward entering a supradiaphragmatic stomach with chronically inflamed mucosa. The hiatal passage was narrower than usual in cases of herniated stomach. At a subsequent examination, other erosions were noted. Those first seen healed. A 7 mm tube was later slowly and carefully insinuated into the subdiaphragmatic stomach. This was found to be apparently normal. Dilatations of the narrowing at the hiatal pinchcock produced permanent relief. There had been no recurrence of symptoms when the patient was last heard from three years later.

New Growths in the Stomach—Benign and malignant growths are usually evident at roentgen examination, yet we have often been called on to decide definitely, by means of gastroscopy, before the patient would consent to operation. This was most often in patients who objected to an exploratory operation. In quite a number of our cases a small malignant ulcerative growth was found with the gastroscope after roentgen examination was negative. In other cases gastroscopy has been of the utmost value in relieving the anxiety of the physician and the anguish of the patient by demonstrating the benign character of a condition supposed to be malignant. The following notes are abstracted from the histories of examples of such cases.

CASE 6—Chronic gastric ulcer In a man aged 40 a previous diagnosis of cancer had led to a miserable year of anxiety accentuated by the fact that the father and a sister had died of cancer. The symptoms were loss of weight, epigastric distress unrelated to food vomiting occasionally showing "coffee grounds" anorexia constipation, occult blood and anemia. Repeated gastric analyses demonstrated absence of free hydrochloric acid. The report of a roentgen examination was negative. Gastroscopy revealed chronic esophagitis chronic gastritis and a chronic ulcer at the edge of the antrum in the segment merging into the lesser curvature. The appearances were so typical of chronic ulcer that we did not deem it necessary to take a specimen, but yielding to the request of the medical and surgical consultants, we did so nipping out the margin of the ulcer. Dr. V. L. Andrews found no evidence of malignancy. The relief of the patient's anxiety and an ulcer regimen resulted in a complete cure. A year later, when the patient came in none of us recognized him, he weighed nearly 200 pounds (90 Kg).

CASE 7—Adenocarcinoma of the stomach In a man aged 24, typical general symptoms of carcinoma were present but doubt was cast on this diagnosis because of the negative roentgen examination, the age of the patient, hyperchlorhydria the intermittence and the duration of the symptoms (six years), and the absence of a palpable mass. Gastroscopy revealed a chronic gastritis and a soft bleeding mulberry-like lesion on the posterior wall close to the antrum. A specimen taken from this was reported by Dr. V. L. Andrews as adenocarcinoma. At operation J. Hartley Anderson found no metastases and a favorable limitation in the extent of the growth. Partial gastrectomy gave three years of freedom from local recurrence. The patient died of sigmoidal fibrocarcinoma.

Biopsy—The taking of a specimen of tissue through the open-tube gastroscope is easily done, and hundreds of cases without a single complication have demonstrated its freedom from danger when done with proper precautions. The nipping off of a benign growth or the removal of fungations from a malignant one involves no risk. In the ulcerative type a specimen

may be taken from the edge of the ulcer. There might be risk in biting deeply into the bed of the ulcer, especially if it should prove to be benign. In the infiltrative type of lesion not yet ulcerative and especially when the mucosa is not grossly abnormal, it is best to postpone the taking of a specimen until the ulcerative stage has been reached.

CONCLUSIONS

1. Contraindications to gastroscopy are few, they are of two kinds, general and local. General contraindications are (a) very high and irreducible hypertension and (b) a moribund or hopelessly ill condition of the patient.

2. Local contraindications to the passage of an open tube do not exist except in a case of aneurysm encroaching on the esophagus. Any disease of the esophagus constitutes a contraindication to the use of the flexible gastroscope.

3. Lens-system gastroscopes present no image or structure in advance of the distal end, therefore preliminary open-tube examination is advisable for safety.

4. The only dangers in flexible-tube gastroscopy are incidental to passage through the esophagus. The dangers are entirely eliminated by careful work and by preliminary exclusion of esophageal disease.

5. A diagnosis of gastric neurosis or of hysteria with gastric manifestations should not be made until both esophagoscopy and gastroscopy have excluded organic disease of the esophagus and stomach.

6. Gastric symptoms so often arise from esophageal lesions that open-tube esophagoscopy is indicated, and for reasons given it should precede gastroscopy.

7. For diagnostic inspection of the stomach the flexible gastroscope is best. It does not permit of biopsy nor of removal of foreign bodies, however. For these, the open tube is required.

8. Gastroscopy for a foreign body is a safe procedure that is advisable when the size, shape and other qualities of the foreign body renders its passage uncertain or unsafe.

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ABSTRACT OF DISCUSSION

DR. GABRIEL TUCKER, Philadelphia: I should like to speak of open tube gastroscopy. The authors have given the only safe rule: "Find the lumen." I should like to repeat the injunction and add "Find the lumen and follow it." The great danger in gastroscopy is from complications that follow trauma during the introduction of the gastroscope. If the lumen is found and followed, there should be no complications in a patient whose esophagus has been found normal on examination with the open tube. The authors have mentioned elsewhere the necessity for careful roentgen study of the cervical thoracic and lumbar spines to demonstrate any abnormality that might contraindicate gastroscopy. This cannot be too strongly emphasized. Free mobility of the spine is necessary in gastroscopy and careful check-up should be made in order to prevent injury to the spine as well as to avoid injury to the esophagus. Careful roentgen study of the spine, esophagus and stomach should be made in every case prior to gastroscopy. In esophagoscopy the open tube must enter the stomach if the examination of the esophagus is complete. The area of stomach explored is limited to the cardiac end. It is often found however that the lesion producing the esophageal symptoms is in the cardiac end of the stomach, particularly carcinoma. I have been able to visualize peptic ulcer of the cardia. Biopsy may be done if indicated. In gastroscopy for foreign body it is very important to know that the foreign body is in the stomach immediately before attempt at removal.

I have used a method of localization which I have not found recorded, which will demonstrate the location and also its relation to the hiatal esophagus through which the gastroscope must enter for removal. The localization is accomplished by fluoroscopy and films in the anterior-posterior and lateral planes with the patient in the position required for gastroscopy. A rubber tube is passed, from 14 to 16 size, a feeding tube of the Levin type may be used, a sufficient length of tube is passed to place a coil in the stomach or until contact has been made with the foreign body. Films and fluoroscope will demonstrate the foreign body if it is in the stomach and also show its relation to the hiatal esophagus. The tube can then be withdrawn and gastroscopy done immediately and there will remain no opaque material to obscure fluoroscopic guidance. The stomach may be emptied of secretions before the tube is withdrawn, if desired. The greater number of cases of foreign body occur in children. Gastroscopy is most difficult in children, because the pressure of the tube compresses the trachea and may obstruct breathing to a dangerous degree. Tracheal pressure has been avoided by improvements in the gastroscope making the size of the tube smaller without lessening the working lumen of the tube. This has been accomplished by the perfection of a one-piece lamp light carrier which I devised, for the infant bronchoscope, with the assistance of the George P. Pilling Company of Philadelphia. This light carrier lamp has been adapted to a slender esophagoscopic tube. Two sizes of tubes have been constructed for infants 35 mm by 35 cm for older children, 5 mm by 35 cm. The larger gastroscopic tube will permit the use of curved forceps that go around the corner," which one frequently finds necessary for the removal of foreign bodies. The use of the lens system gastroscope in its present stage of development should prove a valuable aid in the diagnosis of gastric lesions. It will not be of aid, however, in removal of foreign bodies or the treatment of diseases of the stomach until further improvements are made.

DR WILLIAM A. SWALM, Philadelphia. It has been my privilege to work up many of these cases clinically and then to visualize the stomach by means of the Wolf-Schindler, semi-flexible gastroscope. This gastroscope is about the size of the old-fashioned large stomach tube. The upper half is more rigid than the lower half, and the lower half has a series of lenses, the lower lens being just far enough from the tip so that it is not easily bathed by the stomach juices. The authors have performed considerable preliminary studies on dogs and have correlated the position and partial flexibility of the gastroscope in association with the x-ray department. They state that the method does not replace or lessen the necessity for any other diagnostic or therapeutic method, except for the removal of foreign bodies. There are very few contraindications to its use except for such local conditions of the esophagus as varix, stricture, carcinoma, ulcer, and the so-called cardiospasm. Other contraindications are hypertension, hopelessly ill patients, and aneurysm. Cancer and ulcerations of the stomach, gastritis and other conditions were observed without undue discomfort to the patients and without any mishaps. In acute pain of suspected ulcer, the procedure should be postponed. Success or failure in diagnosis depends to a great extent on the proper preparation by one experienced in the technical procedures of gastric analysis and lavage, and the correlation of these observations with the trained endoscopist of the esophagus and stomach. After careful observation of the fasting gastric residuum and lavage extractions the stomach tube is allowed to remain in situ for drainage until sufficient time has elapsed for morphine and atropine to exert their physiologic effect. The latter point is important for two reasons: first to quiet an apprehensive attitude on the part of the patient and second to check excessive secretion. The patient should be fully informed and assured that a surgical operation is not contemplated. Visualization through the gastroscope is somewhat analogous to that of the sigmoidoscope except that in the lens system, as mentioned by the authors, the mucosa of the normal appears somewhat of a deeper orange red shade and that the view is at right angles or slightly retrograde from the lens to the extent of 60 degrees. Sufficient distance from the walls of the stomach is necessary in the lens system, and this can be readily facilitated by adequate air injection by an assistant, using a hand bulb.

DR SAMUEL WEISS, New York. Gastroscopic examination has been practiced on the continent of Europe for more than half a century, and in this country a number of men, notably Drs. Chevalier Jackson and Max Einhorn, have devised methods and instruments for inspection of the stomach under direct vision. In 1930 I presented before this section a new gastroscope for visualization and photography, the important features of which were a flexible outer tube, a focusing pinion and a movable reflecting mirror. I should like to call attention to certain clinical aspects of gastroscopy. To make the procedure useful, one must aim to make it less drastic by eliminating such measures as the use of morphine and atropine and hospitalization. An important feature of gastroscopy concerns the preparation of the patient. The stomach must be empty. In the new gastroscope the outer flexible tube has a large catheter through which lavage may be effected without undue strain on the patient. After this catheter is withdrawn, the optic is introduced. If there is recurrence of secretion, the optic may be withdrawn the catheter reintroduced and suction again applied. Thus one secures a clean field without removal of the outer tube. Regarding the choice of a drug to replace morphine and atropine, I use perparin hydrochloride, a micro-crystalline yellow powder almost tasteless slightly soluble in water and alcohol but readily soluble in chloroform and ether. Perparin is an isochinolin benzyl derivative closely related to papaverin but three times as active and much less toxic. The antispasmodic effect appears within ten to fifteen minutes after injection, which can be done in the office or clinic with the patient ambulatory. In addition, the outer tube of the gastroscope is smeared with a 1 per cent nupercaine ointment, which will anesthetize the esophagus so that morphine or other opiates are unnecessary.

DR EDWARD B. BENEDICT, Boston. During the past year at the Massachusetts General Hospital we have conducted gastroscopic examination in about 110 cases using the new Wolf-Schindler flexible gastroscope. The flexibility of the instrument makes it an entirely safe procedure, we have had no difficulty whatever with any case during or after gastroscopy. Gastroscopy is carried out under local anesthesia. We have even done a number in the outpatient department and allowed the patients to go home shortly afterward. The most important use of the gastroscope is probably in the diagnosis of gastritis. We have established that diagnosis in some sixty cases with or without association with peptic ulcer. In bleeding cases which are unexplained and undiagnosed by the x-rays we have been able to demonstrate small actively bleeding erosions in the mucosa. In some cases diagnosed as gastric neurosis in the past the gastroscope has been taken without any sign of neurosis and a definite diagnosis of gastritis has been established. In carcinoma and ulcer the gastroscope is of great use in confirming the roentgen diagnosis, in localizing the lesion, and in defining its characteristics and extent.

Test for Protective Power Against Yellow Fever—A method of testing sera for protective power against yellow fever is described and designated as the intraperitoneal protection test in mice. The test consists essentially of the inoculation of mice intraperitoneally with yellow fever virus, fixed for mice, together with the serum to be tested and the simultaneous injection of starch solution into the brain to localize the virus. If the serum lacks protective power the mice die of yellow fever encephalitis. The test is highly sensitive. Consequently it is useful in epidemiological studies to determine whether individuals have ever had yellow fever and in tests to find whether vaccinated persons or animals have in reality been immunized. When mice were given large intraperitoneal injections of yellow fever virus fixed for mice, the virus could be recovered from the blood for four days although encephalitis did not occur. If the brain was mildly injured at the time of the intraperitoneal injection the symptoms of yellow fever encephalitis appeared six days later, but the virus was then absent from the blood. Strains of white mice vary greatly in their susceptibility to yellow fever—Sawyer, W. A., and Lloyd, Wray. The Use of Mice in Tests of Immunity Against Yellow Fever, *J. Exper. Med.* 54: 533 (Oct.) 1931.

FEMORAL HERNIA

OPERATIVE REPAIR BY LIVING FASCIAL SUTURES

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NORFOLK, VA

My purpose in this paper is to show that absorbable sutures of catgut in the repair of any type of hernia do not give the permanent results afforded by unabsorbable sutures. It is not my object to go into details covering the history, the diagnosis or the generally accepted methods of surgically treating femoral hernia. The only point to bring out is the technic of the adaptation of living fascia to the closure of femoral hernia. I presume that fascial suture has already been used by many surgeons in the repair of femoral hernia, but I can find no illustrated technic in the literature to cover the use of living fascial sutures and therefore present certain minor details which have proved in my hands more satisfactory than any method hitherto employed.

The fundamental principle is that the autogenous fascial suture is a living tissue, which is never absorbed and under aseptic conditions never dies. I¹ recently published the results obtained by the use of living fascial suture in 200 cases of inguinal hernia, and the progressive satisfaction in this group stimulated me to apply the same procedure to the closure of the patulous femoral canal.

To the exceptionally well prepared and experienced surgeon the drawings in this paper will appear very

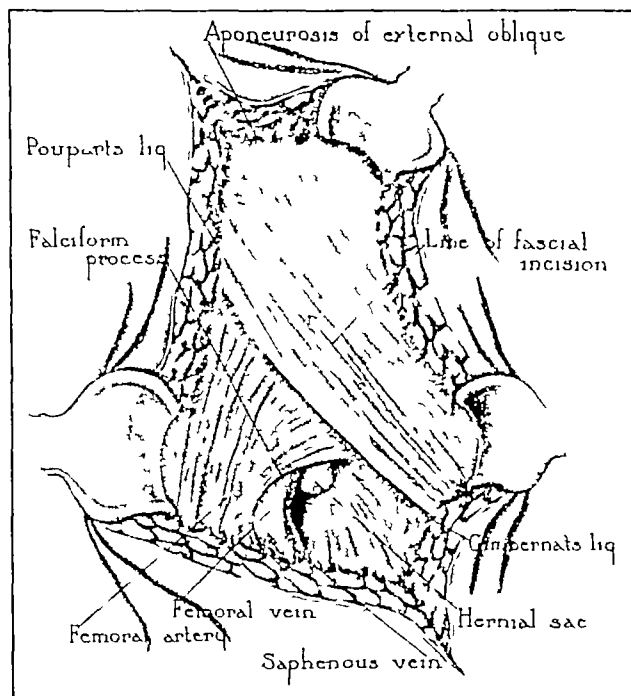


Fig 1—Anatomy and line of incision in the external oblique muscle from which the fascial suture is taken. The inner leaf is cut free at the upper end and left attached to the pubic bone at the lower end.

simple and primer-like in their details. There is no pretense of anything new or original. To the younger surgeons and to operators of limited experience the execution of the technic may prove difficult and hazard-

ous. This will be directly proportionate to their intimate familiarity with the anatomy of the region. The operator must be absolutely certain of his knowledge and familiar with the anatomic structures adjacent to and forming the femoral canal. In every operation for femoral hernia one must identify the femoral

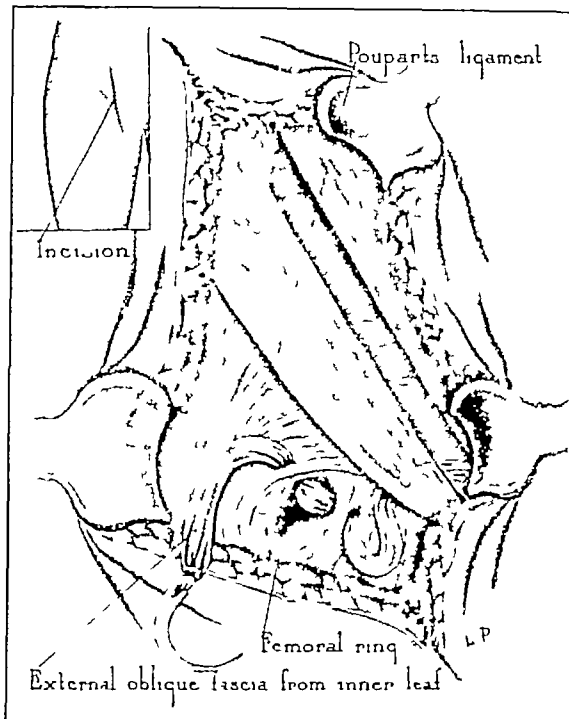


Fig 2—Dealing with femoral ring by the femoral approach below Poupart's ligament. The fascial suture is passed under the outer leaf of the external oblique through Poupart's ligament and through Gimbernat's ligament. The pectineal fascia on the inner side of the ring is approximated to the falciform process on the superior and external side of the ring.

vessels, the epigastric vessels, the obturator artery (often in an anomalous position) and, most important of all, the ligamentum pubis or Cooper's ligament.

While the drawings illustrate a method of operative closure by the femoral or subinguinal approach, this route is far from ideal. I have had successful results from closure of the lower end of the femoral canal by fascial suture as illustrated, but I believe that the inguinal approach above Poupart's ligament is by far the most correct anatomically and will more surely give permanent results in a large series of cases. This is a simple problem of physics. Given pressure within a tube or canal, it is obviously easier to prevent escape by closing up the inlet than the outlet. Furthermore all femoral hernias are acquired and can recur unless the abdominal entrance to the canal is closed.

It is a pity that there exists such a fallacious and rather common impression as that femoral hernia is a simple operation, that anatomic dissection is not essential to success, and that simple ligation of the sac without closure of the ring will result in a permanent cure. In the first place, it is practically impossible to ligate the sac sufficiently high when approached from the subinguinal route and, regretfully, I know that a femoral hernia can recur both after high ligation of the sac and after ligation with attempted closure of the ring below Poupart's ligament.

It is also to be deplored that the rank and file of operating surgeons in this country are not familiar with

the method of approach and repair of femoral hernia by the route above Poupart's ligament. One desiring information should consult the admirable paper of Seelig,² Watson's³ book on hernia and the recent book on surgical anatomy by Callander.⁴ In the last few years I have asked almost every surgeon I have met what method he used in operating for femoral hernia. The answer has been almost invariably the femoral approach below Poupart's ligament, and the impression prevails that the problem is so simple that any hospital intern is capable of securing a successful result.

The utilization of human controls for comparison of operative technic presents a delicate and awkward problem. In my early experience with fascial sutures, however, I had a case in a woman with bilateral femoral hernia. The right side presented a large opening with a large sac containing omentum. The left side had a

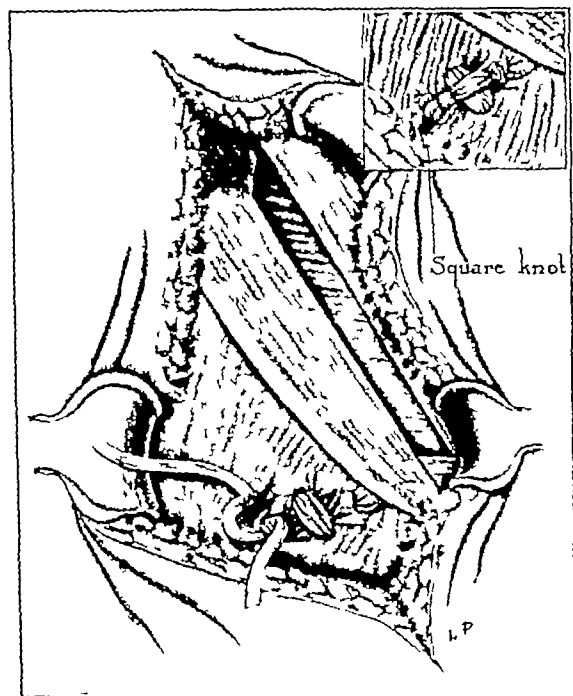


Fig 3—The ring closed by fascial suture. The free end of the fascial suture is then slit and one end of it passed under the last stitch and a square knot tied. The free ends are then turned upward as shown in the inset and additional anchorage of these is obtained by two ties of silk or chromic catgut.

small ring with a small sac containing a loop of bowel easily reduced. On the right hernia I performed a fascial closure of the ring by the crural or subinguinal route, as illustrated in this paper. On the left side, since the opening in the canal and the sac appeared so small, I decided to make a short textbook type of incision below Poupart's ligament and used the textbook method of closing the ring with number two chromic catgut sutures, according to the Halstead technic. The operation of the right hernia resulted in a permanent cure, but to my chagrin the hernia on the left side recurred in six months.

To McArthur⁵ belongs the credit of first demonstrating the use of fascial implant or suture taken from the inner leaf of the external oblique aponeurosis. To

Gallie⁶ surgery is indebted for broadening the field of application of fascia in closing all types of hernial defects. Moschcowitz⁷ in 1907 presented the inguinal approach as a new operation for femoral hernia, though to Ruggi⁸ should belong the credit of first describing the method in 1893. Subsequent descriptions of the

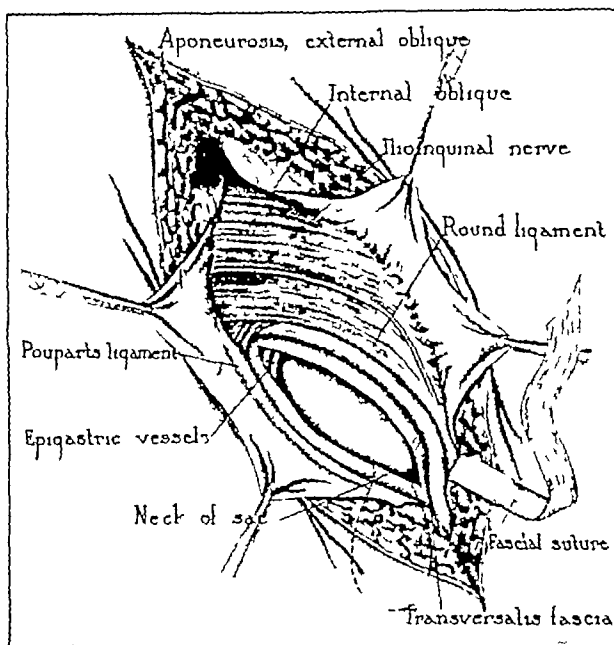


Fig 4—The superior or inguinal route of approach for the cure of femoral hernia. The fascial suture has been taken from the inner leaf of the external oblique muscle and is shown free in the drawings. The incision is carried down through the transversalis fascia to the peritoneum.

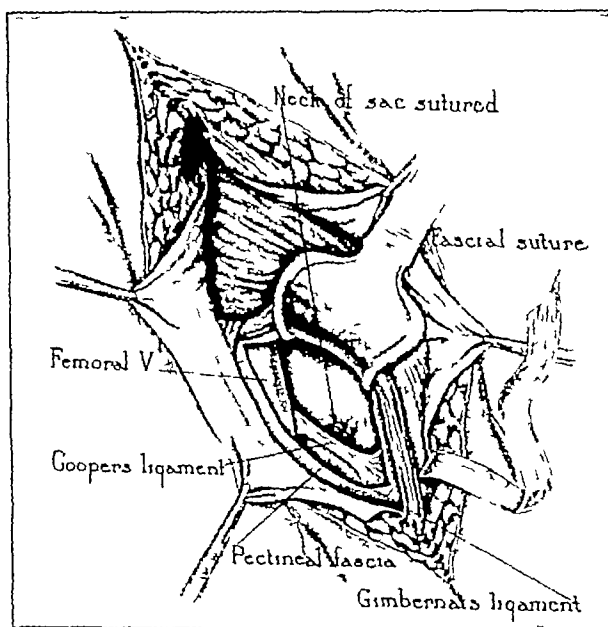


Fig 5—The sac has been pulled back and amputated and the neck has been closed. Cooper's ligament is then dissected out.

operative technic by the inguinal route for the cure of femoral hernia have followed closely the method described by Moschcowitz. The results of American

² Seelig and Tuholske. *Surg. Gynec. & Obst.* 18: 55 (June) 1914.
³ Watson L. F. *Hernia*. St. Louis: C. V. Mosby Company, 1923.

⁴ Callander C. L. *Surgical Anatomy*. Philadelphia: W. B. Saunders Company, 1933.

⁵ McArthur L. L. *Autoplastic Suture in Hernia and Other Diseases*. J. A. M. A. 37: 1162 (Nov. 2) 1901.

⁶ Gallie. *Ontario Medical Association*, 1921.

⁷ Moschcowitz A. V. *New York State J. Med.* 7: 396 (Oct.) 1907.

⁸ Ruggi Giuseppe. *Del metodo inguinale nella cura radicale dell'ernia crurale*. Bologna: N. Zanichelli, 1893.

surgeons show a recurrence ranging from 8 to 30 per cent, the French and German surgeons place recurrence at from 8 to 36 per cent in femoral hernia operated on by the femoral or subinguinal route. My own experience, by the femoral route, is in keeping with that of other surgeons. With these dismaying figures one can see how Moschcowitz with his large experience in hernia would seek to develop and present the inguinal

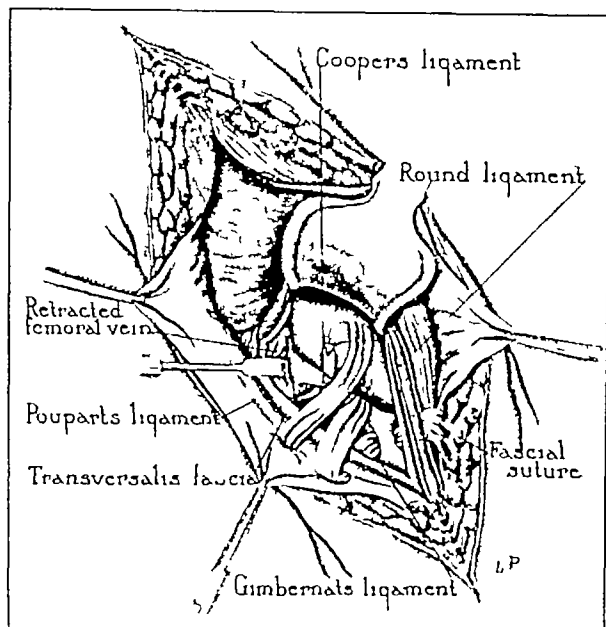


Fig. 6—The fascial suture has been passed behind the cord or round ligament through Gimbernat's ligament thence under the transversalis and Poupart's ligament underneath the outer leaf of the external oblique. The suture then doubles back and is passed under Cooper's ligament once or twice thus obliterating the abdominal opening of the femoral canal by approximation of Cooper's ligament to Poupart's.

method of operation, which has proved so satisfactory. The suggestion herein described of fascial suture would seem to offer an additional safeguard.

With regard to femoral hernia the outstanding contribution of Seelig in 1914 on the inguinal approach was most timely, especially because of his accurate description of the ligamentum pubis or Cooper's ligament. There is no feature in the inguinal operation for femoral hernia that is as important as the dissection and utilization of Cooper's ligament in the closure of the abdominal opening to the femoral canal.

The inguinal approach for the cure of femoral hernia is the ideal route, for it affords the most feasible avenue for handling strangulation or resection when this is a complication. If constriction in the neck of the sac prevents reduction of its contents, the division of Gimbernat's ligament, on the inner side of the ring, is the safest solution, as there are no important structures encountered and this does not interfere with the subsequent closure of the defect.

In using fascial strips for suture it is absolutely necessary that the suture be firmly anchored at both ends. The method here illustrated provides that the natural attachment to the pubic bone be preserved while the free end is fixed by a square knot, and additional anchorage is secured by silk or chromic catgut. Provided firm anchorage of the free end of the fascial suture is obtained and in the presence of reliable asepsis, one can expect satisfactory and permanent results from the operative method here described.

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ABSTRACT OF DISCUSSION

DR. H. W. CAVE, New York. There is a general impression that the cure of femoral hernia is a simple matter. This is due to the fact that the femoral hernia as a rule is small, that in proportion to the incidence of inguinal hernias, there is one femoral hernia to every seventeen inguinal hernias, and to a prevalent belief that two mattress or purse string sutures closing the femoral canal, any kind of suture material being used, will effect a cure. This is erroneous. The anatomic arrangement of the femoral canal is often difficult and uncertain. The rigidity of three sides of the opening renders the uncertainty, the presence of the femoral vein on the lateral side necessitates caution in placing the sutures. Recurrences following the repair of a femoral hernia by either the superior or the inguinal route or the inferior or femoral route are approximately 5 per cent, this is a high percentage of recurrence. A recent analysis of the last hundred cases of femoral hernias in which operation has been performed at the Roosevelt Hospital has shown that over 90 per cent were single and not bilateral, 35 per cent either strangulated or incarcerated, 4 per cent of the strangulated variety necessitated resection of the bowel, 5 per cent were of the Richter variety, and 7 per cent were recurrent. Seven patients of the series died in the hospital. The principal feature in a radical cure is the obliteration of the neck of the sac at its highest point. The combined femoral and inguinal approach will prove, I believe, to effect a more certain cure, for from below a complete dissection from the surrounding structures can be carried out and from above eversion and a much higher obliteration of the neck are obtained. The extensive fascial repair advocated by Dr. Payne should be reserved for recurrent femoral hernias. To advocate making this extensive procedure a standardized one for every type of femoral hernia seems somewhat risky, for the operator who only occasionally employs the large Gallie or Kountze needle may puncture or tear the wall of the femoral vein, thus getting into unnecessary difficulties. May I again emphasize that, no matter how snugly the canal is closed without high secure ligation

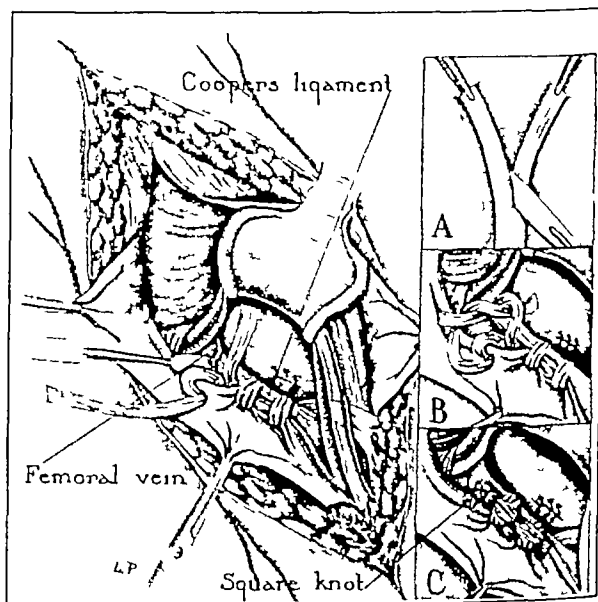


Fig. 7—Femoral canal obliterated. Inset A shows method of splitting free end of fascial suture. Inset B method of tying the square knot. Inset C the free end tied turned back and further anchored with two stitches of silk or chromic catgut. The remainder of the closure consists of the routine steps of approximation of the different layers as one would do in any hernia operation in the inguinal region.

of the neck, the incidence of recurrence in femoral hernias will continue to be relatively high.

DR. F. W. BAILEY, St. Louis. I am not in favor of the closure from the femoral end. I believe that the closure obtained by a free exposure of the upper end of the canal offers less chance of recurrence. I also believe that the pressure incident to the introduction of a fairly large fascial suture

with the use of the large so called Gallie needle, is a little dangerous because of the proximity of the vein. On two occasions I have seen thrombosis follow suture of the lower area with catgut. Consequently I favor closure from above with anatomic exposure, using fascial suture. Most femoral hernias have a content that is resident. Many of them cannot be reduced satisfactorily. No hernia that is incarcerated or strangulated should be forcibly reduced and the opening closed without inspection from within the peritoneum. The combined incision in the skin, which gives a clear view of both the inguinal and the femoral canals is undoubtedly the most satisfactory. The recurring femoral hernia to me is the least welcome of all, but since I have been utilizing for fifteen years the entrance to the canal instead of the exit, getting a clear exposure of all the fascial structures, I have had a far less rate of return. Fifteen years ago my attention was called to the excellent presentation of Dr McArthur of Chicago, and since that time I have been using the fascial suture. One is inclined to use a large fascial strip, requiring a broad-eyed needle. My experience in the last eight or ten years has been to utilize a smaller needle and a narrower strip and it has been just as satisfactory. The only new point that I wish to mention is with reference to the incision, and that is that the anatomic approach should be very clearly identified. No needle should be used, as Dr Payne emphasized, without clearing the fascial structures and being sure that one is suturing fascia and not the tissues surrounding one of the important and dangerous attending structures. I have on a number of occasions been unable to utilize the local fascial area because of tension or because of a previous operation. On those occasions I do not hesitate to use the fascia lata strip, taking advantage of the newer method of Grace and others in obtaining the fascial strip without undue trauma to the leg. In industrial cases it is not wise to make an accessory incision in the leg without a thorough understanding beforehand.

CHANGES IN VAGINAL EPITHELIUM DURING PREGNANCY IN RELATION TO THE VAGINAL CYCLE

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Since the investigations of Hitschmann and Adler¹ on the cyclic changes in the uterine mucosa, other portions of the mullerian tract have been studied in an attempt to show similar physiologic activity. Novak and Everett have demonstrated in the human female that there are secretory cells in the epithelium of the fallopian tubes which undergo cyclic secretory changes. Seckinger and Snyder² noted that the spontaneous contractions of the fallopian tube became more marked and rapid in the mid and late intervals following ovulation. This activity was greatly diminished during pregnancy.

Dierks³ in 1927 published the results of his study of the human vaginal cycle. He obtained pieces of vaginal mucosa from about thirty women from whom he was able to obtain accurate menstrual histories. In his description of the vaginal epithelium he states that

it is composed of three layers—a basal layer, a functional layer and a cornification zone. Immediately after menstruation a gradual increase occurred in the thickness of the functional layer. About the middle of the interval a zone of cornification appeared, separating the functional layer from the basal layer. This layer consisted of dark staining cells having a tendency to form granules in the cytoplasm, with rather small dark staining nuclei. The general appearance was that of a narrow, darker staining band of cells interposed between the basalis and the functionalis, which Dierks called the intra-epithelial zone of cornification. With the onset of menstruation a marked destruction of the functionalis and the intra-epithelial zone of cornified cells occurred, so that the basalis was completely denuded at the cessation of menstruation. These rhythmic changes in the vaginal epithelium were under the same ovarian influences as the changes in the uterus.

Dierks' article aroused considerable interest, and many publications appeared in the literature discussing the possibility of a cycle in the vaginal mucosa of the human female. Stieve,⁴ Stemshorn,⁵ Lindeman, Kückens,⁶ Gisbertz,⁷ and others could not find typical cyclic changes in the vaginal mucosa. Stieve felt that the varying changes which he found were similar to those seen in other mucous membranes, such as in the mouth and pharynx. On the other hand, Keller,⁸ Pankow, Geist⁹ and more recently Papanicolaou¹⁰ described cyclic changes in the human vaginal mucosa which can be followed and correlated with ovarian activity.

Stockard and Papanicolaou¹¹ gave added impetus to the study of cyclic phenomena in the vagina by their discovery of the vaginal smear method in the guinea-pig. Thus by a simple study of the cytologic content of the vaginal fluid it was possible to follow the rhythm of the sexual cycle. No longer was it necessary to sacrifice the experimental animal. This method was quickly applied to other rodents, particularly the rat, in which case the cyclic phenomena were distinctly visible and clear cut in the vaginal fluid content. It was hoped that similar methods could be applied to the higher mammals and primates. In the human female and in monkeys, in which menstruation is the striking phenomenon in the sexual rhythm, relatively little information has been gleaned from the cytologic studies of the vaginal fluid content.

The presence of a cycle in the vaginal mucosa of the higher primates has thus received considerable attention. One group of investigators has studied the vaginal mucosa proper removed at various periods in the cycle in an attempt to correlate these observations with changes in the uterus and the ovaries. Human material accurately identified as to the time interval in the cycle was difficult to obtain. It was almost impossible to

⁴ Stieve H. Cornification Processes in Epithelium. *Ztschr f mikr anat Forsch* 24: 213 (April) 1931. Alleged Cyclic Changes in Epithelium. *Zentralbl f Gynak* 55: 194 (Jan 24) 1931. Ueber Schwan gerschaftsveränderungen des Halssteiles der menschlichen Gebärmutter, *Verhandl d anat Gesellsch* 36: 51 1927.

⁵ Stemshorn. Normal Monthly Cycle of Human Vaginal Mucosa. *Zentralbl f Gynak* 52: 2387 (Sept 15) 1928.

⁶ Kückens Hans. Cyclic Histologic Changes in Human Epithelium. *Ztschr f Geburtsh u Gynak* 96: 55, 1929.

⁷ Gisbertz, H. Periodic Changes in Epithelium of Human Vagina. *Arch f Gynak* 136: 362 1929.

⁸ Keller F. Microscopic Changes During Menstrual Cycle. *Zentralbl f Gynak* 54: 641 (March 15) 1930.

⁹ Geist S. H. Cyclic Changes in Vaginal Mucous Membrane. *Surg Gynec & Obst* 51: 848 (Dec) 1930.

¹⁰ Papanicolaou G. N. Sexual Cycle in Human Female as Revealed by Vaginal Smears. *Am J Anat (supp)* 52: 519 (May) 1933.

¹¹ Stockard C. R. and Papanicolaou G. N. The Existence of a Typical Oestrous Cycle in the Guinea Pig with a Study of Its Histological and Physiological Changes. *Am J Anat* 22: 225 280 (Sept) 1917.

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Read before the Section on Obstetrics Gynecology and Abdominal Surgery at the Eighty-Fifth Annual Session of the American Medical Association Cleveland June 14 1934.

¹ Hitschmann Fritz, and Adler L. Der Bau der Uterusschleimhaut des geschlechtsreifen Weibes mit besonderer Berücksichtigung der Menstruation. *Monatschr f Geburtsh u Gynak* 27: 182 1908.

² Seckinger D. L. and Snyder F. F. *Bull Johns Hopkins Hosp* 39: 371 378 (Dec) 1926.

³ Dierks K. Normal Monthly Cycle of Human Vaginal Mucosa. *Arch f Gynak* 130: 146 1927.

secure frequent specimens from the same individual. Another group has continued to study the cytologic contents of the vaginal lumen in the human being, the chimpanzee and the rhesus monkey, correlating such changes with the sexual rhythm. We have attempted to combine our study of the vaginal mucosa with that of the vaginal fluid content, as one is entirely dependent on the other, thus associating the whole process with the cyclic phenomena in the entire genital tract.

They breed readily and are physiologically normal. Ovulation is diagnosed by rectal palpation and when ever this is doubtful, by laparotomy. It is questionable whether human material can ever approximate such ideal experimental conditions.

Biopsies of the vaginal mucosa were made at weekly intervals on a large group of these monkeys, a lighted speculum especially constructed for this work being

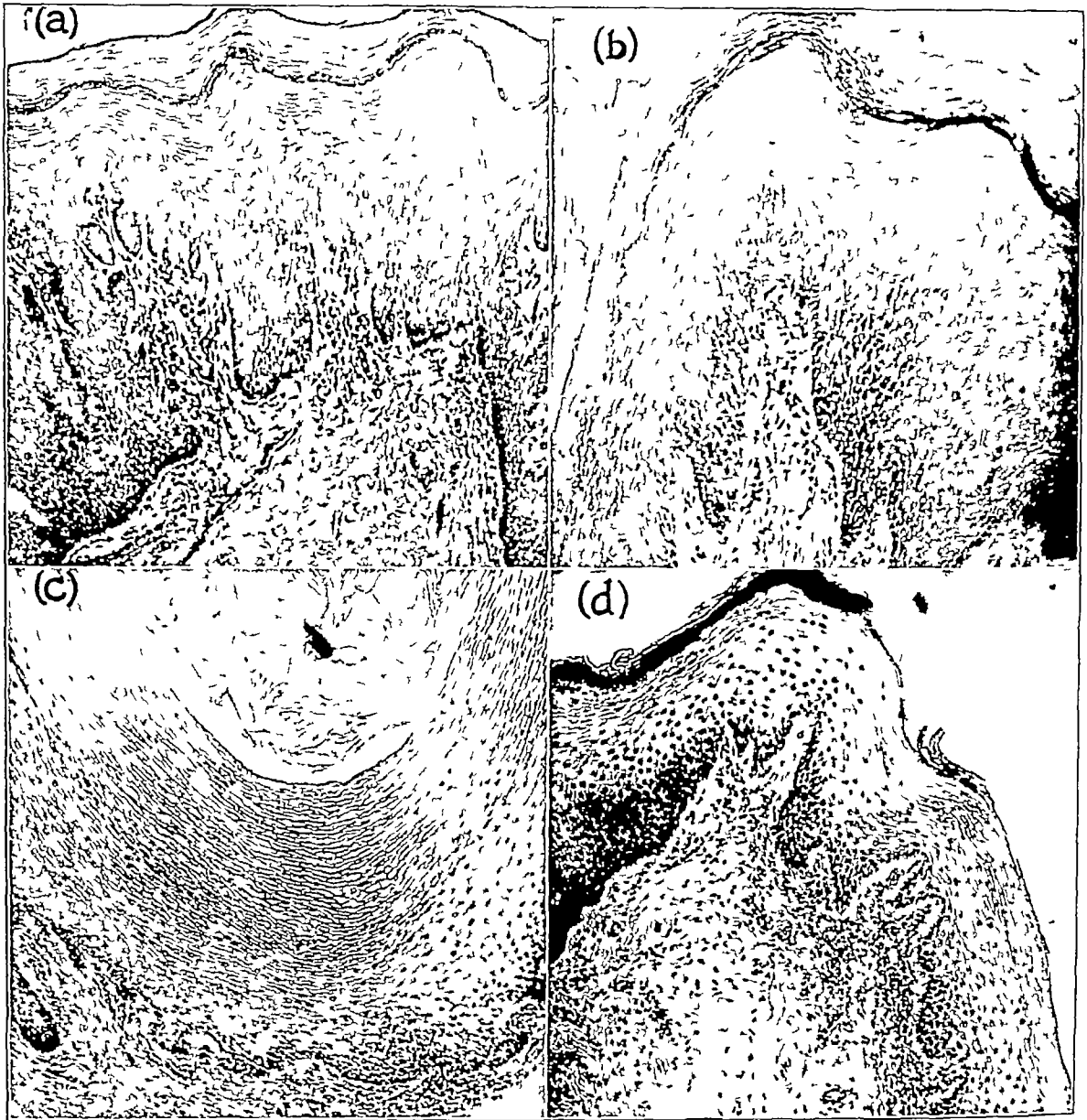


Fig 1—Sections $\times 100$ of vaginal mucosa removed during menstruation showing typical cyclic activity on the part of the epithelium in the normal sexually mature monkey a first day of menstrual cycle b seventh day c twelfth day d twenty first day

MATERIAL FOR STUDY

In the human female and her near kin—the higher primates—menstruation has been the outstanding manifestation of sexual activity. In the rhesus monkey the periodic flow occurs at approximately the same time interval as in the human female. It is for this reason that the monkey becomes exceedingly desirable for studies of sexual physiology. The Carnegie colony of monkeys is ideally suited for this study in that they

used. These specimens were immediately fixed, embedded in paraffin, sectioned and stained by various methods. A small portion of each biopsy tissue was fixed in absolute alcohol for glycogen study. The specimens were removed from approximately the same portion of the vaginal mucosa, although other portions of the vagina were studied for comparison. A similar series of biopsies was made on eight animals during the entire period of pregnancy, as well as during the

postpartum period. In none of the animals did we have any difficulty because of this minor procedure.

The cyclic changes in the vaginal epithelium are striking, and while they are not as sharply defined in many respects they resemble those seen in the rodents (fig 1). The epithelium usually consists of the three layers described by Dierks in the human female. Immediately after menstruation the basalis begins to undergo marked activity. This is noted by a marked proliferation of

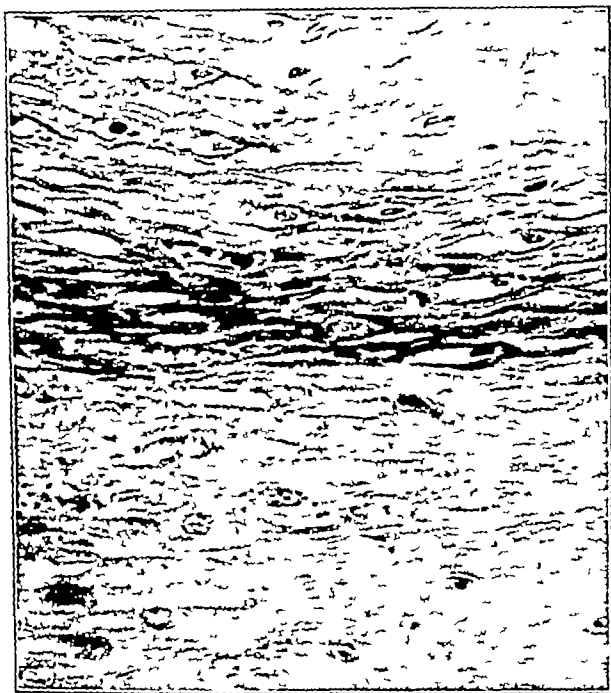


Fig 2—Intra-epithelial zone of cornification or Dierks' layer showing the granular character of the cells. $\times 600$

the basal layer of cells. These cells become cuboidal in type, are larger than usual, and stand out because of their better staining ability. The nuclei become larger, stain darker, and show an abundance of active mitosis. Instead of the single layer of cells, several such layers rapidly develop. The functionalis, which has not been completely lost in the previous cycle, begins to grow thicker, owing to an accumulation of cells from the basalis. The cells in this layer are not altered. These are the cells in which retrogressive changes have taken place and they will be lost in the sloughing process. The intra-epithelial zone of cornification, or Dierks' layer, becomes more pronounced as the period of ovulation is approached. This layer increases in thickness. The cells become compressed and stain deeply, although there is little cytoplasm. The nuclei are elongated and stain darkly in a homogeneous manner. Throughout this layer are numerous granules. They are of various sizes, not entirely confined to the cells, and stain with nuclear stains. These granules give the characteristic appearance to this layer (fig 2).

The activity of the basalis continues to the twelfth or fifteenth day, when ovulation usually occurs. At the time of ovulation the epithelium has attained its greatest thickness following which desquamation begins. This proceeds by a steadily increasing crumbling away of the surface cells from the functional layer. The cells crumble away individually, in groups and in entire

plaques. This process increases in rate as the menses approach but does not seem to be very marked during the actual flow. Rarely is the entire functionalis lost during this sloughing process. If it is, Dierks' layer may likewise disappear. As a rule, some of the functionalis is retained and Dierks' layer becomes less pronounced, consisting of fewer cells. During this process of desquamation the cells in the basalis remain inactive, mitotic figures are rare, and the basal layer of cells becomes very low and cuboidal in type (fig 3).

The wandering cells in the epithelium likewise undergo rhythmic variations. In that period of the cycle just before, during and immediately after the menses, leukocytes, chiefly of the polymorphonuclear variety, may be seen in the mucosa. These cells are abundant just beneath the epithelium and come in between the epithelial cells in columns, pushing the cells apart. They are best seen in the basalis, where they stain deeply and apparently are alive. They decrease in number as the functionalis is approached, in which layer they are less numerous and many are apparently dying. There is a progressive diminution until the ovulatory phase is reached, during which they are almost absent, but recur again toward the end of the cycle. The cause of this leukocytic exodus is not known. Hartman¹² does not believe that their function is caused by the digestion of cellular detritus in the

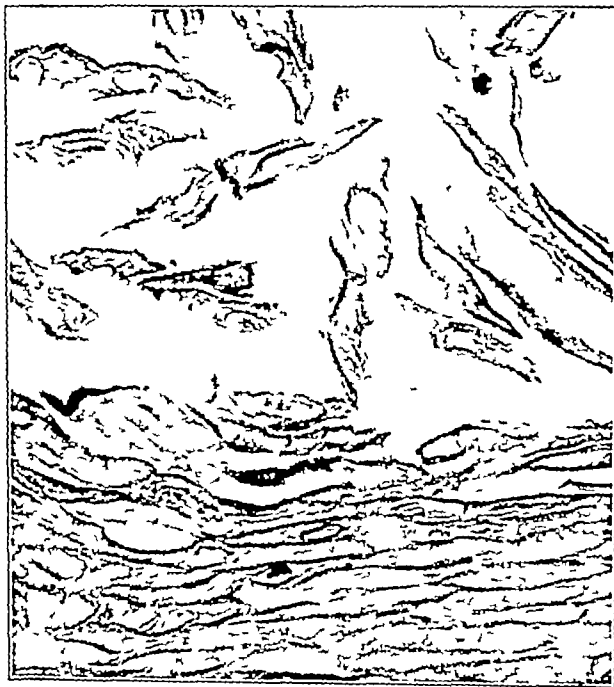


Fig 3—Section $\times 600$ of the upper portion of the functionalis showing the process of desquamation. The cells break away individually and in plaques appearing in the content of the vaginal lumen.

vagina, in that the majority are probably dead when they reach the lumen of the vagina (fig 4).

CHANGES DURING PREGNANCY

Steve,¹³ in his extensive work on physiologic changes in the genital tract during pregnancy, described the

¹² Hartman, C. Studies in the Reproduction of the Monkey *Macacus Rhesus*, with Special Reference to Menstruation and Pregnancy. Carnegie Inst. Washington, Pub. 433, 1932, pp. 1-161.

¹³ Steve, H. Das Schwangerschaftswachstum und die Geburtserweiterung der menschlichen Scheide. *Ztschr. f. mikr. anat. Forsch.* 3: 3, 1925.

changes in the vagina. He noted that a marked thickening of the vaginal mucosa occurred, which represented an active proliferation early in the stage and later a growth of the tissue cells. Toward the end of pregnancy the epithelium may reach a thickness of from 450 to 500 microns. This thickening was due chiefly to an edema of the cells and to a less extent to cell division. The individual cells became larger and the cellular bridges wider. He noted that the mitosis diminished after the fifth month, although the epithelium became progressively thicker. The vaginal mucosa was examined by Stieve immediately after delivery. He found that the functionalis had completely disappeared, that the basalis in some cases was likewise extensively destroyed, and that the remaining cells were flattened and pressed together. The extent of the loss of epithelium depended on the length of labor and its character. After a long hard labor only a single layer of



Fig. 4—Section $\times 600$ of vaginal mucosa removed on the twentieth day of the cycle showing typical leukocytic invasion of the epithelium.

cells remained in the basalis. In a few cases there was little change in the squamous epithelium. He ascribed all these extensive sloughings of the vaginal mucosa to the mechanical damage of delivery.

In our pregnant experimental animals the vaginal mucosa remained at about the same stage as seen at the time of ovulation. In some of the cases the functionalis was even more marked than in the normal cycle. Dierks' layer became unusually prominent, owing to an increased thickness of this layer and to an increase in the size of the individual cells. The basalis continued to show marked activity and the cells increased in number and in size. The nuclei stained darkly and numerous mitotic figures could be seen in many of them. Mitoses continued until the latter half of pregnancy, when they decreased in number and disappeared completely at the end of gestation. The functionalis continued to show marked desquamation of the superficial layers, such as is seen at the time of ovulation in the normal cycle.

This sloughing process continued at about the same rate until after the middle of pregnancy, when it increased in extent. In the functionalis there occurred very large abnormal appearing cells, some round or oval, others oyster shaped, and their nuclei were likewise round and large, and stained poorly. These abnor-

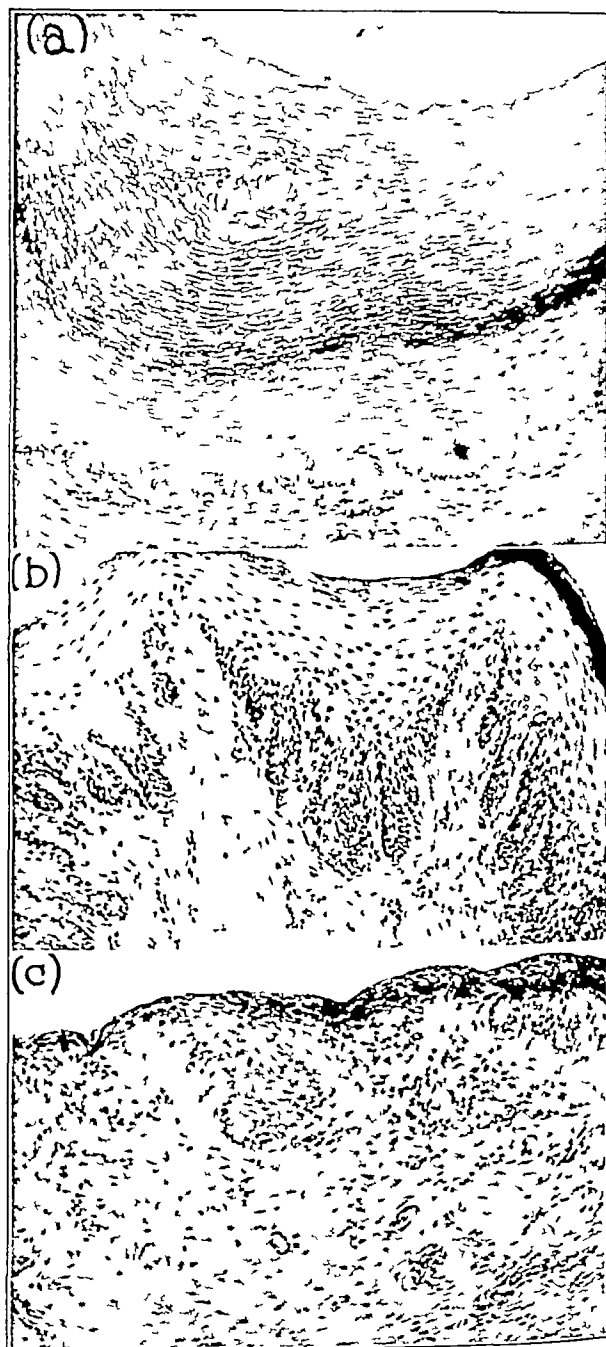


Fig. 5—Sections $\times 100$ of vaginal mucosa removed during pregnancy showing the progressive desquamation and destruction of the vaginal epithelium so that in c only a juvenile type of epithelium remains a fifty seven days pregnant b eighty days pregnant c ninety two days pregnant

mal cells appeared singly and in groups, and probably represent the so-called "pregnancy cells" of Papanicolaou,¹⁴ to which we will refer again. After the middle of pregnancy the functionalis began to crumble away

¹⁴ Papanicolaou G. N. Diagnosis of Early Human Pregnancy by the Vaginal Smear Method. *Proc. Soc. Exper. Biol. & Med.* 22:436-437 1925

layer by layer, until it had completely disappeared. In the last weeks of pregnancy Dierks' layer, as well as a good portion of the basalis, likewise disappeared as the result of the more extensive desquamation. In the last weeks of pregnancy all that remained was a few layers of basalis of irregular thickness. On the surface there were present several layers of cells that were elongated in type and compressed with dark staining nuclei, which probably represented a semicornified layer (fig 5).

This loss of almost the entire vaginal mucosa is a most interesting phenomenon in that it does not represent a mechanical destruction due to the trauma of labor, as Stieve would have one believe, but to some other unknown etiologic factor. It occurred long before the onset of labor and in those monkeys at term that were delivered by cesarean section in which no trauma to the vaginal mucosa could have occurred.

Following delivery the vaginal mucosa was gradually rebuilt to its normal three-layered appearance by the end of the fourth postpartum week. At this time the functionalis, the basalis and the intra-epithelial zone of cornification could be clearly seen. Following this complete restoration the rhythmic activity of the mucous membrane began again. We could not determine whether lactation had any effect on the restoration of the mucous membrane, for in only one case did the young nurse. In this monkey the postpartum restoration of the vaginal epithelium took place in the same way and during the same time interval (fig 6).

RELATIONSHIP OF OVARIAN ACTIVITY TO THE MENSTRUAL CYCLE

It seems certain that the periodic sloughing of the surface layer of the vaginal epithelium is associated with ovarian activity, probably in the same manner as in the case of the endometrium. In very young girls, before the onset of puberty, the vaginal epithelium consists of a basalis of only three or four layers of cells, which are entirely inactive. This is the typical juvenile epithelium in the young girl and the young monkey. With the onset of ovarian function the three-layered condition is quickly built up. Experimentally, this can be done by the use of theelin. Robert Lewis recently made use of theelin in the treatment of gonorrheal vaginitis in children. He was able to change the juvenile type of vaginal epithelium to the normal adult type by the use of estrogenic substance. As soon as the vaginal mucosa was thus changed, the infection disappeared.

Following the menopause, whether spontaneous or artificially produced, the vaginal mucosa likewise degenerates to the condition seen before puberty. Allen¹⁵ castrated monkeys and followed this retrogressive change in the vaginal mucosa. When it had been completely broken down so that the basalis consisted of only three or four layers of cells, he injected theelin and restored the normal adult type of epithelium. In one of our monkeys, castrated for one year, two weeks' treatment with amniotin likewise completely restored the vaginal epithelium to the normal active type (fig 7). Dierks¹⁶ recently reported that in a castrated young woman he was able to produce a good functional layer

in the vaginal mucosa with 9,000 mouse units of estrogenic substance. In all these instances it can be readily seen that the vaginal mucosa is directly under ovarian influence and as such it must be subject to the rhythmic activity seen in the other müllerian derivatives.

In some of our monkeys cyclic activity on the part of the vaginal mucosa could be demonstrated without the occurrence of ovulation. Anovulatory periods are

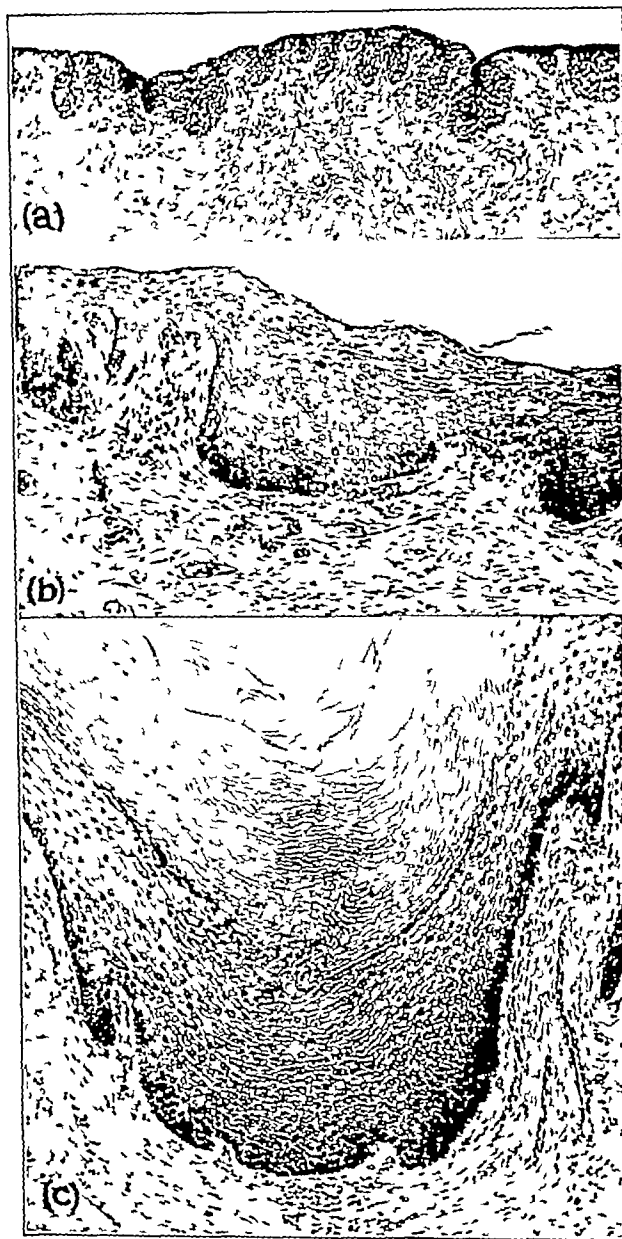


Fig 6—Sections $\times 100$ of vaginal mucosa removed during the post partum period showing a rapid restoration of the epithelium. At the end of the first month the epithelium has been restored to the normal three-layered appearance. a thirteen days post partum, b twenty days post partum, c thirty-two days post partum.

well known and are quite common in the rhesus monkey. Hartman¹⁷ has demonstrated this many times. During the summer months menstruation occurs regularly in the monkey without ovulation. The changes in the basalis and functionalis, however, are not as marked as when ovulation occurs. Apparently the threshold for

¹⁵ Allen Edgar. The Menstrual Cycle of the Monkey *Macacus Rhesus*. Contrib to Embryology No 98. Carnegie Inst. Washington. Pub 380 vol 19, pp 1-44.

¹⁶ Dierks K. Experimentelle Untersuchungen an menschlicher vaginal Schleimhaut. Arch f Gynak. 138 111 130 1929.

¹⁷ Hartman C. Menstruation Without Ovulation in *Macacus Rhesus* (abstr). Anat Rec 35:13 (March) 1927.

growth, periodic bleeding and vaginal desquamation are all different, although all these physiologic phenomena are dependent on ovarian activity

No sloughing of the functionalis occurred in a very long cycle in one of our monkeys. On examination a persistent atretic follicle was found. Apparently this follicle provided a continuous stimulus to the vaginal mucosa so that its normal three-layered appearance persisted for an unusually long time.

In another animal a period of amenorrhea extended over eighty days. During this time the vaginal mucosa had been torn down to the senile type, only three or four layers of cells remaining in the basal layer. Here ovarian activity was definitely at a minimum.

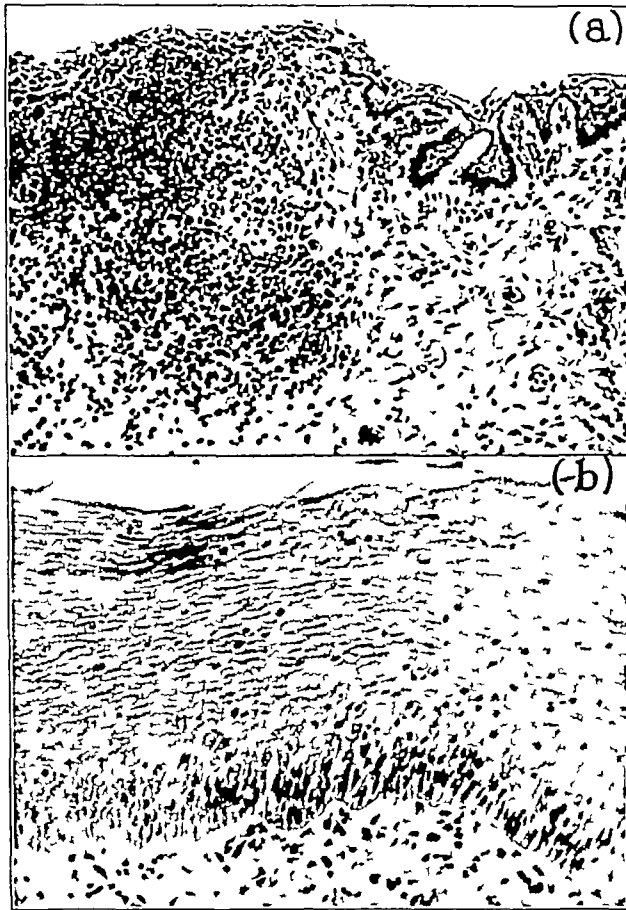


Fig. 7—*a* section of vaginal mucosa removed from a monkey that had been castrated for one year showing the extensive destruction of the epithelium; only several layers of cells remain in the basal layer. *b* section of vaginal mucosa removed from the same monkey after it had received injections of estrogenic substance over a period of two weeks showing the restoration of the vaginal epithelium and the marked activity of the basal cells.

COMMENT

The human female, as well as the monkey, exhibits cyclic activity of the vaginal mucosa as well as the changes during pregnancy, as described.

Papanicolaou recently reported a study of the sexual cycle in the human female as revealed by vaginal smears. He made daily studies of the vaginal contents in twelve women by means of carefully prepared smears. This histologic study was correlated with the cyclic activity in the ovaries of these women. He was able to follow a clear-cut cycle in the occurrence and predominance of the various desquamated cells. These cells were an accurate index of the various stages in the sexual cycle.

Ovulation could be determined with a fair degree of accuracy from the contents of the vaginal smears in all these women. At the onset of pregnancy there occurred a marked change in the vaginal smear. The cells and their nuclei became large, with large flat cells predominating early in pregnancy. As pregnancy advanced the cells became smaller and more compact. Highly differentiated forms of cells gradually appeared, some oyster shaped, others remaining round or oval, and were characterized as navicular cells. These cells were identified by Papanicolaou as "pregnancy cells." Leukocytes were unusually abundant. After the termination of pregnancy the vaginal smear undergoes typical modification as the result of extensive desquamation. The cells are distinctly of the outer basal layer, with round or oval forms. Many polymorphonuclear leukocytes are present, and erythrocytes are numerous.

The cellular content of the vaginal lumen is a true index of the changes that take place in the vaginal mucous membrane. However, practically all the epithelial cells found in the vaginal smears have been sloughed off of the superficial vaginal mucosa and are dead cells.

The significance of the extensive denudation of the vaginal mucosa just before labor is difficult to explain. Perhaps the greatly thinned out epithelial layer is better suited for the extensive stretching it must undergo during delivery. It seems, however, that it is a poorer barrier to infection than the normal, thick, three-layered mucosa. Whether the extensive sloughing present in the monkey is likewise present in the human female is still to be proved. We would infer that the same condition exists in the human female, according to the postpartum studies of Stieve, as well as the fact that physiologic sexual processes in the human female and the monkey are very similar. Possible endocrine influences may be present toward the end of gestation, resulting in extensive desquamation and destruction of the vaginal epithelium.

SUMMARY

The cyclic changes in the vaginal epithelium were studied in a large group of female monkeys at the Carnegie Monkey Colony by means of frequent biopsies. These rhythmic changes were coordinated with ovarian activity and ovulation.

We found that the epithelium attains its greatest thickness in the midinterval, consisting at this time of an active basal layer, an inactive functional layer, and an intra-epithelial zone of cornification interposed between these two, which we call Dierks' layer. Following ovulation, desquamation begins and proceeds by a crumbling away of the functionalis, which is usually not completely destroyed. Mitosis begins in the basal layer on the first day of menstruation, becoming most marked near the time of ovulation, and then gradually subsides.

A cessation of ovarian activity, such as is seen at the menopause, or an abnormal ovarian activity definitely alters these physiologic changes.

Early in pregnancy the epithelium remains in the same state as is seen during ovulation, consisting of the typical three layers.

Desquamation of the functional layer continues throughout pregnancy but is increased progressively following the middle of pregnancy.

At the end of pregnancy only the basal layer remains and is of irregular thickness, in many places of only three or four cells.

In the postpartum period the epithelium is rapidly restored to normal at the end of the first month.

Hormone influences are probably responsible for these phenomenal changes.

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ABSTRACT OF DISCUSSION

DR. F. L. ADAIR, Chicago. It is obvious from the work of Drs. Davis and Hartman that it is at least theoretically possible to build up the epithelium in premature females and in castrates and presumably in postmenopausal conditions. This theory has been corroborated experimentally and therapeutically. This fact may lead to the use of estrogenic preparations for therapeutic reasons in clearing up infection and degenerative changes in the vaginal tract. A word of caution, however, should be interjected because the action of these endocrine substances is not limited to the vagina, and damage may be done to other structures and endocrinal imbalance may occur. One should be especially cautious in the use of these agents in sexually immature females. The examination of vaginal epithelium secured by smears or biopsy may enable one to diagnose differentially between the vagina of pregnant and of nonpregnant females between ovulatory and nonovulatory phases. This may be helpful in determining the cause of sterility in a woman who menstruates. In other words one may be able to determine whether or not a sterile woman who has normal anatomic organs is sterile because of lack of the ovulatory function. These changes are undoubtedly related to the physiologic and protective function of the vaginal lining and may explain the tendency of certain vaginal infections to advance and recede with the menstrual cycle. They are doubtless related to the copulatory mechanism and particularly with the preparation of the vaginal tubes for parturition. One can only speculate with regard to the relation of the immunity of the vagina to infection that may be associated with these changes. The exfoliation of the superficial cells of the vaginal epithelium may well serve as a cleansing process removing pathogenic organisms contained in the vaginal tube and superficial layers of the vaginal epithelium. The leukocytic barrier laid down in the subepithelial layers in the premenstrual stage and during pregnancy may well serve as a barrier to bacterial invasion of the underlying tissue. The increased vascularization facilitates the mobilization of the defense troops through the blood and lymph streams. This work of Drs. Davis and Hartman is very fundamental and shows the cyclic changes in the vagina and may well be of great practical value as well as explain some of the pathologic changes and clarify some of the phenomena that have previously been noticed but not understood.

DR. M. EDWARD DAVIS, Chicago. I have only one suggestion and that is that more biopsy material be used in studies of the vaginal mucosa. It should not be difficult under local anesthesia to take a small specimen for examination. Many changes in the vaginal mucosa can thus be followed. I am sure that the changes in the vaginal epithelium in the monkey will be found also in the human female. In the monkey the periodic flow occurs at approximately the same time interval as in the human female. It is for this reason that the monkey is especially adapted for this study. We intend to make further studies of the vaginal epithelium in an attempt to correlate the changes in the vagina with those in the ovaries. No one has ever attempted to demonstrate cyclic changes in the cervix but since it is also a part of the mullerian tract it likewise must undergo cyclic changes. It is hardly possible that one portion of the mullerian tract will undergo cyclic changes without involving the entire tract. Therefore, further studies with the proper material such as biopsies from the monkey or the human female, will probably reveal cyclic changes in the cervix as well as in other parts of the mullerian tract.

Mycobacterium Leprae—In fact it must be stated today sixty years after Hansen first saw *Mycobacterium leprae* that there exists no absolute proof as yet that any investigator during all of these years has actually succeeded in cultivating *Mycobacterium leprae* in vitro—McKinley E. B. The Etiology of Leprosy. *Midwest* 13:377 (Dec.) 1934.

THE NECESSITY FOR THE STANDARDIZATION OF THE TREATMENT OF BACILLURIA

ALBERT M. CRANCE, M.D.

GENEVA, N. Y.

Considering the fact that modern urology has in general made great strides forward during the past two decades, there is still a wide discrepancy within the profession regarding the management of urinary infections, particularly those infections which are due to the colon bacillus group. This discrepancy should actually not exist. Its remedy is obtainable only by effecting some definite standardization in the management of bacilluria in general. My purpose in this paper, therefore, is to summarize briefly the reasons why such a therapeutic standardization is possible as well as advisable.

Needless to say, it has apparently not yet been learned that there is no urinary antiseptic which eliminates the colon bacillus from the urinary tract. Drugs, therefore, are of little value in treating this infection.

It must furthermore be borne in mind that urinary infections due to *B. coli* rarely ever disappear spontaneously. It was only a few years ago that one of the great urologists said that, in his opinion, when a patient develops colon bacillus infection in the kidneys he is bound to go to his grave with the kidneys still infected. Today, since advances in the management of bacilluria have become so obvious, this statement is decidedly out of order. Approximately 80 per cent of colon bacillus infections in the urinary tract can be completely eliminated by conscientious, practical methods of therapy.

As early as 1924 I¹ reported a small series of cases in which complete recovery occurred by the use of autogenous vaccine, given in rather large doses at five day intervals over a period of from eight to twelve weeks. Many physicians have little use for vaccines. I am not an exception to this belief. However, so far as *B. coli* infections are concerned, it is perhaps one of the most valuable aids to date.

Continuing to work out more effective measures, because it was obvious that not every case would respond to one form of treatment alone, I began to wonder why nearly all these cases showed infection in one or both kidneys. In fact, all cases were thoroughly studied on the cystoscopic table, and in more than 90 per cent the infection was found to originate above the bladder. Why should this be true? Why also did so many of these cases give histories of chronic constipation, or in fact some intestinal upset, such as diarrhea, prior to the appearance of cystitis symptoms? The reason is, I believe, that the colon bacillus, whose natural habitat is in the colon, is by virtue of its increase in numbers politely invited to seek a new residence and, by gaining entrance to the lymphatic system, finds its way to the kidney, where it is known to become a pathogenic, pus-producing organism. With this theory firmly in mind the treatment then became more of a matter of treating the colon, the focus of infection. It is quite evident that if the number of *B. coli* in the intestinal tract can be reduced to somewhere near normal the organisms will cease leaving it to go elsewhere.

Read before the Section on Urology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.
¹ Crance, A. M. Treatment of Colon Bacillus Infections of the Upper Urinary Tract with Autogenous Vaccine. *M. J. & Rec.* 110:303 (March 19) 1924.

Three methods may be used, and in fact all three methods should be used, in attacking the problem of correcting the focus first, by daily enemas, second, by changing the intestinal flora each two weeks with a sudden change in diet—i e, two weeks high protein, two weeks high fat and two weeks high carbohydrate, third, by the daily use of a good acidophilus preparation, preferably not in milk. These, together with the aforementioned autogenous vaccine, constitute four important measures, which I have termed the "four-point treatment." As reported in 1928,² it gave 80 per cent satisfactory results, and this percentage has remained the same. This method of treatment was used long before the various types of the colon group were differentiated.

TYPES OF BACILLURIA

Bacillus coli constitute approximately 80 per cent of all urinary infections, excluding of course the gonococcus. Today it is definitely known that two distinctly separate types of *B. coli* exist, namely, the *Escherichia* and the *aerogenes* varieties. These constitute nearly all the cases of bacilluria. Others, which occur far less frequently, are *Pseudomonas* (*B. pyocyaneus*) and *B. proteus*.

Of chief concern in this paper is the management of the *B. coli* group. First of all, it must be borne in mind that this discussion does not deal with cases presenting surgical complications such as perinephric abscess or surgical pyonephrosis but rather it is to deal with the type of case in which treatment is considered medical in character.

IMPORTANCE OF DIAGNOSIS

Diagnosis is of primary importance. Samples of urine for culture should always be collected by catheter in the female, and in the male by careful cleansing of the meatus prior to voiding in a sterile container. Cultures will show practically all types of bacillus infections and the coccus group such as staphylococci and streptococci, tubercle bacilli excepted. When *B. coli* is found, usually in pure culture, the laboratory should go further and subculture the specimen to determine which type is present. A very simple method may be used for determining this. *Aerogenes* produces gas within forty-eight hours in saccharose, whereas *Escherichia* does not. Both types form gas in lactose. It is very important, as I will try to point out, to know which type is present before any outline of treatment is attempted. As already stated, I have obtained approximately 80 per cent successful results in the treatment of *B. coli* infections during the past ten years by the so-called four-point treatment. This method yields results in the *aerogenes* type practically as well as it does in the *Escherichia* variety.

Clark,³ formerly of the Mayo Clinic, and also Helmholtz⁴ have shown in several recent reports that about four out of five patients presenting infection with *Escherichia coli* will completely recover by the ketogenic diet treatment. During the past two years, I have been able to obtain approximately the same percentage of recoveries in this type, using the ketogenic regimen. The principle of the ketogenic treatment probably needs

little explanation, excepting that the work of Fuller of England has shown that a specific agent (1-B-hydroxybutyric acid) is produced in a ketone urine and that this agent destroys the colon organism. A recent editorial in THE JOURNAL⁵ also reviewed in an interesting manner the action of this specific agent. The diet also strives to yield a urine with a p_H somewhere below 5.1. Colon bacilli are destroyed in an acidity of from 5.1 to 4.6. (Normal urine averages approximately from 6.8 to 5.8.) Clark also obtained satisfactory results in seven out of twenty-one cases presenting the *aerogenes* type. In ten cases of the *aerogenes* type that I treated, the ketogenic regimen failed in each instance. Therefore, with one worker showing only one out of three patients recovered, and another showing no recoveries, why should the ketogenic diet be considered as a method of choice in treating the *aerogenes* type?

This is exactly where the standardization of definite therapy enters the picture. Since the *Escherichia* type of *B. coli* responds to both the ketogenic regimen and the four-point treatment with approximately equally satisfactory results, one has the choice of either. The ketogenic diet is much the quicker method if it produces the result, from ten to twenty days usually being sufficient. Against the ketogenic diet is the fact that hospitalization is necessary, or at least the patient must go to the hospital for meals, if the utmost cooperation is to be obtained. On the other hand, if the ketogenic treatment fails in this type, the other treatment may be resorted to (cases 7, 8 and 9). Conversely, patients failing to recover with the four-point treatment may completely recover under the ketogenic regimen. I have had one such case (12). Generally speaking, therefore, in infections with *Escherichia coli* the ketogenic diet, when possible to carry out conveniently, is the method of choice. The other method can always be resorted to if necessary.

For reasons previously stated, the ketogenic diet, in my opinion, is not at all indicated in the *aerogenes* type of *Bacillus coli* infections. The percentage of successful results has been too low to warrant the advisability of submitting patients to the expense of hospitalization or dietary measures. The *aerogenes* type decidedly calls for the four-point treatment. My results with this type have been entirely satisfactory, and in fact I feel that the *aerogenes* type definitely contraindicates the use of the ketogenic regimen. It has occasionally been necessary to repeat the course of treatment, persistence, until complete recovery, is essential to its success.

Pseudomonas (*B. pyocyaneus*) infections respond exceptionally well to the ketogenic diet, as do the majority of the remaining types of organisms found less frequently in bacillurias. In the *pseudomonas* infections, Clark⁶ was able to obtain sterile urines from thirteen out of fourteen patients treated.

AUTHORS FOUR-POINT TREATMENT

1. Autogenous vaccine, made up 1 000 million per cubic centimeter, is given intragluteally at five day intervals, beginning with 0.5 cc and increasing each subsequent dose by 0.5 cc until the dosage of 2 cc is reached. Usually a course of twelve injections is given.

² Crance A. M. Treatment and Cure of Bacillus Coli Infections of the Kidney and Bladder. Urol & Cutan Rev 32: 495 (Aug.) 1928.

³ Clark, A. L. Escherichia Coli Bacilluria Under Ketogenic Treatment. Proc. Staff Meet. Mayo Clin 6: 605-608 (Oct. 14) 1931.

⁴ Helmholtz H. F. The Ketogenic Treatment of Urinary Infections of Childhood. J. A. M. A 99: 1305 (Oct. 15) 1932.

⁵ Fuller A. T. The Nature of the Bactericidal Substance in the Urine of Patients Receiving a Ketogenic Diet. Biochem J 37: 976-982 1933.

⁶ The Bactericidal Action of Ketonic Urine editorial. J. A. M. A 102: 1231 (April 14) 1934.

⁷ Clark A. L. Personal communication to the author.

2 Daily enemas are given The soapsuds enema is used, the size being increased up to 2 to 2½ quarts This portion of the treatment helps to eliminate an excess of colon bacilli from the intestinal tract, which is the focus of infection

3 Previous work has shown that *Bacillus acidophilus* definitely aids in changing the intestinal flora and also that it aids the intestinal tract in its function of elimination It is prescribed in liquid culture form because in milk it would interfere with the change in diet mentioned in the fourth item

4 Two weeks of high protein diet, two weeks of high fat diet and two weeks of high carbohydrate are given for the purpose of changing the intestinal flora, which in turn decreases the number of colon bacilli in the colon It is occasionally necessary to continue on with this diet if the urine still shows positive cultures at the end of the first six weeks

GROUP ILLUSTRATIONS BY TYPICAL CASE HISTORIES IN BRIEF

The following three cases are used as examples of treatment prior to the time when any differentiation of type of colon bacillus was made

CASE 1—Mrs C W, aged 53 admitted Dec. 23, 1927, complained of frequency and burning micturition, with considerable dysuria and recent hematuria Cystoscopy revealed a marked purulent cystitis The kidney samples in this case, however, were negative Culture from the bladder showed the colon bacillus She was placed on the four-point treatment as described Ten weeks later there was freedom from all symptoms the urine was negative for pus cells, and culture was sterile.

CASE 2—Mrs J K, aged 30, admitted Dec 5 1927 with an early pyelitis of pregnancy, complained of marked frequency and burning micturition, with marked pain in the right part of the back, encircling the abdomen downward She had a temperature of 103 F Cystoscopy revealed thick purulent urine from the right kidney, which showed the colon bacillus on culture, the left side was clear and sterile on culture The right kidney pelvis in this case was irrigated on only one occasion with 1 per cent mercurochrome She was placed on the four-point treatment and was free from all symptoms within two weeks In twelve weeks she was reexamined The urine was found clear and sterile and she later went on through delivery without further trouble

CASE 3—A. H., a man, aged 26, admitted Feb 14, 1925, was acutely ill, with marked pain in the right kidney region a temperature of 105.5 and a history of chills for the past two weeks together with bloody urine and frequency, although he had had some bladder irrigations for the past three months He had passed clots of pus and blood the past week, with considerable referred pain to the penis This case is especially interesting because the bladder was so terrifically infected that it was utterly impossible to locate the ureteral orifices and, consequently passing a catheter for drainage or lavage of the right renal pelvis was impossible Therefore this could not be used as a factor in treatment although it was evident that the source of the infection was in the right kidney The patient was given the four-point treatment immediately and in three days the temperature had dropped to normal He was discharged from the hospital two weeks after admission free from symptoms but with a pyuria still present He continued with the four-point treatment at home with the vaccine being administered each five days by his home physician Twelve weeks later he was perfectly well The urine was free from pus cells and the culture no longer showed growth of colon bacilli

The following three cases of *Escherichia coli* infection illustrate beyond doubt the splendid results obtainable with the ketogenic diet

CASE 4—W C a man, aged 52 admitted Sept 19 1932 complained of marked weakness, chills, loss of appetite, marked

frequency, urgency and burning micturition The cystoscopic diagnosis was severe purulent cystitis Kidney samples were negative Bladder culture showed a heavy growth of *Escherichia coli* The ketogenic diet was started September 20 The same day the urine pH was 6.3 September 21, 5.5, September 22, 5.2, September 23, 24, 25, 26 and 27, 5.1 On September 27, seven days after treatment was begun, an examination of the urine showed it to be free from pus cells and sterile on culture There has been no recurrence to date

CASE 5—Mrs T C, aged 47, admitted Nov 10, 1932, complained of marked frequency, urgency, painful micturition and hematuria at the onset one week prior Cystoscopy showed a very marked severe generalized cystitis Both kidneys and bladder cultures showed *Escherichia coli* The ketogenic diet was begun November 11, with a pH of 5.8, subsequently decreased as follows November 12, 5.3, November 14, 5.1, November 15, 5.0, November 16, 4.9, November 17 5.0 Culture made November 17, the seventh day of treatment, showed the urine to be free from pus and culturally sterile The symptoms had entirely subsided and the patient was discharged as recovered There has been no recurrence and the culture has remained sterile

CASE 6—Mrs M B, aged 56 admitted June 21, 1932, complained of frequency and burning micturition, which had been present several months The diagnosis was bilateral chronic pyelitis and cystitis due to *Escherichia coli* The urine showed ++++ pus cells The ketogenic diet was begun June 27 and ended July 8 The lowest pH obtained during this time was 5.2, although tests had on several occasions daily showed ++++ diacetic acid and acetone. All symptoms had disappeared and the urine was free from pus cells at the time of her discharge July 9, 1932 She has remained perfectly well

The following three cases illustrate the successful use of the four-point treatment after failure with the ketogenic diet in the *Escherichia coli* type

CASE 7—Miss L C, aged 35, admitted May 5, 1933, complained of frequency and urgency which had been present since January She also complained of severe constipation Examination by her home physician had revealed ++++ pus in the urine, and various kinds of internal medication had been prescribed with no relief Examination revealed a primary cystitis very severe in character, but both ureteral samples were clear and sterile The bladder urine showed a heavy growth of *Escherichia coli* The patient remained in the hospital for three weeks under ketogenic treatment with no relief and with no change in the pyuria She returned to her home city after having begun the four-point treatment The treatment was continued by her home physician until early in July, at which time she had recovered symptomatically She returned, July 31, at my request, for a culture of the urine It was found free from pus and sterile Incidentally, the patient returned for another check up May 12, 1934, and again the urine culture was sterile

CASE 8—W G a man, aged 69 admitted March 6, 1933 complained of marked frequency, with burning and some dribbling The attack had started about a week prior, during which time he had been at home under the care of his family physician There had been chills and fever and considerable hematuria for the first five days Examination of the prostate was entirely negative Cystoscopy revealed a severe generalized cystitis and samples from both kidneys showed pus and cultures were positive for *Escherichia coli* The ketogenic diet yielded a sterile culture and a complete disappearance of pus cells in seven days The diet was continued a few more days and the patient was discharged Within two days there was a recurrence of symptoms and the culture was again positive March 27 he was again placed on the ketogenic diet for three weeks taking his meals as an outpatient at the hospital There was no improvement in the pyuria and cultures remained positive He was then given the four point treatment, which he followed very cooperatively for several weeks, and on July 10 the culture no longer showed any colon bacilli and the urine was entirely clear This patient has had no further recurrence and appears to be in excellent health

CASE 9—Mrs B. B., aged 37, admitted Jan. 11, 1933, complained of rather severe pain in the right side of the abdomen and back, which had begun three days prior to admission. The symptoms suggested right ureteral calculus but examination revealed a right pyelitis with a mucopurulent cystitis due to *B. coli* infection, *Escherichia* type. A right pyelogram showed definite clubbing of all the calices, with a dilatation of the renal pelvis. There was also evidence of a slight kink at the right ureteropelvic juncture. This was not surgically treated. The ketogenic diet was begun, and on February 2 there had been no improvement in the pyuria and cultures were still positive. The patient was discharged and placed under the care of her family physician, who carefully followed out the four-point treatment. March 4 a culture was made on a specimen of catheterized urine and it was found to be sterile. She had remained perfectly well without further pain or recurrence of the pyuria.

The following two cases are used to illustrate typical examples of results obtained with the four-point treatment in the aerogenes type. (In this type I believe that the ketogenic diet treatment is definitely contraindicated.)

CASE 10—Mrs L. D., aged 40, admitted May 28, 1932, had severe right renal colic, chills and fever. There had been several severe attacks during the week prior to admission. Examination revealed a right pyelitis ++++ pus cells and cultures of *B. coli* (aerogenes type). She was discharged May 30 and began the four-point treatment. She received a total of twelve injections of autogenous vaccine over a period of ten weeks at the end of which time she was perfectly well and stopped all treatment. August 18 a sterile culture of urine was obtained. There were no pus cells present.

CASE 11—Mrs A. D., aged 42, admitted Jan. 26, 1933, complained of frequency with nocturia from one to five times and severe pain in the bladder region and dysuria. The present trouble had been gradually getting more severe in character since its onset, several weeks prior. Cystoscopy revealed severe chronic generalized cystitis, ++++ pus and aerogenes type *B. coli* from the bladder, and ++ pus cells with positive culture from the right kidney. Examination of the left kidney was negative. The four-point treatment was begun immediately. All symptoms had disappeared by April 10 at which time a catheterized bladder sample was free from pus cells and cultures were sterile.

The following case is one in which the four-point treatment resulted in a pus free urine but not a sterile urine on culture. However, hospitalization with the ketogenic regimen resulted in a sterile culture in nine days.

CASE 12—Mrs S. S., aged 40, seen Dec. 13, 1932, complained of frequency, urgency and burning micturition with marked pain following voiding. The trouble had begun one week prior, at which time there was hematuria. Six months before examination she had a similar attack and again another attack in September with a definite bladder irritability existing constantly. The present attack was probably an acute flare up of a previously existing bacilluria. The culture showed a heavy growth of *Escherichia coli*. The four-point treatment was carried out until May 1, 1933 at which time all symptoms had disappeared and the urine was clear and free from pus cells. The culture, however, showed a heavy growth of *Escherichia*. Although she felt perfectly well, she was willing to enter the hospital and take the ketogenic treatment in an effort to obtain a sterile urine. Nine days after the ketogenic treatment, cultures of the urine were negative. One culture has been taken since, which again showed no growth. She has continued to remain perfectly well.

SUMMARY OF CASE REPORTS

I have chosen the foregoing examples from a series of more than 250 cases of *B. coli* infections, simply to illustrate the principle outlined in the paper, which

is directed toward the standardization of therapy. An effort has been made to show that the four-point treatment, although occasionally requiring several weeks, yields a high percentage of satisfactory results in either the *Escherichia* or the aerogenes type. It has also been shown that the ketogenic regimen is indicated only in the *Escherichia* type, and when results are obtained they are usually quicker than with any other method of therapy. One group of cases illustrates that it has been necessary, in several instances, to complete the treatment by this method after the ketogenic diet had failed.

SUMMARY

The first remark should deal with the importance of bacilluria. Too often is this type of case "passed up" as something inconsequential, to be treated only with urinary sedatives or the supposedly antiseptic preparations. Too often does the physician believe, because the symptoms subside under these remedies, that he has cured his patient. *B. coli* infections especially may subside sufficiently to warrant this belief. Actually, however, the infection goes on, and sooner or later a "flare up" occurs, at which time it will erroneously be termed a "recurrence." It is not a recurrence in the true sense but rather an acute exacerbation, simply because the case was not carried along to complete recovery at the time of the previous treatment. A cure depends on three things—no more, no less. These are freedom from symptoms, a urine free from pus and an entire absence of bacilli on culture. The culture must be sterile.

CONCLUSIONS

The following conclusions are directed entirely to the standardization of the treatment of bacilluria.

- 1 The physician should have courage enough to discontinue the use of oral medication with urinary antiseptics. It has previously been proved that they will not yield a sterile culture of the urine.

- 2 *Bacillus coli* cultures must be subcultured, since the treatment depends on the type, whether aerogenes or *Escherichia*.

- 3 *Escherichia coli* infections heal very satisfactorily under the ketogenic diet in fully 80 per cent of the cases. When this fails, the four-point treatment is indicated. It is well to remember that the two treatments yield equally good results but that the ketogenic treatment is usually somewhat quicker in effecting a cure.

- 4 In the aerogenes type of *B. coli*, the four-point treatment appears to be by far the better method of attack. It will require from eight to twelve weeks of persistent effort, on the part both of the physician and of the patient.

- 5 *Pseudomonas*, and other less common types of bacilluria, apparently respond best to the ketogenic treatment.

- 6 The stubbornness of *B. coli* infections in general being realized, a complete cystoscopic study of each case including differential function, elimination of ureteral strictures, and the like, should be made. Pathologic changes that will interfere with the treatment should be known in the beginning. It would seem more advisable for the physician to make such a study before treatment is instituted rather than to find out later why the treatment failed.

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A SIMPLIFIED TREATMENT OF
BACILLURIA

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AND

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From the work of William Mansfield Clark¹ it has been shown that it is practically impossible to increase the acidity of the urine sufficiently by the oral administration of any drug to inhibit entirely the growth of the colon bacillus. Because of this it was decided to try the effect of altering the food intake. Barborka² suggested that the ketogenic diet, which had been used originally by Wilder in the treatment of epilepsy, produced an acidity of the urine considerably above the normal. Previously, Johnson³ had placed several patients with a bacillary infection of the urinary tract on the ketogenic diet. He noted some improvement in their condition, but the patients were too ill to allow a thorough test of the treatment. About this time Helmholz⁴ had noted that the urine of a patient on the ketogenic diet for the treatment of epilepsy remained clear and apparently sterile, although it had been voided into an unsterile vessel and allowed to stand for a number of days.

To a patient who had returned to the Mayo Clinic a number of times for treatment of a persistent bacillary infection of the urinary tract belongs the real credit for making the ketogenic treatment available to the other sufferers of this ailment. During his fourth trip to the clinic in fourteen months he announced that he would stay until his condition was entirely relieved. At this visit, as before, many different types of treatment both local and oral were applied, with only temporary periods of improvement. The culture of the urine showed the infecting organism to be the colon bacillus. July 21, 1931, the patient was placed on the ketogenic diet. In five days his symptoms of burning, frequency and urgency of urination were relieved. In twelve days a culture of the urine revealed the absence of the colon bacillus. Refusing to believe in his good fortune, because of his many periods of temporary relief in the past, he insisted that he be allowed to remain on the diet for ten more days. This patient has been followed for over two years since discontinuing this type of treatment and has not had a recurrence of the urinary tract infection. In August 1931 another patient was placed on the dietary treatment with very satisfactory results. Subsequently, Helmholz put several children who were suffering from infections of the urinary tract on the ketogenic diet and he also obtained excellent results.

In October 1931 one of us reported these first two cases at the staff meeting of the Mayo Clinic,⁵ and following this Helmholz presented his results. Since that time, the reports of a number of investigators⁶

who have used the ketogenic treatment in chronic urinary infections leave no question as to its definite therapeutic value. We wish to reiterate that urinary sepsis is frequently concomitant with other urologic conditions, such as obstructions, tumors and calculi. Necessarily, the management of these cases must include the early elimination of any such complications.

Up to the present time the ketogenic treatment has required the cooperation of a trained dietitian. In many cases this has necessitated hospitalization of the patient. Robb,⁶ reporting a carefully controlled series of cases, says in his conclusions: "The results suggested that the ketogenic diet was an unsuitable form of treatment for outpatient departments." Since accumulated data have shown a definite increase in satisfactory results obtained in this type of treatment compared with those of other types of therapy, it would seem essential to simplify it to permit its application to office practice and outpatient departments.

To do this, we present the following simplified ketogenic treatment, which has been shown from our experience to be applicable to office practice. The diet may be prescribed without detailed dietetic knowledge by the physician and can be prepared in the average home without special dietetic supervision. The menus are so arranged that, regardless of the items selected from the different groups, the daily intake of food will consist of carbohydrates 15 to 20 Gm., protein 35 to 50 Gm., and fat 300 to 325 Gm., with a ketogenic-antiketogenic ratio of approximately 4 to 1. The vitamin deficiency need not be considered, since the patient will be on the diet only a short period of time.

The simplified diet consists primarily of cream (40 per cent fat), mayonnaise, butter, eggs, bacon and vegetables containing 3 per cent carbohydrate. In group A are combinations of eggs and cream, group B gives a number of recipes for salads, group C is desserts, and group D contains the beverages that may be taken. The various items in each group have approximately the same carbohydrate, protein and fat content. The daily menu instructs the patient from which group selections are to be made for each meal.⁶

How is the ketogenic diet effective in eradicating urinary sepsis? Two conditions are necessary. Sufficient concentration of ketone bodies must be present in the urine coincidental with an acidity of the urine of p_{H} 5.2 or less if satisfactory results are to be obtained. Fuller⁶ has shown that levorotatory beta-oxybutyric acid is the ketone body producing the greatest bacteriostatic effect. Helmholz and Osterberg⁷ were able to demonstrate the bactericidal effect of urine with a p_{H} of 5.2 and a beta-oxybutyric acid content of 0.5 per cent. Recent work by Clark, Moore and Harrell,⁸ however, indicates that at a p_{H} of 5.0 and a beta-oxybutyric acid content of the urine up to 1.5 per cent the effect of the urine is not sufficiently bactericidal to inhibit entirely the growth of the organisms. As the average beta-oxybutyric acid content of the urine of an adult patient on the ketogenic diet will not exceed a concentration of 1.2 per cent and the average acidity of the urine will not be greater than p_{H} 5.0, it is probable that the action of the ketogenic treatment is one of bacteriostasis. It is important that this bacteriostatic

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¹ Clark, W. M. The Final Hydrogen Ion Concentrations of Cultures of *Bacillus Coli*. *J. Biol. Chem.* 22: 87, 1915.

² Barborka, C. J. Personal communication to the authors.

³ Johnson, H. W. E. Personal communication to the authors.

⁴ Clark, A. L. The Ketogenic Treatment of Bacilluria. *Proc. Staff Meet., Mayo Clin.* 6: 605 (Oct. 14) 1931.

⁵ Clark, A. L. The Ketogenic Diet in the Treatment of Urinary Infections. *J. Urol.* 36: 193-204 (Feb.) 1934. Band David Dunlop D. M. and Dick, I. L. Studies in Urinary Infection—Pathological, Therapeutic and Bacteriological. *Tr. Edinburgh M. J.* 40: 65-91 (Mar.) 1933. Fuller, A. T. The Ketogenic Diet: Nature of Bactericidal Agent. *Lancet* 1: 855-856 (April 22) 1933. Robb, D. C. The Ketogenic Diet in the Treatment of Infections of the Urinary Tract. *Brit. M. J.* 2: 1158-1162 (Dec. 23) 1933.

⁶ We are indebted to Miss Gladys Taylor of the Dietetic Department of the University Hospital, Oklahoma City for helpful suggestions.

⁷ Helmholz, H. F. and Osterberg, A. E. The Concentration of Beta-Oxybutyric Acid and the p_{H} in Bactericidal Urine. *Proc. Staff Meet., Mayo Clin.* 8: 46-48 (Jan. 17) 1934.

⁸ Clark, A. L., Moore, H. D. and Harrell, D. Unpublished work at the University of Oklahoma School of Medicine.

effect be continuous and be maintained as uniformly maximum as possible during the entire twenty-four hours. Only in this way will the last organism be washed from the urinary tract.

Experience has shown that the patient who quickly develops and maintains an intense ketosis is greatly benefited in a short time. Ketosis should develop within

The Simplified Ketogenic Diet

Group A Egg Dishes	
I Egg nog	III Egg omelet
Egg 1	Eggs 2
*Cream (40% fat) 6 tblspns	Cream (40% fat) 6 tblspns
Water 5 tblspns	Butter 3 teaspns
Nutmeg to taste	
II Scrambled eggs	IV Egg custard
Eggs 2	Eggs 2
Cream (40% fat) 7 tblspns	Egg yolk 1
Butter 3 teaspns	Cream (40% fat) 7 tblspns
	Vanilla 2 drops
Group B Salads	
I Lettuce salad	IV Combination
Lettuce 1½ head	Lettuce few leaves
Mayonnaise 4 tblspns	Celery hearts 2
II Lettuce and tomato	American cheese (grated) 2 tblspns
Lettuce 1½ head	Mayonnaise 4 tblspns
Tomato 1 small	
Hardboiled egg 1 yolk	
Mayonnaise 5 tblspns	
III Asparagus	V Egg salad
Asparagus 6 stalks	Lettuce few leaves
Lettuce 7 leaves	Egg (devilled) 1
Mayonnaise 4 tblspns	Mayonnaise 4 tblspns
Group C Cream Desserts	
I Bavarian cream	II Gelatin
Gelatin 1 teaspn	Make plain gelatin as in I. Use
Cream (40% fat) 7 tblspns	7 tablespoonfuls of unsweet
Whip the cream. Soak the	ened whipped cream over it.
gelatin in 1 teaspoonful of	
cold water. dissolve in 2 tea-	III 7 tablespoonfuls of cream
spoonfuls of hot water.	whipped with or without fla-
Add 2 drops of any flavor-	vorings
ing. When cooled add to	
cream. Place in mold and	
chill.	
Group D Beverages	
Tea, coffee or water with 4	
tablespoonfuls of cream.	
If desired this amount of cream	
may be used with	
2 cups of the beverage. Use	
no sugar or milk.	

Daily Menu

Breakfast	
I One choice from group A	I One choice from group B
II One choice from group D	II One choice from group A or C
III 8 slices of thin crisp bacon or	III One choice from group D
4 tablespoonfuls of cream	
(40% fat)	

In some cases it may be impossible for the patient to have specially prepared menus. Satisfactory results will be obtained if one and one half pints of cream (40% fat) and six eggs are prescribed as the daily food intake. The recipes and suggestions in groups A and D may be used.

Important Instructions to Patient

- 1 Satisfactory results cannot be obtained unless this diet is followed absolutely as outlined. Even the smallest deviations will ruin the chance for success of this treatment.
- 2 No food or beverage other than that listed is to be taken.
- 3 Water may be taken in moderate quantities as desired.
- 4 The chewing of gum or tobacco is not permitted. Smoking is allowed.
- 5 No cathartics are to be used other than liquid petrolatum or bitter cascara. Magnesium magna or other sweet cathartics may cause failures.
- 6 Do not take any medicines unless prescribed by the physician. It may conflict with the diet.

* It is of utmost importance to use extra thick cream containing at least 40 per cent fat. The average whipping cream is only about 32 per cent fat.

Recipe for mayonnaise

Egg	1	Have ingredients cold.	Beat egg
Vinegar	2 tablespoonfuls	until stiff.	Add dry ingredients
Salted oil	1 pint	Add oil drop by drop	beating
Salt	2 teaspoonfuls	constantly.	Thin with vinegar
Mustard	1 teaspoonful	to the desired consistency.	
Pepper	few grains		

three to five days. At the end of ten or twelve days, whether or not the results have been satisfactory, a mixed diet should be resumed. Several short courses of the dietary treatment are preferable to one long course. Certain patients will put through the ketone products in the urine much more quickly than others. To maintain a continuous ketonuria it may be necessary to space the intake of fat more evenly. This may be done by supplementary feedings of cream (40 per cent fat) between meals, especially between the evening meal

and breakfast. During the treatment the physician should not be alarmed if the patient is nauseated. It may cause the patient to miss one or more meals without interfering with the desired results. Experience has shown that normal exercise and activity will lessen anorexia. Only the normal fluid intake should be prescribed. To force fluids will lessen the bacteriostatic effect by diluting the ketone bodies in the urine.

DAILY TESTS

Evidence of ketosis is based on the test for diacetic acid in the urine. If it is present, equal parts of a 10 per cent aqueous solution of ferric chloride and the patient's urine give a port wine color. It must be remembered that a patient who is taking acetylsalicylic acid will give a false positive test. The tests for diacetic acid and acidity of the urine should be made daily. Herrold⁹ suggests a most useful procedure for an approximate measure of the acidity, which may be quickly and easily done in the office. To 20 drops of the patient's urine, one drop of 0.04 per cent solution of chlorphenol red is added. If the color of the urine remains the same, it is safe to assume that the acidity is p_H 5.2 or less. After the addition of the indicator, if the solution becomes faintly pink or red, the acidity is above p_H 5.2 and indicates that further measures for acidification of the urine will be necessary to obtain satisfactory results.

A stain of the urine sediment should be made every other day. After three tests have shown that the bacillus is apparently no longer present in the urine, the treatment may be discontinued. The final test, of course, is whether or not the bacillus is found in the urine after the patient has returned to a general mixed diet and the ketone bodies have disappeared from the urine. When one can follow the progress of the patient conveniently, microscopic examinations of the urine will eliminate the need for cultures as the final test of a satisfactory result.

DRUGS

In prescribing the simplified ketogenic diet, we have found it advisable to give no oral medication until ketone bodies have appeared in the urine. At that time, if the acidity of the urine is above p_H 5.2, it may be advisable to give ammonium chloride orally to increase its acidity. Ammonium chloride 12 drachms (47 Gm) in 8 ounces (240 cc) of water makes a solution of which 2 fluidrachms (8 cc) in a glass of water may be given after each meal and at bedtime. This medication may upset the gastro-intestinal tract, in which case 15 grains (1 Gm) of the drug is given every two hours for six doses. The 15 grains is prepared in the form of two enteric coated tablets, each of 7½ grains (0.5 Gm).

In some cases tests will indicate that sufficient acidity has developed but that the percentage of ketone bodies in the urine is insufficient to produce the necessary bacteriostatic action. In such an instance, the oral administration of methenamine may increase the bacteriostatic power of the urine to a point at which the organism will be eliminated.

LOCAL TREATMENT

Hydrostatic lavage of the bladder with 1:2,000 solution of acetic acid or 1:8,000 solution of potassium permanganate may be instituted, but excellent results have

⁹ Herrold, R. D. and Ewert, E. E. A Simplified Test for the Determination of Approximate Acidity of Urines. Urol. & Cutan. Rev. 37: 607 (Sept.) 1933.

been obtained without lavage, particularly in women. It should be remembered that the mechanical and chemical irritation of the catheter and lavage may offset the relief afforded by the ketogenic treatment. In male patients, a gentle massage of the prostate gland, every second day is given to eliminate this as a focus of infection. In a number of cases in which there are resistant or recurring infections, urethroscopy may reveal dilated prostatic ducts leading from small chronic abscesses. As organisms from these foci may constantly re-infect the urine, drainage from such regions should be obtained by cystoscopically enlarging these ducts, as described by Thompson¹⁰. In women, urethral cysts and small infected urethral glands should receive careful attention.

Frequently the coccic type of infection may be associated with the bacillary type. In these cases a short course of neosarsphenamine may be helpful, an intravenous injection of 0.3 Gm is given every five days for from four to six doses.

In prescribing the ketogenic treatment it must be remembered that the bacteriostatic agent must pass through the kidney. Poor renal function, particularly if unilateral is a contraindication for this type of treatment. In carefully observed cases it has been found that the ketone bodies will be largely excreted through the kidney with good function. There are two groups of cases for which we have no explanation as to the possible reasons for unsatisfactory results. One group will not develop a ketonuria, while in the second group the p_H of the urine remains high, although large doses of some acidifying agent are administered.

SUMMARY

Applied in short courses, the simplified ketogenic treatment of bacillary infections of the urinary tract may be prescribed by the physician in the office or in the outpatient department with very satisfactory results.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DR. CRANCE AND DRs CLARK AND KELTZ

DR WILLIAM P HERBST JR Washington D C Both presentations have outlined excellent plans of treatment. Dr Crance has presented a combination type of treatment consisting of the alternating forms of diet, treatment of the colon and vaccines which in his hands has unquestionably been very satisfactory. I haven't had any experience with this treatment. It has been generally accepted that lavage of the colon is satisfactory in aiding in the treatment of chronic urinary infections even when dependence is placed on urinary antiseptics. Specificity of the vaccine used is a rather important phase of the problem. To retain specificity cultures should be young and made up into vaccine very rapidly so that they will have a more satisfactory effect. In regard to the ketogenic diet as outlined by Drs Clark and Keltz the greatest value is in widening the number of patients to which the treatment is applicable. They have presented an ambulatory treatment that can be outlined in the office and followed in the home. Any treatment that will allow the discontinuance of instrumentation of the bladder is a tremendous boon in itself. That is one thing which this ketogenic regimen does. I want to say something about the types of relative obstruction that cannot be remedied by any known means. I refer to cases in which there are large dilated kidneys and ureters as a result of neurogenic or chronic infection. The drainage in these cases cannot possibly be improved and for that reason they have not responded well to the accepted forms of treatment. In this particular group it is certainly a great boon to be able to clear up the infection. How does the ketogenic diet produce its effect? Is

it due entirely to the change in the p_H and to the changes in the percentage of beta-oxybutyric acid? There are some patients in whom the p_H fails to come down to the desired point, and there is no appreciable amount of the beta-oxybutyric acid, but who nevertheless are definitely relieved and improved. There must therefore be some other factor in the problem besides the p_H and the beta-oxybutyric acid. I don't know whether it is on the basis of vitamin content of the diet or not but I do feel strongly that there must be some other factor.

DR CLIFFORD J BARBORKA Chicago There is a question in my mind whether the bactericidal property from the beta-oxybutyric acid alone sterilizes the urinary tract or whether this, combined with other factors from a ketogenic regimen, acts as the sterilizing agent. I would emphasize two points: first not to be too critical nor on the other hand too enthusiastic in the possible application of diet in the treatment of disease. There are a great many possibilities that are going to be developed from the studies of the influence of food and its possible interreactions on the tissues of the body. Second, if the simple qualitative method such as Drs Clark and Keltz have presented can be taught to patients in office practice so that it will produce an adequate ketosis to be bactericidal in a high enough percentage of cases, it will be a most valuable aid in treating urinary infections. It is indeed gratifying after working many years with the ketogenic diet, first in epilepsy, then in migraines, with none too great a response and without a tremendous percentage of enthusiastic results, to find that my suggestion of its use in urinary infections is meeting with such satisfaction in a new field of application. I think that one point which I observed years ago should be mentioned: namely that approximately 25 to 30 per cent of the women in my early application of the ketogenic diet to epilepsy had a cessation of the menstrual period. There has been experimental work on animals in this country and abroad in the study of the influence on the estrous cycle of a vitamin B deficient diet which produces a cessation of the estrus. The time necessary to use the ketogenic diet in urinary infections is so short that deficiencies are hardly to be considered but this can be compensated by the use of one or more of the various products of vitamin B concentrates that are on the market.

DR HENRY F HELMHOLZ, Rochester, Minn. Since Dr Clark and I started working on this subject, it has been largely a matter of a qualitative determination of ketosis, and although we were able to determine that it took ketosis of a certain degree and a p_H of a certain intensity, we did not know until recently what the actual qualities were that were necessary for bactericidal action. I should like to emphasize that ketonuria is bactericidal and not merely bacteriostatic. When ketonuria kills off colon bacilli and staphylococci in six hours, I think it is right to speak of the bactericidal power of such urine. What is the concentration of beta-oxybutyric acid and what is the p_H necessary to produce bactericidal urine? We have been working on that question for some time, and as you possibly saw in a recent publication by Dr Osterberg and me, 0.5 per cent of beta-oxybutyric acid is necessary and a p_H of less than 5.5. The higher the concentration of beta-oxybutyric acid, the greater the bactericidal power of the urine. The lower the p_H , the greater the bactericidal action of the urine. By a rather simple test, which can be made by any one in his office in six minutes a concentration of 0.5 per cent beta-oxybutyric acid can be determined so that it is now a simple thing to know whether conditions are right for bactericidal action of the urine. *Streptococcus faecalis* or *Streptococcus lacticus* is the most difficult one to kill and that *Bacillus coli*, *Bacillus lactis aerogenes* and *Bacillus proteus* are about equally difficult or equally easy to kill. *Bacillus proteus* responds very much more than the other two to a urine of low p_H . In some instances we have found that a normal urine with a p_H of 4.8 will kill, in twenty-four hours, all these organisms, that *Bacillus lactis aerogenes* needs a very much lower p_H , and that it sometimes will grow even at a p_H of 4.6 and 4.5, and that the urine with a low p_H is very much more difficult to produce in the presence of infection due to *Bacillus lactis aerogenes*. Among children, we have found no difference between the ease with which we could kill *Bacillus lactis aerogenes* and *Bacillus coli*. In a number of instances we have been able after six meals on the ketogenic diet to obtain a sterile urine in cases of infec-

¹⁰ Thompson G J The Treatment of Chronic Abscesses of the Prostatic Duct Proc Staff Meet Mayo Clin S 219-220 (April 12) 1937

tions with these organisms. There will be a number of patients who cannot be affected by the ketogenic diet, those in whom the kidney can no longer excrete a urine high in ketones and of low pH . In a recent case in which the blood contained 66 mg of beta-oxybutyric acid per hundred cubic centimeters, we were never able to get a concentration of beta-oxybutyric acid in the urine greater than 0.1 per cent. I think an even simpler mode of securing increased ketosis in the urine will be by feeding beta-oxybutyric acid directly. Unfortunately, at present, it is too expensive to be used in this way.

DR ANSON L. CLARK, Oklahoma City. Dr. Crance is to be congratulated for having pioneered in attacking infections of the urinary tract with dietary measures. I have particularly appreciated his cooperation in confirming the results I have reported. There has been a lot of discussion here today about different bacillary organisms with names that must be confusing to many. Those attempting to apply this simplified treatment will probably do well not to complicate the procedure by trying to classify the organisms. The object of our paper was to simplify the attack on this type of urinary tract infection so as to make it more generally applicable. Highly trained laboratory technicians sometimes have difficulty in classifying the bacteria. Dr. O'Connor has just said that one week his technician will say 'this is an aerogenes bacillus' and a few days later will decide that the organism found in the urine of the same patient is the colon bacillus. The results obtained from this simplified treatment may not be as satisfactory as when one has the assistance of trained dietitians and laboratory technicians. However, this simplified treatment should reach and benefit a greater number of patients.

DR ALBERT M. CRANCE, Geneva, N. Y. I have little to add, except to refer to the remarks of Dr. Helmholtz. He made the statement that it was necessary in the aerogenes type to obtain a pH somewhere around 4.5 or 4.4. I have been at this thing good and hard for the past two years, and I think the lowest obtained was 4.7. That is why I can't see why the aerogenes type can be treated by this method.

MODERN STATE HOSPITAL TREATMENT OF THE PSYCHOTIC

AN ATTEMPT AT AN EVALUATION OF PRESENT AND FUTURE TRENDS

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AND

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ELGIN, ILL.

The modern state hospital is a specialized mechanism for the treatment of psychotic patients. A portion of this treatment consists of separation from an environment in which the individual has failed to adjust together with his removal to one which is plastic in its various degrees of simplification to fit reduced powers of adaptation. In this sense the state hospital consists of a series of treatment situations, rather than of structures, and is dynamic, rather than static, the interrelationship of patients, doctors, nurses and attendants being of more importance than the character of the buildings.

Out of years of psychiatric experience, certain desirable physical facilities for the promotion of therapy have evolved, so well standardized as to require no mention here. It is probable that improvement and recovery time diminish in rather direct ratio to any decrease in recognized minimum floor space requirements.

An adequate professional staff carries at least one physician for every 150 patients and includes a patholo-

gist and a psychoanalyst. Provision should be made for interns, together with their proper instruction, and for resident and research associates. Of this, more will be said later. Registered nurses should number at least one for every 100 patients, in addition to the supervising and teaching staff, receiving hospitals, medical and surgical wards, infirmaries, tuberculosis pavilions and special treatment wards, to be staffed by registered nurses and pupils of the training school. The latter should train only high school graduates, and these for registry, with general hospital affiliation as required. Illinois considers it undesirable to train "nurses" who are not eligible for registration. There should be a nurse or attendant for at least every eight patients (on a forty-eight hour week basis, which will soon become universal) with required training courses for all and elective courses for the grade of charge or certified attendant.

The presence of other personnel who are essential to treatment, including dentists, psychologists, psychiatric social workers, occupational therapists, recreational directors and dietitians, is assumed without discussion here.

INFLUENCES ANTIPATHETIC TO INTENSIVE TREATMENT EFFORT

Injected into the hospital situation there are certain antipathetic influences that have their repercussions on patient treatment. Foremost of these destructive tendencies is the disheartening absence of unitary etiology and classic pathologic changes in those psychoses which furnish over a third of first admissions and two thirds of the resident population. Thus ignorance, which should merely challenge scientific curiosity and activity, too frequently furnishes an easy rationalization of their opposites. Pessimistic attitudes of older staff members contaminate newcomers before their insight becomes keen enough to penetrate the various disguises of envy, indolence and incompetence. Lack of team work is pernicious, the blame for it, in hospitals free from political appointees, lies at the door of the superintendent and his first assistants. There are few men who will not gladly work with the group under competent leadership.

Too often the management fails to make liberal time allowances for attendance on scientific meetings and to encourage spontaneous or assigned investigative work in every reasonable way. Few states are definitely committed to a promotional system based on professional merit. State welfare departments do not often bestow an honor, a grant of money for special study or an extended leave of absence with pay for outstanding work. Lack of appreciation retards or stunts the professional growth of many good men who fall just short of being sturdy pioneers. Cooperation between hospitals in the same state is rather uncommon—a situation that is doubtless a vestigial remnant of the days when each hospital, like a feudal barony, was isolated, fearful of outlanders and jealous of interference.

A most important discouraging influence on therapeutic effort arises from a failure to visualize treatment and its results for the benefit of the staff as a whole. Many state hospitals do not keep open books on their various forms of therapy. Physicians too often flounder about in their separate areas of endeavor without accurate knowledge of one another's accomplishment and without even arriving at clearly defined conclusions concerning their own results. We suggest daily journal entries of treatment, posted weekly into

a classified treatment file, from which the results of various types of therapy may rapidly be taken off as occasion requires

SOURCES OF THE THERAPEUTIC DRIVE—THE HEILWILLEN¹ OF THE STAFF AS A UNIT

The professional and personal requirements of staff physicians cannot well be standardized beyond B+ scholarship, adequate internship, professional interest and a well balanced personality, though "plus values" are naturally most desirable. Given this substratum, a man may become a fairly competent, though not an accomplished, psychiatrist in three years—in two if he is an interested, intelligent and well compensated introvert. A judicious admixture of extroverts, with a broad medical and surgical background, is most desirable.

The impetus of an attack on the treatment problem of the psychotic derives primarily from the medical schools and their psychiatric institutes by way of adequate undergraduate and postgraduate training, the affiliation of staff men with the schools as junior faculty members, psychiatric internships and residencies, special training periods for staff men, and the encouragement of research work in the hospitals by graduate students in biochemistry, anthropology, sociology, psychology and psychiatry. Recently Illinois has developed an educational research council, composed of the heads of the departments of neuropsychiatry of the various medical schools, appointed by the governor to advise with him on matters pertaining to the professional work of the state hospitals. The stimulus that such a group may give to therapeutic effort requires no extended comment.

State hospitals must deal with psychotic patients in large groups so far as ordinary care is concerned, but each patient is a person to be studied and prescribed for individually, each represents a summation effect of appalling extent and intricacy. Staff conferences if not thus oriented, become futile diagnostic rituals. We confess that Bleuler's² conception of schizophrenia as "a physical illness with a lingering course" with "a superstructure of psychogenic origin determined by the patient's experiences" carries considerable weight at Elgin. Also we feel that the search for physical determinants of mental disorder is a hopeful, stimulating endeavor. This receptive attitude does not, however, to our mind connote a drive solely in the direction of "detoxication," since we are quite aware of the problems of constitutional inadequacy of the endocrines and of the autonomic nervous system, and welcome psychoanalytic interpretations, along with the possibility of morbid physical reactions to pathologic mental states. We agree with Conn³ that "what we shall do with the facts he [the patient] presents is our major problem and always will be," if by these facts "of the patient's doings and his sayings" we conceive the dynamics of the body-mind organism as a whole. Although major emphasis at present is placed on psychic mechanisms it is still distinctly possible that the exact mental content of a schizophrenic patient may some day assume somewhat the same status as the hallucinations of the alco-

holic addict or the psychic reactions of a patient with dementia paralytica.

Adequate laboratories are obviously indispensable. An autopsy rate of 50 per cent is possible. The effect of frequent autopsies and pathology conferences on diagnosis and treatment is inestimable. A competent pathologist, together with an outspoken psychoanalyst, will keep any staff alive to its responsibilities. Experienced neuropathologists are often difficult to secure, but there should be at least one, with an adequate laboratory staff, available to each state service, together with as many more as possible.

TREATMENT CLASSIC PROCEDURES

Thus far we have briefly stated what we believe to be the principal conditions and circumstances under which treatment may be carried out. We continue with a summary of what may at present be considered the "back log" of accepted state hospital therapy.

1 Perhaps the oldest of all treatments for psychotic patients, if one may call it such, is mechanical restraint. The practical abolition of restraint in the modern state hospital is a very positive contribution to therapy. We find at Elgin that a hospital of 4,300 patients, with a reception service of 150 a month, need carry an average of but one or two patients in restraint daily, principally for surgical reasons. Seldom need a patient be confined in a locked room. Very probably some hospitals do better than this, and others, perhaps, not so well.

2 Psychotherapy is a treatment as old as the physician-patient relationship itself. We cannot possibly dissect its ramifications from out the vast mass of contacts which the patient makes with his environment during his hospital sojourn. Its immanence and its directed use have often been commented on. We appreciate the light thrown by psychoanalysis on mental mechanisms, but we do not look to it for the cure of a noticeable percentage of psychotic patients, nor can we accept the proposal that without the use of psychoanalysis there can be no psychotherapy. We believe, as does Schilder,⁴ that "conversation will often substitute for free association methods," and that the community life of the hospital situation, carefully readjusted from time to time by a discerning physician, strengthens the ego system by diminishing the sense of isolation and facilitating a return to reality.

3 As restraint was done away with, occupation emerged, first as a necessity and then as a recognized mode of treatment. Directed occupation now holds a secure place in the therapy of mental disease, almost too secure, in view of the fact that its practice tends to become ritualistic in the absence of thoughtful medical attention. Seldom are there enough well trained aides, and only occasionally a staff physician, sufficiently interested to carry it on properly. There is a tendency to consign patients to this treatment without careful direction and follow up. The time has come to bridge in state hospitals the arbitrary gap between occupational therapy and industrial occupation with a system of promotional employment, combining the two and making use of trained foremen in the key positions of carefully directed industries.

4 Hydrotherapy, ancient in origin, is most useful but too often misused as a form of restraint with therapeutic sanctions. It is easily prescribed, its effects are too seldom studied. We question how many patients

¹ Staehelin J. E. Somatische Therapie der schweren Psychosen innerhalb und ausserhalb der Anstalt. Schweiz Arch f Neurol u Psychiat 30: 205 1932.

² Bleuler E. The Physiogenic and Psychogenic in Schizophrenia. Am J Psychiat, 10: 203 (Sept.) 1910.

³ Conn J. H. The Concept of Dementia Praecox. Am J Psychiat 13: 1019 (March) 1934.

⁴ Schilder P. Principles of Psychotherapy in the Psychoses. Psychiat Quart 5: 423 (July) 1931.

treated in this fashion are actually benefited by their aqueous contacts per se

5 Only a brave or foolish man would venture to speak ex cathedra of sedation in a state hospital. Unquestionably the reduction of physical restraint and seclusion has increased the demand for chemical restraint. Although hydrotherapy has found its widest application in the excitements, sedation by drugs is often the wiser choice.

6 Exercise, recreation and directed group activities contribute largely to resocialization. Freedom to go and come at will on the hospital grounds strengthens the ego. At least 15 per cent of any ordinary hospital population should enjoy this privilege.

7 The modern state hospital provides physical as well as mental examinations for its patients each six months—something which the medical profession for many years has endeavored to do for the population at large without much success. Surgery does not often remove psychotic symptoms, but the patient who has been well operated on, other things being equal, improves or recovers more rapidly than he or she otherwise would have done. The incidence of tuberculosis in state hospitals necessitates segregation and proper treatment of active cases and the continued observation of quiescent ones. Pretentious units are unnecessary. Repeated roentgen examinations, determinations of blood sedimentation rates at intervals of two months and a three-day clinical observation period every two or three months for a number of years informs us of reactivation in arrested cases. A monthly list of weight losses of the entire hospital population is a distinctive health measure, screening out patients who are failing from whatever cause.

8 Malaria therapy of dementia paralytica has become a classic procedure. Elimination of subjects presenting definite contraindications, repeated blood counts and hemoglobin estimation, together with nonprotein nitrogen determinations, the free administration of dextrose, orally as well as intravenously, and immediate interruption of treatment, when indicated, has held our death rate well below 2 per cent, as the result of this therapy.

9 The state hospital is merely a highly specialized community situation, an integral part of the social group it serves. Out of this conception and its economic implications has arisen a successful effort to follow up patients while they are at home on probation or boarding out on the Gheel plan.⁵ And inevitably as a further development in this direction comes the effort to assist various individuals to make a community adjustment without first requiring of them a course of training and treatment in the hospital situation itself, i. e., commitment. Thus flying squads of psychiatrists, social workers and psychologists, working out from the hospitals, examine problem cases and advise teachers, welfare organizations, judges and physicians concerning their disposition. This is a rational and inevitable undertaking but apt to arouse anxiety and antagonism in the medical profession of some localities.

RECENT AND MORE SPECULATIVE TRENDS

The elimination of evident, together with the search for occult, foci⁶ of infection in the hope of favorably affecting abnormal mental states still beckons us on

despite discouraging reports to the contrary. The large intestine continues to be an object of grave suspicion. We question the alleged demonstration of hepatropic and neurotropic colon bacillus toxins,⁷ yet from time to time we use vaccines prepared from the intestinal flora, with some apparent success. Colonic irrigation, aside from its detoxifying effects, often is markedly sedative. Tonsils, teeth and prostate must be kept constantly in mind, as a search for obscure pathogenesis is made.

Years ago Kraepelin and Wagner-Jauregg considered the psychiatric significance of the ductless glands. Since endocrinology in the treatment of nonpsychotic patients still contends with a baffling constellation of interrelated phenomena, it is not surprising that thyroid therapy, in judiciously selected cases, is the only effective hormone treatment of the psychotic to emerge thus far,⁸ and even here we have not been especially fortunate at Elgin.⁹ The fact that young amenorrheic schizophrenic patients excrete excess amounts of the follicle-stimulating factor, comparable to those excreted by climacteric controls,¹⁰ may have psychiatric significance. Thus far we have been disappointed in pituitary treatment. However, we continue unabashed with endocrine therapy, always hopeful that tomorrow may bring the happy answer.

Prolonged sleep *dauerschlaf*,¹¹ with or without the addition of other so-called nonspecific methods, is a most important therapeutic procedure. Although pioneered nearly fifteen years ago in Europe, it has been reported on infrequently in this country. Unfortunately, the user of this therapy must choose between the Scylla of light sleep with attenuated results and the Charybdis of deep narcosis with better results but occasional fatalities. The technic is exacting, the personnel must be ample and intelligent. The administration of insulin¹² with dextrose to relieve acidosis and the use of coramine as a cardiac and respiratory stimulant have increased the margin of safety.

The quantitative and histochemical deficiency of catalytic iron in the cortical ganglion cells of schizophrenic patients,¹³ plus a direct but temporary stimulation of the nervous mechanism, may explain the fleeting effects of carbon dioxide and oxygen mixture obtained by most reporters.¹⁴ Thus far this effort has not emerged from the research stage. Ours has been the ordinary experience with the barbiturates.¹⁵ Given intravenously they

7 Baruk H. Catatonie somnol pathologique et onirisme par intoxication colibacillaire. recherches cliniques et experimentales. *Paris med* 2 278 (Oct. 7) 1933. La catatonie experimentale colibacillaire et les psychoses colibacillaires, les troubles psychomoteurs determines par la toxine neurotrophe colibacillaire dans le serie animale et en clinique humaine. *Presse med* 41 1588 (Oct 14) 1933.

8 Hoskins R J and Sleeper F H. Thyroid Factor in Dementia Praecox. *Am J Psychiat* 10 411 (Nov.) 1930.

9 Hutton J H, Brandon R, Read, C F and Nerancy J T. Endocrine Dyscrasias and Mental Disorders. *Illinois M J* 64 242 (Sept.) 1933.

10 Saethre H. Sexualhormone bei Geisteskranken. *Klin Wchnschr* 12 1409 (Sept 9) 1933. Prolanusscheidung im Harn. *ibid.* 12 1727 (Nov 4) 1933.

11 Kjaesli J. Ueber die therapeutische Anwendung des Dauerschlafes mittels Somnifen bei Schizophrenen. *Ztschr f d ges Neurol u Psychiat* 74 557 1922. Mueller Max. Die Dauernarkose mit fliessigem Dial bei Psychosen. *ibid* 107:522 1927. Lutz J. Ueber die Dauer narkose in der Psychiatrie. *ibid* 123 91 1929.

12 Quastel J H and Stroom Olsen R. Glucose-Insulin Administration in Prolonged Narcosis. *Lancet* 1:464 (March 4) 1933.

13 Freeman Walter. Deficiency of Catalytic Iron in the Brain in Schizophrenia. *Arch Neurol & Psychiat* 24 300 (Aug.) 1930.

14 Loevenhart A S, Lorenz W F and Waters R M. Cerebral Stimulation. *J A M A* 92 880 (March 16) 1929. Langenstrass K H and Buchman E F. Stupor in Zirkulaeren und schizophrenen Psychosen. Versuch einer aktiven Behandlung. *Ztschr f d ges Neurol u Psychiat* 135 83 1931. Solomon H S, Kaufman M R and d'Elseaux F. Some Effects of Inhalation of Carbon Dioxide and Oxygen and of Intravenous Sodium Amytal on Certain Neuropsychiatric Conditions. *Am J Psychiat* 10 761 (March) 1931. Hinzie L E. and others. The Treatment of Dementia Praecox by Continuous Oxygen Administration in Chambers and Oxygen and Carbon Dioxide Inhalations. *Psychiat Quart* 8 34 (Jan.) 1934.

15 Ettelson A. The Use of Sodium Amytal in the Psychoses collected and Contributed Papers. Elgin State Hospital. December 1932.

5 Crockett Helen M. Boarding Homes as a Tool in Social Case Work with Mental Patients. *Ment Hyg* 18 189 (April) 1934.

6 Kopeloff Nicholas and Kirby G H. Focal Infection and Mental Disease. *Am. J Psychiat* 3 149 (Oct.) 1923.

at times effect an extraordinary rapport with inaccessible patients

"Nonspecific" therapy embraces the use of a vast number of protein and nonprotein substances. Its indications and applications remain purely empirical. Whatever the *modus operandi* may be—pyrexia, somatic protein disintegration, changes in acid base equilibrium, colloidal alterations, activities of reticulo-endothelial cells, mobilization of cholesterol, quickening of metabolism—the conclusion seems possible that there is one common leverage, an action on the autonomic nervous system with an "onimucellular protoplasmatic activation"¹⁶ accompanied possibly by re-inflammation of the originally affected organs. Our best results with fever—and occasionally these are startling—have been secured in the more recent cases. However, we are not enthusiastic and agree with the more conservative statements in the literature (collected reports of 1,795 cases of fever therapy in schizophrenic patients, with 10 per cent of recoveries and 30 per cent of improvements¹⁷).

The electrical cabinet,¹⁸ the electrical heat blanket¹⁹ and similar devices, as well as diathermy²⁰ and radiotherapy,²¹ are valuable in the treatment of dementia paralytica if burns can be avoided. However, we are not convinced that these contrivances are superior to biologically induced fever. The use of typhoid vaccine has received some fresh impetus with the use of the split, or double dosage, method. Negroes, notoriously resistant to malaria, do well with this technic, which produces temperatures well above 106 F. We make free use of a suspension of sulphur in oil, injected intramuscularly.²² A course of from six to eight injections often carries an excited patient along with mild temperature reactions until a course of malaria or other heat therapy can be instituted. Our experience with continuous forced spinal drainage,²³ with and without the use of hypotonic solutions intravenously, has been too small to merit comment. Repeated withdrawals of large amounts of liquor, together with substitution of air, occasionally appears to be useful in the excitement of dementia paralytica as well as in other types of excitement.

State hospital dietaries have in the past been considered principally from the standpoint of weight maintenance. An era of nutritional exploration has now been entered on. The ingestion of inadequate amounts of the vitamins and calcium phosphorus and copper, as well as iron, iodine and the like, may have more to do with mental disease than has heretofore been realized. The experiment—incomplete as yet—of the Otho Sprague Memorial Foundation in feeding 100 young schizophrenic patients at Elgin with a "vitamin

B complex" over a long period of time is a stimulating approach to the treatment of psychotic patients. Previous experiments with animals and school children are interesting.

FUTURE TRENDS

The future of modern state hospital treatment is an interesting field for speculation, especially in view of the past, which presents so many by-paths leading into the swamps of disillusionment. One may question whether any consistent evidence of neuropathology in schizophrenia—against which the effects of therapy may be checked as in dementia paralytica—will issue from laboratories using present day methods of examination. This ground has been painstakingly worked over for years without yielding consistent and generally accepted results. We look more hopefully to the work with living tissues and to those who survey the advances of physiologic chemistry with inspired discernment. Especially does there seem to be some hope in the study of the colloids, the chemistry of films, surfaces and interfaces. Changes in the status of the protein micelles of the blood may reflect correlated changes in the fixed tissues, including those of the brain, possibly an evidence of chronic toxemia, dyscrimism, disturbance of the autonomic nervous system, and the like. We have done some work that contributes slightly to this idea and vaguely indicates tentative therapy along corresponding lines.

We look for the development of an abbreviated psychoanalytic technic applicable to psychotic patients in larger numbers, especially for use during their convalescence before they leave the hospital. And yet, as the tremendous role of the sympathetic and parasympathetic systems is increasingly revealed, we wonder whether, perhaps, we shall not come to know how to balance their activities by other means than psychoanalysis. If, as Hess²⁴ expresses it, "disturbed psychic function can be the expression of disturbed equilibrium between the influences of the parasympathetic and sympathetic principle," very possibly complexes at times become malignant and regressions of personality occur as the result of slowly developing or suddenly acquired autonomic-endocrine imbalance in those who otherwise might have carried on quite well despite certain constitutional inadequacies.

Hoskins' application of Cannon's concept of homeostasis to the research problems of schizophrenia expresses an increasing attention to the reaction patterns of the entire mind-body organism in the study of the psychotic, a direction of thought which should eventually result in a more resourceful, less empirical therapy. The intensive study of a large number of acute cases of schizophrenia in anticipation of their possible recovery, together with a painstaking, retrospective analysis of those who eventually recover, or greatly improve, might reveal important clues to the *modus operandi* of their social readjustment. More painstaking evaluation of such data than have been heretofore attempted would be well worth while, corresponding in psychiatry to antemortem and post-mortem case studies of physical illness.

Increasingly better neuropsychiatric training for undergraduate medical students is to be expected, especially along the line of actual case contacts during clinical clerkships and special internships in psychiatric hospitals. This practice, together with residencies in

16 Margolis J. I. Insulin and Nonspecific Therapy—Common Mechanism. *Nonspecific Syndrome*. *J. Nerv. & Ment. Dis.* 74: 278 (Sept.) 1931.

17 Nutini G. La terapia febrile nella demenza precoce. *Rassegna di studi psichiat.* 21: 128 (Jan. Febr.) 1932. Ewald G. Schizophrenie. *Fortschr. d. Neurol. u. Psychiat.* 5: 321 (Aug.) 367 (Sept.) 1933.

18 Hoverson E. T. and Morrow G. W. Treatment for General Paresis by Means of Electric Cabinet, Arsenicals and Typhoid Vaccine. *Illinois M. J.* 64: 547 (Dec.) 1933.

19 Wilgus S. D. and Lurie L. The Fever Treatment of Paresis by Means of the Diathermy Current and the Electric Blanket. *Illinois M. J.* 60: 341 (Oct.) 1931.

20 Neymann C. A. and Osborne S. L. Treatment of Dementia Paralytica with Hyperpyrexia Produced by Diathermy. *J. A. M. A.* 60: 7 (Jan. 3) 1931.

21 Hinsie L. E. and Carpenter C. M. Radiothermic Treatment of General Paralysis. *Psychiat. Quart.* 6: 215 (April) 1931.

22 Schroeder K. Sulphur Treatment of Dementia Paralytica and Other Metasyphilitic Affections of Central Nervous System. *Ugeskr. f. Læger* 80: 759 (Aug. 25) 1927. Read C. F. Sulphur in the Fever Treatment of Paresis. *Illinois M. J.* 59: 21 (Jan.) 1931.

23 Kubie L. S. and Retan G. M. Forced Drainage of Cerebrospinal Fluid. Its Experimental Basis. *Technic of Clinical Application and Indications and Contraindications*. *J. A. M. A.* 101: 142 (July 29) 1933.

24 Hess W. R. Interrelationship Between Psychic and Vegetative Functions. *J. Nerv. & Ment. Dis.* 74: 511 (Oct.) 645 (Nov.) 726 (Dec.) 1931.

neurology and psychiatry, plus some training in neuropathology, will furnish staff men prepared to do excellent work if they can be interested in state hospital practice by the allure of proper facilities, housing and recognition of services rendered. We look forward to greater efforts in the future on the part of hospital managements to relieve staff members of unessential work, so that they may devote themselves intensively to their medical task of evaluating the patient-treatment problem. There is a natural tendency to overdevelopment of routine in an effort to stop every possible loophole for public complaint and official criticism.

We deplore the statement that state hospitals deal only with "end products," especially in view of the fact that so much of medical and surgical practice also deals with end results. As psychiatric institutes associated with medical schools increase in number, we hope for programs of teaching, research and treatment that will envisage state hospitals as extensions of these institutes.

We look forward to a state of mind in welfare departments that will seek to encourage the outstanding worker with citations and awards of one kind or another. This idea may even develop so far as to involve the reward of an entire institution with added grants for the continuation of important work on a larger scale. In many commonwealths, partisan politics still impinge unduly on the hospital situation. The wise selection and retention of hospital heads and their assistants a simple measure so obviously right as to require no argument, will doubtless affect the future treatment of institutionalized psychotic patients more favorably than any other one factor in the situation.

When one visualizes the treatment of dementia paralytica as it was prior to the advent of fever therapy and considers the situation today, contemplates the contribution of psychoanalysis to the understanding of the mental phenomena of psychotic states and takes into consideration the tremendous improvement in the entire medical school-state hospital situation during the past twenty-five years, there is good reason to look on the future treatment of psychotic patients as one of the most exciting adventures, as well as one of the most hopeful therapeutic enterprises, in the field of medicine today.

SUMMARY

A modern state hospital is a treatment situation in which personnel is more important than structures.

Various factors, exogenous and endogenous, contribute to the discouragement of therapeutic effort.

The therapeutic drive derives primarily from the attitude of the medical school toward psychiatry.

The orientation of the medical staff toward causation is important. The patient is to be considered as a somatopsychic problem.

Adequate laboratories are as essential to proper treatment as they are in a general hospital.

In addition to classic procedures, more recent trends involve principally the endocrines, various modes of carrying out fever therapy, better nutrition, and various attempts to bring about readjustment of metabolism.

Future trends of therapy will be determined by better training of psychiatrists, together with increased recognition of their efforts, and by further developments of physiologic, especially colloidal, chemistry combined with an increased knowledge of the activities of the autonomic nervous system.

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ABSTRACT OF DISCUSSION

DR C O CHENEY, New York. The authors mentioned one point to which I wish to confine my remarks, and that is the importance of the adequacy and training of the medical personnel. The removal of politics from the appointment of the medical personnel in state hospitals is a fundamental, primary requirement for stability and maintenance of adequate personnel. In New York all the medical positions, as well as others in the state department of mental hygiene, are on a civil service basis, and in twenty-three years experience in the state hospital service I have never known any one to be appointed or removed from a position on account of a political situation. In the department, all medical appointments above the grade of medical intern appointments are made after civil service competitive examinations. Appointments are made after promotion examinations from assistant physician to senior assistant, first assistant and superintendent. A man does not come in as superintendent unless he has come through the various grades in the state department of mental hygiene. Most of the hospitals take on their staffs now only men who have had a general internship because they are approved by the American Medical Association for residencies in psychiatry. The psychiatric institute has continued in its new location as part of the Columbia-Presbyterian Medical Center the practice originated by Adolf Meyer some thirty years ago of having special courses for state hospital physicians. At present it is a ten weeks course given under university auspices by the combined departments of neurology and psychiatry of the medical school at the institute. The head of the department of psychiatry in Columbia is also the director of the institute. The ten weeks course covers both neurology and psychiatry. The course is planned primarily as a source of stimulation for further investigation and study for the men who go back to the hospitals, and we find from experience that this aim is pretty well carried out. Men get points of view that they never have had before or never would be able to get in more or less isolated hospitals. In addition, we have yearly inter hospital conferences. Each year we send out a list of topics to the hospitals for men to work on about a year ahead of the time of the conference. Men from practically all the hospitals worked on problems during the year, and those papers were presented by them at two conferences, one at the institute and one upstate at Utica, twenty-five papers in all being presented. The affiliation with the university is important. The more men who can be brought from surgery and other branches of medicine into state hospitals, the better it is for the hospitals.

DR GEORGE B HASSIN, Chicago. The title of the paper by Drs Read and Nerancy should in my opinion be "Modern Care of the Insane," instead of treatment, for, with few exceptions the treatment of the insane is purely symptomatic, not amenable to medicinal, surgical, psychotherapeutic and even psychoanalytic procedures. This is especially true of the large class of patients classified as dementia praecox, manic depressive, paranoid and similar states. The reason for the poor progress made in the treatment of insanities is the lack of knowledge of pathophysiology. The types of abnormal mental conditions mentioned do not manifest morphologic changes in the nervous system but are most likely caused by some physicochemical and physiologic processes that result in severe toxemia. In some cases, pathologic studies revealed changes in the cerebral subarachnoid space that might be interpreted as a reaction against abnormal chemical substances discharged by a toxic brain into the subarachnoid space. It was considered worth trying to relieve the brain of such abnormal chemical substances by washing them out with diluted physiologic solution of sodium chloride. This has been tried in the Psychiatric Institute of the University of Illinois on four catatonic patients by Drs Haines and Broder. Intravenous injections of from 1,500 to 2,640 cc. of a diluted (as much as three times) physiologic solution of sodium chloride were given combined with spinal drainage and immediately followed by injections of hypertonic solutions. Though at the beginning the results were somewhat encouraging, in the majority of the cases treated there was hardly any significant change for the better, though the patients stood the treatment well. The method somewhat modified will be tried in cases less advanced and will be described soon by Drs Haines and Broder.

DR H J GAHAN, Chicago Forty one years ago I entered the state service of Illinois as an assistant physician in the Elgin State Hospital Dr Kilbourne, the first superintendent, was granted full control in the construction of the building and the beautiful grounds of the hospital The front wards were arranged with libraries, billiard rooms music rooms private dining rooms and other home comforts The patients in the back wards were subjected to restraint measures so predominant in those early days Dr Arthur Loewy was the superintendent during my early service His first work was to abolish restraint We were not favored with the diagnostic knowledge, appliances and procedure so usual today In 1914 I returned to the service as superintendent of the Elgin State Hospital The complexion of things had changed because of overcrowding and many of the home features and amusements were necessarily done away with in order to make more room for beds The building of more units had not been commensurate with the population Many features for the welfare of the patient during this period were introduced All restraint measures were removed, and the paraphernalia was either used for better purposes or was destroyed The removal of bars from the window was carried out and occupational therapy was instituted There were also more modern methods of diagnosis and treatment, facilitated through the initiation of laboratory procedure

DR. CHARLES F READ Elgin Ill Dr Cheney has spoken from the point of view of New York There are other states not so enlightened as New York in respect to modern state hospital care The *Psychiatric Quarterly* represents the work done and reported by the New York State Hospital Service In many states the hospitals are still quite isolated. They are rather jealous of one another and resent interference from outside, a vestigial remnant of the old days when they were considered more or less as mental barracks I couldn't quite understand what Dr Hassin said concerning treatment I thought I mentioned treatment Care is not all that can be accomplished in a state hospital The main purpose of this paper was to present to the section the possibility of a state hospital doing much more for those committed to its custody

RECOGNITION OF TYPES OF ARTERIO-SCLEROSIS BY OSCILLOMETRY

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The importance of the concept of cardiovascular disease as a clinical entity is fully understood today Emphasis has been placed, and properly so, on the recognition of cardiac abnormalities of various types Recently the necessity of obtaining information as to the condition of the vascular tree has begun to be stressed It is not believed today that arteriosclerosis is merely an expression of aging of the arteries As Aschoff¹ has said "Arteriosclerosis is not merely a change or transformation attending the process of aging, it is not a mere infirmity of old age, but rather a disease of the vessels manifesting itself mainly during senescence" The clinical recognition of arteriosclerosis thus becomes a matter of import, because the type and the degree of arteriosclerosis present in a given individual have distinct prognostic significance Any method of clinical examination that gives reliable information as to the condition of the vascular tree thus becomes worthy of attention

The studies here reported were undertaken as part of the work of the Vascular Disease Clinic of the Cin-

cinnati General Hospital By means of a new technic, eight oscillometric curves are taken in each instance, and it has been shown that it is the form of the oscillogram, rather than the mere height of the oscillometric index, which is of greatest importance

METHOD²

The Boukitté modification of the Pachon oscillometer has been used for all determinations This apparatus has two overlapping, distensible pouches having a combined width of 15 cm These pouches are enclosed in a rigid web cover fitted with web straps The apparatus is strapped to the extremity to be studied By a simple valve arrangement the pouches can be inflated together or singly A manometric dial permits the recording of oscillometric variations at different pressures

In each case studied, eight oscillograms are made, i.e. of the forearms, upper arms, legs and thighs on both sides With the band snugly fitted to the extremity, air is pumped in until the pressure is great enough (in ordinary cases) to prevent any movement of the oscillatory needle In certain cases even at the pressure of 300 mm of mercury (the limit of the instrument) oscillations still occur By means of a needle valve, the pressure is dropped 10 mm at a time and the height of the oscillation recorded at the various pressures

Since the time element is a factor, the observer announces the oscillations at the various pressure levels, which are then immediately charted by an assistant By the use of various chart symbols for the different extremities, the four oscillograms for the upper and again for the lower extremities can be charted on one graph and the two graphs combined on one sheet

Blood pressure readings are taken by the auscultatory method on the right and left arms as soon as the arm oscillograms are charted The patient lies recumbent during the test so that the extremities are approximately at the heart level

With this technic, several hundred charts were made of patients suffering from diverse conditions, material from the medical service of the Cincinnati General Hospital being used In all cases studied, records were made of the results of physical and laboratory examinations, electrocardiograms and roentgen studies

As one surveys the rather extensive literature on oscillometry that has appeared recently, one is struck by the fact that in nearly all studies the main emphasis has been placed on the maximal oscillometric phase (MOP), a single arm tracing having been taken

It is evident now that the form of the oscillogram, taken with the eight tracing technic, is of paramount importance From the form of the oscillogram certain definite deductions may be drawn as to the condition of the vascular tree In the consideration of cardiovascular disease, attention ought certainly to be directed to the vascular tree It would appear that oscillometry affords valuable evidence not only as regards the presence of arteriosclerosis but also as to its type

The normal oscillogram of the upper arm begins to show an oscillometric rise at about 120 mm of mercury and drops to zero between 40 and 30 mm of mercury Oscillations do occur at higher pressures than 120 mm, but they are not marked The maximal oscillometric phase occurs between 100 and 80 mm of mercury The

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¹ Aschoff Ludwig in Cowdry E V Arteriosclerosis New York Macmillan Company 1933 p 5

² Friedlander Alfred Am Heart J 9 212 (Dec) 1933

thigh shows oscillations at higher pressures (around 160 mm of mercury) and the drop occurs around 40 mm. The maximal oscillometric phase occurs somewhat above 100 mm.

In obliterative vascular sclerosis the oscillations occur over a much narrower range of pressure, the maximal oscillometric phase, especially in the lower extremity, is apt to occur at higher pressures—from 140 to 120 mm of mercury—and the height of oscillation is low—from 2 to 3 units.

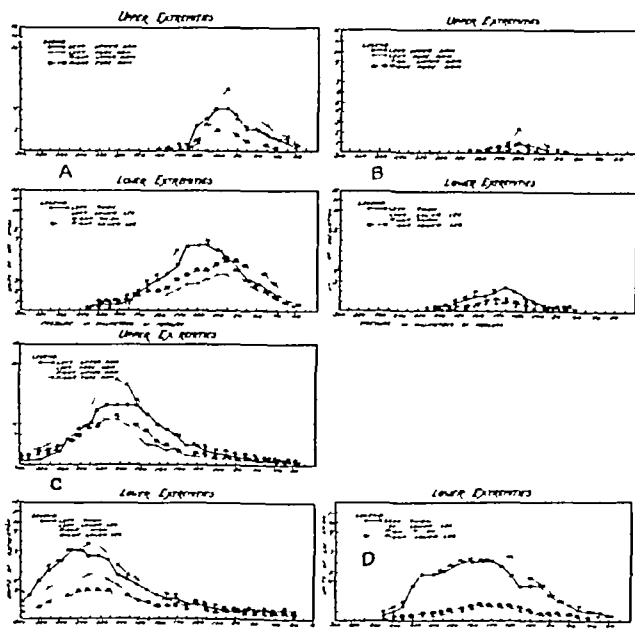


Fig 1—Four typical oscillograms. *A* normal oscillogram white man aged 65 blood pressure 120 systolic 60 diastolic clinical diagnosis pernicious anemia. *B* generalized vascular sclerosis white man aged 49 blood pressure 120 systolic 100 diastolic clinical diagnosis arteriosclerotic heart disease and vascular sclerosis. *C*, essential hypertension white woman aged 50 blood pressure 250 systolic 160 diastolic, clinical diagnosis essential hypertension and nephrosclerosis. *D* medial arteriosclerosis white woman aged 68 blood pressure 190 systolic 120 diastolic, clinical diagnosis arteriosclerosis marked in arteries in lower part of legs.

In hypertensive heart disease with arteriosclerosis, the spread of oscillations is very much greater. The height of the oscillometric index varies very greatly, but the maximal oscillometric phase in both upper and lower extremities always occurs at levels well above 100 mm of mercury.

In malignant hypertension with nephrosclerosis the oscillometric curve is quite characteristic. There is what might be called a definite shift to the left. In both upper and lower extremities the maximal oscillometric phase occurs at levels much above the normal (from 220 to 200 mm of mercury). Oscillations begin at such high pressures as 300 mm of mercury. Furthermore, the oscillations approach zero at much higher levels (around 100 mm of mercury). The unit height of oscillations is high, from 8 to 9 at the maximal oscillometric phase.

In medial arteriosclerosis of the Mönckeberg type, there is marked difference in the curves in legs and thighs, or forearms and arms, or both.

There is a wide spread of oscillations, which begin around 240 mm of mercury, extending to 40 mm of mercury. The maximal oscillometric phase occurs at various pressures and the curve is sometimes of the plateau type.

It must be added that mixed forms of sclerosis are of course common. In such cases, definite diagnosis

cannot be made from the oscillogram alone. The diagnosis of vasospasm of the peripheral arteries can also be made by means of the oscillogram. Where, from the tracing, one suspects that vasospasm exists, vasodilatation is induced by the application of external heat or by the use of other methods of vasodilatation, and the tracing is repeated. The difference in curves thus obtained is striking and, many times, definitive.

With this method, groups of cases of various types have been studied during the past eighteen months to determine the types of arteriosclerosis encountered. A discussion of certain of these groups of cases follows. Figure 1 shows some actual tracings taken.

Bell³ says that medial calcification is one of the most important changes occurring in the muscular arteries. It begins early in life and increases progressively with age but varies greatly in degree in individuals of the same age group. The high relative frequency of medial calcification in the arteries of the lower extremities suggests that functional strain is an important factor in its genesis.

The oscillometric curve of medial sclerosis is so distinctive that the clinical recognition of the existence of the condition is much facilitated. Accordingly, in the analyses of the oscillograms in specific diseases, attention has been given, in each series, to the incidence of medial sclerosis.

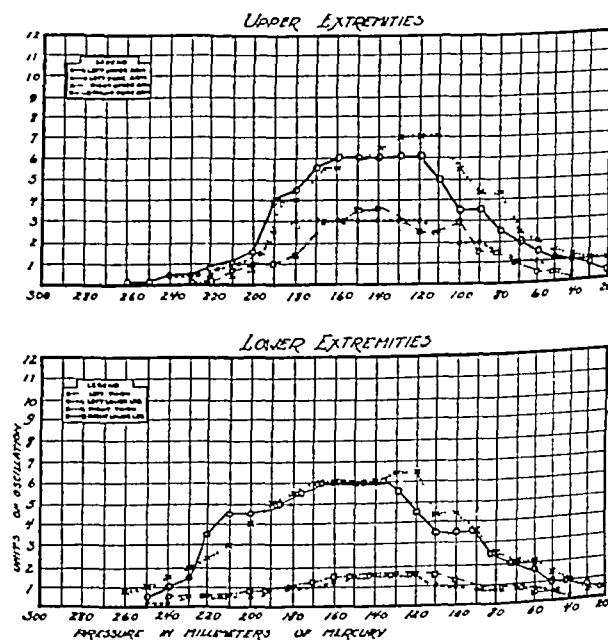


Fig 2—Oscillogram in hypertensive heart disease white woman aged 68 blood pressure left 190/110 right 190/120.

HYPERTENSIVE AND ARTERIOSCLEROTIC HEART DISEASE WITH VASCULAR SCLEROSIS

Thirty-six cases of hypertensive heart disease were studied. Ten, or 27.7 per cent, showed medial arteriosclerosis. Four patients were under 40 years of age.

The divergent forms of tracings obtained are well illustrated in figure 2, but it will be noted that the oscillographic criteria for diagnosis are constantly present. The tracing in malignant hypertension with nephrosclerosis (fig 1 *C*) shows its own definite form, well illustrated in the photograph of the tracings made

CORONARY DISEASE

Sixteen patients with coronary disease were studied. Of these sixteen patients, eleven showed definite clinical and electrocardiographic evidence of coronary thrombosis, the other five showed the general picture of coronary sclerosis.

Five of the sixteen cases in the group showed the oscillometric tracing of medial arteriosclerosis. Two of these were cases of thrombosis, the other three of coronary sclerosis.

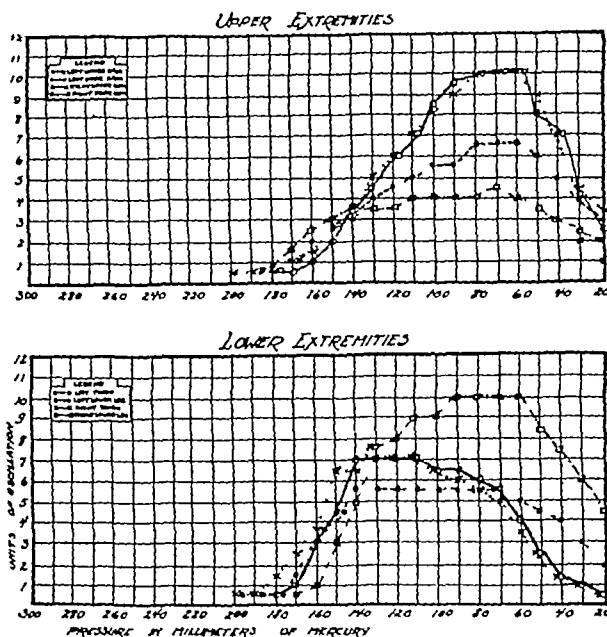


Fig 3—Oscillogram in rheumatic heart disease white woman aged 22 blood pressure left 145/0 right 145/0

Of the eleven cases in the series in which medial arteriosclerosis was not present, seven showed the picture of general vascular sclerosis in the tracings, four gave normal charts.

The patients with medial arteriosclerosis were all men, ranging in age from 51 to 78.

Of the two patients in the series under 40 years, one was a Negro man with a positive Wassermann reaction and the other a white woman with a negative Wassermann reaction.

At this time in the study it is not possible to draw any definite conclusions from the standpoint of diagnosis or prognosis from the oscillometric curve in cases of disease of the coronary arteries.

RHEUMATIC HEART DISEASE

The relation of rheumatism and various forms of arthritis to arteriosclerosis is still under discussion. MacCallum is not sure that there is a distinct relation. On the other hand, Zeek⁴ analyzed the records of 1,070 autopsies in persons under 30 years of age. Twenty-three cases of rheumatic heart disease came to autopsy. She found that rheumatic heart disease was almost invariably accompanied by atheromatous changes in the aorta, or pulmonary or coronary arteries.

In a second paper she⁵ studied the changes in sixty-two cases of rheumatic heart disease, in persons dying at ages of from 10 to 70. The observations were in accord with those reported in the previous study. In

addition, she notes that lipid deposition has seemed to begin soon after the onset of cardiac disease and that, in a very general way, it has paralleled in degree the cardiac lesion.

We have studied thirty-six cases of rheumatic heart disease. Nine of these (25 per cent) showed the tracings of medial arteriosclerosis, while six of the remaining cases showed vascular sclerosis. Thus of thirty-six cases, fifteen (41.6 per cent) showed the oscillometric curves of arteriosclerosis.

Of the thirty-six patients studied, twenty-three (63.8 per cent) were under 40 years of age. Five (55 per cent) of the nine patients with medial sclerosis were under 40. One of the six patients who had vascular sclerosis was under 40.

The oscillometric curves in rheumatic heart disease present certain well defined characteristics when they show a deviation from the normal.

There is a definite shift to the right. The maximal oscillometric phase occurs at levels usually below 100 mm of pressure in both upper and lower extremities, and there is a high oscillometric index. These observations are not dependent on blood pressure, as will be noted in the tracings shown.

SYPHILITIC HEART DISEASE

In syphilitic heart disease the picture is different. Of fifteen cases studied, fourteen, or 93.3 per cent, showed

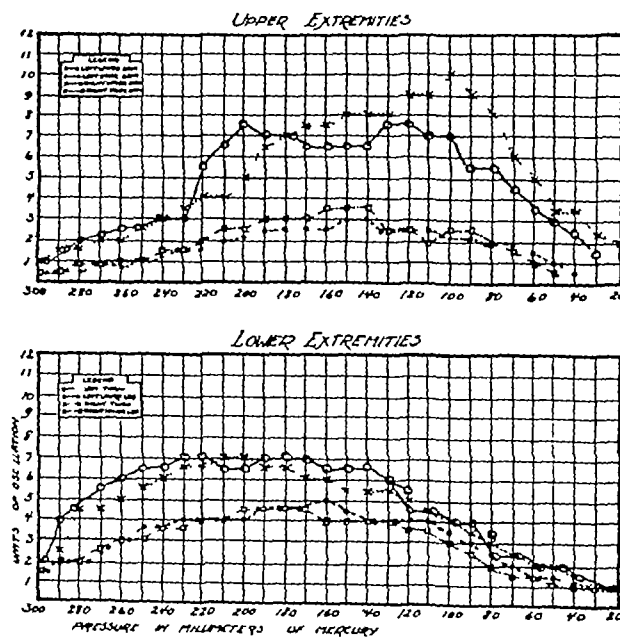


Fig 4—Oscillogram in syphilitic heart disease Negro aged 35 blood pressure left 220/70 right 220/70

the tracing of medial sclerosis. All fourteen patients were males, nine white and five Negroes. The high incidence of medial sclerosis in syphilitic heart disease is, of course, well known. By means of the oscillometric curves the clinical diagnosis is much facilitated. As will be seen in the charts, the shift to the right, as found in rheumatic heart disease, does not occur, and the characteristics of the curve of medial sclerosis as previously noted are well shown.

THYROID ADENOMA

Nineteen cases of thyroid adenoma were studied. Two of these (10.5 per cent) showed medial sclerosis, and six of the remainder showed vascular sclerosis.

⁴ Zeek Pearl Am J M Sc 184: 350 (Sept) 1932
⁵ Zeek Pearl Am J M Sc 184: 356 (Sept) 1932

These were all women, aged respectively 29, 37, 40, 41, 46 and 56

Eight of the nineteen cases (42.1 per cent) showed arteriosclerotic curves

At present all cases in which total thyroid ablation is to be done for the relief of myocardial insufficiency are being studied. These studies have not progressed far enough to warrant a report

PULMONARY TUBERCULOSIS

Thirty-two cases of pulmonary tuberculosis were studied at the Hamilton County Tuberculosis San-

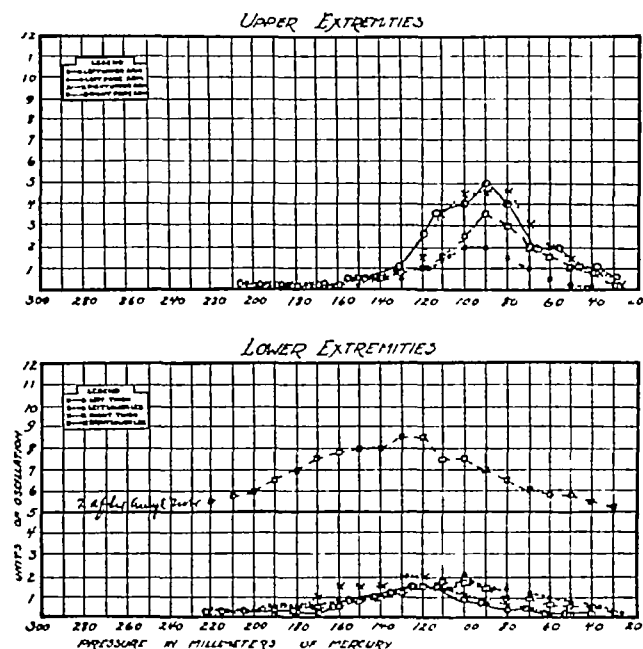


Fig. 5—Oscillogram in a case of poisoning with corrosive mercuric chloride marked vasospasm and effect of amyl nitrite white woman aged 27 blood pressure left 120/80 right 120/80

torium. All were far advanced cases, there were fifteen men and seventeen women. All but four were under 50 years of age. Three of the patients (96 per cent) showed the curves of medial sclerosis, all white men, aged 40, 44 and 53. All three gave a negative Wassermann reaction.

In addition, seven other cases (21.8 per cent) of the group showed the curves of vascular sclerosis, six women and one man, ranging in age from 24 to 35 years. Six of the seven had negative Wassermann reactions, the one positive Wassermann reaction occurred in a white man, aged 28.

The three cases of medial sclerosis showed the characteristic curve in the upper extremity only. This may or may not be coincidence, at any rate, no definite explanation of the finding may be advanced.

The relation of pulmonary tuberculosis to the pathogenesis of arteriosclerosis is still under discussion. MacCallum⁶ is of the opinion concurred in by Ophüls, that tuberculosis has no effect on the arteries, at least so far as arteriosclerosis is concerned.

It is admitted that the series studied is much too small to warrant the making of any very definite statement as to the relation of pulmonary tuberculosis and arteriosclerosis. None the less the observations are sufficiently striking to make further studies advisable.

VASOSPASM

In the routine work of the Vascular Disease Clinic of the Cincinnati General Hospital, the differentiation of vasospasm from obliterative arterial disease of the extremities is an important diagnostic procedure. One method in use is to take tracings of the extremities, blanket the entire body and lay on hot water bottles to relax any existing vasospasm by increasing the environmental temperature, after forty-five minutes of such heating tracings of the same extremities are taken again. This procedure has been used by us on several occasions.

Recently we have become interested in the effect on the peripheral vessels of corrosive mercuric chloride, which produces a definite vasospastic effect. We have taken tracings in our corrosive mercuric chloride (attempted suicide) cases and have temporarily nullified the vasospastic effect by the exhibition of amyl nitrite (fig. 5).

DIABETES

The intimate relation of diabetes and arteriosclerosis is now generally recognized. MacCallum⁷ quotes the studies of Joslin showing that arteriosclerosis is relatively frequent in diabetes, especially arteriosclerosis of the coronaries and of the arteries of the lower extremities. Bell⁸ also comments on the fact that

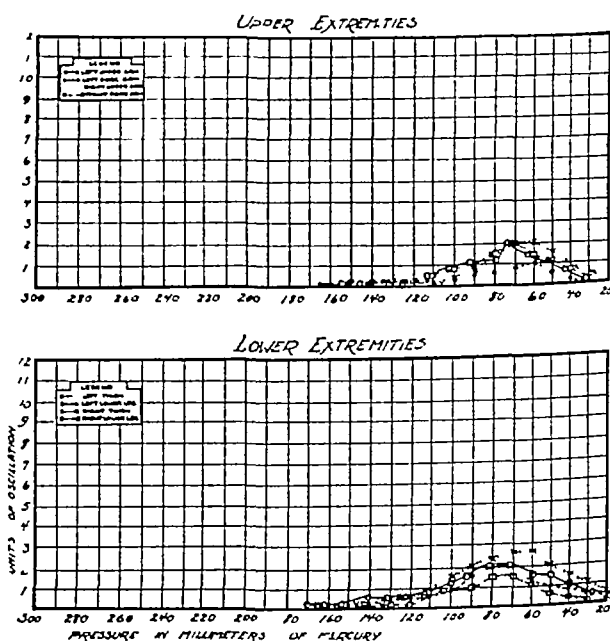


Fig. 6—Oscillogram in diabetes in a Negro girl aged 13 years blood pressure left 95/60 right 95/60

diabetes causes a definite increase in the intensity of intimal atherosclerosis. He says that "it is not known whether diabetes has any relation to medial calcification or fibrosis."

We have made tracings in thirty-three cases of diabetes. No attempt has been made to select severe cases. We have taken patients from the outpatient and the inpatient service of the Cincinnati General Hospital. There were fourteen males and nineteen females. The ages ranged from 10 to 79 years, twenty-eight of the patients being under 60 years of age.

Four of the patients, two men, aged 54 and 55, and two women, aged 70 and 71, showed the curve of medial

6 MacCallum W. C. in Cowdry, Arteriosclerosis p. 357

7 MacCallum W. G. in Cowdry, Arteriosclerosis p. 361
8 Bell E. T. in Cowdry, Arteriosclerosis p. 487

sclerosis (12.1 per cent). They were all known to have had diabetes of long standing. The Wassermann reaction was negative in all four.

In addition to these cases, seventeen other patients in the diabetic group showed the oscillographic chart of vascular sclerosis, so that, of the thirty-three cases studied, twenty-one (63.6 per cent) showed evidence of some form of arteriosclerosis.

Of the seventeen patients with vascular sclerosis eleven were under 50 years of age. The figures as given are not excessively high in comparison with other studies. Thus, Joslin showed that in autopsies of 112 persons dying of diabetes the arteries showed advanced arteriosclerotic changes in ninety-four.

What is particularly significant in this small series is that four of the thirty-three cases showed evidence of medial sclerosis. If such a ratio continues to obtain as a greater number of diabetic patients is studied it would seem that one might have to say definitely that medial sclerosis does occur in diabetes.

COMMENT AND CONCLUSIONS

By means of a new technic involving the taking of eight tracings on each patient, oscillograms have been made in a large series of cases. It has become apparent that the form of the oscillographic curve is of importance (a) in determining variations from the normal in the vascular tree, (b) in determining the type of arteriosclerosis existing.

It is possible by this means to make the differentiation between vasospasm and organic arterial disease in peripheral arteries.

One object of these studies was to determine whether the oscillographic records of various types of arteriosclerosis would run true to form. This is apparently true. It is quite possible to make a diagnosis of medial (Mönckeberg) sclerosis by means of this type of oscillogram.

The curve in malignant hypertension with nephrosclerosis is perfectly definite.

The oscillogram in rheumatic heart disease is quite different from that in syphilitic heart disease. In syphilitic heart disease the curve of medial sclerosis predominates.

Even in rheumatic heart disease in young persons a considerable proportion show oscillographic evidence of vascular sclerosis.

The high incidence of arteriosclerosis in diabetes is again demonstrated in these studies. If the present figure of 12 per cent of incidence of medial sclerosis is maintained as the studies progress, an answer will be afforded the question, still moot as to whether medial sclerosis occurs in diabetes.

No definite conclusions as to the existence of coronary thrombosis in suspected cases can be drawn from the oscillogram. Neither can sweeping deductions be made in cases of pulmonary tuberculosis.

But it does seem reasonable in the light of these studies to suggest that, by means of oscillographic studies of the sort here described, definite information may be had as to the condition of the vascular tree.

By means of oscillographic tracings made by this technic, definite information may be had not only as to the existence of vascular sclerosis in a given case but also as to its type.

ABSTRACT OF DISCUSSION

DR CARL J. WIGGERS, Cleveland. Oscillographic methods are based on fundamental physical propositions of dubious validity and are not destined to play any considerable role either in the diagnosis or in the understanding of generalized cardiovascular disease. They have a limited value but are not indispensable in the diagnosis of localized vascular diseases. The amplitude of any individual oscillation is determined by (1) the extra-arterial pressure, (2) the elasticity of the vessel compressed, (3) the height of diastolic blood pressure, (4) the amplitude of the pressure pulse and (5) the speed of the upstroke of the pulse wave, all integrated with the natural frequency of the ponderable swinging lever, which is not sufficiently great to follow pressure changes accurately. To untangle the effects of these numerous factors has proved beyond the capacity of physiologists and physicists up to the present time. I have perused carefully a large volume of French literature but this has not clarified the situation for me. I tended rather to produce a state of complete mental fibrillation. Dr. Friedlander's graphic studies presented here and those which I viewed in his clinic in Cincinnati seem to leave no doubt that if the changes in amplitude of oscillations are plotted in relation to decreasing arterial pressures the plots show striking differences in (a) normal subjects, (b) generalized cardiovascular disease, (c) essential hypertension, and (d) medial arteriosclerosis. As the diagnoses were apparently made preliminary to determining the character of the graphs, it would seem that the method merely supplements the facts on which these diagnoses were based. It would be dangerous to leave the thought that the oscillogram supplies a diagnostic adjunct that in any measure compares with basal metabolism apparatus or the electrocardiograph. Dr. Friedlander should be commended for presenting his facts and for modestly suggesting that they may serve as an adjunct in diagnosis. He deserves special commendation for his wisdom in refraining from explicit interpretations.

DR ALFRED FRIEDLANDER, Cincinnati. Dr. Wiggers is quite right when he says that there are many factors which enter into the interpretation of oscillograms. I agree when he says that he cannot follow the French cardiologists in their conclusions. None the less, admitting that oscillograms must be interpreted in terms of those factors which maintain blood pressure, and likewise admitting the fact that the diagnoses have been made in advance, I still submit that here is a method which if used judiciously, will give definite information as to the condition of the vascular tree. Thus, in the study of diabetes, the relation of arteriosclerosis is becoming more and more important. The relation of coronary disease to diabetes is well known. The management of diabetes per se is often complicated by the presence of cardiovascular lesions. Under such circumstances it becomes a matter of importance to know as much as possible concerning the state of the vascular tree. Continuous studies should add to the sum of our knowledge. Dr. Wiggers came to Cincinnati to address the Heart Institute and saw some of this work. He asked several questions to which I answered 'I don't know.' He asked 'How many cases have you studied?' I said 'About 500.' Then he replied 'Well you have a chance to get somewhere, as any man who has studied 500 cases and doesn't know stands a chance to learn.' I propose to keep on trying to learn.

The Sole Function of Milk.—As a matter of fact, milk is the only article of diet whose sole function in nature is to serve as food. Anything else which we eat was 'intended' (evolved) by nature for some other purpose and so must not be blamed too severely if it contains something which in too large quantity might not be best for us, or if it falls short of supplying adequately all the things which are essential to our nutrition. We do not seek to avoid every food of which this may be true, but rather to give it its proper place in our dietary or food supply adequately balanced by other foods. What might be treated as problems of slight food injury are thus often more practically treated as problems of nutritional balance.—Sherman, H. C. Food and Health, New York, Macmillan Company, 1934.

CONGENITAL DISLOCATION OF THE HIP

STATISTICAL ANALYSIS

ARTHUR STEINDLER, M D

JACOB KULOWSKI, M D

AND

ERNEST FREUND, M D

IOWA CITY

In the period from 1915 to 1933, 387 cases of congenital dislocation of the hip, representing 501 dislocated hips, have come under our observation. Of this total number, however, only 75 per cent, or 378 hips were treated.

The policy of the clinic in respect to treatment can be shortly stated as follows. The bloodless reduction was accepted as the method of choice within the upper age limits of 5 for bilateral and 6 for unilateral cases, although there were many exceptions which either added to or detracted from the field of indication. External reasons prevented the observance of a lower age limit in the sense that only a few cases were treated in the first and second years of life.

The open operations were adopted not as a competition but as a supplementary method to the closed reduction. It was made contingent universally on failure of the closed method to accomplish reduction or retention of the hip or both. Failure of reduction within the age limit (up to 5 years) was, in our series, not as rare as in other reports (Annovazzi, 6,935 cases, 9,660 hips 4.2%, in our series, 7.5 per cent).

The incidence of the primarily irretainable hips, that is, early redislocation, is not as high in our series as is that given by others (Froelich, 20 per cent, in our series, 13.65 per cent).

Both the primarily irreducible and primarily irretainable hip constitute the principal indication for the open method.

The contingent of primarily irreducible hips was increased by our policy of refraining from strenuous and overforceful reduction. The reason for this was not only the immediate danger of applying excessive force but more so the postreduction degenerative changes, such as osteochondritis deformans, coxa plana, osteo-arthritis and other deformities, which are generally considered as results of the reduction trauma. Annovazzi, in 1932, reports definite changes of this type in 32 per cent of the cases. A second point of interest is whether the indication field for open operation can be enlarged by raising the age limit applying to closed reduction.

The palliative operative methods, again, depend for their indications on failure of both closed and open reduction and, principally, on the much wider age limits (to middle age). The average age in the group of palliative methods amounts to 14.2 years. On the other hand, the operative results are naturally so much inferior to those of the age limit methods that there is in this group a high percentage of not treated or conservatively treated cases. Only cases in which there were marked objective and subjective complaints were, as a rule, treated by means of palliative operations.

STANDARDIZATION OF RESULTS

It is difficult to choose from the many suggestions in the literature a proper type of standard both suitable and fair. We have approached our standard as much as possible to that of Galeazzi's clinic (Annovazzi). Clinically good: a stable and painless hip, no easy fatigue, no marked oscillation, good mobility, no limp, no or slight Trendelenburg symptom. X-ray: concentric reduction, fair cases with concentric or moderately eccentric placement of the head, but still in the socket, hip stable, only slight limp, no pain or easy fatigue, slight or no shortening, Trendelenburg symptom moderate. Poor: all cases showing pain, bad limp, marked shortening of over 1 inch, and a subluxated or redislocated hip.

THE CLOSED METHODS

Of the cases of bloodless reduction 85 per cent of the patients were females and 15 per cent males. Seventy-one per cent were unilateral and 29 per cent bilateral cases. Associated deformities were found in only 4.64 per cent such as spina bifida, dislocation of the knee, torticollis, clubfoot and coxa vara. A point of interest is the age of the patient at admission while 5 years was considered the upper limit for the closed reduction, 138 children, or 36 per cent, came under observation after 5, only five, or 1.4 per cent, were under 1 year of age.

In the light of experiences on early reduction it would seem that more attention should be paid to public education, which will facilitate admission at an early age.

The great number of patients over 5 are the main reason why in only 249 cases, or 319 hips (64 per cent) bloodless reduction was attempted.

In most of the cases the Paci-Lorenz method was followed and, as a rule, the hip was immobilized in the primary Lorenz position for about three months, then the leg was brought down to Lange's position and immobilized for another three months. Walking exercises were initiated at an average from six to eight months after immobilization. It is the policy of this clinic not to be too orthodox but to fit the maneuver of reduction and the position of immobilization as much as possible to the individual case. If Lange's position seems to be the position of best primary stability, we do not hesitate to put the leg in this position. The casts as a rule, are changed after from six to eight weeks and the position is frequently controlled by roentgenograms. The attempts at reduction varied from one to five, reduction naturally being obtained in most of the cases at the first attempt, more than two attempts were made in only fifteen, more than one attempt was made in fifty-six hips, or 17.5 per cent. After the first attempt, 90 per cent were successful, after more than one attempt, 55 per cent were successful.

Mortality and Morbidity—Immediate mortality was zero, two patients died incidentally shortly after operation. There were eleven postoperative complications: six fractures of the femur, four palsies, of which one was permanent, and one metastatic pyemic joint supuration in a bilateral case.

Table 1 illustrates the postoperative results according to the time of observation.

From one to five attempts were made to secure bloodless reduction. Primary failures of reduction or primary failures of retention (redislocation in the cast) were encountered in forty-three cases, or 13.5 per cent, these

cases were largely reallocated to the group of open operations. The main reason for this group is the relatively high age, twenty-three of these patients, or 53 per cent, being older than 5 years of age.

The frequency of the reduction maneuver necessarily increases the trauma to the hip joint and severe arthritic or degenerative changes may develop. This was seen

TABLE 1—Closed Reduction Operative Results in Congenital Dislocation of the Hip According to Time of Observation

1 Primary failures, hips	52 = 16.00%	(total)	unilateral 28	bilateral 10 (24 hips)
2 Observation time less than 1 yr hips	36 = 11.70%	(discarded)		
3 Observation time 1-5 yrs (av 2.3 yrs)	114 = 26.00%	(total)	unilateral 64	bilateral 20
Results				
good hips	81 = 70.67%	satisfactory	86%	
fair hips	16 = 14.03%	not satisfactory	14%	
poor hips	17 = 14.91%			
4 Observation time 5-10 yrs (av 6.9 yrs)	71 = 22.00%	(total)	unilateral 37	bilateral 17
Results				
good hips	72 = 40.00%	satisfactory	73%	
fair hips	20 = 27.67%	not satisfactory	27%	
poor hips	10 = 20.70%			
5 Observation time 10-20 yrs (av 14 yrs)	46 = 14.40%	(total)	unilateral 26	bilateral 10 (20 hips)
Results				
good hips	24 = 52.17%	satisfactory	70%	
fair hips	6 = 17.39%	not satisfactory	30%	
poor hips	14 = 30.43%			

especially if the closed reduction method was tried more than once in children over 4. In these, one attempt should be sufficient.

In thirty-six the postoperative observation period was either less than one year or they were still in the cast, so that the result could not be judged, or they could not be followed up at the end of the immobilization period, these cases were eliminated from the group. The remaining 231 hips are divided into three groups, with observation from one to five, from five to ten, and from ten to twenty. The classification of these results was on the clinical evidence rather than on the roentgenograms, the latter often showing considerable changes of the femoral head and acetabulum in cases with good or very good results.

It will be seen that the incidence of satisfactory results (good and fair), at one to five years observation, is 85 per cent against 15 per cent unsatisfactory.

In the second group, with the observation time from five to ten years, satisfactory results are noted in 73 per cent and unsatisfactory results in 27 per cent.

In the third, with the observation period from ten to twenty years, satisfactory results were obtained in 70 per cent and unsatisfactory results in 30 per cent.

One notices the rapid decrease of the good results as the period of observation extends, and about 25 per cent of the good results become fair or poor beyond five years of observation. If it is considered that the average observation time for the last group (from ten to twenty years) is fourteen years, and the average age at reduction about 3, the patient at the end of observation is still in the growing age, and the definite outlook of the bloodless reduction is not as good as some clinical statistics might imply. For this reason it may be safe to say that statistics of closed reduction of the hip are of only relative value as long as they do not report on a good number of cases observed for a certain period after bone growth has stopped.

A painless and stable hip ten years after reduction is not an absolutely definite criterion, and some of the older cases (fifteen years) of congenital dislocation of one or both hips, which have never been treated, may show a painless and stable hip.

Table 2 shows the operative end results arranged according to age groups.

Group A, patients from 1 to 2 years old at the time of reduction, twenty-six hips, or 82 per cent. Satisfactory results (good plus fair) were obtained in 54 per cent, unsatisfactory in 38 per cent, and undetermined 8 per cent.

One notices the low percentage (82) of closed reductions attempted before the second year of life, and in the small number of cases in which closed reduction was done at this age the results were not as good as expected, being only somewhat over 50 per cent. This seems to be in contradiction to the more recent reports on the exceptionally good results of early treatment of congenital dislocation of the hip. However, it is probably due to the fact that the cast treatment which was applied was not the best treatment for early childhood, as it is difficult to maintain the position in a well fitting cast in a very young child.

Group B, patients from 2 to 3 years of age at the time of reduction, 103 hips, or 30.28 per cent, sixty-nine unilateral and thirty-four bilateral. Satisfactory results were obtained in 68 per cent, unsatisfactory in 20 per cent, and undetermined in 12 per cent of the cases.

Group C, patients from 3 to 4 years old at the time of reduction, eighty-six hips, or 27 per cent, forty-two

TABLE 2—Closed Reduction Operative Results in Congenital Dislocation of the Hip According to Age Group

A Age at time of reduction 1-2 yrs hips	26 = 8.2%	unilateral 18	bilateral 4
Results			
good hips	12 = 46.14%	satisfactory	54%
fair hips	2 = 7.69%	not satisfactory	38%
poor hips	10 = 38.47%	undetermined	8%
undetermined	2 = 7.69%		
B Age at time of reduction 2-3 yrs hips	103 = 32.38%	unilateral 69	bilateral 34
Results			
good hips	57 = 55.33%	satisfactory	68%
fair hips	13 = 12.62%	not satisfactory	20%
poor hips	21 = 20.38%	undetermined	12%
undetermined	12 = 11.65%		
C Age at time of reduction 3-4 yrs hips	86 = 27%	unilateral 42	bilateral 22
Results			
good hips	38 = 44.17%	satisfactory	57%
fair hips	11 = 12.80%	not satisfactory	30%
poor hips	20 = 23.25%	undetermined	13%
undetermined	11 = 12.80%		
D Age at time of reduction 4-5 yrs hips	32 = 10%	unilateral 16	bilateral 8
Results			
good hips	11 = 34.37%	satisfactory	53%
fair hips	6 = 18.75%	not satisfactory	38%
poor hips	12 = 37.50%	undetermined	9%
undetermined	3 = 9.37%		
E Age 5 and over (average 6.3 yrs) hips	70 = 22%	unilateral 39	bilateral 16
Results			
good hips	18 = 25.71%	satisfactory	43%
fair hips	12 = 17.14%	not satisfactory	51%
poor hips	36 = 51.42%	undetermined	6%
undetermined	4 = 5.71%		

unilateral and twenty-two bilateral. Satisfactory results were obtained in 57 per cent, unsatisfactory in 30 per cent, and undetermined in 13 per cent.

Group D, patients from 4 to 5 years of age at the time of reduction, thirty-two hips, or 10 per cent, sixteen unilateral and eight bilateral. Satisfactory results were obtained in 53 per cent, unsatisfactory in 38 per cent, and undetermined in 9 per cent.

Finally, group E, patients over 5 years of age at the time of reduction, seventy hips, or 22 per cent, thirty-

eight unilateral and sixteen bilateral. Satisfactory results were obtained in 43 per cent, unsatisfactory in 52 per cent, and doubtful in 5 per cent.

Comparing the results in the unilateral and bilateral cases in all age groups arranged according to periods of postoperative observation, one finds a considerably higher percentage of satisfactory results in the unilateral cases, giving the prognosis in bilateral cases in our series throughout at about 10 to 20 per cent worse than in the unilateral cases. As there is no essential difference between the unilaterally and bilaterally dislocated

TABLE 3—Obstacles to Open Reduction

1 Capsular	
Iliac adhesions	21
Hour glass constriction	22
Pathologic changes	3
2 Pelvifemoral structures	
Adductor contracture	14
Iliopsoas contracture	4
Rectus contracture	3
Abductor contracture	3
3 Acetabular	
Soft tissue plug	22
Ligamentum teres	15
Disproportion and deformity	14
4 Femoral head and neck	
Cartilage changes	10
Deformity of head	17
Deformity of neck	3
Anterior dislocation	4

Note. Anteversion was common but cannot be numerically recorded owing to inaccuracy of the observation.

hip so far as the reduction maneuver is concerned, the difference can only lie in the greater difficulty in retaining the two reduced hips by a plaster cast. We would consider the numerical difference between the satisfactory results seen in bilateral cases as purely and primarily due to technical insufficiency.

Redislocation of the hip occurred in sixty-six cases altogether, or 26.5 per cent, but in thirty-four of these (13.64 per cent) the redislocation was noticed within the immobilization period.

In thirty-two cases the redislocation occurred more or less after the end of the immobilization period, in one case fifteen years afterward, following a direct trauma to the hip joint. Besides the interposition of the soft tissues, the main reasons for the late redislocations are the shallow acetabulum and the development of deformities of the upper end of the femur, leading sometimes to complete absorption of the epiphysis, to subluxation and finally to complete dislocation of the upper end of the femur.

THE OPEN REDUCTION

The open reduction was done in thirty-eight cases with forty-four hips, 7.89 per cent males and 92.11 per cent females. Twenty-four, or 63.18 per cent, were unilateral, and fourteen, or 36.82 per cent bilateral. The age limits varied from 21 months to 11 years, the average age being 4.84 years.

The indications for open reduction were failure of reduction in twenty-two and failure of retention in fifteen cases, primary open reduction was undertaken in only seven cases.

Preoperative treatment consisted in preliminary skeletal traction, which, however, was effective in only fourteen out of twenty-two cases. The interval between the attempted closed reduction and the open operation was on the average forty-nine weeks.

Table 3 analyzes the anatomic difficulties in open reduction. Capsular obstacles are in the foreground,

particularly the iliac adhesions (twenty-one hips) and the hour-glass constriction (twenty-two hips). Of the muscular obstacles the adductor contraction is the most important, of the skeletal, the plugging of the acetabulum by soft tissue and the ligamentum teres (twenty-two and eighteen hips, respectively). Cartilage changes were noticed in ten, deformities of the head in seventeen cases.

In the technic of the operative reduction, Smith Petersen's approach was used in forty out of forty-four cases and Whitman's approach four times. In addition to the open reduction, shelving was carried out in ten cases.

Postoperative treatment consisted in the plaster immobilization for a duration of from seven weeks to five and one-half months, on an average of 10.33 weeks, either in Lange's position (65.78 per cent) or in the primary Lorenz position (34.22 per cent).

Physical therapy followed the cast treatment in twenty-six cases or 68.68 per cent, for an average of 4.7 weeks. Weight bearing is allowed one month after the plaster has been removed.

Secondary procedures were necessary in eighteen cases, consisting in manipulation, osteotomies (subtrochanteric, supracondylar), the setting down of the trochanter, or a Soutter operation. In one case drainage had to be instituted because of suppuration.

The immediate operative results are shown in table 4, primary open reduction was successful in thirty-eight and failed in six hips.

There was primary redislocation in two (reoperation successfully done in one) and primary subluxation in four hips.

TABLE 4—General Operative Results

1 Reduction							
Primary open reduction successful in	38 (93.6%)						
Open reduction failed in	6 (23.64%)						
(one responded and failed again)							
2 Retention							
Primary redislocation (one reoperative success)	2 (5.26%)						
Primary subluxation	4 (10.52%)						
3 Complications							
(a) Mortality	1 (2.63%)						
(b) Pneumonia	2 (one death as above)						
(c) Infection	1						
(d) X-ray changes	Total hip roentgenograms studied 2						
Changes occurred in 13 (46.42%)							
Neck	<table> <tr> <td> Coxa vara</td><td>0</td></tr> <tr> <td> thickening</td><td>4</td></tr> <tr> <td> flattening</td><td>1</td></tr> </table>	Coxa vara	0	thickening	4	flattening	1
Coxa vara	0						
thickening	4						
flattening	1						
Head	<table> <tr> <td> dissolution</td><td>3</td></tr> <tr> <td> roughening</td><td>2</td></tr> <tr> <td> slight slipping</td><td>2</td></tr> </table>	dissolution	3	roughening	2	slight slipping	2
dissolution	3						
roughening	2						
slight slipping	2						

The postoperative mortality consisted of one case (2.65 per cent) from pneumonia, the morbidity, two cases from pneumonia and infection.

The roentgenographic changes observed secondarily following the first attempt by the open reduction were studied in twenty-eight cases and were found to be present in 46.42 per cent. They consisted in coxa vara, coxa plana, absorption and epiphyseal slipping.

Table 5 gives the analysis of operative end results. The report covers twenty-seven cases, or thirty hips. The general average of good and fair results was 70 per cent, and of poor results 30 per cent. At ages up to 6 years sixteen are found satisfactory to four unsatisfactory (75 and 25 per cent). At ages of 6 years or over are found five satisfactory and five poor results, or a ratio of 50/50 per cent.

The unilateral cases show a decided advantage over the bilateral, namely fourteen satisfactory to three unsatisfactory results, or 84.16 per cent, against the bilateral cases in which operation was performed on both or on either one side with a ratio of 7.6 seven satisfactory to six unsatisfactory hips, or 55.45 per cent.

THE PALLIATIVE METHODS

The indication is conditional both on the actual or probable failure of the closed and the open reduction in older individuals. Of the operations advocated and

TABLE 5—Analysis of End Results in Treated Seven Cases (Thirty Hips)

Results	Satisfactory 70%			Poor 30%
	Excellent 6 (20%)	Good 8 (26.66)	Fair 7 (23.33)	
1 General average total				
2 As to age groups				
Up to 6 years	0	5	5	4
Six years and over		3	2	5
3 As to site of lesion				
Unilateral	6	5	3	9
Both			2	0
4 As to operative technique				
Simple reduction	6	8	2	4
Shelving			1	2
Prying trochanter			1	3
Capular arthroplasty				
Whitman			1	
5 As to time of observation				
Up to 1 year		2	3	5
Up to 2 years	3	4	4	
Up to 3 years	1	1		
Up to 4 years		1		
Up to 5 years	2			1

practiced, the osteoplastic shelf reconstruction is in the foreground. Answers to our questionnaires combining the statistics of Drs. Le Breton, Stern, Conn, H. R. Thomas, McAusland and Miller aggregate sixty-nine hips with fifty-four satisfactory and fifteen unsatisfactory results, or 78.22 per cent. Next to this the osteotomies (Schanz and von Baeyer-Lorenz) are considered valuable. Zahradnick reports twenty-one good results among thirty cases of Lorenz bifurcation observed over two years or more, and Hass reported favorably on twenty bifurcation operations. Answers to our questionnaires gave the combined statistics of Drs. Conn, Le Breton, Stern and Gaenslen as twenty-five hips with twenty-one satisfactory, two unsatisfactory results and two undetermined, a proportion of satisfactory results of 91 per cent.

Among the older methods, the transposition is uncertain and unreliable, arthrodesis is an operation favored by British surgeons.

Our material of the palliative treatment comprises fifty-five cases, of which forty-six were treated, twenty-five operatively, comprising thirty-one hips and twenty conservatively, or twenty-three hips, ten cases were not treated.

Objective indications included irreducibility and failure of retention, or redislocation, age and degree of dislocation, bad limp or positive Trendelenburg symptom. The subjective indications added to the objective mentioned were pain, fatigue and spasm. Of the four patients with objective symptoms alone nine were shelved, and one had adductor tenotomy. Of the thirty-one patients with subjective as well as objective symptoms eleven had shelving, three were osteotomized, and two had adductor tenotomy.

Relation of the amount of shortening to the age of the patient was found as follows. Seventy-five per

cent of 1 inch of shortening 52 per cent of 1 to 2 inches of shortening, 88 per cent of 2 to 3 inches of shortening and 100 per cent of more than 3 inches of shortening were 12 years or over.

Table 6 gives the preoperative and postoperative roentgen observations. We found, preoperatively absorption of head and neck (two cases), the secondary flat acetabulum with small primary socket (twenty-six cases), subluxation (two cases), nearthrosis (one case), postoperatively the shelf was absorbed in five cases, the shelf was preserved in eleven cases, and checking was not done in four cases.

Table 7 gives the analysis of palliative operations.

1 The end results of the shelving operation according to the time of observation, age and shortening, gave a percentage of satisfactory results of 84.2.

2 This series is too small to be of much statistical value for osteotomy and tenotomies. Four osteotomies (Schanz and Lorenz) gave uniformly satisfactory results, as did also four adductor and flexor tenotomies.

In comparing the intracapsular and extracapsular shelf technic in respect to subsequent mobility of the hip we found that there was no disadvantage in the intracapsular shelving which was carried out in the majority of the cases (15.5).

The conservative treatment was carried out in a number of cases which, because of age shortening or

TABLE 6—Preoperative and Postoperative Roentgen Observations in Congenital Dislocation of the Hip
Palliative Treatment

Operation	Hips								Number of Roentgenograms	Average Observations, Years
	Preoperative				Post-operative		Annul-ation			
	Absorption of Head	Shallow Secondary Acetabulum and Defect of Head	Subluxation	Nearthrosis	Shelf Present	Shelf Absent	Positive	Negative		
Shelving 20 cases, 21 hips*	12	17	12	0	11	5			4	2.18
Osteotomies 8 cases 4 hips		3		1			3	1		1.2
Transposition		1					align			
Transp and fusion		1					1			} 0.77
Trans troch		1					1			
Tenotomies		3								2.66
	12	26	2	1	11	8	6	1	4	
	31				20					

lack of subjective complaints did not seem to be proper material for operation. It was found not without value in a number of cases, particularly the extension shoe and the securing of the pelvis by belt or brace. Of twenty cases so treated, three were followed up for a sufficient length of time, only four failed to show any relief whatever from the mechanical appliances, and in nine the gait was improved and the subjective symptoms relieved.

CONCLUSIONS

1 Summarizing, we can say that the extreme optimism concerning results in the closed method, as it is shown by some German and Italian authors, does not seem to be entirely justified. Results become definitely worse with the duration of the observation period. A systematic after-care and long lasting follow up of

the patients is absolutely necessary (roentgenograms should be taken at least twice a year in the first five years after reduction, and at least once a year in the following years) Results of definite significance are given only by patients who, after reduction in childhood, are grown up to manhood and womanhood. These cases will settle the question of functional disability, especially if compared with the nontreated cases of the same age group. Considering the great change which the treatment of congenital dislocation of the hip has undergone since it was initiated by Paci and Lorenz, one must say that the definite proof of the value of the method, expressed in percentages, cannot yet be given. We do not doubt, however, that with the greater precautions in the after-treatment and the perfection of orthopedic means, the cases which come to reduction today have by far a better outlook than those in which reduction was done from ten to fifteen years ago.

2 As open reduction was practiced not as a competitive but as a supplementary method to closed reductions, it must be judged on its own merits and not by

anatomic point of view the standard for this type of operation is naturally lower than that for the reductions. Functionally, however, available statistics show an encouraging percentage of acceptable results both for shelf operations and for osteotomies.

ABSTRACT OF DISCUSSION

DR JOSEPH A. FREIBERG, Cincinnati: The authors have covered the entire field of treatment of congenital dislocation of the hip, both conservative and surgical treatment has been discussed in a thorough manner and concise data have been given. After a study of 500 cases Dr Steindler and his co-workers conclude that a preliminary closed reduction should be attempted within certain age limits. I am entirely in accord with this conclusion. I would stress the importance of early recognition of congenital dislocation of the hip. The earlier it is recognized, the simpler is the treatment. This is a problem of propaganda to the general practitioner rather than to the orthopedic surgeon. The authors do not emphasize sufficiently the importance of palliative operative treatment of congenital dislocation of the hip in the older child. It is their opinion and mine also that palliative operative treatment is preferable to open reduction with the possibility of a resulting stiff hip in the older child.

TABLE 7—Analysis of Operative End Results (Hips) in Congenital Dislocation of the Hip: Palliative Treatment

	Good				Fair				Poor				Total Number	Per Cent Satisfactory	Per Cent Poor
	Number	Average Age Years	Average Shelving Years	Average Observation Years	Number	Average Age Years	Average Shelving Years	Average Observation Years	Number	Average Age Years	Average Shelving Years	Average Observation Years			
Shelving	10	13	1.21	2.12	6	15.3	1.88	2.28	3	16.3	1.44	1.5	19	84.2	15.8
Osteotomy	3	15.3	1.15	1.16	1	14	1.5	1.28					4	100	
Tenotomy	2	17	2.15	6	2	14	1.62	1.3					4	100	
Other transposition and fusion															
transposition and troch															
Total	15				10	5	1.34	1	3	12.07	1.5	0.94	4	25	75

Standard—Good: walking well, free motion, good endurance; fair: walking better, less limp, more endurance; poor: no better, essentially no increase of endurance.

comparison with the bloodless results. We have tried to keep separate the two fields of indication. Its proper province is the irreducible and irretainable case within the bloodless age limit.

Outside this limit, it does not very materially enlarge the territory of reducible cases, even though our age range was up to 11 years. The fact that beyond 5 years of age the satisfactory result rapidly decreased would indicate that the upper age limit for open reduction in general would be about 8 years. This agrees with Dickson, who recommends open reduction for all patients between 4 and 9.

3 The significance of the palliative methods lies in its preventive effects on the increased functional difficulties during and beyond puberty and on the late sequelae seen in unreduced dislocated hips in middle age, the secondary arthritis due to the static insufficiency.

It seems to us that from this point of view the simple operations, namely, the shelving and the osteotomy, will undoubtedly gain in favor because of the lesser danger of operative failure and of postoperative complications. To date we have no statistics and late end results of palliative operations. In view of the increasing evidence of late degenerative sequelae of the unstable, unreduced hip, it may be assumed that the future will find the indication field of the palliative operation extended rather than restricted. From the

DR SAMUEL L. ROBBINS, Cleveland: The important conclusion can be drawn from this paper that the cure of a dislocated hip is unfortunately not a reality. Without doubt there persist anatomic imperfections but here as in other congenital malformations, it is not possible to make perfect organs out of imperfect elements. Not all is finished when a dislocated hip has been replaced. The construction of the hip is a complex work, which must be observed for a long while, especially at the age of puberty, in order to preserve good results which are unhappily the exception. A girl, aged 13 years, who had bilateral dislocation of the hip replaced at the age of 2, had no pain whatever from the age of 3, no limp and no trouble. Three weeks before the examination the patient complained of severe pain and instability on the left side. She was well developed and walked about favoring the left side. On reclining, there was no asymmetry noted, except atrophy of 1½ inches on the right side. There was no shortening, and motions on the good side were normal in all directions, on the left side they were limited only at the extremes of motion. Roentgenograms demonstrated the neck to be short and squatty on the good side, the head was mushroomed, and the roof of the acetabulum was oblique. On the ill side the head and neck were well shaped, and there was only a slight obliquity of the roof of the acetabulum. First it was thought that the markers on the x-ray plate were not correct and reexposures were taken. On careful examination of the left side atrophy of the head of the femur and also of the roof of the acetabulum was found. Because of pain, the child was put in a hip spica, which she wore for eight weeks. After four months, she was able to get along without any pain or limp. Roentgenograms of the left hip showed no atrophy. She has been perfectly well.

I believe that this condition, if overlooked or if neglected, would have resulted in a possible redislocation or of a fragmentation of the head

DR. ARTHUR STEINDLER, Iowa City Allow me to say that the greater credit belongs to my associates, Dr Kulowski and Dr Freund I thank Dr Fresberg for calling attention to the necessity of early recognition and also for taking the stand that he will refrain from attempting the reduction after a certain age limit is reached and content himself with the palliative operations I also want to thank Dr Robbins for pointing out again that long-range observations are absolutely necessary

Clinical Notes, Suggestions and New Instruments

A METHOD OF ARTIFICIAL RESPIRATION ESPECIALLY USEFUL FOR THE PARALYZED PATIENT

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Fellow in Orthopedic Surgery Hospital for Ruptured and Crippled

The advent of the Drinker respirator has made possible the prolonged treatment of respiratory paralysis, but the problem still remains of treating the patient until he can be placed in a respirator. Many large institutions keep a respirator always on hand for such emergencies, but it is obviously impossible for the family doctor or smaller hospitals to have one immediately available and some means of artificial respiration must be resorted to. Numerous methods have been described and it is only because in my experience they have at times been unsatisfactory that the following modification is suggested. The older standard methods have been compared¹ and the only one found adequate was the Schafer prone pressure method. This will maintain normal exchange in the ordinary case and is fairly satisfactory except that the repeated pressure on the lower thorax often causes considerable soreness. Most authorities agree that the Schafer method is to be preferred to any type of mechanical device such as the pulmotor or lung motor, and it is the accepted standard method of the American Red Cross Life Saving Corps.

The following illustrates the type of case in which the existing means of artificial respiration with the exception of the Drinker respirator are unsatisfactory and explains how this method was developed.

REPORT OF CASE

A youth aged 18, was admitted on the fourth day of his illness. He had almost complete paralysis of both lower extremities and abdomen with urinary retention. The arms and neck were moderately affected but respiratory movements were quite good. He was very sensitive to pressure over the entire trunk and extremities. A lumbar puncture was done and the diagnosis of anterior poliomyelitis established. Because the paralysis seemed to be progressing and his temperature ranged from 100 to 102 he was given convalescent serum intraspinally, intravenously and intramuscularly. Two days later he complained of a "tight feeling" in his chest and felt that he could not take as deep a breath as he wished. The excursion of his chest seemed unchanged, his color was good, and he seemed to have good power and control in his thoracic muscles. On the next day at 5 a. m., after a fairly comfortable night, his respirations became slow and shallow. He became cyanotic and in a few minutes lost consciousness. He was given stimulating drugs with some temporary improvement, but he remained slightly cyanotic and respirations were slow and shallow. Respirations became steadily slower until about 7:30, when they practically stopped. The patient was deeply cyanotic and about two or three jerking gasps were produced by the neck muscles each minute. When his pulse began to fail, it was thought that the end was near. He was taken out of his plaster bed placed on the floor and artificial respiration by the Schafer prone pressure method was begun. By the use of considerable force a moderate exchange could be obtained. By 8:30 the patient's condition was considerably better, though

he was still unconscious and moderately cyanotic. Strong pressure on the lower part of the thorax caused a slight respiration but the patient was so extensively paralyzed that the chest remained practically in a position of expiration and there was no gasping inspiration like that which usually occurs in a subject who has a normal resilient thorax. Several other methods of artificial respiration were attempted without avail. No method seemed to cause the patient to inspire.

While various maneuvers were being tried it was found that, if the patient's pelvis was lifted upward about 18 inches from the floor by a hand under each anterior superior spine the back sagged into marked lordosis and a deep gasping inspiration could be heard. This was almost surely produced by the sagging of the abdominal contents in the position of lordosis, causing descent of the diaphragm and consequently a moderately deep inspiration. When the pelvis was released, a long expiration could be heard as the relaxed abdomen came in contact with the floor. An additional pressure on the lower ribs posteriorly after this caused a small additional expiration. Each time this maneuver was repeated the patient's color visibly improved and by 10 a. m. his pulse was strong, his lips were red and he was semiconscious and able to take water and to complain bitterly of his soreness. A respirator could not be

TABLE 1—Exchange Per Minute (Cubic Centimeters)

Subject	Vital Capacity	Average Normal Minute Volume	Exchange per Minute			
			Schafer Method	Lifting by 1 Man	Lifting by 2 Nurses	Combined Lifting and Schafer Method
S	4,715	7,465	9,575	11,880	9,200	25,000
T	5,600	7,985	7,245	10,155	14,030	20,590
G	2,790	3,800	7,085	8,050	10,700	8,970
B	2,200	3,800	8,500	9,500	8,730	16,290

TABLE 2—Exchange Per Respiration (Cubic Centimeters)

Subject	Vital Capacity	Average Exchange per Normal Respiration	Exchange per Respiration			
			Schafer Method	Lifting by 1 Man	Lifting by 2 Nurses	Combined Lifting and Schafer Method
S	4,715	622	1,194	1,482	1,156	3,125
T	5,600	665	906	2,010	1,886	2,574
G	2,790	262	961	1,006	1,340	1,121
B	2,200	272	1,069	1,188	1,091	2,044

obtained before 5 p. m., and for eight hours all types of artificial respiration were attempted. Even with extreme pressure a good color could not be maintained by the Schafer method, but by lifting the patient by the pelvis almost to the knee chest position and then allowing him to flatten out on his abdomen on the hard floor, sufficient exchange could be maintained even though this was done as few as five or six times per minute. As the patient complained of any pressure on the thorax, the Schafer maneuver was omitted.

The patient's general condition improved greatly in the respirator. He was rational within a few hours, but it was three weeks before he made the slightest attempt at voluntary respiration when he was removed from the respirator for periods of one or two minutes at a time for nursing care. At the end of six weeks he could remain out of the respirator indefinitely, but daily periods in it were continued until the patient's vital capacity exceeded 2,000 cc., about one year later.

This experience over a period of eight or ten hours with an almost completely paralyzed subject led me to try this new method on several patients who stopped breathing during the administration of an anesthetic. It was found to be as efficacious as the Schafer method and no more difficult except when the subject was very heavy. It can be done practically as well by two people lifting the pelvis of the subject by the two ends of a folded towel placed under the subject at the level of the groins.

Comparison of the respiratory exchange obtained in normal individuals by different artificial methods is not entirely satisfactory because of the fact that the subject either resists or assists the operator, and any increase in respiratory exchange

above the body requirements will cause inhibition and a decrease will cause an increase in voluntary movements. In spite of this fact measurements of respiratory exchange in normal subjects obtained by several methods were made and the results are shown in the accompanying tables. A slow rate was used to avoid overventilation, and each method was used only for a period of one minute. Long periods of rest were given between tests to allow the subject to attain normal exchange again. In each instance the exchange obtained by lifting the patient by the pelvis exceeded that obtained by the Schafer method. Combining this procedure with the Schafer method produced an exchange with each respiration which was more than one half of the vital capacity of the subject.

The Schafer method depends on compression of the lower part of the thorax to produce expiration while the method

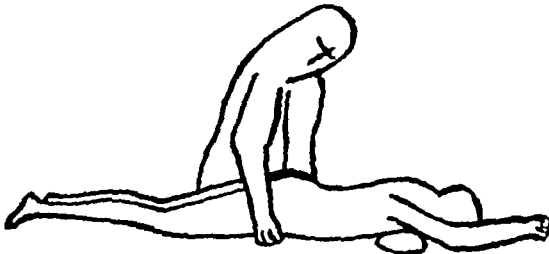


Fig 1—Position of patient

described here is directed toward producing adequate descent of the diaphragm and consequently a deep inspiration. The two methods together insure an exchange far exceeding that obtained by either one alone.

DETAILS OF THE METHOD²

1 The subject is placed in the prone position on a hard surface as in the Schafer method. It is well to place a folded coat or small pillow beneath the clavicles and upper part of the chest (fig 1).

2 While sitting on a low chair or kneeling the operator puts one hand beneath each anterior superior spine and lifts the pelvis well off the ground so that the back arches and the abdomen sags downward (fig 2).

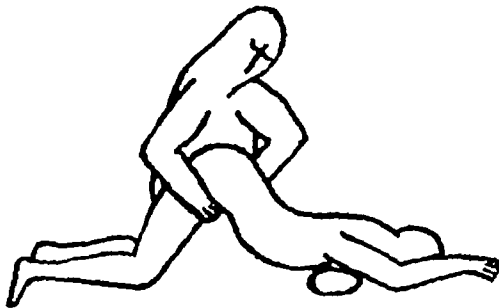


Fig 2—Procedure by operator

3 The operator lowers the subject to the floor slowly to his original position. If maximum exchange is desired the usual Schafer procedure of pressing downward and forward and compressing the chest over the lower ribs is then carried out.

4 This procedure is repeated from six to ten times per minute.

CONCLUSIONS

1 Respiratory failure with extensive flaccid paralysis of the trunk muscles cannot be treated satisfactorily by the Schafer method of artificial respiration.

2 Lifting the pelvis of a subject in the prone position and allowing it to fall back to the floor produces adequate respiratory exchange even in the paralyzed subject.

3 This procedure, combined with the Schafer prone pressure method produces a remarkably large respiratory exchange.

321 East Forty-Second Street.

² Mr. G. R. Gardlestone, F.R.C.S. of Oxford, England, made suggestions that led to the use of this method on the patient who was so extensively paralyzed.

SECONDARY ANEMIA COMPLICATED BY AN EXTRADURAL ENDOTHELIOMA OF THE THORACIC SPINAL CORD

EXHIBITING AN UNDESCRIBED PHYSICAL SIGN

FREDERICK R. TAYLOR, M.D., AND W. K. McCAIN, M.D.,
HIGH POINT, N. C.

Cord symptoms due to pernicious anemia, or even to severe grades of secondary anemia, are frequent enough to need no special discussion. In the case about to be described, however, the combination of a moderately severe secondary anemia with spinal cord symptoms suggestive in character, but not in distribution of those occurring in pernicious anemia, the cord symptoms being due to a nonmalignant extradural tumor, seems sufficiently unusual to warrant description, the more so, perhaps, because a physical sign was discovered by one of us (F. R. T.) by accident that has, so far as we know, not been described before.

Mrs. W. C. C., aged 23, an electrician's wife, came to one of us (W. K. McC.) complaining of difficulty in walking. It was obvious from a preliminary examination that she suffered from an organic neurologic condition, and she was referred to the senior author for further study. Her history was taken on Jan. 27, 1934, and its essential points are as follows:

For the past year she had noticed some difficulty in walking in a straight line. Until recently there had been no real staggering but merely a difficulty in holding her course. She would tend to zigzag, because she was constantly having to correct her direction of progress. She is sure there was no constant deviation to one side only, as she would often bump into either the right or the left side of a doorway while attempting to walk through it. This difficulty did not seem to be due to any visual disturbance. She thought little of it at the time, though it persisted without any new symptoms until about a month before examination. Then she noticed a tickling sensation in the front of both knees, worse in the right as if insects were crawling over her skin. This lasted about two weeks. Then followed a numbness in both legs from her knees down, worse in the toes and on the right. This had spread upward, till she was numb to some degree up to the waist. During the past two weeks she had felt as if her feet were "asleep" and had had severe difficulty in walking, which condition was rapidly getting worse. She staggered badly and her leg and thigh muscles felt stiff to her. She had had no pain at all other than occasional inconstant slight backache, no worse or different than she had often had most of her life. She had noticed no trouble with her arms or hands and could write or sew as well as ever. However, one of us (W. K. McC.) thought he noted a little clumsiness in her hands as she started to unfasten her dress. She had had no dizziness or tinnitus. Her appetite and digestion were normal. There was a certain degree of constipation but she took no laxatives other than very rarely a dose of salts. She had no difficulty in controlling the bowels or bladder. Her feet felt swollen to her but did not look so, she said. Her backache was lumbosacral and appeared to be associated with the menstrual periods. It was never severe. There were no abnormal urinary symptoms. The periods were regular, every four weeks, and lasted a week, the flow was free, but no more so recently than always, there were no clots, and she did not suffer much with them. There was no suggestion of any acute infection at the onset of the present trouble. Her husband stated that she formerly had an excellent color but recently had been getting very pale, with a somewhat yellowish hue to her skin.

Her past history, habits and family history threw no light on the case.

The patient was 5 feet 2 3/8 inches (156 cm.) high and weighed 111 3/4 pounds (51 Kg.). The temperature was 98.4 F. The pulse was 88 and of normal rhythm and quality, respirations 22. The blood pressure was 120 systolic, 70 diastolic. The patient was rather strikingly pale, with a slightly yellowish hue. This was hardly the typical lemon yellow of an advanced pernicious anemia. The mucosae as well as the skin, showed this pallor. There was no jaundice. Her gait was grossly affected, being of a spastic-ataxic type. She could not stand without support though she did not show the wide preliminary swaying of the usual marked Romberg sign. She simply fell at

once unless supported. This occurred with the eyes open or shut. Vision was 20/30 in both eyes, with some astigmatism, apparently normal, except for a refractive error. The eye-grounds were normal. The cranial nerves were normal. The head, neck and chest showed no abnormalities other than the pallor. The spine showed no tenderness or bulging, but examination disclosed a sign, apparently a reflex, hitherto unknown to us viz, percussion over the lumbar spine caused a contraction of the adductor muscles of both thighs. With the patient sitting up, this produced a sudden momentary compression of the knees together. The patient herself noticed this, and the result was quite constant when percussion was done over the lumbar vertebrae, but the reaction did not occur when percussion was done over the thoracic or sacral region. There were no neurologic changes above the waist line at this time. The abdomen showed no evidence of visceral disease. Pelvic examination by one of us (W. K. McC.) was negative except for the fact that it was difficult to make, owing to marked adductor spasm of the thighs.

The patellar reflexes were exaggerated to an extreme degree, ankle clonus was marked on the left doubtful on the right. The Babinski reflex was positive on both sides. There was hypesthesia for touch anteriorly from the level of the umbilicus to the ends of the toes, and for pain and temperature from the middle of the thighs anteriorly down. Posteriorly, sensation appeared to be normal. In other words, the lumbar root distribution was affected on both sides the sacral on neither. The symmetry of the involvement was quite remarkable. The sense of position seemed normal.

The urine was normal. Blood examination revealed hemoglobin, 55 per cent, red blood cells 3,500,000 white blood cells not counted, polymorphonuclears, 67 per cent, lymphocytes, 25 per cent, large mononuclears, 5 per cent transitionals, 2 per cent, eosinophils, 0, basophils 0. No blasts were found, but marked anisocytosis and poikilocytosis were present. There were no plasmodia. The Wassermann reaction was negative.

The picture seemed so unusual that an absolute diagnosis could not be made at this time, but one of us (F. R. T.) felt that a few days of observation under extralim treatment would do no harm, and an atypical pernicious anemia seemed a possibility, though the definite level and rapid development of symptoms made that diagnosis difficult to defend.

We saw the patient again four days later and not only was she no better, but the level of sensory disturbances had risen about three inches. Then we made a definite diagnosis of tumor of the spinal cord and referred her to the Duke University Hospital at Durham, N. C. for further study, and if deemed wise, operation to remove the tumor.

At Duke she was examined by Dr. Frederic M. Hanes, professor of medicine and he agreed with the diagnosis, though no cause for the anemia was found. After a few days of observation and building up she was transferred to the surgical service of Prof. Deryl Hart, who operated on her February 13. Previous to this a cysternal injection of iodized poppy-seed oil had been done which showed a definite subarachnoid block at the level of the fourth, fifth and sixth thoracic vertebrae. An extradural tumor was found springing from the outer surface of the dura which almost encircled the cord involving the anterior and posterior roots on both sides, in the region of the fifth and sixth thoracic vertebrae. It was of unusual difficulty to remove, but after long patient work involving removal of part of the dura and covering the exposed cord with fascia the operation was completed. The pathologist's report was endothelioma. Our latest information is to the effect that the patient is rapidly regaining motion and sensation where these were impaired and complete cure is hoped for.

COMMENT

Having seen the tumor in situ we find it difficult, if not impossible to explain the absence of pain. Before operation we thought of the possibility of an intramedullary tumor, but had this been present it is highly probable that the pathways going through the sacral roots would be involved also with sensory disturbances posteriorly sphincter disturbances and so on. During her stay in the hospital before operation, the anterior sensory symptoms kept rising higher till they reached a level

near the nipples. She also began to show very slight incontinence of urine. The adductor spasm resulting from percussion over the lumbar spine is also rather hard to explain. If the tumor caused it, as presumably it did, why did not percussion over the thoracic spine in the tumor region also produce it? We do not know. We merely record the fact.

Pernicious anemia explains the great majority of cases of severe anemia with cord symptoms but appears to have been excluded in this case, though it was considered for a few days as possibly the sole diagnosis. The association of a rather severe anemia of obscure cause with a benign tumor of the cord is unique in our experience and seems worthy of record.

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Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

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NOTE—In their elaboration these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The series of articles will be continued from time to time in these columns.—Ed

ULCER THERAPY

An ulcer is a defect of the body surface entailing the loss of at least its epidermal covering. It may or may not be infected. It may be large or small, deep or shallow, acute or chronic, painless or painful with exuberant granulations, indolent or indurated. It may show a tendency to spread owing to virulent infection such as chancroid, to granulomas such as syphilis, tuberculosis or lepra, to malignant disease such as carcinoma or sarcoma, or merely because of malnutrition of the tissues. In accordance with these different conditions, various ulcers need different treatment.

Because of the special therapy that they require, all ulcers with a tendency to spreading and ulcers in special locations will be eliminated from this discussion, as these will be discussed under their respective headings such as corneal ulcer, peptic ulcer, ulcers of the colon and fissure of the rectum, as well as varicose ulcer or chancroid (q v).

CLEANING UP

According to the definition that infection means the "successful invasion of tissue by micro-organisms," disinfection of an ulcer is possible only by sacrificing the invaded tissue in order to destroy the invaders at the same time for no agent is known as yet that will kill bacterial cells without at the same time destroying the more highly organized tissue cells, when these two are in intimate relation to each other. As such treatment will make the ulcer larger than it was before, it is justified only in ulcers that have a tendency to spread because of progressive invasion, as chancroid (q v) or lupus (q v), though even in these conditions gross cauterization is being abandoned. When on the other hand, spreading ulceration is due to loss of proper blood or nerve supply as in arterial thrombosis of the legs or in perforating ulcer of the foot, the use of disinfectants would merely add grave chemical injury to tissue dying from intrinsic deficiency of nutrition and would increase the damage.

Drainage, i. e., encouraging the discharge, is the chief measure for removing infection with minimum harm to the invaded tissue. In providing drainage one is reinforcing a curative tendency of nature. Drainage is indicated when an ulcer is acutely inflamed, its surface is secreting profusely, and its edges are infiltrated. After it is cleansed as far as possible with Solution of Hydrogen Dioxide, it is treated with hot Boric Acid dressings, under water-proof covering which are changed two hourly during the day and every four hours during the night until healthy granulations have made their appearance and the infiltration of the edges has largely disappeared. Superior probably to the hot boric dressing is the hot 10 per cent Magnesium Sulphate solution compress which, being hypertonic, not only prevents maceration but also, by the exosmotic currents it induces aids in the cleaning up process, and it is analgesic besides. For foul-smelling sores, constant immersion for a time in a warm (95 to 100 F) dilute solution of Potassium Permanganate is the quickest way of rendering them inoffensive. The solution is made and kept rose colored. Frequent irrigation with such solution is next best. After the odor has been overcome, hot boric dressings may be applied. An exception to the employment of macerating (occlusive) moist dressings must be made in case of ulcers surrounded by dermatitis. So-called eczematous ulcers require uncovered compresses. For moistening these Solution of Aluminum Subacetate, diluted 1 to 10, might be the most useful primary dressing to be followed as soon as the ulcer appears clean, by whatever local treatment the surrounding eczema (q. v.) calls for.

Once a shining granulating surface has been secured, it is fairly resistant to infection, so long as this surface is not traumatized, as occurs e. g., on pulling off adherent dressings, which also delays the healing. Hence one of the most important principles in the treatment of all ulcers is the prevention of the sticking of dressings. Moist dressings accomplish this only so long as they are moist. They must therefore be renewed at intervals of not more than three or four hours. Moist dressings should not be continued, however, longer than is necessary to "clean up" the ulcer, for they are also responsible for waste of a great deal of reparative material. So long as there is infection, this sacrifice is necessary. As soon as the need for antiseptic therapy has ceased, moist dressings should be discontinued. Dry absorbent dressings are even more objectionable because, in addition to draining away a lot of reparative material, they become adherent to the surface, so that on daily renewal of the dressing a day's growth of reparative cells may be pulled off, thus delaying the healing indefinitely while inflicting pain on the patient, who comes to dread the dressing ordeal.

PROTECTION

When an ulcer is or has become fairly clean, its chief need is some form of protection to act in the place of the epidermis, the missing natural protectant against physical injury and infection.

(a) John E. Cannaday advocates wire gauze screens to protect ulcers and allow contact with air to minimize drainage and promote healing while permitting exposure of ulcers to warm, dry air and to sunshine or to electric light treatment, if the former is not available.

Light "mouse proof" wire mesh is cut to the size necessary to make an adequate shield over the wound. The edges are bound with adhesive plaster and shaped

so as to fit about the wound, at times holding the edge away from the area by means of a felt support, as for instance in case of a screen encircling the finger. These screens are anchored in place by pieces of adhesive plaster or otherwise.

Absorbent dressings do no harm on a wound in which no raw surface is exposed, but, if a raw surface is present, they do a great deal of harm. The contact of absorbent dressings with granulating surfaces causes a foreign body reaction—a profuse discharge that wastes reparative material. It keeps the skin edges in a moist, macerated and water-logged condition and macerated epithelium does not mature well. The tearing away of epithelial new growth with adherent dressings still further delays healing. The longer healing is postponed the more fibrous scar tissue forms, which still further discourages the reparative process. The ideal condition for epithelization consists of a clean wound covered with a dry, well adherent scab that remains *in situ* undisturbed, until healing is complete, at which time spontaneous detachment occurs.

(b) The paraffin film expedites healing probably more than any other dressing by furnishing more physiologic condition for healing. It is firmer and gives a better immobilization of the part and support to the growing epithelium than most others. It protects the surface cells against drying, which, being an enemy to cell life, makes proliferation of the surface cells impossible and, thus, delays healing. Indeed, in all air exposure dressings, surface cells are killed and these form the protective film essential for the growth of the cells beneath. Applied as the paraffin film is to extend well over the healthy skin, it soon becomes lifted off the raw surface by accumulation of exudate. This fluid furnishes the best possible culture medium for the proliferating tissue cells. At the same time there is less exudate than with absorbent dressings, either dry or wet, so that healing occurs with comparatively little waste of reparative material. Being perfectly bland, the paraffin does not kill cells as do most antiseptic dressings and as even drying does, nor are the living cells likely to be pulled off or damaged as occurs with adherent dressings.

"Surgical Paraffin" (of a melting point at or below 50 C) is employed for this dressing. Medication with antiseptics is useless, as the paraffin hermetically seals the chemical against access of solvent. The paraffin, shaved or broken into small pieces, is put into a perfectly dry sterilized receptacle, which, well covered to prevent water from splashing into it, is placed in a larger vessel partly filled with water that is kept boiling until nearly all the paraffin is melted. Should water get into the melted paraffin, it may cause a burn when the dressing is applied. Before applying it, one should take the temperature of the melted paraffin or else test by dropping a little of it on the back of one's hand. It is not likely to be too hot if there is still some unmelted paraffin present. The ulcer is carefully cleaned by aseptic or antiseptic irrigation and the removal of loose dead tissue. One then dries it by laying a piece of sterile gauze over it gently touching and blotting the gauze by wads of dry gauze or cotton. The surface should never be wiped, and care should be exercised to avoid bleeding or infection. The use of a hot air douche to expedite drying is convenient but not essential. To minimize the distress caused from the application of the first coat of melted paraffin to the sensitive raw surface, the latter is painted first with

sterile Liquid Petrolatum Over this a thin layer of sterile cotton is applied, which is followed by a film of the melted paraffin laid on by a series of gentle pats, rather than by painting it on. The dressing should be carried half an inch or more over the healthy skin, to which it adheres, completely sealing the wound. The skin being more sensitive than a raw surface, patients may complain of pain when the application to the skin is made. However, provided the temperature is at or near the melting point of paraffin, there is little danger of a burn. After the first film has been gently laid on, a second fairly thick layer may be applied by painting. The dressing may now be finished by covering it with a gauze bandage, or else a piece of gauze may be placed over the paraffin and a muslin roller bandage put on.

At first the dressing needs to be changed once every twenty-four hours, later it may be left in place for forty-eight hours or longer. In removing the dressing, it is best to slit it through with scissors, taking care, of course, not to wound the raw surface. Owing to the accumulation of fluid underneath it, the film may then be rolled back without the least pain or danger to the ulcer. A fresh dressing is then reapplied. If pus accumulates under the paraffin film, as it may if the ulcer is not sufficiently aseptic—for the serum accumulating under the film is a good culture medium not only for cells but also for microbes—or if other local or systemic symptoms of infection manifest themselves,

PRESCRIPTION 1—*Petrolatum Cerate*

R Paraffin	30.00 Gm
Petrolatum	60.00 Gm
Mix by melting and sterilize.	
Spread on gauze in a sterile manner and apply to ulcer.	

application of moist dressings for a few days is required.

(c) As cerate is a salve of a melting point higher than the temperature of the human body surface, dressing an ulcer with such a preparation is superior to using Castor Oil or Petrolatum. The latter melts at body temperature and both soak through the dressing rather than stay on the surface where the fatty film is needed. As good as any preparation for the purpose is a mixture of Paraffin one part and Petrolatum two parts (prescription 1), which is less troublesome to apply than the paraffin film but probably not quite so efficient, as it does not retain the wound secretion, the "culture medium for cells," quite as well. If the raw surface is not very extensive, cerate serves well enough. If the ulcer is painful, 10 per cent of ethyl aminobenzoate (anesthesine) may be incorporated with advantage (see prescription 4, Therapy of Pain).

(d) Silver foil has been suggested as a dressing especially suitable for deep burns of limited extent, such as those resulting from electric currents. Silver foil clings to the surface, it is bacteriostatic, it forms a closed moist chamber for accumulation of wound secretion to serve as a culture medium for the proliferating cells, it keeps dressings from sticking and it is remarkably analgesic. Keloid formation seems to be less marked under this than under almost any other treatment.

STIMULATING GROWTH OF CONNECTIVE TISSUE

While the rather fresh raw surface of an acute ulcer is too sensitive to tolerate the application of anything other than bland protectants such as those described, there soon comes a time when healing can be accelerated

by increasing the blood supply and stimulating the proliferation of cells. Such stimulative treatment is demanded by the indolent ulcer, i. e., an ulcer that remains without signs of healing and shows no tendency to exuberant granulations or to callous margin formation. All irritants of appropriate strength stimulate the growth of connective tissue and most of them favor its growth more than they do the proliferation of the epithelial cells, probably because the latter are more highly organized than the former. If the employment of nonspecific irritants is continued too long, exuberant granulations, which delay final healing, may soon have to be contended with. Until the ulcer bed is well filled, such irritants are indicated. Their use must be discontinued as soon as a tendency to exuberant granulations manifests itself.

(a) Radiant energy is especially indicated in the treatment of extensive ulcers, e. g., burns (q. v.), particularly if the part seems to be poorly supplied with blood. Then more or less continuous direct exposure to the heat of the electric "bake" or "cradle" may be the most convenient way of accomplishing the result. Ultraviolet rays or sunshine must be dosed more carefully. The latter rays are probably indicated especially when a remnant of infection must be cleared up, for they may have a certain degree of antiseptic value. For fresh granulations not more than a mild erythema dose is advisable. When the local reaction has disappeared, another exposure may be given, usually in about a week. Excessive exposure may produce necrosis. In chronic fibrous lesions, massive dosage may be required so as to secure an intense reaction even to the degree of destroying the unhealthy tissue and securing a fresh granulating surface. As granulating surfaces are more sensitive to radiant energy than the skin, dosage for them must be more carefully regulated. The wire screen dressing is especially suitable when the use of radiant energy is contemplated.

(b) Rosin Cerate, by reason of the small amount of turpentine contained in the rosin, might be used as the succedaneum to the petrolatum cerate as soon as the initial irritability of the ulcer has subsided. Among all the possible irritants that might be used for stronger action, Balsam of Peru might be said to be "time honored," especially in the treatment of bed sores. Its disadvantages are that it has an odor which becomes objectionable when continually under one's nose and that it produces a rather indelible stain on fabrics. On the other hand, it is not only a good stimulant to healing but also bacteriostatic and keeps dressings from sticking. It might be added in varying proportions to rosin cerate. It may be used in the form of a paste with Zinc Oxide (prescription 2) or mixed with Castor Oil in various proportions, e. g., equal parts, and is soon tolerated in full strength, poured directly on the sore or as "Balsam Gauze," i. e., gauze strips impregnated with Balsam of Peru, that are then covered with wire screen or absorbent dressing according to the amount of discharge. When applied too strong, it produces an initial stinging and burning sensation. Compound Tincture of Benzoin (the friar's balsam of the Middle Ages) forms, after evaporation of the alcohol, a varnish that is not only protective but also stimulant to healing. It is especially suitable as a dressing for rather small and somewhat indolent sores.

(c) Sympathectomy, periarterial or otherwise, may cause prompt healing of a particularly refractory ulcer,

STIMULATING EPITHELIAL GROWTH

As an ulcer is not healed until completely covered with epidermis, the problem presents itself not infrequently of stimulating the multiplication and maturation of epidermal cells. Reducing agents have a special reputation for having this effect. Can it be that, by lessening the supply of available oxygen, they make the developing cell act as though it were farther away from the blood supply than it really is and undergo earlier keratinization? Scarlet red ointment is used in 5 per cent strength. It probably has its best use applied

PRESCRIPTION 2—Balsam of Peru Paste

R	Balsam of peru	10.00 Gm
	Zinc oxide	40.00 Gm
	Castor oil	50.00 cc
Mix	Label: Spread on gauze and apply to ulcer	

merely to the growing epithelial margin for a day or two alternating with soothing ointment. Gauze may be impregnated with scarlet red ointment or a compound (prescription 3) as especially recommended by Adalbert G. Bettman (1931) for preparing ulcers for skin grafting and for favoring the "taking of the grafts." Short pieces of the red gauze are cut and laid directly on the wound, completely covering it with a single layer. A sufficient layer of dry sterile gauze is applied and the whole kept in place with a bandage. When discharge appears at the surface of the dressing the outer layer

PRESCRIPTION 3—Compound Scarlet Red Ointment

I	Oxyquinoline sulphate	0.60 Gm
	Chlorbutanol	2.40 Gm
	Liquid petrolatum	4.00 cc
	Scarlet red ointment 5 per cent	120.00 Gm
Mix	Melt and immerse rolled gauze bandage until all bubbling has ceased. When cool it is ready for use. It keeps well. The outer layer or two of the bandage is discarded as it is completely covered with ointment and only that portion of the gauze is used whose interstices are open.	
	This prescription may be unnecessarily complicated. Scarlet red ointment applied in the same manner in gauze bandage works quite well.	

is changed, but the red gauze is left in place until it comes off easily, which may not be until complete epithelization has occurred. Thiocresol compresses advocated of late (Reimann, 1930), probably deserve trial in extensive ulcers. Because thiocresol is very unstable, it should be always freshly prepared in a 1:10,000 dilution (prescription 4). It is poured on sterile gauze, which is applied directly to the wound and covered with waterproof material, so that changing of the dressing may not be required oftener than every two hours. Such dressings are best alternated after forty-eight hours.

PRESCRIPTION 4—Thiocresol Stock Solution

R	Thiocresol	0.10 Gm
	Alcohol	50.00 cc
Mix	Label: Mix 5 cc with 100 cc of distilled water to give a 1:10,000 dilution. Prepare fresh solution for each change of compress.	

periods with simple dressings, such as compresses of Physiologic Solution of Sodium Chloride. The chief disadvantage of thiocresol is its offensive smell.

REMOVING IMPEDIMENTS TO HEALING

In disease, as in warfare, conditions change so that what may have been correct tactics one day may be wrong a few days later. The three most important impediments to healing are (1) exuberant granulations, (2) a callous ulcer margin and (3) ulceration completely encircling a limb.

1. Exuberant granulations have to be destroyed and then restrained from redeveloping. There may be a sufficient growth of them in neglected cases to require curettement or even trimming off with scissors.

(a) Silver Nitrate cauterization usually suffices to restrain their growth, if applied once or twice a week. In applying the lunar caustic stick or crystal, one must keep a respectful distance away from the visible epithelial margin. Indeed, if one looks sharply, one may distinguish the zone of advancing epithelial cells as a dull pearly haze in contrast with the shining naked granulations. It is easy to sacrifice this microscopic layer of pioneer epithelial cells and with it the prospect of early healing. One "thorough" cauterization may set healing back by a week. When a tendency to exuberant granulations manifests itself, the dressing should be merely protective (as described under Protection), excepting as far as stimulation of epithelization is concerned.

(b) An exception to this rule occurs in case of anemic ulcers with pale, flabby granulations. In these the stimulating astringency of the Copper Sulphate crystal or even of Zinc Chloride is preferable to silver nitrate cauterization. It should be followed by dry treatment, e.g., dusting with Thymol Iodide, and a compression bandage.

(c) For restraining the development of exuberant granulations there is nothing better than the compression bandage, which also seems to favor ingrowth of epithelium. It is secured either by firm strapping with elastic adhesive plaster, applied directly over the naked granulations and a liberal area of the surrounding skin or else, if moist or cerate dressing is desired, a rubber sponge may be incorporated under a firmly applied bandage (cf. varicose veins).

2. The callous ulcer with edges of indurated edema of often cartilaginous hardness, cannot heal so long as the induration is permitted to remain. It indicates the use of

(a) Hydrotherapy. Hot circular compresses covered for maximum effect with waterproof material continued possibly for several days may produce a macerating effect on the tissues and increase the blood supply to the part to such an extent as to alter the immediate aspect of the ulcer as well as its ultimate prospect of healing. Local hypodermoclysis of Physiologic Solution of Sodium Chloride into the surrounding tissue may assist this softening effect by its lymphagogue action.

(b) Pressure. By means of adhesive plaster, an elastic bandage or a rubber sponge dressing (see varicose veins) accompanied by a fair amount of muscular exercise, so as to exert a pumping action on the circulation, pressure may help in the absorption of the callous margin softened by hydrotherapy, so that these two measures should be used in succession or alternation, e.g., the pressure bandage during the day, the compress during the night.

(c) Irradiation. The absorption of the infiltration of the edges may be favored by roentgen rays in fractional doses (140 kilovolts, 0.25 mm of copper, 1 mm of aluminum, 75 roentgens) or perhaps more safely by an occasional erythema dose of ultraviolet rays or by daily graduated doses of the sun's rays.

(d) Surgery. When the foregoing methods fail, there are two ways of forcing healing, after a thorough curettement. One is to make incisions through the indurated margins radiating from the center of the ulcer, like the spokes of a wheel. The incisions must penetrate the deep fascia and extend for one or two inches beyond the margins of the ulcer. The other and more usual

method is complete excision of the ulcer, to be followed by skin grafting as soon as healthy granulations have been secured

3 An ulcer encircling a limb may require amputation if plastic operations fail

SKIN GRAFTING

Skin grafting is mandatory in the larger defects at the earliest possible moment, i e., as soon as a bed of healthy granulations of deep red "raw beef" color has been secured, and especially in those ulcers in which cicatricial contraction is liable to lead to deformity. As grafts from another individual (isoplastic grafts) are less likely to take, autoplasmic grafts should be preferred. Of the two different methods of skin grafting, the free and the pedicled graft, each has its own indications.

(a) The free grafts are taken down through the germinal layer of the epidermis, not deep enough to cause much bleeding. "Seed implants" (Wilhelm Braun, 1920) are the most uniformly successful variety, as they are likely to take even in the presence of infection. The site having been anesthetized by infiltration with 2 per cent solution of Procaine Hydrochloride, the skin to be transplanted is picked up on the point of a hypodermic needle and snipped off with sharp scissors or sheared off with a sharp knife or razor. It is then cut into small pieces, "about half the size of a grain of wheat," and these are implanted deep in the granulating surface about 1 to 1.5 cm. from one another. It does not matter which side is up. Warm Physiologic Solution of Sodium Chloride compresses are applied for two days, to be alternated with thio cresol compresses (prescription 4) for the next two days. In the ambulatory patient, gauze impregnated with compound scarlet red ointment (prescription 3) is used from the very beginning, or else silver foil is applied. If the granulations have a tendency to be exuberant, adhesive plaster strapping or rubber sponge needs to be incorporated in the dressing. The advantages of the seed implants are that they are most economical of skin and that they will take even if the surface is not aseptic. Their disadvantage is that they grow unevenly and ultimately develop into a mottled skin with islands of pale color surrounded by areas of redness. Hence they are not suitable for exposed surfaces. In spite of this it might be well to cover with these seed implants any ulcer larger than a dollar, no matter where located, as it can be made to heal more rapidly by their use. If further plastic surgery is needed it can be done at a later date, the rapid covering of the wound and granulations by these new grafts lessening cicatricial contraction.

Thiersch grafts, in which strips of about half the thickness of the skin are used, have the advantage of quicker healing and of producing a smoother surface than the seed implants and a relatively noncontractile new skin, but they leave a thin and rather vulnerable scar and are less likely to take in the presence of infection. The surface must therefore be carefully prepared for their reception. It must be made as healthy and aseptic as possible and there must be little or no pus. The superficial granulations if irregular, are curetted away with a very light touch and if a line of cicatrization has formed it is best to remove this as subsequent ulceration frequently occurs at just this place. All hemorrhage must be thoroughly checked before the grafts are put in place, because blood clots make adhe-

sion impossible and result in infection. The skin from which the graft is to be taken is put on the stretch and, with a keen razor kept wet with Physiologic Solution of Sodium Chloride, strips from 1 up to 12 inches long are removed, transferred to the wound on the razor blade, and spread evenly and closely on the prepared raw surface by means of probes. If it is more convenient, the strips may be temporarily immersed in warm sterile Physiologic Solution of Sodium Chloride. No antiseptic solution must be permitted to come in contact with the grafts. The first thing to be laid on these grafts should be some material that will keep the grafts in place and favor their adhesion to the raw surface without permitting the dressing to stick. This may be found in the red gauze (prescription 3), in silver foil, or in sterile rubber tissue. When the red gauze is used, it is cut into short pieces and the entire surface is covered with it completely, overlapping being reduced to a minimum. A sufficient thickness of dry gauze is then applied to carry away the secretions and protect the wound. With the foil or rubber tissue, gauze impregnated with sterile oil or petrolatum is employed. It is very important to immobilize the part sufficiently to prevent dislodging the grafts, which adhere but slightly to the raw surface during the first few days. Dressings should not be changed for the first four or five days, and dressings that adhere should never be pulled off but left in place until they come away easily.

The full thickness graft is useful when greater flexibility is required than that furnished by the thin grafts. These grafts must be freed from fat and subcutaneous tissue. They must be sutured accurately and under slight tension over an aseptic and dry surface, and firm, even pressure must be maintained over the graft during the period of healing. Their chief disadvantage is that the slightest infection, such as is present in most granulating surfaces, is sufficient to cause necrosis and loss of the graft. Hence it is more suitable in the treatment of scar tissue contractures after an ulcer has healed completely than in the treatment of ulcers as such.

(b) The pedicled graft permits transplantation of subcutaneous tissue including fat, which requires its blood vessels to survive. Pedicled grafts are especially indicated in cases in which subcutaneous tissue is required to restore the contour of parts, as in ulcers involving the face. The pedicled graft produces a much more flexible covering than any other kind of graft and hence finds its field of greatest usefulness in cases in which important anatomic structures, such as tendons, blood vessels, nerves, bones or joints, lie exposed in the bottom of the wound. It is more certain to survive, even in the presence of a slight degree of superficial infection. Its technic, being a matter of the art of plastic surgery, would require too much space to be adequately discussed here.

PREVENTION OF CICATRICIAL DEFORMITY

From the very first, the physician having charge of a case of extensive ulceration must take care to prevent deformities due to scar tissue contraction. This is done by

(a) Posturing the affected part, if necessary with the aid of splints or other mechanical devices, so as to force the newly formed tissue to cover the greatest span required by function, e g., maintaining the arm in full flexion for a large ulcer on the posterior surface of the elbow, thus antagonizing nature's tendency to

economize tissue growth by lessening the size of the ulcer by contraction during the process of cicatrization

(b) Exercise When joints are involved in the ulcer the patient, at the time dressings are changed, should put the joint repeatedly through all its possible movements. This is many times best accomplished by performing the exercises in a warm bath

(c) Early skin grafting

CORRECTION OF SYSTEMIC ABNORMALITIES

Syphilis and diabetes mellitus are two conditions that are particularly prone to interfere with healing processes and that require appropriate treatment. The presence of anemia, nephritis, myxedema, avitaminoses and general malnutrition requires early recognition and energetic treatment, for good tissue growth needs an abundant supply of healthy blood

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS

HOWARD A. CARTER, Secretary

HANOVIA ULTRAVIOLET METERS ACCEPTABLE

The Hanovia Ultraviolet Meter, marketed by the Hanovia Chemical and Manufacturing Company, Newark, N. J., is designed and calibrated for the measurement of the ultraviolet radiation energy of wavelength 3130 angstroms and shorter from the quartz mercury arc lamp and from the 60 ampere C carbon arc

The meter consists essentially of a light sensitive cell mounted behind a filter glass transmitting radiations of wavelengths between 2500 and 4000 angstroms and a sensitive microammeter for the measurement of the electric current generated within the cell when the cell is exposed to ultraviolet radiations. The photo electric cell used is of the dry electronic type and should not be confused with the usual photo-electric cells, which require auxiliary electrical circuits and an electrical supply. The photocell used is manufactured by the Weston Electrical Instrument Company of Newark, N. J.

The Hanovia Ultraviolet Meter is available in two forms, namely, an indicating instrument and a recording instrument

The indicating instrument is portable and completely contained within a quartered grain oak meter box $8\frac{1}{2}$ by $4\frac{1}{4}$ by $8\frac{3}{4}$ inches provided with a cover and a leather handle. Provision is made within the meter box for the target (photocell) an electrical cord for attaching the target to the meter instrument and an instruction book. The entire instrument weighs $7\frac{1}{2}$ pounds

The target of the indicating instrument is a light bakelite container conveniently shaped for handling, and has mounted in its broad surface the filter window, which admits the ultraviolet to the sensitive cell below, and a metal disk on which is inscribed a calibration factor by which all readings on the accompanying micro-ammeter must be multiplied in order that readings may be converted into microwatts per square centimeter of ultraviolet radiation of wavelength 3130 angstroms and shorter, for the quartz mercury arc. The target is permanently connected electrically to the microammeter which is provided with multipliers permitting the employment of the ultraviolet meter for a range of intensities extending from about 10 microwatts per square centimeter to about 10,000 microwatts per square centimeter. The instrument is intended for intermittent use

The Hanovia Recording Ultraviolet Meter is designed for continuous operation and gives a written record of the ultraviolet radiation in the spectral band of wavelength 3130 angstroms and shorter that falls on the target. The target is

essentially the same as that employed in the indicating meter excepting that for continuous operation and for the protection of the cell and filter from humid conditions these elements are sealed within a copper container provided with a transparent quartz window. The recording micro-ammeter employed is the Engelhard Type S (U. S. Weather Bureau Circular Q, 1931). This instrument automatically provides a timed and written record of the ultraviolet energy at half minute intervals on a chart roll

A special form of the Hanovia Recording Ultraviolet Meter with auxiliary equipment can provide constant voltage regulation for quartz mercury and carbon arcs and in the instance of the Hanovia quartz mercury arcs operated on the Bird electrical circuit and at initially lower than maximum burner wattages, can correct automatically for any ultraviolet losses resulting from deterioration of the quartz envelop by gradually increasing the burner wattage by increments as the quartz envelop becomes more opaque to the radiation

The recording ultraviolet meter is normally calibrated for a range of ultraviolet intensities in the band of wavelengths 3130 angstroms and shorter extending from 100 to 10,000 microwatts per square centimeter. When employed as a control instrument, the meter is frequently calibrated to record the energy as falling on the irradiation surfaces instead of the actual light energy falling on the target. When employed in this manner, the target, the irradiation surfaces and the burner must be located in absolutely fixed positions

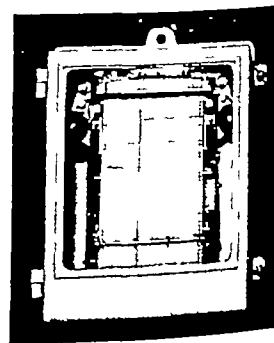
All Hanovia ultraviolet meters are calibrated by the Hanovia research staff employing reference instruments calibrated at the National Bureau of Standards, Washington, D. C. When especially requested (and subject to a reasonable delay), meters may be calibrated at the National Bureau of Standards and supplied with its certificate

It is claimed that the meter employed with the proper factors and multipliers and recalibrated at the proper time intervals (see later) will give a measure of the ultraviolet energy of wavelength 3130 angstroms and shorter, from the quartz mercury arc and from the 60 ampere C carbon arc, with an accuracy of plus or minus 5 per cent

The permanence of the response of the Hanovia Ultraviolet Meter has been established. The photonic cell itself has been found to have a very small fatigue; the response decreases from 2 to 3 per cent with normal temperature increases; there is a continual decrease in sensitivity as the cell ages

These factors are compensated for as follows. The target must be exposed to the radiation for several minutes before a reading is taken. A constant reading (with a constant light source) will then be obtained. Provided the target is not subjected to high temperatures (60 C and more) the factor of temperature will not enter into the usual measurement because the cell will not warm sufficiently during the brief exposure to result in any readable differences due to temperature effect

The aging of the cell itself is very slow, extending apparently over years and amounting to a few per cent each year. Recalibration readily accounts and corrects for such changes. It is interesting to note that Prof. Paul Gleason of the department of physics, Colgate University in the *Review of Scientific Instruments*, October 1932, has reported similar observations for the photonic cell exposed to visible light



Hanovia Recording Ultraviolet Meter

In the case of industrial and milk lamps in which the target may be exposed continuously to the radiation, after from three to four hours of operation the response of the cell has decreased the 2 to 3 per cent, and because of the constant intensity feature of these lamps the ultraviolet intensity actually increases from 2 to 3 per cent above the initial value

The glass ultraviolet filter employed over the cell has been another point of consideration. All indications have pointed to the solarization of this filter as one of the most important factors influencing the constancy of response of the ultraviolet meter. Presolarization of the glass has been considered as a possible means for eradicating this factor, and experiments are now in progress to determine whether such procedure is productive of practical results.

The micro ammeters employed are well known instruments of the highest quality. The switches used in the indicating meter are also the best obtainable but these have in a few instances been responsible for a sudden loss in instrument sensitivity. The recording meter does not employ any switches and so is not subject to such a possible difficulty.

The Hanovia research organization has concluded that the foregoing somewhat troublesome observations were greatly outweighed by the convenience and desirable features of the meter. At the most they would be greatly minimized by frequent recalibration, certainly a recommendation for any quantitative radiation measurement device. With this in mind each meter at the time it is delivered is accompanied by a "recalibration notice" advising resubmission of the meter to the Hanovia Laboratory at definite time intervals, three and six months, for check and recalibration. The Hanovia Company is so interested in having ultraviolet radiation measurements common practice and on the same reliable basis as electrical measurements that it is contracting to do this recalibration without charge to the meter users. Provision is also made for periodic recheck of all recording ultraviolet meters in their working location, and any adjustments that may be necessary can be made without interruption of operation.

Measurements made by the Hanovia Laboratory have indicated that if a target is exposed continuously for 1000 hours to ultraviolet radiation of wavelengths 3130 angstroms and shorter, 1,500 mw/cm², the response of the meter at the end of that time will be decreased by about 25 per cent from the initial value. Since there are 365 days in a year and it seems unlikely that the indicating meter will be used more than an hour per day (actual exposure), 1000 hours represents about three years' usage. A recalibration of the instrument each three to six months when so used, should keep the instrument within the desired degree of accuracy plus or minus 5 per cent.

The target of the recording ultraviolet meter is very likely to be exposed for longer periods daily. The loss in sensitivity per hour is about the same for the recording meter as for the indicating meter, but the loss per day will most certainly be larger. When the recording meter is used for a constant intensity control, the ultraviolet intensity cannot fall below the predetermined value set and indicated on the scale unless the burner has reached the limit of its useful life or the ultraviolet meter has not been recalibrated according to schedule. On the other hand as a result of the gradual lowered response of the target there results a gradual increase in the burner wattage and therefore in the ultraviolet output of the lamp amounting on the average to 25 per cent increased intensity per hundred hours of operation. Thus if the measured intensity were 5000 mw/cm² initially after 100 hours of target exposure the intensity of the lamp would be 5125 mw/cm² although the meter record would still indicate an intensity of 5000 mw/cm². Since a 10 per cent increase in intensity is within the limits of biologic evaluation recalibration of the meter every few hundred hours of use will maintain a practical balance.

The Hanovia ultraviolet meters within the limitations disclosed are suitable for the measurement of the ultraviolet component of wavelength of 3130 angstroms and shorter from the quartz mercury arc and from the 60 ampere C carbon arc. The meter may be used for the measurement of other light sources only when specifically calibrated for them. The meter cannot be used for the measurement of the ultraviolet component in sunlight satisfactorily.

The Council investigated this meter in a laboratory and a clinic. The results obtained were substantially the same as reported. The Council, therefore, includes the Hanovia Ultraviolet Meter in its list of accepted devices for physical therapy.

WESTINGHOUSE PHOTO-ELECTRIC RECORDER ACCEPTABLE

Manufacturer, Westinghouse X-Ray Co., Inc., Long Island City, N. Y.

The Westinghouse Photo-Electric Recorder provides a continuous record of the intensity of light. The record furnished is in the form of permanent graphic charts, each recording the rate of intensity every minute during a period of several hours. This instrument is particularly valuable for the recording of intensity in the ultraviolet portion of the spectrum, and it can be supplied to respond only to any of several well defined wavelength bands in this region.

A typical example of the use of this instrument is the measurement and recording of ultraviolet intensity in the irradiation of fluid milk. The graphic charts produced by this instrument can be filed away in chronological order as permanent evidence of the rate of irradiation intensity during every minute of each working day.

The instrument (fig. 1) consists of a light-sensitive photo cell with necessary direct current rectifier for energizing it, a relay tube and condenser circuit through which the photo-electric currents are fed, and a graphic recording mechanism. It is operated from any 60 cycle alternating current wall plug the total power consumption being about 25 watts. It can also be supplied, on special order for 25 cycle apparatus. No vacuum tube amplifiers are used.

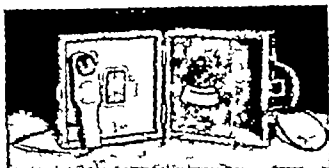
The instrument is housed in two units interconnected by a flexible cable. The smaller contains the light-sensitive photo cell, relay tube and condenser. The larger contains the rectifier and chart movement mechanism.

Principle of operation. A photo-electric cell, sensitive to the desired wavelength band in the light spectrum is supplied with the instrument. Minute electrical currents are passed by the photo cell when exposed to such irradiation and these currents are proportional to the irradiation intensity in that particular band. These minute currents are used to charge a small condenser, which is connected in parallel with a relay tube.

Every time this condenser is fully charged the relay tube "spills over" discharging the condenser and sending an impulse to the recorder. Each of these impulses deflects a recording pen on a moving chart (fig. 2), which is ruled at one minute intervals and moves in time with these rulings. The number of deflections per minute, representing the intensity of light, can be read at a glance at any time, and the charts furnish permanent records of the irradiation intensity for every minute of the time during which the process is carried on.

Photo Cell. The photo-electric cell is essentially an evacuated glass envelop containing a cathode in the form of a metal plate and an anode or target. Light impinging on the metal plate causes it to emit electrons. If a voltage is applied across the tube between the plate and the anode, the electron stream will be directed from the plate to the anode and an electrical current will therefore flow through the tube. The electron emission from the plate is proportional to the intensity of the light; hence the current passed is also proportional to the light intensity. The voltage across the tube is immaterial and has no bearing on the amount of current flowing.

By proper choice of bulb material and of plate material photo-electric cells are constructed to be sensitive only to specific bands in the spectrum. Bulb materials such as glass or Corex pass the longer wavelengths of light but are opaque



Hanovia Indicating Ultraviolet Meter

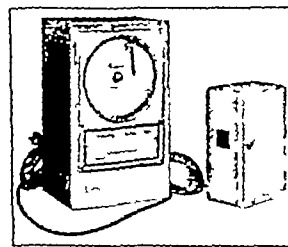


Fig. 1—Westinghouse Photo-Electric Recorder

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING
REPORT PAUL NICHOLAS LEECH SecretaryVEGEMUCENE NOT ACCEPTABLE
FOR N N R

Following the introduction of the use of gastric mucin in the treatment of peptic ulcer by S. J. Fogelson of Northwestern University (*THE JOURNAL*, Feb. 28, 1931) a rather extensive series of clinical reports has appeared. Notwithstanding, the Council is of the opinion that further studies are necessary in order to establish thoroughly the value of such therapy. Workers at the Michael Reese Hospital have recently reported seventeen cases of proved gastric or duodenal ulcer relieved symptomatically, following the administration of a mucilaginous plant substance (in contradistinction to gastric mucin) (*Illinois Medical Journal*, October 1933). The material used in this work consists of powdered dehydrated okra now marketed under the name of VegeMucene by BioVegetin Products Incorporated, which presented the product to the Council for consideration.

Certain advantages are claimed for VegeMucene over gastric mucin by way of palatability, greater gastric tolerance, and convenience of dosage. Probably all three are valid in a measure but the clinical studies made of the product, thus far, are so inadequate as to preclude any possibility of arriving at a fair estimate of the therapeutic value of the substance. The name is objectionable, as it implies that the substance is mucinous or mucoid in character, yet it is not a true mucin as the term is ordinarily employed. It resembles mucin in physical properties only. As may be seen from the respective formulas there is a significant difference chemically. VegeMucene is said to contain water 10.12 per cent, protein 14.4 per cent, fat 1.8 per cent, ash 5.4 per cent and carbohydrate 66.6 per cent. The protein is said to comprise albumins and globulins. On the basis of average analyses of such glycoproteins, the protein nitrogen in VegeMucene could not be greater than 2.4 per cent, whereas that in true mucin is in the neighborhood of 12 per cent. The term Mucene is therefore misleading in fact and false by connotation.

Notwithstanding the very limited studies thus far reported of the use of powdered okra in peptic ulcer, the firm states in one of its advertising brochures that

Extensive clinical tests have shown VegeMucene to be extremely effective in the treatment of patients suffering from peptic and duodenal ulcer.

It is pointed out that these patients were maintained on a modified ulcer diet which of itself undoubtedly would have effected a significant improvement in the majority of cases. This fact tends to render another exaggerated therapeutic claim more or less invalid.

VegeMucene causes rapid and effective relief from pain and other associated symptoms of peptic ulcer and duodenal ulcer. Unless it can be shown conclusively that powdered okra is of benefit in the cure of gastric or duodenal ulcerations, there can be no place for it in the therapy of these conditions, and a series of but seventeen cases is inadequate foundation for critical evaluation of the therapeutic worth of any drug.

However inconclusive and inadequate the available studies of VegeMucene in gastric ulcer it appears that the product is intended for use in that least adequately controlled of all series of cases those which do not have the advice of competent gastro-enterologists. The Council has been informed that the Board of Directors of BioVegetin Products Inc., has taken formal action endorsing lay promotion of VegeMucene. Thus the preparation has been thrust definitely into that vast realm of 'ulcer cures' so elaborately exploited to the general public. It should be noted that even were the product sound therapeutically acceptable chemically and named rationally, the

to the shorter wavelengths. On the other hand plate materials used such as tungsten, titanium and thorium have exactly the opposite characteristics, responding in various degrees to the shorter wavelengths. Hence by choice of a suitable combination of bulb material and plate material, a photo electric cell more sensitive to a particular section of the spectrum can be constructed.

Three of the standard cells available for use in measuring intensity in the ultraviolet region are as follows

- A cell with a thorium plate and Corex D bulb sensitive within a range of 3200 to 3700 angstrom units
- A cell with a titanium plate and Corex D bulb sensitive within a range of 2700 to 3200 angstrom units
- A cell with a tungsten plate and bulb having an extremely thin indrawn bubble glass window sensitive within the range below 2700 angstrom units

The first two of these cells are mounted behind Corex windows in the photo cell housing. These windows not only keep the photo cell housing dust tight but also are factors in the fixing of the sensitivity range. With the third cell no window is interposed in front of the bulb to avoid filtering out of radiation in the region of the spectrum to which this cell is sensitive.

Recorder. The recorder charts are of the disk type and the record appears as a spiral line with the condenser discharge marks crossing it. One chart provides a complete totally visible record for several hours. The chart is marked off with radial lines one minute apart and is rotated by a clock type synchronous motor which of course insures very precise timing. Ordinarily the calibration is such that between five and ten condenser discharges occur each minute and it is therefore only necessary to glance at a chart to see whether any serious discrepancies in light intensity have occurred. The length of the condenser discharge marks may change because of line voltage fluctuations or variations of friction of the pen on the paper but this is of no consequence, as the number of discharge marks per unit of time is the only pertinent factor.

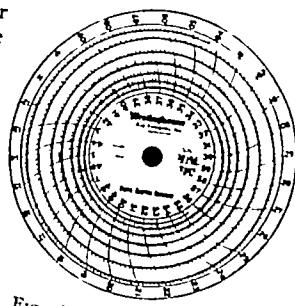


Fig. 2—Recorder chart

In the lower part of the recorder housing is mounted the rectifier for the direct current voltage required to operate the photo-electric cell. A type 80 rectifier is used.

Installation. The photo cell housing is set up at the calibration distance from the light source in such a position that it will be reasonably free from dust and moisture. The window through which the light enters must, of course, be kept clean. The recorder housing is mounted on a wall at any convenient place, and a plug inserted in an alternating current wall receptacle. The cable connecting the photo cell housing to the recorder is provided with a plug permitting the use of an extension cable if necessary.

To start operation of the recorder a blank chart is inserted and ink placed in the recording pen. Simple adjustments are provided for locating the pen at the proper position on the chart to correspond with the time at which the record is started. Turning the main switch in the recorder housing to the "on" position starts the apparatus. To stop it, it is necessary only to shut off the switch.

The following units are available

- Photo Electric Recorder W 6095 for ultraviolet radiation complete including photo cell housing relay tube graphic recorder and 100 recording charts for operation on 110 volts 60 cycles alternating current
- W 6096 Same as W 6095 but for operation on 110 volts 25 cycles alternating current

Any one of the three different types of photo cells aforementioned are available. The Council on Physical Therapy therefore voted to include the Westinghouse Photo Electric Recorder in the list of accepted devices.

policies of the firm, tending as they do to encourage self medication of insidious and dangerous disease, would alone condemn VegeMucene in the eyes of the conscientious practitioner of medicine.

The Council declared VegeMucene not acceptable for New and Nonofficial Remedies, because it is an unoriginal preparation of powdered okra, marketed under a noninformative and misleading proprietary name, and promoted with exaggerated and unwarranted therapeutic claims to the profession and to the public at large

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION. **RAYMOND HERTWIG** Secretary



GREEN HILL BRAND MUSHROOMS FANCY BUTTONS—SLICED—SLICED STEMS AND PIECES

Manufacturer—Green Hill Brand Mushroom Farms, West Chester, Pa., subsidiary of Edw H Jacob, Inc., West Chester, Pa

Description—Hot house mushrooms, respectively buttons, sliced and sliced stems and pieces, the same as Jacob Mushrooms, Fancy Buttons—Sliced—Sliced Stems and Pieces (THE JOURNAL, Sept 15, 1934, p 838)

GAZELLE BRAND SEEDLESS RAISINS HORSESHOE BRAND SEEDLESS RAISINS JOCKEY CLUB BRAND THOMPSON SEEDLESS RAISINS MISSION BRAND THOMPSON SEEDLESS RAISINS PANSY THEY R SEEDLESS BRAND FANCY QUALITY RAISINS ROSEDALE BRAND FANCY QUALITY THOMPSON SEEDLESS RAISINS TEMPLE BRAND THOMPSON SEEDLESS RAISINS TULIP BRAND SEEDLESS RAISINS

Packer—Guggenlime & Company, San Francisco

Description—Sun-dried Thompson seedless grapes

Preparation—Raisins, sun dried without artificial heat or chemical treatment are tested for moisture and sugar content mechanically separated from the clusters mechanically graded according to size, freed from foreign material, imperfect fruit and small stems thoroughly washed in mechanical washers, inspected, treated with high pressure steam to remove excess surface moisture, and automatically packed in cartons

Analysis (submitted by manufacturer) —

Moisture	17.0
Ash	1.6
Fat (ether extract)	0.2
Protein (N X 6.25)	2.6
Total reducing sugars as dextrose	72.7
Crude fiber	0.9
Carbohydrates other than crude fiber (by difference)	75.9
Titration acidity as tartaric acid	1.8
Potential alkalinity—24 (cc normal acid per 100 grams)	
Copper (Cu)	0.0002
Iron (Fe)	0.005
Magnesium (Mg)	0.08
Manganese (Mn)	0.0004

* Sherman and Gettler J Biol Chem 11 323 1912

Calories—3.2 per gram 91 per ounce.

Vitamin—Fair source of vitamin B (22 Sherman units per ounce)

OSCAR MAYER'S SLICED BACON APPROVED BRAND

Manufacturer—Oscar Mayer & Company, Chicago

Description—United States Government Inspected dry cured, smoked sliced bacon

Manufacture—Hog bellies, selected for quality of meat and fat, width, length and thickness, are cut down to uniform size, trimmed and spread on racks over night to bring them to a definite temperature. The bellies are individually rubbed with a curing mixture of salt, sugar sodium nitrate and sodium nitrite and pressed into a wooden curing box. No pickle is added to hasten the cure. In a few days, moisture from the meat forms a brine with the salt and covers the bellies. This process of dry-curing proceeds for twenty-one days at a temperature of 3 C. The bellies are removed from the brine soaked in cold water for thirty minutes to leach out the excess salt from the surface tissue, washed, and hung on special frames in the smoke-house, where they are smoked with smoke and fumes of burning hardwood sawdust and gas for from thirty to thirty-six hours at 32-52 C. The bacon is removed from the smoke-house, chilled, skinned, frozen for twenty-four hours automatically sliced onto a metal conveyor belt scaled off into one-half pound packs wrapped in cellophane check-scaled, and packed in cartons holding twelve one-half pound packages. Before being shipped the cartons of bacon are chilled.

All equipment, including the dry-curing box, is thoroughly washed each day. The soaking boxes are washed weekly with sodium hypochlorite and the slicing equipment daily. The girls who pack the bacon wash their hands in sodium hypochlorite every half hour. The plant is United States government inspected. Every ingredient in the curing mixture and the manufacturing process are subject to approval by the Bureau of Animal Industry. The bacon is analyzed periodically by this bureau to check the nitrates present, which cannot be in excess of 200 parts per million.

Analysis (submitted by manufacturer) —

	per cent
Moisture	14.1
Ash	4.0
Fat (ether extract)	71.7
Protein (N X 6.25)	7.3

Calories—6.7 per gram, 190 per ounce

HALE'S PRIDE STERILIZED UNSWEETENED EVAPORATED MILK

Distributor—Hale-Halsell Company, McAlester, Okla.

Packer—Carnation Company, Oconomowoc, Wis

Description—Unsweetered sterilized evaporated milk, the same as Carnation Sterilized, Unsweetered Evaporated Milk (THE JOURNAL, June 14, 1930, p 1919)

TRISCO FLOUR (BLEACHED)

Manufacturer—Tri-State Milling Company, Rapid City, S D

Description—Patent flour milled from hard northern spring wheat, bleached

Manufacture—Selected hard spring wheat is cleaned, washed, scoured, tempered and milled by essentially the same procedures as described in THE JOURNAL, June 18, 1932, page 2210. Chosen flour streams are blended and bleached with benzoyl peroxide and calcium phosphate (one-tenth ounce per barrel)

HOLIDAY OLEOMARGARINE

(CONTAINS 1/20 OF 1% SODIUM BENZOATE)

Manufacturer—The Best Foods, Inc., New York City

Description—Margarine containing hydrogenated coconut and peanut oils, pasteurized milk cultured with lactic acid bacilli, salt, and sodium benzoate (not over 0.1 per cent)

Manufacture—The same as Nucoa Oleomargarine (THE JOURNAL, April 22, 1933, p 1238)

Claims of Manufacturer—For use as a bread spread and as a fat or shortening in baking and cooking or for table purposes

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 26 1935

PROGRESS OF PLANS FOR ECONOMIC SECURITY

The suggestion made by President Roosevelt in June 1934 that the chief objective of the present Congress would be the enactment of legislation leading to greater economic security for the American people began to find its fulfilment on Jan 17, 1935. On that day he sent to Congress a message relative to unemployment insurance, old age pensions, federal aid to dependent children, the support of existing mothers' pension systems, appropriations for services for the protection and care of homeless, neglected, dependent and crippled children, and finally additional aid by the federal government to state and local public health agencies and for the strengthening of the federal Public Health Service. As was recently pointed out in an editorial in *THE JOURNAL*, the problem of sickness insurance is more difficult. Of this the President has just said specifically:

I am not at this time recommending the adoption of so-called "health insurance," although groups representing the medical profession are cooperating with the federal government in the further study of the subject and definite progress is being made.

Coincident with the message to Congress by the President came a message from the Committee on Economic Security to the President and the report that it submitted to the President. The committee, which includes as chairman Frances E. Perkins, Secretary of Labor, and Henry Morgenthau Jr., Secretary of the Treasury, Homer Cummings, Attorney General, H. A. Wallace, Secretary of Agriculture and Harry Hopkins, Federal Emergency Relief Administrator, indicates again in its report the difficulties inherent in a sickness insurance program but seems to forecast quite definitely its plans in relationship to this problem. Thus it says:

As a first measure for meeting the very serious problem of sickness in families with low income we recommend a nationwide preventive public health program. It should be largely financed by state and local governments and administered by state and local health departments, the federal government to contribute financial and technical aid. The program contemplates (1) grants in aid to be allocated through state departments of health to local areas unable to finance public health

programs from state and local resources, (2) direct aid to states in the development of state health services and the training of personnel for state and local health work, and (3) additional personnel in the United States Public Health Service to investigate health problems of interstate or national concern.

The second major step we believe to be the application of the principles of insurance to this problem. We are not prepared at this time to make recommendations for a system of health insurance. We have enlisted the cooperation of advisory groups representing the medical and dental professions and hospital management in the development of a plan for health insurance which will be beneficial alike to the public and the professions concerned. We have asked these groups to complete their work by March 1, 1935 and expect to make a further report on this subject at that time or shortly thereafter. Elsewhere in our report we state principles on which our study of health insurance is proceeding which indicate clearly that we contemplate no action that will not be quite as much in the interests of the members of the professions concerned as of the families with low incomes.

The committee proceeds somewhat further along in its report to a brief consideration of so-called health insurance, which still more elaborately hints at what is contemplated. Apparently the technical advisory staff of the Committee on Economic Security has made studies of the compulsory sickness insurance plans already established abroad. It has considered the possibilities of voluntary insurance and rejected them, as well as the possibility of ordinary commercial insurance. It has already, it seems, prepared the basic principles for a tentative plan of insurance believed adequate for the needs of American citizens with small means and appropriate to existing conditions in the United States. These are said to have been submitted to the professional advisory groups organized for the purpose already described in *THE JOURNAL*, the advisory groups have requested an extension of time and the extension has been granted until March 1. The statement is made that "arrangements have been effected for close cooperative study between the committee's technical staff and the technical experts of the American Medical Association." In its report submitted to the President, the Committee on Economic Security offers the following information to the professions and to the public as to the main lines along which its studies are proceeding:

1 The fundamental goals of health insurance are (a) the provision of adequate health and medical services to the insured population and their families, (b) the development of a system whereby people are enabled to budget the costs of wage loss and of medical costs, (c) the assurance of reasonably adequate remuneration to medical practitioners and institutions, (d) the development under professional auspices of new incentives for improvement in the quality of medical services.

2 In the administration of the services the medical professions should be accorded responsibility for the control of professional personnel and procedures and for the maintenance and improvement of the quality of service, practitioners should have broad freedom to engage in insurance practice, to accept or reject patients, and to choose the procedure of remuneration for their services, insured persons should have freedom to choose their physicians and institutions, and the insurance plan shall recognize the continuance of the private practice of medicine and of the allied professions.

3 Health insurance shall exclude commercial or any other intermediary agents between the insured population and the professional agencies which serve them

4 The insurance benefits must be considered in two broad classes (a) cash payments in partial replacement of wage loss due to sickness and for maternity cases, and (b) health and medical services

5 The administration of cash payments should be designed along the same general lines as for unemployment insurance and, so far as may be practical, should be linked with the administration of unemployment benefits

6 The administration of health and medical services should be designed on a state-wide basis, under a federal law of a permissive character. The administrative provisions should be adapted to agricultural and sparsely settled areas as well as to industrial sections, through the use of alternative procedures in raising the funds and furnishing the services

7 The costs of cash payments to serve in partial replacement of wage loss are estimated as from 1 to 15 per cent of pay roll.

8 The costs of health and medical services, under health insurance, for the employed population with family earnings up to \$3,000 a year, is not primarily a problem of finding new funds but of budgeting present expenditures, so that each family or worker carries an average risk rather than an uncertain risk. The population to be covered is accustomed to expend, on the average, about 45 per cent of its income for medical care.

9 Existing health and medical services provided by public funds for certain diseases or for entire populations should be correlated with the services required under the contributory plan of health insurance.

10 Health and medical services for persons without income, now mainly provided by public funds, could be absorbed into a contributory insurance system through the payment by relief or other public agencies of adjusted contributions for these classes.

11 The role of the federal government is conceived to be principally (a) to establish minimum standards for health insurance practice and (b) to provide subsidies, grants or other financial aids or incentives to states which undertake the development of health insurance systems which meet the federal standards

Promptly on the submission of these messages and reports to the Congress of the United States, Senator Wagner of New York submitted in the Senate S 1130, which is known as the Wagner Bill for Social Insurance. It covers specifically old age assistance, aid to dependent children, earnings and employment excise taxes. It sets up a social insurance board composed of three persons appointed by the President, to be a part of the Department of Labor. This board is authorized, with the approval of the Secretary of Labor, to appoint and fix compensation of all officers, attorneys and experts needed, without regard to civil service laws. Under this board will come the control of old age insurance, unemployment compensation, accident compensation, health insurance and related subjects. Annuity certificates and taxes on payrolls of 3 per cent are provided as means of raising funds.

Under the heading maternity and child welfare, this bill appropriates \$4,000,000 annually to enable the federal government to cooperate with the state agencies of health in extending and strengthening services for the health of mothers and children, especially in rural areas

and in areas suffering from severe economic distress. This is to be administered by the Department of Labor. Each state is to get \$20,000 annually, and \$1,000,000 is to be apportioned among states in proportion to the respective live birth rates. The Secretary of Labor may apportion \$800,000 among states that are unable to match the federal appropriation. Furthermore, the Secretary of Labor may use the remainder to make special demonstrations and conduct research in maternal care. To secure the federal funds, the states must submit their plans to the Children's Bureau and obtain approval.

For the care of crippled children the Wagner bill provides \$3,000,000 annually, to be handled in much the same way as the funds for maternal and child welfare are to be handled, also subject to approval of the Children's Bureau.

For child welfare services \$1,500,000 annually is allotted, also distributed and controlled along the same lines.

Finally, the Wagner bill appropriates \$10,000,000 annually to be administered by the Bureau of the Public Health Service. The bureau is to allot \$8,000,000 to the states in amounts determined on the basis of the need of each state for such assistance, to develop state health services, including the training of personnel for state and local health work and for the purpose of assisting counties or other political subdivisions of the states in maintaining public health programs. The sum of \$2,000,000 is to be made available annually to the Public Health Service for the further investigations of diseases and problems of sanitation and related matters.

This, then, is the outline of plans by the federal government for immediate action in relationship to economic security, and also a general outline of what may be anticipated in the way of a system of sickness insurance to be proposed about March 1. It is understood that the Wagner bill is to be a first order of business with the Congress now in session. *THE JOURNAL* has repeatedly called attention to the political situation, which indicates that any measure proposed by the administration is likely to have legislative approval and to pass speedily into the law of the land.

Physicians will recognize in the plans for maternal and child welfare, and for the care of the crippled, a repetition of the methods operative under the Sheppard-Towner law, except that the money now to be made available is somewhat in excess of what was then used for these purposes.

The work of the United States Public Health Service is worthy of generous support. The amount of money now spent for preventive medicine is insignificant compared to the total budget of the nation for medical purposes.

Readers of *THE JOURNAL* need not be reminded of the various criticisms that have been brought against the use of federal subsidies to the individual states to

induce legislation by the states. Essentially this provides federal control, because all plans for expenditure must be approved by a federal bureau before the appropriation can be secured. Moreover, the states that fail to cooperate merely deprive themselves in order to make more money available to other states. Finally, most of this important medical work is placed in the Department of Labor, under what is essentially non-medical control, instead of being correlated under the United States Public Health Service. Again and again, plans have been suggested for gathering together the medical services of the federal government under some single leadership of a medical character, yet these services remain distributed through the Department of the Interior, the Department of Labor, the Department of Agriculture, the Treasury and others. Now it is proposed that the Social Insurance Board shall undertake still other responsibilities, some of which inherently involve medical considerations. Fortunately, all concerned realize the complex character of the problems to be approached and all seem willing to undertake these projects in an experimental manner, subject to such revisions and modifications as may be necessary.

The point of view of the American Medical Association is apparently clear to the Committee on Economic Security. It is the only nongovernmental organization specifically mentioned by name in the Report of the Committee on Economic Security. Moreover, the eleven broad principles outlined by the committee as fundamental to the design of a sound plan of health insurance reflect distinctly the ten principles to control experiments in medical practice adopted by the House of Delegates of the American Medical Association at its meeting in Cleveland last June. Here are recognition of the importance of sustaining the quality of medical service, professional responsibility in administering medical care, free choice of physician and institution, continuance of private practice, exclusion of commercial intermediary agents, state rather than federal control, and other minor factors.

In submitting its eleven principles, may we again point out, the Committee on Economic Security says:

From the very outset, however, our committee and its staff have recognized that the successful operation of any such plan will depend in large measure upon the provision of sound relations between the insured population and the professional practitioners or institutions furnishing medical services under the insurance plan.

The committee states that it has already submitted this tentative plan to the various professional advisory groups organized for this purpose and it is announced that these advisers will not report until March 1. Time is therefore now available in which the medical profession as a whole as represented by the American Medical Association, and in smaller units as represented by state and county medical societies, may make its views clear both to the appropriate advisory committees and to the Committee on Economic Security. The American Medical Association has opportunity to pre-

sent its attitude to these bodies and, indeed, to Congress itself, when eventually legislation is promulgated to make the views of the committee a part of the national administration of our lives.

THE JOURNAL has emphasized repeatedly that no system of medical practice can succeed unless the medical profession gives it whole-hearted support and cooperation. Physicians everywhere must make themselves fully conversant with the trend of the legislation that is proposed so that they may, in turn, enlighten the senators and representatives who speak for them in Congress. We seem to have impressed considerably with our point of view those who are undertaking the development of these new experiments in the conduct of medical care. We must not lose heart. Convinced of the righteousness of our attitude, knowing that the medical profession alone understands the fundamental human factors at the basis of the best medical care, it is our duty to do our utmost to make our point of view prevail. This we must do not only for economic security but also to secure to the American people a continuance of the high quality of medical care that has been theirs up to now.

DIET AND RELIEF

In the establishment of various relief bodies, much consideration has been given to the development of relief rations suitable to the people to whom they are distributed. It has long been known that there are racial differences as well as national habits in relation to food consumption. Indeed, as was pointed out by Dr. Lafayette B. Mendel¹ before the annual session of the American Medical Association in 1932, definite epochs exist in the evolution of diet. Diets change not only through the introduction of new food substances but also as a result of changing habits and methods of work. In association with the development of motor cars and the introduction of many machines into industry there has been a lessening consumption of carbohydrates. In this connection the story of sugar is of especial interest. In 1823 its annual consumption was 8.8 pounds per person, in 1931 it was 108 pounds, and today it is from 99 to 100 pounds. Such a change in food habits is vitally significant to the industry involved in the production of food. Furthermore, the sophistication of food substances in their manufacture has tended to deprive them more and more of such essential substances as the vitamins and the mineral salts, which, it is realized today, are highly significant for health.

In the provision of any diet it is necessary, if one would have the food consumed by those who require it, to consider not only the essentials such as proper proportions of protein, carbohydrates and fats, mineral salts and vitamins but also those factors of racial taste

¹ Mendel, L. B. The Changing Diet of the American People. J. A. M. A. 99: 117 (July 9) 1932.

and preference which have so much to do with the creation or loss of appetite. A study of the foods consumed by people who eat at restaurants in which one can have all one wants of anything on the menu for a fixed price brought out the amazing information that there was less and less choice of heavy foods and more and more of desserts such as ice cream cake and chocolate eclairs. Experts in the field of nutrition have pointed out repeatedly that it is unsafe to trust the individual to the guidance of the appetite alone, even though some evidence with lower animals indicates that they will satisfy their appetites and at the same time obtain suitable nutrition. Babies and the lower animals are not guided as are adult human beings by what is rather flatteringly called human intellect.

Thus it has been necessary for relief organizations in preparing rations of food for various families to work out lists that will appeal to various racial and national groups. Since there are many different groups in the United States, the Illinois commission found it expedient to develop four standard dietaries, planned for seven persons in a family, and to emphasize to these people the desirability of adding fruits, vegetables, eggs and milk to the materials supplied by relief commissions. The four dietaries are listed as general, southern, Italian and Jewish dietaries. The cereal products in these selections include, for example, spaghetti for all the groups, eliminate macaroni from the southern and Jewish groups, and include extra amounts of macaroni and vermicelli for the Italian group. For example, the general, southern and Jewish lists provide 2 pounds of spaghetti per month, whereas the Italian list includes 15 pounds of spaghetti per month. The general diet provides rather large quantities of navy beans, which are eliminated from the southern diet. The Jewish list fails to include pork and beans but does include four cans of sardines to three in the Italian and general lists and two in the southern list. The southern list includes 4 pounds of salt pork, which is entirely eliminated from the other three lists.

Such considerations are of the greatest importance for physicians who are concerned with the provision of suitable food for the sick. Nutritional benefit, as has been pointed out by H. C. Sherman, comes from what we eat rather than from lists of what we should eat. Money spent for food that is not eaten represents a serious wastage, particularly in a period when economic considerations must dominate many others. Furthermore, the rapid advancement of our knowledge has given opportunity to exploitation by the charlatan and the commercially minded who do not hesitate to abuse the truth in their promotions. The application by scientific medicine of the nutritional knowledge now already available has done much to improve health. The opportunities for the future are limited only by the possible increase of knowledge and the extent of its application.

Current Comment

METASTASES FROM THYROID TUMORS

When malignant thyroid tumors metastasize in distant and unexpected locations, the cells of the primary tumor have usually invaded the blood vessels and have thus been disseminated in the blood stream. In a study of 124 cases of metastatic lesions, Dinsmore and Hicken¹ found that (except for the cervical lymph nodes) the most common site of metastases was the lungs, and next the bones. The theory that the development of the transported cells into large metastatic tumors depends on a correct affinity between the cancer cells and the organ where they lodge would seem to explain the tendency of epithelial tumors of the thyroid to metastasize to bones. It is evident that metastases occur more frequently where the red bone is found, in the skull, vertebrae, pelvic bones, ribs and the proximal end of the humerus and femur. The highly nutritive bone marrow may encourage the growth of the metastatic tumor until it destroys the adjacent bone by pressure and thus produces a pathologic fracture or even invades the soft tissues adjacent to the bone and finally ulcerates through the skin. The first sign of a primary thyroid tumor may be a metastatic tumor in some bone. In such cases the primary tumor may be so small that it can be recognized only by a histologic examination of the metastases in the bone. The unusual sites of metastases of thyroid tumors are the liver, kidneys, brain, heart, and soft tissues of the orbit of the eyes. The concept of the "benign metastasizing goiter," which was encouraged by Cohnheim's case reported in 1876 and in which some still believe, is confusing and should be abandoned. This interesting study, made at the Cleveland Clinic, shows further that accurate diagnosis requires an ever increasing breadth of knowledge.

RETENTION OF MANGANESE

One of the newer points of interest in nutrition pertains to the physiologic importance of chemical elements that are unusual because they occur in the diet in extremely small amounts. Certain of these, notably iodine and iron, are known to be constituents of compounds essential to the normal function of the body, copper and perhaps other metals appear to be concerned rather with certain metabolic processes. Among the latter group, manganese has received considerable attention. Elimination of this element from an otherwise adequate experimental ration has been shown to produce sterility in the male and interference with normal lactation in the female. At birth the concentration of manganese is higher than at any time later, indicating an accumulation in fetal tissues during intra-uterine development. Whereas the amount stored in the tissues can be increased by feeding this element, none was found in the organs of experimental animals consuming a manganese-free ration. Information regarding the biochemical significance of this metal has been extended to human subjects in a recent study by Ever-

¹ Dinsmore, R. S. and Hicken, N. F. Metastases from Malignant Tumors of the Thyroid. *Am. J. Surg.* 24:202 (May) 1934.

son and Daniels¹ Determinations of the retention of manganese in three girls and four boys ranging in age from 3 to 5 years were made over ten day periods while three adequate diets differing only with respect to the content of manganese were being consumed. It was observed that the excretion of the metal in the urine was extremely low. A large part of the manganese was lost in the feces the proportion varying from 80 to 90 per cent of the amount consumed. With daily intakes of 0.113, 0.158 and 0.307 mg per kilogram of body weight the retention was 0.01, 0.031 and 0.059 mg per kilogram of body weight respectively. Assuming that the maximum retention is optimal, the conclusion is reached on the basis of the Iowa study that the diet of children should contain from 0.2 to 0.3 mg of manganese per kilogram daily. Despite the inevitable limitations to interpretation, these observations provide additional data regarding one aspect of nutrition that is attracting increasing attention.

Medical Economics

RECENT BRITISH HEALTH INSURANCE COSTS

The Fifteenth Annual Report of the Ministry of Health of Great Britain covering the fiscal years 1933 and 1934, supplies some interesting facts concerning the workings of the British health insurance system.

"The number of insured persons entitled to medical benefits was approximately 15,150,000." There were 15,500 doctors in insurance practice. About 10,000 druggists supplied medicines and appliances. The total cost of medical benefit was £8,420,000 (\$42,100,000).¹ These figures show that the average expenditure for medical relief was \$2.77 per person annually.

The physicians received for attending and treating insured persons, £6,077,000 (\$30,385,000). According to these figures, insurance physicians received close to \$2 per person annually.

In spite of all the restrictions and denunciations of over-medication, the report says:

"There was an increase of nearly 6 per cent in the number of insurance prescriptions dispensed in 1933 as compared with 1932, the numbers rising from 56,081,507 to 59,338,504 and the average number of prescriptions issued per insured person entitled to supplies increased from 4.19 to 4.56.

"The total of the chemists' accounts rose from £1,865,123 (\$9,325,615) (in 1932) to £1,985,885 (\$9,929,425) (in 1933, representing \$0.65 per insured person) and the following movements in the cost of the service also occurred:

	1932	1933
Average ingredient cost (in pence) per prescription	3 594d (\$0.0718)	3 643d (\$0.0728)
Average total cost of drugs and prescribed appliances per insured person entitled to obtain them from chemists	2s 9½d (\$0.67)	2s 11½d (\$0.71)

"The above increases were mainly due to the prevalence of influenza during the earlier months of the year."

In addition to these sums a little over \$1,000,000 was paid for mileage. The physicians received directly for services approximately \$2,000 a year, out of which they were required to pay all their expenses except mileage as noted. Some of them dispensed their own medicines which accounted for about \$900,000 more. Since the mileage and the payments for medicines cover little more than out-of-pocket expenses, the actual gross income remains about \$2,000 annually, out of which all other expenses of practice must be paid.

To be sure, this is not the total income received by the physicians, since the great majority of them had some private practice. The fees for that practice, however, tend to be fixed in most localities at very low rates, owing to the standards set up by the insurance system. Although £9,000 (\$45,000) "was set aside to enable country doctors to attend courses of postgraduate study," only £2,830 (\$14,150) of this was expended. This "enabled 102 doctors to attend short courses of postgraduate study."

Much has been made of the fact that the proposal to abolish regional medical officers was objected to by the insurance practitioners because, it was claimed, these officers were available for consultation purposes. The report shows that only "1,472 'consultation' references were received, 1,443 from societies and 29 from insurance doctors." There has been a continual decline in the number of such references from insurance doctors and these figures would seem to indicate that the number of such consultations was close to the vanishing point.

"The total number of references for advice as to incapacity for work in 1933 was 503,254 (500,769 from Approved Societies, and 2,485 from insurance doctors). Of these references 202,514 (or 40 per cent) related to men, and 300,740 (or 60 per cent) related to women.

"The number of persons actually examined on 'incapacity' references was 268,157. The number who were reported to have received a final certificate before the date fixed for examination was 139,170, and 94,127 others did not attend for examination. Of the persons examined, 188,693 were reported as incapable and 79,464 as not incapable of work."

These figures continue to be a startling commentary on the difficulties of certification. The fact that over half a million such references are made annually in spite of all the regulations and cautionings that have been issued to restrict overcertification seems to be of considerable significance.

The largest single expenditure is still that for cash sickness benefits, which amounted to £9,562,000 (\$47,810,000). To this should be added "disablement benefit," which "is practically a continuance of sickness benefit at a reduced rate" and which amounted in 1932-1933 to £5,095,000 (\$25,475,000). The total payments for cash benefits is therefore, according to these figures, £14,657,000 (\$73,285,000), about \$4.92 for each insured person.

Expenditures for Health Service

Service	Expenditure	Total
Public health		
Hospitals, sanatoriums, dispensaries etc		
For tuberculosis	£ 3 600 698	\$ 18 003 490
For venereal diseases	439 308	2 196,540
For other diseases (diphtheria, smallpox, etc.)	3 356 044	16 780,220
General hospitals	3,244 895	16,224,475
Notification of disease general disinfection etc.	565 824	2 829 120
Salaries etc of medical officers of health sanitary inspectors and health visitors (so far as not allocated to specific services)	1 766 023	8 830 115
Maternity and child welfare	3,012 528	15 062 640
Vaccination	147 416	737 080
Port sanitary service	102 581	512,905
Welfare of the blind	958 693	4 793 465
Other health services	1 210 625	6 053 125
Mental hospitals and patients therein	8 783 502	43,917,510
	£27 188 137	\$135,940,685

Some of the proposed sickness insurance laws in this country that are offering much higher cash benefits than are paid in the English system and yet have set aside a smaller proportion of the total resources for this purpose than for medical relief would appear to be courting financial disaster. The total benefits, both cash and medical, and including several unlisted minor expenditures, in 1933 amounted to £26,790,000 (\$133,950,000), or approximately \$8.92 for each person insured.

The total receipts were £31,946,000 (\$159,730,000). Of this, £22,020,000 (\$110,100,000) was received from contributions by the insured and their employers. The men pay approximately 9 cents and the women 8 cents weekly, or about \$4.50 for the men and \$4 for the women annually. This may well be contrasted with the assessments proposed by most of the plans of

¹ Everson G. J. and Daniels Amy L. J. Nutrition 8 497 (Nov) 1934

² The British pound has been uniformly calculated as \$5 the shilling as 24 cents and the penny as 2 cents unless otherwise stated

2 McCleary G. F. National Health Insurance London H. K. Lewis & Co. Ltd 1932 p. 48

sickness insurance now being urged in this country, which call for employee contributions of from \$0.20 to \$1.80 weekly

The cost of administration is given as \$4,764,000 (\$23,820,000) which is approximately 14.9 per cent of the total receipts of \$31,946,000 (\$159,730,000). This is two thirds as much as was expended for the payment of physicians and about one fourth of the total cost of medical service and drugs. However there is much doubt whether this includes a considerable number of expenditures that are performed by other government departments such as the post office, for example and it does not include many forms of contribution to the health care of insured persons by public and private bodies.

In fact, the expenditures for other forms of medical care are steadily increasing, as is shown by the foregoing table

Association News

SPECIAL MEETING OF THE HOUSE OF DELEGATES

At the request of the Board of Trustees, a special meeting of the House of Delegates has been called by the Speaker of the House, to meet in Chicago at 10 a. m., Feb 15 1935

THE ATLANTIC CITY SESSION

Hotel Reservations

Hotels in Atlantic City report that many reservations are now being received for the annual session, June 10-14. The local Committee on Hotels, through which all hotel reservations are arranged, will do everything possible to secure the type of accommodations desired. However, it is an obvious advantage to make early application, and as an aid to those expecting to attend the session, a special "Hotel Reservations" page appears in the advertising section (page 41). This lists the hotels of Atlantic City and gives a complete schedule of rates for the various kinds of service. A reservation coupon is also provided, and it is suggested that the form be filled out and mailed at once to insure a better choice of accommodations.

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next three broadcasts will be delivered by Dr. W. W. Bauer. The titles will be as follows:

January 31	Thirty Six Thousand Deaths
February 7	Heart Diseases
February 14	Heart Valves

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next three broadcasts will be as follows:

January 29	Organizing for Health	Morris Fishbein M.D.
February 5	Pipes and a Pump	W. W. Bauer M.D.
February 12	Rheumatism and Gout	Morris Fishbein M.D.

Special Medical Broadcast Program

The American Medical Association will broadcast on a special program arranged through the courtesy of the National Broadcasting Company over a network of stations beginning at 6 p. m., eastern standard time Monday February 18. The program will include music and three speakers from among physicians in attendance at the Annual Congress on Medical Education and Medical Licensure meeting in Chicago on that day. The speakers will be introduced by Dr. Morris Fishbein. The speakers and their topics are as follows:

Advancement of Medical Education	Walter L. Bierring M.D.
The Prolongation of Life	Ray Lyman Wilbur M.D.
The Battle Against Tuberculosis	Kendall Emerson M.D.

ANNUAL CONGRESS ON MEDICAL EDUCATION, HOSPITALS AND LICENSURE

Program of Meetings to be Held in Chicago,
February 18 and 19

The thirty-first Annual Congress of the Council on Medical Education and Hospitals of the American Medical Association will be held at the Palmer House, Chicago, February 18 and 19. The Federation of State Medical Boards of the United States will participate in the congress. The program follows:

MONDAY, FEBRUARY 18, 10 A. M.

RAY LYMAN WILBUR M.D. Presiding

Report of the Council on Medical Education and Hospitals
Ray Lyman Wilbur M.D. Chairman, Stanford University, Calif.
Should the Number of Professional Students Be Restricted?
Raymond Walters, Litt. D., President, University of Cincinnati
Discussion Olin West M.D. Chicago
The History of Medical Licensure
Henry E. Sigerist, M.D., Director, Institute of the History of Medicine, Johns Hopkins University, Baltimore
Discussion Irving S. Cutter M.D. Chicago
The Larger Social Aspects of Medical Education
Richard E. Scammon, Ph.D., Dean of Medical Sciences, University of Minnesota Medical School, Minneapolis
Discussion Willard C. Rappleye M.D. New York.

Red Lacquer Room

MONDAY, FEBRUARY 18, 2 P. M.

FREDERIC A. WASHBURN M.D. Presiding

Tuberculosis: Institutional and Educational Aspects

Objectives of the Campaign Against Tuberculosis
Kendall Emerson M.D., Managing Director, National Tuberculosis Association, New York
Discussion Henry C. Sweany M.D. Chicago
Education of Physicians in Tuberculosis
James Alexander Miller M.D., Professor of Clinical Medicine, Columbia University College of Physicians and Surgeons, New York
Discussion James J. Waring M.D. Denver
Some Historical Aspects of Tuberculosis
L. J. Moorman M.D., Dean, University of Oklahoma School of Medicine, Oklahoma City
Discussion Kennon Dunham M.D. Cincinnati
Function of the General Hospital in the Treatment of Tuberculosis
J. A. Myers M.D., Professor of Medicine, Preventive Medicine and Public Health, University of Minnesota, Minneapolis
Discussion Edward S. McSweeney M.D. New York.

Red Lacquer Room

TUESDAY, FEBRUARY 19, 9 A. M.

JOINT SESSION OF THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS AND THE FEDERATION OF STATE MEDICAL BOARDS

ROY B. HARRISON, M.D. Presiding

Should the Practice of Radiology, Pathology and the Administration of Anesthetics Be Limited to Those Who Are Licensed to Practice Medicine?

Legal Aspects
William C. Woodward M.D., Director, Bureau of Legal Medicine and Legislation, American Medical Association, Chicago
Administrative Aspects
A. T. McCormack M.D., Secretary, Kentucky State Board of Health, Louisville
The Radiologist
B. R. Kirklin M.D., Mayo Clinic, Rochester, Minn.
The Pathologist
J. P. Simonds M.D., Professor of Pathology, Northwestern University Medical School, Chicago
The Anesthetist
F. H. McMechan M.D., Secretary General, International Anesthesia Research Society, Rocky River, Ohio
The Surgeon
Karl A. Meyer M.D., Medical Superintendent, Cook County Hospital, Chicago
The Internist
James S. McLester M.D., President Elect, American Medical Association, Birmingham, Ala.
The Hospital Administrator
A. C. Bachmeyer M.D., Director of Clinics, University of Chicago
The Licensing Board
Walter L. Bierring M.D., President, American Medical Association, Des Moines, Iowa
Discussion Albert Soland M.D., Los Angeles; J. J. Moore M.D., Chicago; and William R. Davidson M.D., Evansville, Ind.

Red Lacquer Room

TUESDAY, FEBRUARY 19, 2 P. M.

J. H. MUSSEY M.D. Presiding

Osteopathy and Licensure
Frederick Etherington M.D., Dean, Queen's University Faculty of Medicine, Kingston, Ont.
Discussion William D. Cutter, M.D. Chicago
Extension Teaching in Medicine
Charles Gordon Heyd M.D., Professor of Clinical Surgery, New York Post-Graduate Medical School, New York
Discussion George B. Zehner M.A., University, Ia.
Daniel J. Glomset M.D., Des Moines, Iowa
Discussion A. S. Berg M.D. Boston

Are Interns Practicing Medicine?

Harold Rypins M.D. Secretary New York Board of Medical Examiners Albany

Discussion J. W. Bowers M.D. Fort Wayne Ind

Uniform Standards in Licensure

Charles B. Pinkham M.D. Secretary California Board of Medical Examiners Sacramento

Discussion Arthur W. Booth M.D. Elmira N. Y.

EXECUTIVE SESSION FEDERATION OF STATE MEDICAL BOARDS

Red Lacquer Room

Federation Dinner

The annual dinner of the Federation of State Medical Boards of the United States will be held Monday at 6:30 at the Palmer House. All attending the congress are invited.

PROGRAM

Address by Henry E. Sigerist, M.D. Director Institute of the History of Medicine Johns Hopkins University Baltimore.

Presidential address of Henry M. Fitzhugh M.D. Secretary Maryland Board of Medical Examiners Baltimore

Round table conference

Reduced Railway Fares

Reduced railway fares will be in effect for those who attend the congress. In some cases excursion rates are offered. In most instances, however, the reduced rate will be upon the certificate plan. This certificate must be obtained at the point of departure at the time of purchase of the railroad ticket to Chicago and must be countersigned by a representative of the railroad at the congress in order to entitle the holder to a reduced fare on the return trip.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Dr. Major Gives Scripps Lectures—Dr. Ralph H. Major, professor of medicine University of Kansas School of Medicine, delivered the annual Scripps Metabolic Lectures, January 10-12, La Jolla. The subject was *Bedside Clinics*.

Personal—Dr. Alexander M. Lesem, director of public health of the city and county, has been chosen president of the newly organized San Diego Public Health Association.—Dr. John M. Wakefield, Sutter Creek, has been appointed health officer of Amador County, succeeding the late Dr. George L. Lynch.—Dr. Carlton C. Purviance has been named health officer of Fairfield, succeeding the late Dr. Henry V. Chmer.

Bills Introduced—S. 21 proposes to regulate the production and distribution of serums, vaccines, bacterial cultures and viruses and to require the licensing by the department of public health of persons manufacturing, preparing and distributing such products. A. 8, to amend the workmen's compensation act, proposes to extend the benefits of the act to all persons performing services for any public body in return for aid or relief. A. 73 proposes to transfer to and vest in the state board of pharmacy all powers, duties and functions vested in the chief of the division of narcotic enforcement.

Popular Medical Lectures—James M. D. Olmsted, Ph.D., gave the first of the annual series of popular medical lectures sponsored by Stanford University School of Medicine, San Francisco, in Lane Hall, January 4. His subject was "Brain Activities." Dr. Harold K. Faber gave the second in the series, January 18, on "Poliomyelitis." Other lectures will be:

Dr. Maurice L. Tainter, February 1, *Dinitrophenol in the Control of Obesity*.

Nathan Van Patten, director of university libraries, February 15, *Quinine: The First Hundred Years*.

Dr. William P. Shepard, March 1, *Present Day Relationships Between Medicine and Industry*.

Dr. Mary H. Lavman, March 15, *Growth and Development in Infancy*.

Course in Ophthalmology and Otolaryngology—The fourth annual midwinter clinical course in ophthalmology and otolaryngology, given by the Research Study Club of Los Angeles, opened January 21 and will continue until February 2. At a dinner meeting, January 28, of the Los Angeles County Medical Association and the Research Study Club, the speakers will be Prof. Georges Portmann, professor of otorhinolaryngology, University of Bordeaux Faculty of Medicine, France; Drs. John

Γ Barnhill, professor of surgery of the head, Indiana University School of Medicine, Indianapolis; Harry S. Gradle, professor (extramural) of ophthalmology, Northwestern University Medical School, Chicago; and Webb W. Weeks, professor of ophthalmology, New York University, University and Bellevue Hospital Medical College.

CONNECTICUT

Dr. Winternitz Resigns as Dean—Dr. Bayne Jones Appointed—Dr. Milton C. Winternitz, whose term of office as dean of the Yale School of Medicine expires in June, has declined to be considered for reappointment; it was announced, January 15. Dr. Stanhope Bayne-Jones, professor of bacteriology at the school since 1932, has been named to succeed Dr. Winternitz for a period of five years beginning July 1. Dr. Winternitz has been teaching at Yale since 1917, first as professor of pathology and bacteriology and later as Anthony N. Brady professor of pathology, and has been dean since 1920. He will continue as professor of pathology. Dr. Bayne-Jones received his medical degree from Johns Hopkins University School of Medicine in 1914, having previously graduated from Yale. During the World War he served as medical officer with the British Expeditionary Forces for ten months, later was with the Twenty-Sixth Division of the American Expeditionary Forces, and finally with the rank of major was sanitary inspector of the Army of Occupation receiving the British military cross and the *croix de guerre*. From 1919 to 1923 he was associate professor of bacteriology at Johns Hopkins and for the next eight years was professor of bacteriology at the University of Rochester (N. Y.). While in Rochester he was also director of the Rochester Health Bureau Laboratories. On leave from Yale in 1932 and 1933, he was chairman for one year of the Medical Science Division of the National Research Council in Washington. Since 1931 he has been a member of the Council on Pharmacy and Chemistry of the American Medical Association. He is a former president of the Society of American Bacteriologists and of the American Association of Immunologists. Recently he was elected vice president for Section N of the American Association for the Advancement of Science. He is the author of many publications in his field. At Yale he is master of Trumbull College, one of the seven student houses.

DISTRICT OF COLUMBIA

Medical Bills in Congress—S. 368, introduced by Senator Capper, Kansas, and Senator Copeland, New York, and H. R. 4135, introduced by Representative Norton, New Jersey, propose to amend the Code of Laws for the District of Columbia to provide relief, aid, care and support for the aged.

Society News—Dr. Arthur H. Ruggles, Providence, R. I., among others, addressed the annual dinner meeting of the Washington Institute of Mental Hygiene, Dec. 7, 1934, on "Mental Hygiene and Education."—Dr. William Charles White was reelected president of the District Tuberculosis Association, Dec. 21, 1934.

ILLINOIS

Society News—Dr. John D. Camp, Rochester, Minn., addressed the Peoria City Medical Society, January 22, on "Significant Roentgenologic Changes in the Spine," and January 15 the speaker was Dr. George E. Shambaugh, Jr., Chicago, on "What Can Be Done for Sinus Disease?" Dr. George W. Parker was recently elected president of the society.—The La Salle County Medical Society was addressed at La Salle, January 10, by Drs. Italo F. Volini, Chicago, on "Etiologic Diagnosis of Heart Disease," and Robert A. Black, Chicago, "The Rheumatic Heart in Children."—Dr. Theodore N. Rafferty, Robinson, addressed the Crawford County Medical Society in Robinson, January 10, on "Intra-Abdominal Hemorrhage of Ovarian Origin."

Four Year Study of Accidents—In a recent report of accidents in Illinois for the four years 1930-1933 released by the state department of health, it was stated that accidents account for one in every seven deaths in some counties, while in others only one in twenty-five fatalities is attributed to accidents. For this period accidents were responsible for 23,905 deaths in Illinois, and of these 8,938 were charged to motor vehicle mishaps. For all accidents the highest rates prevailed in Alexander, Union, Christian, Morgan and Lake counties, in the order named, where the number of deaths ranged from 140 to 120 per hundred thousand of population. The most favorable rates prevailed in Menard, Pratt, Jasper, Wayne and Moultrie counties where the annual losses averaged from 36 to 40 per hundred thousand of population. For motor vehicles alone Lake County had the worst record by a wide margin, 60 deaths per

hundred thousand annually from automobile mishaps Next in order were Edgar, with a rate of 49, DeKalb, 43, Will, 42, McLean, 41, Grundy, 40, and Kankakee, 40 Calhoun County was the only one in which no death was attributed to motor vehicles The state at large had an average loss of 77 per hundred thousand from all accidents for the four years

Chicago

Dr Greenough Gives McArthur Lecture—Dr Robert B. Greenough, Boston, will deliver the eleventh Lewis Linn McArthur Lecture of the Frank Billings Foundation of the Institute of Medicine, February 22 His subject will be "Cancer Education in Medical Schools"

Hospital News—Cook County Hospital cared for 70,427 patients during the fiscal year ended December 1, an increase of 153 over the number hospitalized in 1933 The daily average is 2,680 patients for 1934 as compared with 2,652 during 1933, according to the *Chicago Tribune*—Prof Ulrich Friedemann of the staff of the British National Research Council lectured at the Albert Merritt Billings Memorial Hospital on "Experimental Investigation on the Blood-Brain Barrier in Infectious Diseases"

Society News—Dr Ludwig Fraenkel, professor and head of the department of gynecology and obstetrics, University of Breslau, Germany, gave an illustrated lecture before the Institute of Medicine of Chicago and the Chicago Gynecological Society, January 15, his subject was "Etiology, Diagnosis and Treatment of Parametritis."—Speakers before the Chicago Society of Internal Medicine, January 28, will be Dr William S Hoffman on "Relation of Serum Inorganic Sulphate to Renal Efficiency", Dr Franklin C. McLean and Albert Baird Hastings, Ph.D., "Clinical Observation of the Calcium Ion Concentration in the Blood," and Dr Géza de Takáts, "Observations on Buerger's Disease."

KANSAS

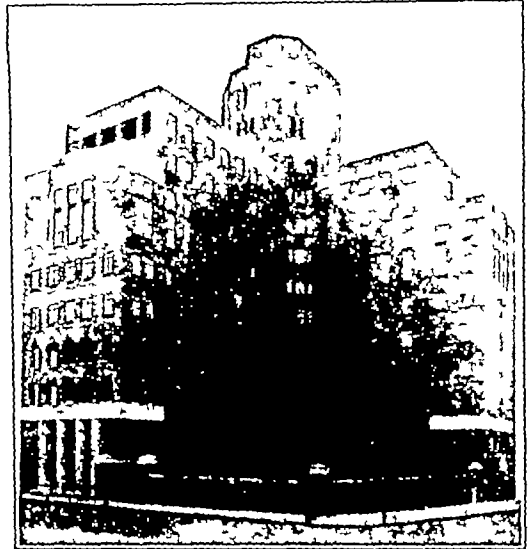
Bills Introduced—H 55 and H 56 propose to authorize the licensing of dental hygienists by the board of dental examiners Such licentiates are to be permitted to remove calcic deposits, accretions and stains from the surfaces of the teeth but are not to perform any other operation on the teeth or tissues of the mouth. A dental hygienist is to be permitted to operate only under the general direction or supervision of a licensed dentist, in his office or in any public school or other institution. S 63 proposes (1) to require each party to a proposed marriage, as a condition precedent to obtaining a license to marry, to present a certificate from a licensed physician that he or she is free from mental and venereal disease, (2) to limit to \$3 a physician's fee for examining each party, and (3) to provide that no license shall issue when either party is epileptic, feeble-minded, idiotic, insane, or has any venereal disease.

MARYLAND

Society News—A joint meeting of the Baltimore City Medical Society and the Mid-Atlantic Urological Society, January 18, was addressed by Drs Howard A. Kelly, Baltimore, on "Radium Treatment of Bladder Tumors Benign and Malignant", Ray M. Bobbitt, Huntington, W Va on 'Experiences in Prostatic Resection in Carcinoma of the Prostate', Harry A. Fowler, Washington, D C, "Pseudomembranous Trigonitis What Is It? What Can We Do for It?", Benjamin S Abeshouse, Baltimore, "Gastro-Intestinal Symptoms in Diseases of the Upper Urinary Tract, the So-Called Retroperitoneal Syndrome," and Horatio N Dorman, Washington, D C, "Necrosis of the Testicle Following Bladder Neck Surgery"—At a meeting of the Osler Historical Society, Baltimore, January 15, Dr Jesse W Downey Jr, Baltimore, presented "Brief Notes on the Ear in Medical History, with an Exhibition of Some of the Earliest Textbooks on Otology," and Dr David I Macht, "A Pharmacological Appreciation of Shakespeare's Romeo and Juliet."—Dr Victor F Cullen, State Sanatorium, discussed "Late Developments in Tuberculosis" before the Allegany-Garrett Counties Medical Society in Cumberland, Dec. 14, 1934—The Baltimore County Medical Association was addressed, Nov 21, 1934, by Dr Perrin H Long on the common cold.—Dr Alan C Woods, Baltimore, addressed the Frederick County Medical Society, Nov 20, 1934 on "Ocular Tuberculosis, Its Diagnosis and Treatment."

University Hospital Dedicated—The dedication of the University Hospital of the University of Maryland, Baltimore took place, Dec. 15, 1934 Dr Irving S Cutter dean, Northwestern University School of Medicine Chicago, gave the dedicatory address Other speakers included Albert C. Ritchie

then governor of Maryland, and Dr Alan M Chesney, dean of Johns Hopkins University School of Medicine Located at Redwood and Greene streets, the building is ten stories high, with the center portion carried up into a tower to provide five extra floors The exterior of the structure is plain brick Purchased steam heats the building, doing away with the necessity of a boiler plant The building is in the shape of a cross with wings radiating in four directions from a common center, providing a means of communication up through the center, without transgressing any department and yet readily accessible to all departments It also provides for a separation between the teaching wards and pay wards and still gives each department its own floor or portion to itself An unusual feature is that practically all the specialized treatment service has been concentrated on one floor, the second The arrangement of the space from the second floor to the eighth has been designed for teaching, while the ninth and tenth floors have been set aside for private and semiprivate pay patients One section of the floors for obstetric and pediatric patients has been reserved for those who require special services Of the 394 beds in the new hospital seventy-one are for private patients,



The new University Hospital

sixty-five for semi-private and 258 for ward patients About \$1,500,000 was allocated in 1932 by the general assembly to erect the building The old University Hospital was built in 1896, although the institution itself was established in 1823 This structure, which provides 250 beds, forty-five of which are devoted to Negro patients, will be remodeled and used for a general outpatient department

MASSACHUSETTS

Bills Introduced—H. 713, to amend the workmen's compensation act, proposes to limit the medical and surgical aid to an injured employee for which the employer is liable to a period of two weeks immediately following the injury Under the present law the employer must render such aid for the first two weeks after the injury, but, if the employee is not immediately incapacitated thereby from earning full wages, the time of such liability on the part of the employer dates from the beginning of the incapacity H 755 proposes to provide (1) that no person shall be required to submit to any form of vaccination or inoculation unless the physician supplies a written guaranty of the purity of the virus to be used, and (2) that any physician vaccinating a child, without the consent of the parents or guardians, or an adult without his consent shall be personally liable for all injuries resulting therefrom H 768 proposes to provide for the establishing under the state department of health of a system of clinics to which persons arrested for intoxication may be committed for treatment

MICHIGAN

Bill Introduced—S 45, to amend the workmen's compensation act, proposes to make compensable any incapacity or disability arising out of and in the course of any employment covered by the act This would bring under the coverage of the act all manner of disease and injuries, whether accidental or otherwise

Dr Barker to Give Beaumont Lectures—Dr Lewellys F Barker, professor emeritus of medicine, Johns Hopkins University School of Medicine, Baltimore, will deliver the Beaumont Lectures of the Wayne County Medical Society, Detroit, February 4-5, on "Heredity and Environment in Relation to the Handicapped." The subtitle of his first lecture will be "The Origin and Nature of Human Handicaps" and the second "The Amelioration of the Condition of the Handicapped and the Possibilities of Reduction of Their Numbers by Modification of Heredity and Environment." Dr Barker will address the students of Wayne University Medical School the morning of February 5, on "Major and Minor Medical Morals."

Dr Furstenberg Appointed Dean—Dr Albert C Furstenberg, professor of otolaryngology, University of Michigan Medical School, Ann Arbor, has been appointed dean to succeed Dr Frederick G Novy, who recently resigned. Dr Furstenberg graduated from the University of Michigan in 1915. Since his internship he has been a member of the faculty of his alma mater in various capacities until his appointment in 1932 as professor and head of the department of otolaryngology. It was simultaneously announced that a division of health sciences had been created to serve as an advisory unit to the university. It will include the medical school, school of dentistry, division of hygiene and public health, school of nursing college of pharmacy and department of postgraduate medicine. Dr James D Bruce, vice president of the university and head of the department of postgraduate medicine, has been named chairman of the newly created division. Both appointments are effective with the beginning of the second semester, February 9. The appointment of an executive committee was also announced. Dr Furstenberg, chairman, Dr Harley A Haynes, director of the university hospital, Dr Bruce, Dr Frederick A Collier, director of the department of surgery, Dr Carl V Weller, professor of pathology, and Dr Udo J Wile, professor of dermatology.

MINNESOTA

Bill Introduced—H 7 proposes to make it unlawful for any person to raise marijuana or prepare or manufacture marijuana into any product usable for smoking purposes.

NEW YORK

Coordination of Medical Society Activities—The council of the Medical Society of the State of New York, at a meeting Dec. 13, 1934, adopted resolutions authorizing the formation of special committees in the district branches of the society to study the objectives of various organized groups that exist within organized medicine. These committees are to endeavor to coordinate the efforts of members of the organized profession along parallel lines within the framework of the ten-point program of the American Medical Association. If and when any common ground is found and a conclusion reached, the committee is to report to the public relations committee of the state society, which may hold further hearings at its discretion and report to the council, the executive committee or to the house of delegates. If reports of the district committees are not in accord the public relations committee is to confer with the committees with a view to finding common ground between them.

Bills Introduced—S 123, A 150 and A 210 propose apparently to do away with the right which both the employee and the insurance carrier now have of selecting physicians at their own expense to participate in such physical examinations of the employee as may be required by the industrial board or by the industrial commissioner. A 185, to amend the medical practice act, proposes to make it unlawful for any one other than a licensed physician to conduct, direct, supervise or control the work or reports of a clinical laboratory, which is defined as a laboratory in which tests are made on individual persons, their secretions, excretions, blood and tissues to aid in the diagnosis, prognosis or treatment of the individual's physical or mental state or states. The provisions of this bill, however, are not to apply to qualitative or quantitative analysis of urine by a licensed pharmacist nor to a clinical laboratory director duly licensed to conduct, direct or supervise a clinical laboratory within the city of New York, nor to any person who has conducted, directed or supervised a clinical laboratory in the state for a period at least six months prior to the date this bill may become enacted. A 195 proposes to amend that provision in the vital statistics law which requires that the personal particulars called for in a certificate of birth shall be authenticated by the signature of an informant, who may be any competent person acquainted with the facts by provid-

ing that such personal particulars shall be obtained from a competent person acquainted with the facts. S 208 proposes to accord to physicians, nurses and hospitals, treating persons injured through the negligence of another liens on all judgments, settlements or compromises accruing to such injured persons by reason of their injuries.

New York City

Society News—Dr Charles H Hochman addressed the Bronx Pathological Society, January 15, on "Traumatic Rupture of the Brain Stem as a Cause of Sudden Death"—Drs El H Rubin and Theodore J Curphey addressed the Bronx County Medical Society, January 16, on "Modern Treatment of Pulmonary Tuberculosis" and "Recent Advances in Diagnosis and Treatment of Pneumonia," respectively.

Lectures in Bronx County—The winter session of lectures sponsored by the Bronx County Medical Society at Bronx hospitals has been announced as follows:

January 21, Dr Solomon Bilson Diabetes in the Young

February 4 Dr Milton J Goodfriend Uterine Bleeding in the Last Trimester

February 11, Dr Joseph Golomb Practical Points in Handling Children

February 18 Dr Henry Roth Minor Surgery

Special Study of Osteomyelitis—The Hospital for Joint Diseases announces that it is making a special study of the maggot treatment of osteomyelitis, for which patients living in or near New York may be referred for observation and treatment. Physicians who wish to refer bed patients are asked to telephone the hospital for reservations, ambulatory patients should be sent to the outpatient department Monday, Wednesday and Friday mornings.

Hospital Closes for Lack of Funds—St. Mary's Hospital for Children, established in 1870, closed its doors Dec. 31, 1934, because of insufficient income. Plans are now in the making to reopen the institution in the spring as a convalescent hospital for children. The hospital formerly operated two convalescent homes at Norwalk, Conn., and Peekskill, N. Y., but both have recently been closed for lack of funds. Last year 65.8 per cent of the ward services and 79.2 per cent of the outpatient department services were rendered free. This is the second hospital in New York to close within a month, the first having been the New York Nursery and Child's Hospital, founded in 1823.

Diabetes Association Formed—The New York Diabetes Association has recently been formed in affiliation with the New York Tuberculosis and Health Association to carry on a campaign against the disease, to be financed by a special contribution of \$15,000 made by Lucius N Littauer. The new organization will act as a clearing house for the study of diabetes as a health problem, devise measures for its control, assist in the formation of an association of clinics dealing with diabetes, develop graduate instruction for physicians, carry on health education of the general public in matters relating to diabetes, and obtain the provision of insulin for indigent sufferers and nursing service and hospitalization for all who require it. In its council will be included representatives of the tuberculosis and health associations, New York Academy of Medicine, city departments of health and hospitals, the five county medical societies, the schools of medicine, public and private hospital authorities, social and welfare agencies and interested laymen. Mr Littauer, a manufacturer, has previously contributed large amounts for support of public health activities, notably gifts of \$50,000 to Albany Medical College and \$10,000 to New York University for studies on pneumonia.

NORTH CAROLINA

Society News—Dr Carl V Reynolds, Asheville, acting state health officer, was guest of honor at a dinner given by the Buncombe County Medical Society at Asheville, Dec. 22, 1934. Dr Julian A Moore was toastmaster and talks were made by Drs Paul P McCann, Sanatorium, president, Paul H Ringer, Asheville, president-elect, and Louis B McBraver, Southern Pines, secretary of the Medical Society of North Carolina. Other speakers included Drs Charles H Cocke, Gibbons W Murphy, Clyde E Cotton, Joseph B Greene, Gaillard S Tennent and Dr Reynolds, all of Asheville. About forty physicians attended.

OKLAHOMA

Bill Introduced—S 14 proposes to authorize the sexual sterilization of habitual criminals and define as an habitual criminal any person convicted to final judgment three times for the commission of felonies.

PENNSYLVANIA

State's Hospitals Gave Sixty Per Cent Free Care in 1933—In 124 Pennsylvania hospitals, 60 per cent of the 5,468,048 days of care given to patients in 1933 was free, according to a study recently made public by the Hospital Association of Pennsylvania. The bed capacity of the hospitals was 25,747 and the average cost per day of the 3,284,096 free days was \$375. The association estimated that if the same ratio of free to paid service existed in the remaining 297 hospitals and sanatoriums in the state, excluding public hospitals, the total cost of free care would have been about \$28,000,000. Outpatient or dispensary service maintained by 202 hospitals cost an additional \$3,187,464. These estimates do not include overhead charges or any evaluation of physicians' services.

Philadelphia

Medical College News—Mr. Alba B. Johnson, president of the board of trustees of Jefferson Medical College and Hospital, died January 8 of heart disease aged 77. Mr. Johnson was a former president of the Baldwin Locomotive Works and was active in civic, social and cultural organizations. William K. Gregory, Ph.D., professor of vertebrate paleontology, Columbia University, delivered the annual Alpha Omega Alpha Lecture at Jefferson, January 18, on "The Origin, Rise and Decline of Homo Sapiens."

Annual Meeting on Economics—The Philadelphia County Medical Society held its annual meeting on medical economics, January 23. Speakers were Drs. Francis F. Borzell, chairman of the committee on medical economics of the Medical Society of the State of Pennsylvania, whose subject was "Organized Medicine and Social Insurance", Nathan B. Van Etten, New York, vice speaker of the House of Delegates of the American Medical Association, "The Medical Economics Program for 1935," and Arthur C. Christie, Washington, D. C., "Some Problems of Medical Care: Is Health Insurance the Solution?"

TENNESSEE

Bills Introduced—S. 83 proposes to create a council of public health, which "shall approve all the rules and regulations formulated by the department of public health" said council to consist of three licensed physicians, one licensed dentist, one sanitary engineer, one member of the Tennessee Congress of Parents and Teachers, one member of the Tennessee Federation of Women's Clubs, one educator, and one member of the American Legion Auxiliary, Department of Tennessee. S. 85 proposes to repeal the laws regulating the registration of nurses and to enact a new nursing practice act. Applicants for licenses must be high school graduates and be graduates of accredited schools of nursing, giving courses of not less than two years. A person not registered may practice nursing but not as a registered, trained certified or graduate nurse and may not use the title, letters or anything else to indicate that he or she is a registered nurse. H. 130 proposes to authorize the sexual sterilization of certain socially inadequate inmates of the Hospital for the Criminal Insane, of the Central State Hospital, of the Eastern State Hospital, of the Western State Hospital, of the Tennessee Home for Feeble-minded Persons, and of the state penitentiary.

TEXAS

Bill Introduced—H. 10 proposes to limit the hours of employees engaged in selling, at retail, drugs and medicines, and compounding physicians' prescriptions, to not more than an average of nine hours a day or 108 hours in any two consecutive weeks.

Medical Assembly in San Antonio—The third International Post-Graduate Medical Assembly of Southwest Texas will be presented in San Antonio, January 29-31. Among guest speakers will be

- Dr. Walter C. Alvarez, Rochester, Minn., "Diagnosis of Gastro-Intestinal Disease from a Good History"
- Dr. Joseph Brennemann, Chicago, "Present Status of Specific Prophylaxis and Serum Therapy in the Infectious Diseases of Childhood"
- Dr. Edward W. Alton, Ochsner, New Orleans, "Treatment of Varicose Veins"
- Dr. Clifton M. Miller, Richmond, Va., "Errors of Refraction and the Importance of Correcting Them."

Several physicians from Mexico will also appear on the program. There will be general sessions each day and evening, with sectional meetings at noon luncheons.

Society News—Drs. Robert K. Lowry, Seymour, and William P. Farrington, Mundy, addressed the Baylor-Knox-Haskell Counties Medical Society, Knox City, Nov. 13, 1934, on "Incent's angina and typhoid fever, respectively." Drs. Charles W. Flynn and Ozro T. Woods, Dallas, addressed the

Henderson County Medical Society, Trinidad, Nov. 5, 1934, on diseases of the gallbladder and tumor of the breast, respectively. Speakers at a meeting of the Tom Green-Eight Counties Medical Society in San Angelo, Nov. 5, 1934, were three San Angelo physicians: Drs. Floyd T. McIntire, on "Etiology and Treatment of Arthritis", Rufus L. Powers, "Episiotomy and Low Forceps in Primipara" and William E. Schulkey, "Infections of the Hand." Drs. James Howard Shane and Charles H. Warren addressed the Dallas County Medical Society, January 24, on "Important Factors in the Management of Urinary Infections" and "Nonspecific Granulomas of the Gastro-Intestinal Tract," respectively.

VIRGINIA

Society News—Drs. Ernest Scott Elliott, Independence, Walter A. Porter, Hillsville, and Joseph Coates presented papers on pneumonia at a meeting of the Carroll-Grayson Counties Medical Society at Galax, Dec. 10, 1934. Drs. Marcellus A. Johnson Jr. and Julius D. Willis addressed the Roanoke Academy of Medicine, Dec. 3, 1934, on "A New Method for Treating Fractures of the Leg" and "Pericardial Accumulations," respectively. Drs. Meade C. Edmunds, Petersburg, and William G. Crutchfield, Richmond, among others addressed the Southside Virginia Medical Association, Dec. 11, 1934, on "Pulmonary Abscess Following Tonsillectomy" and "Acute Head Injuries," respectively. Drs. Griffin W. Holland, Eastville, and William W. Kerns, Bloxom, presented papers on dislocations of the shoulder joint and pneumonia, respectively, at a meeting of the Eastern Shore of Virginia Physicians' Journal Club, Dec. 11, 1934, at Nassawadox.

WEST VIRGINIA

Society News—The Marshall County Medical Society at its meeting, Dec. 11, 1934, adopted a resolution protesting against "misleading advertising of nostrums" over the radio and through other channels.

Health Officers' Meeting—The West Virginia Public Health Association and the State Health Officers' Conference met in joint session at Charleston, recently. Among speakers listed on the program were

- Dr. William H. Park, New York, "New Ways for Old in Diphtheria."
- Dr. Eugene L. Bishop, Nashville, Tenn., "Public Health—What It Is and How It is Administered."
- Dr. Oliver C. Wenger, of the U. S. Public Health Service, Hot Springs National Park, Ark., "Modern Control and Treatment of Syphilis from a Public Health Standpoint."
- Dr. Harry E. Kleinschmidt, New York, "What We Can Do to Control Tuberculosis."
- Dr. Eric M. Matsner, New York, "Some Neglected Phases of Maternal Health."

Dr. Turner E. Cato, New Cumberland, was elected president and Dr. John Thames, Charleston, secretary.

Conference of County Secretaries—The annual conference of the secretaries of county medical societies was held at the headquarters of the West Virginia State Medical Association, Charleston, January 3, with Dr. Joseph A. Striebach, Moundsville, as chairman. A discussion of emergency medical service under the FERA was led by Dr. Grattan G. Irwin, Charleston, and one on nursing service by Dr. Robert C. Hood, Clarksburg. Dr. James R. Bloss, editor of the *West Virginia Medical Journal*, spoke on "The County Secretary and the State Journal". Dr. Eugene S. Brown, Summersville, on "Functions of the Average County Medical Society," and Mr. Joe W. Savage, executive secretary of the state association, on pending legislation. Dr. Rome H. Walker, Charleston, president of the state association, welcomed the secretaries.

GENERAL

Infantile Paralysis Research Fund—Hundreds of entertainments will be held throughout the United States on President Roosevelt's fifty-third birthday, January 30, for the benefit of the President's Birthday Ball Commission for Infantile Paralysis Research. The President will address the guests in a nationwide broadcast late in the evening. This year 70 per cent of the funds will be distributed among local communities to further their infantile paralysis work and 30 per cent to the national fund for research. The fund will be augmented by contributions of 25 cents from each person who signs a multiple signature birthday greeting to the President, and the signatures will be bound in book form in New York.

Requests and Donations in 1934—Gifts for philanthropic purposes increased during 1934, according to a survey made by a firm of fund raising consultants in six large cities, but bequests declined. Health ranked fourth in the eight classifications for which the study was made. In 1934 gifts for promotion of

health amounted to \$3,875,406, in comparison with \$1,178,600 in 1933. Bequests, however, declined from \$16,349,835 in 1933 to \$7,904,709 in 1934. The total amounts contributed for charitable objects in New York, Chicago, Philadelphia, Baltimore, Washington and Boston for the two years were \$142,533,548 for 1933 and \$112,602,266 in 1934. The decline in bequests in the six cities was from \$99,840,290 to \$58,579,670. Organized relief received the largest support, \$27,544,857, about \$5,000,000 less than in 1934. Increased support for education was evident in 1934, gifts having increased to \$13,325,301 from \$4,056,828 in 1933.

Changes in Status of Licensure—The State Board of Medical Examiners of Florida reports the following action taken at its meeting in Tampa, Nov. 12, 1934:

Dr. Joseph M. De Gaetani, whose last known address was Miami, license revoked on two charges, that his license and diploma were fraudulently obtained through the old eclectic board and that he recently committed a criminal abortion. He was tried in the criminal court of Dade County on the latter charge but was pronounced not guilty.

Dr. Harper L. Proctor, Jacksonville, license revoked now serving a prison sentence for having violated the Harrison Narcotic Act.

Dr. Edward K. Tullidge, license revoked June 1931 on the ground that he had falsified in making application to the board, having asserted that he had never been convicted of a crime involving moral turpitude. It was later discovered that he had served a term in a federal prison. The supreme court reversed the action of the board on the ground that Tullidge was improperly notified when his trial took place. The license was revoked again at this meeting on the same charge.

The Board of Medical Examiners of the State of Oklahoma reports the following:

Dr. John Milton Thompson, Walters, license suspension changed from five years suspension to one year's suspension and four years probation. He may thus begin practice March 13, 1935.

Physicians Requested to Help Find Dr. Bigelow—Massachusetts authorities ask physicians throughout the country to watch for Dr. George H. Bigelow, director of the Massachusetts General Hospital and former state health commissioner, who has been missing since Dec. 3, 1934 and may be suffering from amnesia. Dr. Bigelow is 6 feet tall, weighs about 175 pounds, and has deep blue eyes and a heavy shock of black hair, closely cut and slightly gray at the temples. He is of rangy build. When he left home, he wore a soft brown felt hat, a black overcoat with a velvet collar, a brown suit, tan rubber-soled shoes, and a white shirt. He wore a square silver wrist watch with a leather strap and carried a brown pigskin brief case. He is 44 years of age. He disappeared, December 3, having left his home in Milton for his office in the Moseley Building at the Massachusetts General Hospital, Boston. He was to appear at 8 o'clock Tuesday evening, December 4, at the Staten Island Hospital to speak, and on Wednesday at the American Society for the Control of Cancer in New York City. The Massachusetts Department of Public Safety has the fingerprints of Dr. Bigelow. Hospitals are requested to take the fingerprint of all unidentified amnesia victims and forward the prints to the commissioner of public safety, Col. Paul G. Kirk, State House, Boston.



Dr. George H. Bigelow

Medical Bills in Congress—*Change in Status*. H. R. 3410, the Independent Offices Appropriation Bill, has passed the House and Senate. A Senate amendment which is subject to acceptance or rejection by the House authorizes payments not to exceed \$500,000, to state institutions caring for and maintaining veterans suffering from neuropsychiatric ailments, who are in such institutions on the date of the enactment of the act. *Bills Introduced*. S. 1130, introduced by Senator Wagner, New York; H. R. 4120, introduced by Representative Doughton, North Carolina, and H. R. 4142, introduced by Representative Lewis, Maryland, propose to alleviate the hazards of old age, unemployment, illness and dependence, to establish a social insurance board in the Department of Labor, to raise revenue, and other matters. These bills propose to create a social insurance board in the Department of Labor, which is to be authorized among other things to study and make recommendations as to legislation providing for health insurance. They provide federal subsidies contingent on state plans being acceptable to the chief of the Children's Bureau to promote maternal and infant welfare to care for crippled children and to provide for child welfare services. Federal

subsidies are further provided for the development of state and local health work. *S. Res. 55*, introduced by Senator Sheppard, Texas, proposes to create a Senate Committee on World War Veterans' Legislation. *S. 1132*, introduced by Senator Moore, New Jersey, proposes to authorize the Secretary of the Treasury to insure loans made by banks and other financial institutions, for the purpose of financing payment for medical and dental services. *H. R. 19*, introduced by Representative Fulmer, South Carolina, proposes to prohibit the sending of unsolicited merchandise through the mails. *H. R. 99*, introduced by Representative Smith, Washington, and *H. R. 2071*, introduced by Representative Taylor, Tennessee, propose to reenact all laws granting compensation, medical, hospital or domiciliary treatment to veterans that were repealed by the act of March 20, 1933. *H. R. 100*, introduced by Representative Smith, Washington, proposes to reenact laws relating to pensions for Spanish-American War veterans that were repealed by the act of March 20, 1933. *H. R. 150*, introduced by Representative Cochran, Missouri, proposes to authorize the Reconstruction Finance Corporation to make loans to any public or private hospital organized under the laws of any state. *H. R. 156*, introduced by Delegate Dimond, Alaska, proposes to extend the facilities of the Public Health Service to seamen on government vessels not in the military or naval establishments. *H. R. 1404*, introduced by Representative Lundeen, Minnesota, proposes to grant pensions and increases of pensions to certain soldiers and sailors of the war with Spain, the Philippine insurrection and the China relief expedition, and their widows and dependents. No pension is proposed by the bill for contract surgeons of the Spanish-American War. *H. R. 2760*, introduced by Representative Dingell, Michigan, proposes to authorize the Reconstruction Finance Corporation to make loans to nonprofit benevolent charitable corporations operating homes, hospitals or orphanages for sick and infirm persons, indigent persons of old age, mental defectives or orphans. *H. R. 2802*, introduced by Representative Johnson, Oklahoma, proposes to protect labor by providing for old age and disability pensions. *H. R. 2813*, introduced by Representative Kvale, Minnesota, proposes to extend the privileges of compensation and hospitalization to certain American citizens who volunteered in the French military forces without surrendering their American citizenship. *H. R. 2828*, introduced by Representative Lundeen, Minnesota, proposes among other things, to reenact all laws granting medical or hospital treatment, domiciliary care, compensation and other allowances to veterans and the dependents of veterans of the Spanish-American War, including the Boxer rebellion and the Philippine insurrection, which were repealed by the act of March 20, 1933. *H. R. 3005*, introduced by Representative Hoeppel, California, proposes to establish federal research fellowships to college graduates for the purpose of conducting research work for the benefit of the various departments of the federal government or for private industry in medicine, surgery, bacteriology, hygiene and other fields. *H. R. 3423*, introduced by Representative Tinkham, Massachusetts, proposes to direct the retirement of acting assistant surgeons of the United States Navy at the age of 64 years. *H. R. 3635*, introduced by Representative Mitchell, Tennessee, proposes to erect a veterans' hospital in middle Tennessee. *H. R. 3972*, introduced by Representative Mead, New York, proposes to prevent the manufacture, shipment and sale of adulterated or misbranded foods, drugs and cosmetics and to prevent the false advertisement thereof.

FOREIGN

Dysentery in Japan—The *New York Times*, January 11, reported an epidemic of infantile dysentery in Kawasaki, an industrial suburb between Tokyo and Yokohama. It was said that 850 cases had been reported since January 3, with 101 deaths.

Medical Center in Shanghai—Construction has been started on a medical center in Shanghai, China, according to the *New York Times*. Buildings will be erected on a twenty-one acre tract donated by the Rockefeller Foundation to the board of directors of the Shanghai Medical Center. The head of this board, which is made up of twenty-seven Chinese government officials, business men and physicians, is Dr. H. H. Kung, minister of finance of China. The first structure will be a hospital with accommodations for about 550 patients, but the plans call for an ultimate capacity of 1,000. The hospital will be financed with funds solicited by the Shanghai Medical Center, \$200,000 has already been subscribed. The Chinese government will finance the construction of a building on the same site for the National Medical College, plans for which have already been approved. This project will cost about \$125,000.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec 29, 1934

The British Medical Association and the Attempt of the Osteopaths to Obtain Registration

The second reading in the house of lords of the bill for the registration and regulation of osteopaths was reported in a previous letter. A special committee of the council of the British Medical Association is preparing a memorandum on osteopathy, and the medical secretary has prepared the following preliminary criticism. If the bill becomes law, two different classes of practitioners recognized under different acts will be set up. The purpose of the medical acts now in existence was to draw a clear line between persons who have and persons who have not passed through the authorized medical curriculum. This will be defeated. The student of osteopathy, after a course of instruction of considerably less duration than the medical student will be admitted to the register of osteopaths and entitled to hold himself out to practice in the wide field of medicine. A new type of practitioner will appear and the public will have to distinguish for itself between those who have satisfied the full requirements of the General Medical Council, those who have satisfied the lesser and different requirements of the Board of Registration of Osteopaths and those who have received no recognized training at all. Today any physician is free to practice any form of treatment which he regards as beneficial. Neither belief in osteopathy nor the practicing of it can exclude any one from the Medical Register. The General Medical Council, which controls practice, is expressly prohibited from making any distinction between practitioners following different theories or methods of treatment. Those who have a knowledge of the human body in health and disease sufficient to justify them in engaging in medical practice can satisfy the requirements of the General Medical Council and then adopt what methods they like.

Of the "osteopathy" which the bill is to recognize, little information is given by those claiming registration. It is described as a system of treatment by manipulation methods. Yet in clause 8 of the bill it is laid down that no one unless registered under this act shall practice osteopathy. The course of instruction is shorter than that demanded of the medical student. The effect of this would be to attract a new and inferior type of student. Yet on admission to the register he will hold himself out as qualified to practice practically the whole field of medicine. Such a register will prove a back door to medicine. Is this in the public interest? As the law stands the public can seek its treatment where it likes with the Medical Registrar to enable it to distinguish those who have satisfied minimum standards. Soon there will be demands from other cults and registers will multiply. The bill precludes any one not registered as an osteopath from practicing osteopathy, which is described merely as a system of manipulative treatment. It follows that physicians are to be prevented from using manipulative treatment. No monopoly of any particular system of treatment should be created. According to the bill the proposed board of registration will consist of a chairman appointed by the privy council, two persons representative of science, not being physicians appointed by the ministry of health and eight osteopaths five of whom are to be appointed by the British Osteopathic Association. How can a board thus created have an intimate acquaintance with medical science. Medical education must rest on a broad scientific foundation so that the student may be both competent in practice and trained to judge the value, or want of value of future developments. Such a training cannot be provided in institutions restricted to a particular theory.

Speaking at the annual dinner of the Medico-Legal Society Lord Horder made some crucial objections to the proposed registration. It was difficult for him to conceive how it was possible to erect a single therapeutic measure into a system of medicine, to eliminate the art of diagnosis and the basis of all medicine which was pathology, and proceed straight to treatment. He wondered what was going to happen to the British public if for diagnosis and the pathology that underlay diagnosis there was substituted one single treatment, however important, and if the man who had this one method of treatment at his command was to be elevated to the position of a registered medical practitioner. Still, if the public wanted it, let it be tried out. He did not think that physicians should protest too much against that sort of thing. The more they protested the more would osteopaths consider themselves martyrs and martyrdom was valuable propaganda.

The Edinburgh Chair of Clinical Medicine

The important Edinburgh chair of clinical medicine has been rendered vacant by the retirement of Prof Edwin Bramwell, who is widely known by his writings on myasthenia gravis, epilepsy and spinal tumors. He is the oldest son of the late Sir Byrom Bramwell, a great clinician who specialized in neurology at the end of the last century. Professor Bramwell is succeeded by Dr Edwin Matthew, physician to the Royal Infirmary.

Statistics on the Public Health for 1933

The Registrar-Generals Statistical Review for 1933, which has just been published, shows that the infant mortality was 64 per thousand live births. The rates for 1930, 1931 and 1932 were respectively 60, 66 and 65. Thus the rate for 1933 was only slightly in excess of that for 1930, which was the lowest on record. The death rate from tuberculosis was the lowest on record, being 824 per million of population, while the "comparative mortality" from cancer showed a slight decline. The death rate from puerperal sepsis was 175 per thousand births, which was 0.20 more than in 1932 but 0.09 less than in 1930. The death rate from suicide was 140 per million living, a decrease of 3 on the rate for 1932, which was the highest on record. These figures again show that no deterioration of the condition of the people has taken place, in spite of the unprecedented and persistent unemployment. Indeed, the general death rate from all causes, 12.3 per thousand, was only 0.9 above that for 1930, the lowest on record which is attributed to the exceptionally mild weather of the first quarter of that year. It may be added that the 1933 birth rate, 14.4 per thousand population, was the lowest ever recorded.

Treatment of Asthma by Exercises

The Asthma Research Council, whose last report was reviewed in THE JOURNAL, December 29, has issued an illustrated booklet on the treatment of asthma by exercises. The object of treatment is to restore the lungs and chest to normal size or to prevent distention from occurring. Ordinary breathing exercises, the object of which is to increase the expansion of the chest, are useless, as the asthmatic patient is already capable of expanding his chest to the maximum. If an asthmatic patient is told to breathe deeply, his respiration is seen to be almost entirely upper thoracic, in chronic cases the lower part of the chest is already fully expanded and remains immobile, the diaphragm being used only to a slight extent. The exercises are designed to teach the patient first, to use the lower part of the chest as well as the upper and secondly, to use the diaphragm more. They can be performed reclining on a bed, sitting on a stool or standing according to the patient's state of health. In any case the body should be held loosely with the arms by the sides. The patient should face a mirror, so that he can watch the effect of the exercises on his chest. They should be carried out with the aid of a remedial gymnast, but

the patient should practice some of them daily for the rest of his life, even if he remains free from asthma for months or years. They should be performed before breakfast, when the patient is feeling fresh, before going to bed to clear the lungs before sleep, and on the first sign of an impending attack, which may be aborted. Properly performed, they should cause wheezing and often coughing at the end of expiration. The exercises are mainly expiratory and the patient assists expiration by pressure with his hands on the lower part of the chest.

PARIS

(From Our Regular Correspondent)

Feb. 4, 1935

The Ear and Industrial Medicine

The ear and industrial medicine was the subject of a discussion at the French otorhinolaryngologic congress in October 1934. The first paper was by Causse. Only five countries (Bulgaria, Czechoslovakia, Germany, Mexico and Russia) have placed deafness that is the result of the worker's occupation on an equal footing, so far as indemnity is concerned with invalidity due to lead or mercury poisoning. There is no law of this kind in France.

Deafness from the standpoint of industrial medicine may be the result of injury to the skull, electricity, compressed air or intoxications and is also found in those engaged in occupations such as metallurgy and steel construction. The majority of cases of deafness in workers are due to traumatism of the head. Longitudinal fractures of the petrous portion of the sphenoid traverse the middle ear, while transverse fractures are more likely to involve the internal ear. The otologist is consulted most frequently in cases in which there has been a simple concussion of the brain without accompanying skull fracture. There is an absence of any relation between the degree of the injury and its sequelae. The patients in this first group are more likely to suffer from deafness than from vertigo.

Deafness due to electricity does not occur very often. Deafness may result in cases in which the current has not traversed the ear. In patients in this group the signs of deafness may appear quite a long time after the accident, thus making it difficult to determine the part the electrical shock has played. Accidents due to lightning belong in the same group. In divers or caisson workers the deafness is due to microscopic air emboli as shown by Paul Bert, the cochleovestibular apparatus being especially affected. One finds a sudden deafness or vertigo or both in most cases, but in some the symptoms do not appear immediately. Deafness or vertigo in such cases is not always permanent. Deafness due to intoxications is also not frequent, being seen most in the lead and next often in the mercury, arsenic or phosphorus industries. Deafness in those occupied in boiler or other riveting or railroad work is of increasing interest to otologists and is growing in proportion to the development of machinery in general. The otologist in making his report must always keep in mind the possibility of malingering, hence a thorough knowledge of the physiology of the internal ear is necessary.

In the discussion, Barraud of Lausanne emphasized the part played by modern mechanical devices and called attention to the deafness of soldiers in machine gun companies. Jacques of Nancy said that all cases of head or face injury should be examined as soon as possible after the accident.

Relation of Diabetes to Tuberculosis

A study of ninety-five cases observed at Labbe's clinic has been made by Thierry. Pulmonary tuberculosis is the cause of death in 40 per cent of diabetic patients and this percentage rises to 60 in severe diabetes accompanied by lack of assimilation of proteins. In severe cases of diabetes without such a metabolism disturbance tuberculosis is fatal in 30 per cent.

Tuberculosis may complicate diabetes at any period of life even in children in whom insulin has reduced the likelihood of a coma.

Certain types of infection, especially those due to pneumococci, favor the rapid development of pulmonary tuberculosis in diabetic patients. The latter disease in general favors such a complication on account of its tendency to disturbance to protein metabolism and the hyperglycemia. Reciprocally, an incipient tuberculosis or at least one subject to frequent acute exacerbations increases the severity of the diabetes. It causes acidosis to appear in 90 per cent of diabetic patients, and in 40 per cent such an acidosis is not compensated for, with resultant decrease in the alkali reserve and the development of a precomatous state. Tuberculosis causes carbohydrate intolerance and hence recurrence of the severe diabetic symptoms at the same time as the tuberculosis begins to manifest more acute signs. In 15 per cent of patients with diabetes, the tuberculosis appears in a pneumonia like manner. In about 16 per cent the onset is insidious with emaciation, loss of appetite and a subfebrile condition, while in 71 per cent there is a marked rise of temperature. Pneumothorax treatment should always be accompanied by reduction of carbohydrates and the administration of insulin. Such a treatment has resulted in a mortality of only 65 per cent during a period of four years in Labbe's service. Untreated pulmonary tuberculosis complicating diabetes results fatally almost invariably in eighteen months at the most.

Gonorrhea in Its Relation to Pregnancy

A careful study of 142 cases made at one of the large Russian maternities by Astrinsky and Grinner appears in the November 1934 issue of the French journal *Gynecologie et obstetrique*. The gonorrhea was verified bacteriologically in 135 of the 142 cases, and in the remainder the clinical changes were the basis of the diagnosis. Gonorrheal cervicitis and salpingitis do not exclude the possibility of conception. Pregnancy can activate a latent gonorrhea. The disease presents itself in a much more acute manner during pregnancy than in the nonpregnant female. Such complications as postpartum hemorrhage, abortion during pregnancy and hemorrhage during the puerperium are common. The presence of gonococci in the lochia does not give rise to any postpartum febrile reaction. The later the gonorrheal infection takes place in pregnancy, the more severe are the postpartum complications. One ought to treat gonorrhea during pregnancy in the same manner as in the nonpregnant patient.

Honorary Degree Bestowed on Professor Eiselsberg

At the beginning of each academic year it is the custom for the University of Paris to give honorary degrees to those whom the various faculties, law, sciences, letters and medicine recommend. Last year Dr. Harvey Cushing was thus honored, and this year Professor Eiselsberg of Vienna. Dean Roussy of the Faculty of Medicine eulogized Professor Eiselsberg in an eloquent address as being one of the pioneers, along with Billroth, of modern surgery. The career of Professor Eiselsberg has been a long one, and he has shown the unbiased method of thinking and the desire to investigate every new problem, which represents the highest type of modern research. Eiselsberg's work on the surgery of the thyroid, of the alimentary canal, of tumors of the nervous system and especially on that of the hypophysis, has been the means of aiding the rapid development of these subjects. Even though he has retired from teaching at the University of Vienna, Eiselsberg not only continues to work in his large private practice but follows with the keenest interest the progress of that branch of medicine to which he contributed so much. Many American surgeons who have visited the clinic of Professor Eiselsberg at Vienna will hail this recognition of his work as a justly merited honor.

Death of Dr Lucien Camus

The director of the vaccine laboratory of the Academy of Medicine, Dr Lucien Camus, died early in November 1934. He rendered invaluable services in the development of the technique of preparation of variola vaccines and the organization of centers all over France for such preparation. His work on the effect of currents of short wavelength on variola vaccine is well known. His annual report to the Academy on vaccination as a prophylactic measure against variola, was one of the most thorough of its kind.

BERLIN

(From Our Regular Correspondent)

Nov. 19, 1934

The Cost of Health Insurance in 1933

The expenditures of the municipal *krankenkassen* during the year 1933 have just been made public. The status of the *krankenkassen* as such has already been reported. The total expenditures (inclusive of losses incurred by the disposal of property and by other disbursements) of the municipal *krankenkassen* reached during 1933 the total of only 676.6 million RM compared to 713.2 million RM in the preceding year. In apportioning the total expenditures for 1933 to each member the sum is 59.84 RM, compared to 60.80 RM in 1932. The greatest portion of the total expenditures (79.6 per cent) was disbursed for sick benefit to the insured and their families. The average expenditure for sick benefit for each member and his family was 47.63 RM. Of this amount the disbursement for medical and dental services was 18.72 RM, for medicines 6.80 RM, for hospitalization and other nursing care 10.50 RM, and for sick pay, household and other expenditures, 11.60 RM.

The expenditures for the care of puerperal women amounted to 43.2 million RM in all that is to 6.4 per cent of the total disbursements. During 1932, 51.4 million RM was expended for this purpose. The disbursements for burial expenses amounted to 4.7 million RM during 1933. The costs of administration were 82.8 million RM in 1933 compared to 89.5 million RM in 1932 for each member these expenses have been decreased from 7.62 to 7.32 RM. The administration expenditures amounted to 12.2 per cent of the total disbursements and to 12.8 per cent of the income from premiums.

Within the scope of the benefits to the insured and the members of their families the treatment by licensed physicians (inclusive of services in kind and of transportation costs) called for 25.3 per cent of the income from premiums during the year 1933. 7.1 per cent of the income from premiums was expended for dental care, 10.5 per cent for medicine, 1.7 per cent for care in hospitals (exclusive of sojourns in spas) and 19.3 per cent for sick pay in cash.

New Details of Professional Affairs

The newly founded Academy for Medical Graduate Work in Berlin, which succeeded the older graduate institute, instructed about 1,200 physicians during the summer semester of 1934 in fifty courses. The majority came from the various parts of Germany (non-Aryan citizens of the Reich are not admitted to these courses). This academy has a staff of about 300 docents, who have at their disposal about 30,000 beds in the various hospitals of Berlin. The academy is supported by the city of Berlin.

The regulations so far have not made it possible to exclude physicians with a questionable mental status. Now it has been decreed that admittance to the medical examination and to the practical year following the state medical examination is to be refused, when as the result of a mental disease or of some addiction, the candidate has not the reliability that is required for medical practice. To prevent the admittance of such persons into the profession the directors of hospitals are requested

to indicate their observations to this effect in the certificates of the interns or to report to the ministry.

The federal commissioner decreed that all medical societies of Berlin inform him of the time and the program of their next session early enough so that it may be approved. The scientific societies, the National Socialistic Physician's Association and the Association of German Physicians are exempted from these regulations.

The Berlin director of the organization of the insurance physicians of Germany decreed that insurance physicians who desire to spend their vacation in a foreign country must report this in advance to the organization and state the duration, the reason of their foreign sojourn and their address in the foreign country. The furlough in a foreign country requires in all cases previous official consent, a prolongation is generally not permissible.

The chairman of the physician's organization in Düsseldorf sent a circular letter to the members of his organization, which reads as follows: The Marienhospital in Düsseldorf, at the election, August 19, rejected the leader and National Socialism by more than 50 per cent. This election result signifies a challenge to the profession, to the city and beyond that to the state. The medical profession of Düsseldorf will attempt to redress this alien attitude by a strict boycott of the hospital up to a complete economic destruction. I therefore decree that transfer of patients to the Marienhospital is forbidden. The German physicians who send their patients to this hospital in spite of this regulation will be named publicly in a circular letter. This letter was published in a great medical publication.

Recommendations Concerning Abortifacients

The measures adopted by Germany in the campaign against abortion constitute one of the causes of the increase in the birth rate. However the professors of legal medicine have reached the conclusion that the new penal regulations in regard to the sale of abortifacient instruments have not accomplished their aim in the desired extent. For this reason they advocate the following extension of the regulations. All instruments and apparatus that may be used by the public for abortive measures, for instance, so-called uterine catheters, uterine cannulas or tubes, uterine speculums, irrigation apparatus and especially so-called balloon syringes with long thin tubes, as well as the various types of pessaries, are to be withdrawn from the open market. All these should be sold only as medical instruments in the stores specializing in them and by the apothecaries. They should be sold only with a physician's prescription. If necessary, the manufacture of such instruments that are intended for abortifacient purposes should be prohibited.

The Bureau for the Welfare of Youth

Dr. Lottig of Hamburg has explained that the physician's work in the bureau for the welfare of youth is the most interesting of the social activities of the physician. The medical points of view are of especial importance in connection with the work of the youth welfare bureau. The hereditary problem is the focal point in every case. The number of charges of the Hamburg youth bureau averages 35,000 yearly and among them are 4,600 inmates of institutions, of whom 1,600 have been put into institutions because of inadequate training and destitution. The various forms of productive welfare work are extended yearly to about 10,600 charges. The part played by physicians in this work is indicated by the fact that more than 3,400 cases require psychiatric consultation. It is the task of the neurologic-psychiatric-pedagogic section to make a prompt but thorough diagnosis. Other important spheres of action are the clinical diagnosis in the observation ward, cooperation in the guardianship decisions in the juvenile court, in the estimation of juvenile witnesses in penal lawsuits in arrangements for adoptions and finally in the study of the numerous cases of sterilization.

Dangers to Health of Uninterrupted Working Periods

The medical committee of the German Society for Industrial Hygiene has set up 'principles for regulating the hours of work and of recesses from the standpoint of health.' These principles state that the uninterrupted working period is detrimental to health, and they reject it. They recommend the introduction of a divided working time wherever the management of the establishment and the transportation permit it. They recommend a noon recess of two hours, so that the worker may be enabled to go to his home. When this is impossible, there should be suitable recesses so that the workers may take a warm meal at their place of work at noon.

Death of Professors His, Strasburger and Hahn

The well known internist of the University of Berlin, Prof Wilhelm His, died Nov. 10, 1934, shortly after his retirement on account of a chronic ailment. His accomplishments were recounted here a short time ago, on the occasion of his seventieth birthday (*THE JOURNAL*, Feb. 10, 1934, p. 471).

The well known internist and the director of the medical policlinic of the University of Frankfurt-on-Main Prof Dr Julius Strasburger, died, Oct. 27, 1934, at the age of 63. Shortly before, he had resigned from his teaching position as ordinarius. In addition to the policlinic he directed the institute for physical therapy. Together with Adolf Schmidt he had published important studies on intestinal disorders.

Prof Dr Martin Hahn, who for many years was ordinarius for hygiene at the University of Berlin, died at the age of 70. After his research work in the cholera district of Astrakhan, as a young man, his scientific career was assured. As the assistant of Hans Buchner in Munich, who received the Nobel prize, he became known through his collaboration in research on zymase. He was one of the first to devote himself to the problem of physical work and occupational therapy. He greatly promoted social and industrial hygiene and sanitation and early gave all the force of his authority to the racial hygiene movement.

JAPAN

(From Our Regular Correspondent)

Nov. 30, 1934

Essay on Recovery of Medical Prosperity

The *Japanese Medical Journal* offered a prize for an essay on "How to Tide Over the Present Difficult Situation in the Medical Profession." In a six months period eighty-three essays were received, most of them written by practitioners. The winners were recently made known. Dr K. Nakadate won the first prize, 500 yen. In his essay he said that the causes of the present difficulties are, first, the surplus of physicians, which must be corrected by changing the system of medical education so as to divide the specialists and the general practitioners. The last two years in the medical college should be devoted to specialized education and the previous years to general education. A certificate for practice should be given after two years' practical training in approved hospitals after the student has finished the college courses. In the second place, any treatment done by those who are not physicians but are now sanctioned by the local governments should be entirely prohibited except when the practitioner recommends that they treat a patient under his personal guidance. Third, any health benefit associations organized under the pretext of lower medical fees should be dissolved, as they tend to commercialize the profession and prevent patients from exercising a free choice of physician. Fourth, the indiscriminate manufacturing of new medicines should be ended by careful regulation. The doctor with little experience is more apt to administer expensive new medicines and this is one reason for the high cost of medical care. The selling of medicine by practitioners has caused many complaints, and the lower classes are inclined to refrain from consulting the doctor lest they be obliged to

pay too much. This is an essential cause of the present trouble, to say nothing of the general business depression. Fifth, medical advertisements, especially on the roadsides or in the stations or on roofs, should be utterly prohibited. They destroy dignity and induce the people to despise medicine. Supplementary education to promote the practitioner's knowledge should be published by the medical association in a periodical with the latest scientific research and clinical experiences of physicians. Concluding, he says that there should soon be established the most rational medical system. The tendency of regarding medical practice as a commercial product he despises. He holds that medicine is a benevolent art and should be practiced in this principle.

Death of Dr Kagami Fujinami

Dr Kagami Fujinami, honorary professor of the Kyoto Imperial University, died November 18, aged 64. He obtained fame through his studies of a disease due to a Japanese blood sucking parasite for which he was awarded the Imperial prize in the Imperial Academy in 1918. Thanks to his research, this disease was completely stamped out of those provinces where it formerly raged. A monument stands there to commemorate his achievement. He was a man of noble character from his boyhood, and he was always above riches and honors. He was called an infant prodigy and once was awarded a prize while still in primary school for reading a short story, when Emperor Meiji happened to visit his school. He graduated from the Tokyo Imperial University in 1895 and went to Germany, where he stayed four years. On returning home he was appointed professor at Kyoto. Dr Goichi Fujinami is his younger brother.

The Age Limit for Professors

The present age limit for professors of the imperial universities was first established in 1918 in the Tokyo Imperial University on the motion of professors of the medical department. Since then the question has been raised whether it is proper or unreasonable, but it has been faithfully obeyed as an unwritten law though it was merely a gentlemen's agreement. Sixty years, some think, is too early to retire. Prof Dr K. Manabe, who has been about a year in Europe and America, has written on this subject in the *Varsity Press*, saying that the age limit should be abolished, as the age limit in Italy is 75, in Greece and France 70, in Germany from 65 to 68, and in Switzerland 70 years. Some are of the opinion that the age of 60 is the time when man is intellectually in his prime. It is absurd to apply the age limit uniformly without considering some personal factors. This law is now enforced only in the government universities, with one exception. If there is any good reason for this law, it ought to be enforced among other colleges. Some who have retired under this system have soon after been appointed to important offices. That there are many positions open to the retired professors better than the old post shows that it is not a disgrace to retire at 60, on the other hand, the present plan permits energetic young scholars to find their way to a professorship.

Personals

Dr Sennosuke Yokote, director of the Natural Science Research Institute at Shanghai, China, has tendered his resignation on account of illness. His successor is said to be Dr Shinzo Shimjyo, ex-president of Kyoto Imperial University.

Prof Inokichi Kubo of the Kyushu Imperial University medical department will resign shortly, as he has reached the age limit. He was the founder of the section of otorhinolaryngology and has been professor for thirty-five years. He and his wife have attained fame as poets.

Dr Masanori Nakazumi will be promoted to professor and hold the new chair of roentgenology in the Imperial University of Tokyo.

Marriages

JOHN ROLAND UPTON, San Francisco, to Miss Anna Logan Sloan of Paris, France, in New York, Dec 25, 1934

JOHN J SHOBER, Philadelphia, to Miss Emelya M McCormick of Atlantic City, N J, Dec 22, 1934

PAUL Q DANIEL, Deltaville, Va, to Miss Salome Virginia Butler of Richmond, Nov 1, 1934

ELLIS R CRANDLE, Gorham, Ill, to Miss Virginia Lee Williams of St. Louis, Nov 28, 1934

CAESAR F SARNI, Norristown, Pa, to Miss Antoinette Lalcone of Bangor, Oct 27, 1934

EDGAR CHILDREY JR, Rochester, Minn., to Miss Irene Hill of Piqua, Ohio, Oct 20, 1934

ROBERT H MCKELVEY, Bethesda, Ohio to Miss Martha Talbott of Ellsworth, recently

WALTER L WINKENWERDER to Miss Eleanor Zouch both of Baltimore, Dec 1, 1934

SAMUEL J WEITZEN to Miss Elsie Glasser, both of New York, January 15

Deaths

James Francis Coupal, Washington, D C., Tufts College Medical School, Boston, 1909 member of the Massachusetts Medical Society, the Medical Society of the District of Columbia, and the American Association of Pathologists and Bacteriologists served during the World War entered the medical corps of the regular U S Army in 1920 as a major, in 1924 was appointed physician to the White House by President Coolidge, later by act of Congress was appointed a colonel in the U S Army, resigned in 1929, formerly curator of the Army Medical Museum past president of the International Association of Medical Museums, aged 50, died, January 3, in the Walter Reed General Hospital, of cerebral hemorrhage

David James Gibb Wishart, Toronto, Ont. Canada McGill University Faculty of Medicine, Montreal Que. 1885 emeritus professor of otology and laryngology, University of Toronto Faculty of Medicine, member of the American Laryngological, Rhinological and Otolological Society, fellow of the American College of Surgeons, consultant to the department of otolaryngology, Toronto General Hospital and Hospital for Sick Children, aged 75, died, Dec. 5 1934

Ira Hugh Dillon ☉ Topeka, Kan., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898, member of the American Academy of Ophthalmology and Oto-Laryngology, served during the World War, fellow of the American College of Surgeons, on the staff of the Atchison, Topeka and Santa Fe Railway Hospital, aged 61 died Nov 16, 1934, of coronary thrombosis

Millard Fillmore Jarrett, Fort Scott, Kan., Bellevue Hospital Medical College, New York, 1892, past president of the Kansas Medical Society in 1915 Member of the House of Delegates of the American Medical Association, in 1922 president of the Mid-West Academy of Ophthalmology and Oto-Laryngology, on the staff of the Mercy Hospital, aged 77, died Nov 21, 1934, following an operation on the prostate

Max Lionel Ignatoff, Newark, N J., Tufts College Medical School, Boston, 1926, member of the Medical Society of New Jersey, aged 31, on the staff of the orthopedic clinic of the city board of health, on the staffs of the Crippled Children's Hospital the Presbyterian Hospital, the Newark City Hospital and the Beth Israel Hospital, where he died, Dec. 25, 1934, of chronic nephritis and hypertension.

Allyn Bernard Moise ☉ Shreveport, La., Tulane University of Louisiana Medical Department, New Orleans, 1903, member of the American Academy of Ophthalmology and Oto-Laryngology fellow of the American College of Surgeons on the staffs of the Schumpert Memorial, North Louisiana and Highland sanitariums and the Tri-State Hospital aged 57, died, Dec. 23, 1934 of pneumonia

Alexander McPhedran, Toronto Ont., Canada, University of Toronto Faculty of Medicine 1876 professor emeritus of medicine at his alma mater past president of the Association of American Physicians the Canadian Medical Association and the Academy of Medicine of Toronto on the staff of the Toronto General Hospital aged 87 died suddenly Dec 19, 1934 of pulmonary edema.

Reginald Lloyd Prees, North Fond du Lac Wis., University of Pennsylvania School of Medicine Philadelphia, 1917 served during the World War, past president of the Fond du Lac County Medical Society, president of the board of education and village health officer, aged 43, died, Dec. 19, 1934 in the Veterans' Administration Facility, Milwaukee, of cerebral hemorrhage

Paul Peyton Lane ☉ Wilson, N C., University of Maryland School of Medicine, Baltimore, 1908 past president of the Wilson County Medical Society, fellow of the American College of Surgeons, served during the World War, on the staff of the Moore-Herring Hospital, aged 47, died suddenly Dec. 20, 1934, of heart disease, while on a golf course in Waycross, Ga

Frederick Greene Barfield, Jacksonville, Fla. University of Virginia Department of Medicine, Charlottesville, 1897, member of the Florida Medical Association and the Medical Association of Georgia, served during the World War, aged 61, died, Dec 25, 1934 of cerebral hemorrhage, uremia and nephritis

William Delano Garlock, Little Falls, N Y., College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1881, member of the Medical Society of the State of New York past president of the Herkimer County Medical Society, aged 79, died, Dec. 15, 1934, of heart disease

Chester A Hemstreet, Troy, N Y., Albany Medical College, 1905, member of the Medical Society of the State of New York, on the staffs of the Leonard and Samaritan hospitals, aged 52, died, Dec. 13, 1934, of intestinal hemorrhage following an automobile accident.

William Henry Crook, New Brockton, Ala., Medical College of Alabama Mobile, 1884, member of the Medical Association of the State of Alabama, Confederate veteran, aged 88, died in December 1934 at Bethany, of fracture of the femur as the result of a fall

Jesse H Mitchell, Ahsokie, N C., College of Physicians and Surgeons, Baltimore, 1879, formerly mayor, postmaster and justice of the peace, for many years member of the county board of health and board of education, aged 77, died, Dec. 8, 1934, of diabetes mellitus

Eugene Leo Broeker, St. Louis, St. Louis University School of Medicine, 1911, member of the Associated Anesthetists of the United States and Canada, on the staff of the De Paul Hospital, aged 53, died suddenly, Dec. 24, 1934, of heart disease.

Lee Somerville, North Creek, N Y Albany (N Y) Medical College, 1899, for many years health officer of North Creek, formerly member of the school board, aged 60, died Dec. 16, 1934, in the Memorial Hospital, Albany, of mesenteric thrombosis

Daniel Calvin Corriher ☉ A Surg, Lieut. (j g) U S Navy, Landis, N C., Emory University School of Medicine, Atlanta 1931 entered the navy in 1931, aged 33, died, Dec. 13, 1934, in the U S Naval Hospital, Washington, D C., of pneumonia.

Thomas Clarke Graves, Memphis, Tenn., Memphis Hospital Medical College, 1894, formerly county health officer on the staff of the Shelby County Emergency and Pellagra Hospital, aged 64, died, Dec. 24, 1934, of carcinoma of the prostate.

Herman Holmes Bogle, Pittsburg, Kan. College of Physicians and Surgeons of Chicago 1893, member of the Kansas Medical Society formerly on the staff of the Mount Carmel Hospital, aged 67, died, Oct. 26, 1934, of peripheral neuritis

Henry Edward Sauer, Miami, Fla., Northwestern University Medical School, Chicago, 1896, at one time instructor in gynecology at his alma mater, for many years on the staff of the Grant Hospital, Chicago, aged 66, died Dec 10, 1934

Christopher S Best, Middleburg, N Y., Eclectic Medical College of the City of New York, 1876, member of the Medical Society of the State of New York president of the board of education, aged 82, died, Dec. 20, 1934, of cerebral hemorrhage

Roy William Merkle ☉ Alton, Ill., Creighton University School of Medicine, Omaha, 1927, formerly city health officer aged 33, on the staff of St. Joseph's Hospital where he died Dec. 23, 1934, of septicemia, following an infection of the finger

Gerhard Hiebert, Winnipeg, Manit., Canada, McGill University Faculty of Medicine, Montreal, 1900 fellow of the American College of Surgeons, consulting surgeon to the Winnipeg General Hospital, aged 66, died Dec. 25 1934

Edward Randolph Perry, Tacoma Wash. Medical College of Ohio, Cincinnati 1896 coroner served during the World War, aged 62, died, Dec. 19, 1934 in the Veterans' Administration Facility, American Lake, of cerebral hemorrhage.

Hugh Darby Logan, Portland, Ore., University of Oregon Medical School Portland, 1934, aged 26 an intern at the Multnomah Hospital and the Doernbecher Hospital for Children, where he died, Nov. 30, 1934 of pneumonia.

Alfred Wanzer Love, Providence, R. I. University and Bellevue Hospital Medical College New York 1901, member of the Rhode Island Medical Society, aged 55, died, Nov. 16, 1934, of myocarditis and coronary thrombosis.

Stephen Benton Elrod & Henryville, Ind. Hospital College of Medicine, Louisville, Ky., 1898, served during the World War, aged 61, died, January 2, at the Norton Infirmary, Louisville, Ky., of heart disease.

Edward Charles Rochette & Worcester Mass., Harvard University Medical School, Boston, 1903, aged 54, died Dec. 13, 1934 in St. Vincent Hospital, of duodenal ulcer, following an operation for subtotal gastrectomy.

Frank Cornelius Leytze, Seattle, Jefferson Medical College of Philadelphia, 1904, member of the Washington State Medical Association, aged 59, died, Nov. 30, 1934, of chronic nephritis and cerebral hemorrhage.

William Hunt Blankenship, Pine Bluff Ark., College of Physicians and Surgeons, Baltimore, 1893 member of the Arkansas Medical Society, aged 68, died, Dec. 12, 1934, of carcinoma of the intestine.

Milford Winslow Rozzell, Hopkinsville Ky., Kentucky School of Medicine Louisville, 1889 aged 77 died, Dec. 10, 1934 at the home of his daughter near Priorsburg, of chronic interstitial nephritis.

George Farwell Dow & Reading, Mass., Harvard University Medical School, Boston, 1896, veteran of the Spanish-American and World wars, aged 65, died, Dec. 9, 1934, of angina pectoris.

Joseph Thomas Hanna, Chugwater, Wyo., Medical College of Indiana Indianapolis, 1881 member of the Wyoming State Medical Society, aged 78, died, Dec. 10, 1934, of cerebral hemorrhage.

Joseph Clement Kochczynski & Hazleton Pa. Medico-Chirurgical College of Philadelphia, 1913 served during the World War, aged 49 died, Dec. 1, 1934, of acute hyperthyroidism.

George Anson Cristler, Hookstown, Pa. Western Pennsylvania Medical College Pittsburgh 1889 formerly member of the school board, aged 82, died, Nov. 27, 1934, of arteriosclerosis.

Peter Harrison Luttrell & San Francisco, Cooper Medical College San Francisco 1908 aged 56 was found dead Dec. 17, 1934, in his automobile of carbon monoxide poisoning.

James Edwin Campbell Taylor & Columbus, Ohio, Ohio State University College of Medicine, Columbus, 1928, aged 35 died Dec. 12, 1934 in the University Hospital of influenza.

John William Jeffries, Mission Texas Marion Sims College of Medicine, St. Louis, 1896 member of the State Medical Association of Texas, aged 73, died, Dec. 12, 1934.

Albert Gordon Hinman, Honeoye Falls, N. Y. Cleveland Homeopathic Medical College, 1903, aged 53 died, Nov. 27, 1934, of hypertension and cerebral hemorrhage.

George W. Webb, Redboiling Springs Tenn. University of Tennessee Medical Department Nashville 1888 aged 86, died Nov. 2, 1934, of carcinoma of the spleen.

Sidney Ray Dannenbaum & San Francisco University of California Medical Department, San Francisco, 1906, aged 53, died suddenly, Dec. 23, 1934, of heart disease.

Charles Chainer Hennin, Springfield, Mass. (licensed in Massachusetts in 1896), aged 61, died Dec. 14, 1934, in the Mercy Hospital, of hypertensive heart disease.

Albert Lafayette Levy, Baltimore University of Maryland School of Medicine, Baltimore, 1903, aged 52, died suddenly, Dec. 29, 1934, of coronary thrombosis.

Samuel Harris Ganser, Chicago Reliance Medical College, Chicago, 1911 aged 48 died, Dec. 23, 1934, of arteriosclerotic myocarditis and pulmonary edema.

Nathaniel Rives Newman, Coxington, Tenn., Vanderbilt University School of Medicine, Nashville, 1899 aged 59 died, Nov. 30, 1934, of hypertensive heart disease.

Edmund T. May, Warthen, Ga. University of Maryland School of Medicine, Baltimore 1885 aged 73 died Dec. 13, 1934 of cerebral hemorrhage and nephritis.

Charles Duane Cobb, San Diego, Calif., St. Louis University School of Medicine, 1904, aged 68, died Nov. 28, 1934, of angina pectoris and coronary sclerosis.

Horace B. Lashlee, Redlands, Calif., Homeopathic Medical College of Missouri, St. Louis, 1877, aged 88, died Nov. 14, 1934, in Beaumont, of arteriosclerosis.

William A. Mathews, Hawkinsville, Ga., Atlanta College of Physicians and Surgeons, 1900, aged 72, died, Nov. 21, 1934, in Thomasville, of heart disease.

Clarence M. Schellinger, Deptford Township, N. J., Jefferson Medical College of Philadelphia, 1879, aged 85, died Oct. 16, 1934, of cardiorenal disease.

Gustavus French Harvey, Los Angeles, Rush Medical College, Chicago, 1876, aged 85, died, Nov. 27, 1934, of hypertension and cerebral hemorrhage.

Frederick Elmer Jones & Brookline, Mass., Baltimore University School of Medicine, 1897, aged 64, died suddenly, Dec. 21, 1934, of heart disease.

John C. Bortorff & Corydon, Ind., University of Louisville (Ky.) Medical Department, 1896, aged 68, died suddenly, Dec. 15, 1934, of heart disease.

Edmund Oliver Hallett, Weymouth, N. S., Canada, McGill University Faculty of Medicine, Montreal, Que., 1883, aged 73, died, Sept. 3, 1934.

Robert Emmett Jones, Philadelphia, University of Michigan Medical School Ann Arbor, 1881, aged 74, died, Dec. 8, 1934, of cerebral embolism.

Daniel Sigler, Elwood Ind. Miami Medical College, Cincinnati, 1874, aged 91, died, Dec. 17, 1934, of bronchopneumonia and mitral stenosis.

Todd R. Boden & McIntyre, Pa., Jefferson Medical College of Philadelphia, 1910, aged 55, died, Dec. 25, 1934, of a self-inflicted bullet wound.

Marion Lee O'Banion, Houston, Texas, Chattanooga (Tenn.) Medical College, 1904, aged 61, died, Oct. 28, 1934, of chronic myocarditis.

Frank M. Tebbetts, Chicago, College of Physicians and Surgeons of Chicago, 1885, aged 70, died, Dec. 21, 1934, of chronic myocarditis.

George Corbin Bryan, Barstow, Calif., Baltimore Medical College, 1896, aged 64, died, Nov. 3, 1934, in Yuma, Ariz., of diabetes mellitus.

Henry W. Johnson, Port Byron, Ill., Hahnemann Medical College of Philadelphia, 1882, aged 80, died, Nov. 25, 1934, of coronary sclerosis.

James Paul Spackman, Brownsville, Pa. Jefferson Medical College of Philadelphia, 1896, aged 63, died, Nov. 17, 1934, of angina pectoris.

James McWilliam, Toronto, Ont., Canada Faculty of Medicine of Trinity College, Toronto, 1876, aged 81 died, Oct. 11, 1934.

Frank Vanderlip, Brampton, Ont., Canada, University of Toronto Faculty of Medicine 1905, aged 54, died suddenly, Oct. 20, 1934.

Robert Tannahill McNair, Emporia, Va., Medical College of Virginia, Richmond, 1900, aged 56, died, Dec. 9, 1934, of pneumonia.

Henry Francis Strub, St. Louis, St. Louis University School of Medicine, 1926, aged 33, died, Dec. 10, 1934, of heart disease.

Fred Stainsby, Hollyburn B. C., Canada, University of Toronto (Ont.) Faculty of Medicine, 1911, aged 49, died, Nov. 8, 1934.

Mildred Jessie Roberts Broman, Evanston, Ill., Rush Medical College, Chicago, 1916, aged 43, died, January 4, of pneumonia.

Roy White McClintock, Chicago, Harvey Medical College, Chicago, 1904, aged 57, died, January 2, of coronary occlusion.

Henri Trudel, St. Gregoire, Que., Canada, Laval University Faculty of Medicine Quebec, 1878, aged 80, died, Sept. 16, 1934.

John Newhall Kirk, Easton, Pa., Medical College of Ohio, Cincinnati, 1895, aged 61, died, Dec. 3, 1934, of heart disease.

William R. Smyth, Morning Sun, Iowa, Keokuk Medical College, 1896, aged 68, died, Dec. 21, 1934, of heart disease.

Joseph Roach, Baltimore College of Physicians and Surgeons Baltimore, 1891 died Oct. 27, 1934.

Bureau of Investigation

MIN-AMIN

Another Anti-Fat Treatment of the Food-Powder Type

During the past few months a large number of inquiries have come to the Bureau of Investigation asking for information on a preparation sold for the treatment of obesity known as "Min amin." The following letters are typical. From the northwest Dr G H Wahle of Boise, Idaho, writes

Would you kindly inform me by return mail as to the content of a remedy known as Min amin used for reducing weight which is recommended and spoken of by Dr Brady in his writings in the newspapers

From the middle west Dr Don Deal of Springfield Ill, inquires

Min-amin which is recommended by Dr William Brady who has a column of health notes daily in our local paper is made by the National Institute of Nutrition 6777 Hollywood Blvd Los Angeles Calif Several patients have inquired about it and I would appreciate it very much if you would give me the information concerning it

From the southwest Dr Robert M Purdie of Houston, Texas, writes

Do you have any information on Min amin manufactured by the National Institute of Nutrition, Los Angeles California? Appreciate information rationale of its use whether a scientific product etc

From New England Dr Hugo O Peterson of Worcester, Mass, writes

If you have analyzed Min amin a product recommended by Dr Brady for reducing purposes may I have your analysis?

Many other inquiries have come from Nebraska, South Dakota, Minnesota, New Jersey New York, Michigan, Wisconsin, Georgia and other states

The only information regarding the composition of Min-amin that appears on the trade package—and therefore subject to control under the National Food and Drugs Act—is the vague statement that it is "a combination of pure food concentrates containing minerals and vitamins." Women who have written to Dr William Brady, whose syndicated health columns appear in a number of papers throughout the country and have asked how they can safely reduce their weight, have been sent a letter printed in imitation of typewriting under the general head "Personal Health Service." The opening paragraph of this form letter states that excess weight is usually associated with other physical impairments and makes the excellent suggestion that it is wise for the patient to have a complete physical examination by her family physician before entering upon any reduction regimen, followed by a regular check-up at least every week, so that the physician can determine whether the reduction is beneficial. Dr Brady rightly emphasizes the fact that excess weight is usually due to overeating. He then propounds the thesis that fat people overeat "because most good, wholesome food is deficient in vitamins and minerals due to methods of purifying, refining, preserving, storing and cooking or preparing for table" and that hunger is a demand of the body not only for proteins, carbohydrates and fats, but also for minerals and vitamins. As, according to Dr Brady, ordinary food fails to provide such vitamins and minerals, the overweight are led to eat excessively in an attempt to get the lacking accessory food factors.

In the same letter Dr Brady recommends the use of Min-amin and he says

With Min amin which is a concentrate of the essential minerals and vitamins in the proper proportion [Italics ours—Ed] this deficiency of everyday diet is corrected

Dr Brady mentions, too, that if the local drug stores cannot supply Min amin, the recipient can send \$1.50 to the National Institute of Nutrition in Los Angeles and get a two-weeks' supply. In this connection, it is of interest to note that the National Institute of Nutrition is alleged to have been established in June, 1934 and to have been granted permission to issue 4,000 shares of capital stock of no par value. The men behind it are reported to be Drs Llewellyn R. Lewis, John Q. Scroggy, and William Brady, and Mr J. Frank Brazelton. Drs Lewis and Scroggy are practicing physicians. Dr Brady does not

practice. Mr Brazelton is said to be an X-ray technician in the Hollywood Hospital.

A physician who wrote to the National Institute of Nutrition asking for information regarding the composition of Min-amin received a letter, signed Henry S. Mather, and a sample of Min amin. The doctor was told that a supply of "instruction sheets" for dispensing or prescribing the product would be printed with the physician's name on them if he so desired. He was told too that Min-amin "provides in one product which is palatable a clinically-balanced ration of vitamins from natural sources." The physician also received a twenty-eight-page pamphlet entitled "Nutritional Obesity—Its Cause and Correction." The first chapter, dealing with weight reduction, states in the opening paragraph that reduction of excess weight in nutritional obesity could now "be done with all the assurance of safety, without the use of drugs and with little, if any, self-denial" and that the obese could be given "a practical regime that has been found to be universally applicable." In the same chapter Min-amin was described as "a clinically balanced food supplement containing vitamins." Part of the same thesis already propounded by Dr Brady is dilated on in the pamphlet, namely, that the explanation of nutritional obesity is that the obese eat more food than their bodies require because of an unsatisfied hunger allegedly due to the fact that they are getting insufficient vitamins! As a corollary it is maintained that the obvious correction of nutritional obesity is "a reversal of the process," which can be accomplished by "providing a combination of food concentrates containing vitamins in proper clinical balance."

The only information in the pamphlet "Nutritional Obesity—Its Cause and Correction" regarding the composition of Min amin is found in the chapter entitled "Food and Chemical Analysis." While this gives what is described as a "complete report of our analyses of Min-amin," it does not give any hint as to what Min-amin is. The analysis is given in terms of protein, fat, carbohydrates, fiber and mineral matter. These figures, on a moisture-free basis, read as follows:

	per cent
Protein	21.85
Crude Fat	14.40
Carbohydrates	54.05
Crude Fiber	0.80
Ash (Mineral Matter)	3.00

It also states that the fuel value of a dose (teaspoonful) of Min-amin is 41.84 calories.

An original package of Min-amin purchased direct from the National Institute of Nutrition was turned over by the Bureau of Investigation to the A. M. A. Chemical Laboratory for analysis. A condensed report from the Laboratory follows:

LABORATORY REPORT

"One original package of Min-amin (National Institute of Nutrition, Los Angeles, Calif.) was submitted by the Bureau of Investigation to the A. M. A. Chemical Laboratory for examination. The declared content was 5 oz (approximately 150 Gm.). The package contained a substance having the flavor and general physical and chemical characteristics of a product such as wheat germ or embryo. A microscopic examination disclosed particles which indicated wheat embryo, wheat starch, wheat bran and other parts of wheat in small quantity. The product was also examined by a pharmacognosist who reported that the sample of Min-amin contained wheat germ meal. There were no tissues found except those of wheat. The amount of moisture found to be present was 6.5%.

"Quantitative determinations, calculated to the dry basis, were as follows:

Crude Protein	28.80
Crude Fat	17.14
Carbohydrates other than fiber	48.06
Crude Fiber	1.69
Ash	4.23

"On the basis of protein furnishing 4 calories, fat 9 calories and carbohydrates 4 calories per gram, Min amin has been calculated to furnish 439 calories per 100 grams or 1991 calories per pound. A moderately heaping teaspoonful was found to weigh 7 grams. On the foregoing basis, one heaping teaspoonful would furnish 30.73 calories.

"The composition of wheat germ or wheat germ meal varies according to the purity of the germ. References to the literature indicate that the purity of the wheat germ may vary considerably.

"From the foregoing it is concluded that the specimen of Min-amin consists essentially of a relatively pure sample of wheat germ"

It will be noticed that the figures furnished by the exploiters of Min-amin do not altogether agree with those given in the report from the A M A Laboratory. However, the variations may be explained by the fact that commercial wheat germ or embryo is not constant in composition. It probably varies with different types of wheat and even in the same type grown on different soils or under different climatic conditions. Then the degree of refining in the separation of the germ may be a factor. If an appreciable quantity of the starchy part of the wheat remains with the germ, the carbohydrate content will be relatively high and the other components proportionately lower or if the bran particles are not thoroughly removed, the fiber protein and ash content will be increased proportionately to a certain extent.

The closing paragraph of the first chapter of the pamphlet 'Nutritional Obesity' already referred to, explains how to use Min-amin in the reduction of weight. Essentially, the directions are for the obese to eat no breakfast and no luncheon, but to take instead of each of these meals a rounded teaspoonful of Min-amin in an eight-ounce glass of freshly made unstrained orange juice. For dinner, or the evening meal they must eat no breadstuffs, no potatoes, no fats, no sweets, and if a salad is used, it should be made with mineral oil. The obese are told that this regimen does not constitute self-denial.

That persons who follow the instructions that go with Min-amin may reduce weight is doubtless true. That they will have a balanced diet and especially that they will have a diet that will have any particular appeal, seems quite as obviously, untrue. Even if one assumes for the sake of argument that over-eating in the obese is due to a dietary deficiency of vitamins and minerals, it should be patent to anyone who thinks that such alleged deficiencies if present will vary with the diet of the individual. How then, can Min-amin, a powder of supposedly fixed composition, contain as alleged, the 'minerals and vitamins in the proper proportion' [Italics ours—Ed] to correct the alleged deficiencies? Yet this claim is fundamentally the one on which the whole exploitation of Min-amin is based!

At this point it is also worth pointing out that no definite statements are made either in the collateral advertising of Min-amin or on the trade package regarding which vitamins are present nor is there any hint either in terms of recognized vitamin units or otherwise as to how much of each vitamin may be present!

While the argument propounded by those who sell Min-amin that overeating in the obese is due to a lack of vitamins may lend an air of verisimilitude to an otherwise bald and unconvincing tale, it is not one that seems to be generally held by students of scientific nutrition. Wheat germ, which is what Min-amin is for all practical purposes, is rich in vitamin B. On the Min-amin theory, then, one would be led to expect that the obese had an unsatisfied hunger because of lack of vitamin B in their normal diet. The facts are, however, that it is rather generally held that lack of vitamin B in the diet definitely causes a loss of appetite instead of an increase of appetite.

In Min-amin itself there seems to be nothing novel or original. Other food powders have appeared on the market in the past year or two recommended as substitutes for breakfast and luncheon in the treatment of obesity. The one thing about Min-amin that is different is its method of exploitation. Those who sell most treatments for proprietary remedies have to pay newspapers or magazines their regular advertising rates for making the contact between seller and buyer. In the case of Min-amin the thing appears to be reversed. Newspapers that carry—and presumably pay for—Dr. Brady's health column furnish the contact between the sellers of Min-amin and the over-fat buyers! Thus the sellers of Min-amin appear to have solved what to most sellers of proprietaries, is their greatest problem—the tremendous 'overhead' due to advertising costs. Those who put out Min-amin appear to make their contacts through the reading pages (Dr. Brady's health column) instead of through the advertising pages of newspapers, and such reading matter is presumably paid for by the newspapers themselves. This is what seems to make the marketing of Min-amin unique in the field of proprietary products.

Correspondence

TEST OF GLOMERULAR EFFICIENCY

To the Editor —Drs. Edward J. Stieglitz and Alva A. Knight in their preliminary report on "Sodium Ferrocyanide as a Clinical Test of Glomerular Efficiency" (THE JOURNAL, Dec. 8, 1934, p. 1760) gave no credit to the originators of this test when 'presenting a new procedure'.

Erich Leschke presented it (Histochemische Untersuchungen über die funktion der Niere und Leber, in the *Verhandlungen des deutschen Kongresses für innere Medizin* Wiesbaden, 1914, p. 635, with Bunge). The first time sodium ferrocyanide as a renal functional test was spoken about was by Biberfeld and Basler.

Alois Wolff in reviving this test (Die geschlossene, kaver nose Nierentuberkulose, in the *Zeitschrift für urologische Chirurgie* 6:364, 1921) came to the conclusion that if the kidney function is sufficiently impaired the ferrocyanide salts are still traceable when neither indigocarmine nor phenolsulphonphthalcin are eliminated any more.

GEZA SCHNAGEL, M.D., Detroit.

[This letter was referred to Drs. Stieglitz and Knight, who reply.]

To the Editor —In reply to this note we wish to state that the reference to Leschke was unknown to us and failure to mention his work of 1914 entirely unintentional. It should be pointed out that prior to the work of E. K. Marshall Jr. (*Am. J. Physiol.* 94:1 [July] 1930), J. G. Edwards (*Am. J. Physiol.* 95:493 [Nov.] 1930) and of Gersh and Stieglitz (*Anat. Rec.* 58:349 [March] 1934) there was no convincing evidence that ferrocyanide salts were excreted solely through the renal glomeruli. The earlier experimental work of Biberfeld and of Basler is discussed in some detail in the paper by Gersh and Stieglitz, to which reference is made in our clinical report in THE JOURNAL. The clinical application of sodium ferrocyanide as a significant test of glomerular efficiency was dependent on the experimental proof of the route and method of its renal elimination. There has been no wish to claim priority for the study of the kidney excretion of ferrocyanide salts, but the clinical application of the recent significant experimental work is original.

EDWARD J. STIEGLITZ, M.D.,
ALVA A. KNIGHT, M.D.,
Chicago

TOTAL ABLATION OF THE THYROID

To the Editor —Permit me to express my delight in Dr. Christian's communication concerning total ablation of the thyroid (THE JOURNAL, January 5, p. 64). Doubtless, this letter will create a stop movement in regard to this operation. Dr. Christian's authoritative voice must have a sobering effect on the enthusiasts.

It seems that my paper 'Is Total Thyroidectomy Rational as a Method of Treatment?' (*Canad. M. A. J.*, November 1934), pursuing the same purpose, has appeared timely.

I differ with Dr. Christian on his assumption that the disturbing factors of cachexia strumipriva "will limit the applicability and the effectiveness of this new method of treating cardiac disease to a relatively small group of patients." When one speaks of selection of cases in a general way, it does not mean much. As I pointed out in my paper, so far there is no scientific way of defining such a group of patients. The investigators must work out a strict definition of such a group before offering the operation for general use. Cachexia strumipriva, which cripples the patient for the rest of his life, must be the lesser

evil in such cases. The selection of proper cardiac patients will be a difficult, if not an impossible, task.

Without an elaborate definition of the selected group, every physician will select cases according to his personal views. Under such circumstances the application of the operation will bring immeasurably greater harm than benefit to the people.

O R LOURIE MD, Boston

DYSPNEA

To the Editor—In an article entitled "Dyspnea" published in THE JOURNAL, Nov. 10, 1934, table 2, page 1444, Dr. J. C. Meakins assigns low blood pressure as the cause for dyspnea in insulin shock. The majority of investigators have found that insulin shock is accompanied by an elevation of systolic and a lowering of diastolic pressure, with a consequent increase in pulse pressure. It has been postulated by Cannon and his associates that this effect is due to an increase in secretion by the suprarenals.

MAN WISNIOFSKY MD, Brooklyn

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

VOMITING IN CHILDHOOD

To the Editor—I have just returned from a call to a well developed boy who will be 6 years old next January. He never had any serious illness or any sickness of any kind until about eighteen months ago. Since then about once a month he has quit playing and goes to his mother complaining of nausea. Soon he begins vomiting, relaxes, turns pale and limber and then his bowels act but not so loose. He goes to sleep rather irritable and after two or three hours wakes up all right and ready for a hearty meal. During the monthly intervals between spells he is just an average natural normal boy except that the father told me he was always hungry and could and did eat as much as he did. I learned in getting a history of the case that I am the sixth physician who has been called to treat him besides a chiropractor, an osteopath and a druggist. All of the physicians are among our best. One was our best pediatrician. None of the physicians who have treated him have done him any good and most of them were honest and frank enough to tell the parents that they did not know what was the trouble with the child. I am writing to you for any suggestions in the way of treatment with this meager information as I saw him today for the first time. I am beginning treatment and study on the theory that an intestinal parasite is the primary cause. Any help you can give me will be appreciated. Please omit name.

MD Texas.

ANSWER.—Vomiting is a common symptom in many disorders of childhood. Noteworthy points about the patient referred to are that he becomes acutely sick at intervals with vomiting associated with pallor, prostration and evacuation of the bowels. He is ill for only a short time and awakens from his sleep feeling well and showing a good appetite. One would think principally of three conditions which might cause these attacks of illness: recurrent or cyclic vomiting, an allergic reaction or overfeeding.

Recurrent or cyclic vomiting is characterized by periodic attacks of vomiting, which continue even if no food is taken. The nausea and emesis last at least for several days. The patients as a rule are greatly prostrated. The breath usually has an acetone odor. In severe cases the liver may be enlarged. The urine shows the presence of acetone bodies, and the blood shows a hypoglycemia. The patient described in the query was not severely ill and the symptoms do not justify a diagnosis of cyclic or recurrent vomiting.

Acute vomiting and diarrhea may result from the ingestion of some food toward which the patient is sensitive or to use an older expression, toward which the patient has an idiosyncrasy. There are many foods toward which patients react in this way, notably milk, eggs, fish, some of the cereals, meats of various kinds, and a great number of other food substances. The patient who manifests these allergic attacks often shows an eosinophilia in the blood as well as in the stools. The sensitivity of these patients may be tested by determining the skin reaction to certain foods or the elimination test may be

employed, which consists of omitting those substance entirely from the diet which are suspected of producing gastro-intestinal symptoms.

Overfeeding may produce indigestion and gastro enteric symptoms that are usually temporary in character, causing not only vomiting and diarrhea but abdominal pain as well.

Obviously, appendicitis may be excluded because of the lack of localized pain and tenderness and the evanescent character of the attacks.

If the patient is to be treated for intestinal parasites, it would be well to confirm the diagnosis either by observing the presence of worms in the stools or by identifying the ova by microscopic examination of the intestinal discharges.

It would seem that the most rational treatment should be directed toward regulation of the diet and the avoidance of overfeeding as well as the use of coarse and indigestible foods. If skin or elimination tests show that the patient is sensitive to certain food substances, they should be eliminated from the diet.

ETIOLOGY OF HYPERTENSIVE DISEASE

To the Editor—In the comment on a book on the treatment of arterial hypertension (THE JOURNAL, September 8, p. 779) the reviewer mentions that "logical curative therapy must be based on an understanding of etiology and pathogenesis." Since many physicians have never had an understanding of the etiology and pathogenesis present in the vast majority of cases of primary arterial hypertension will you kindly refer this inquiry to the reviewer with the request that he send me his views on the matter?

WILLARD J. STONE MD Pasadena Calif

ANSWER.—Adequate presentations of the etiology and pathogenesis of hypertensive disease are to be found in several of the recent American monographs on the subject: Steiglitz, E. J. Arterial Hypertension, New York, Paul B. Hoeber, 1930; Fishberg, A. M. Hypertension and Nephritis, Philadelphia, Lea & Febiger, 1933; Gager, L. T. Hypertension, Baltimore, Williams & Wilkins Company, 1930; and Norris, G. W., Bazett, H. C., and McMillan, T. M. Blood Pressure Its Clinical Applications, Philadelphia, Lea & Febiger, 1927.

Briefly outlined, the most acceptable present-day conception of the etiology of hypertensive disease includes two groups of factors: (1) constitutional factors that predispose to hypertension and (2) initiating factors that provoke hypertension. The hereditary influences in the causation of this disease are unquestionably of the greatest importance. Familial hypertension is frequent. Constitutional factors may be operative in a number of ways: by contributing to an intrinsic instability of the whole vasomotor mechanism, by creating an unstable, intense emotional temperament, or by endowing an individual with an arteriolar mechanism poor in endurance (what has been aptly called "poor rubber") and vulnerable to the many factors that may persistently irritate the delicate equilibratory mechanisms of the circulation. It is often difficult to distinguish between purely hereditary or constitutional influences and familial factors that modify the constitution. Bad dietary habits, although obviously not hereditary, may be acquired in early childhood through familial influences.

In persons thus vulnerable, the initiating etiology of hypertensive arterial disease is "anything which persistently creates prolonged arteriolar stimulation." There is no single, common, uniform or invariable etiologic factor for all cases of the disease, nor will one ever be found. There are many who insist that the etiology of hypertension is still entirely unknown because of a failure to appreciate the inevitably large multiplicity of factors involved. The term initiating factors includes such sources of arteriolar stimulation as plumbism, endocrine imbalance and dysfunction, focal and other infections, gross and continued dietary indiscretions, chronic arsenic or mercury poisonings, the intoxications of pregnancy, and other factors too numerous to mention. These sources of irritation cause the arteriolar response of hypertonia, with constriction of the vascular lumen and therefore hypertension. If the circulatory apparatus is thus stimulated for but a short time, the physiologic response disappears with cessation of the stimulation. If, however, the stimulation is prolonged, especially in persons made vulnerable through constitutional influences, the progressive changes of hypertensive disease are instituted, and from a state of arterial hypertension the disorder progresses to the arterial disease with hypertension. The mere fact that the causes are difficult of identification and are manifold and frequently superimposed does not justify the contention that hypertension is idiopathic or spontaneous as implied by the term "essential hypertension."

The pathogenesis of the disease is at present fairly well defined. Continuous hypertonia of the arterioles causes hypertrophy of the medial musculature, as convincingly demonstrated by Keith Wagner and Kernohan (Arch Int Med

41 141 [Feb.] 1928) and others. This hypertrophy creates a state of increased sensitivity to stimulation; the arterioles react in an exaggerated fashion to many minor stimuli. With long continued fatigue from continuous hypertonia, exhaustion inevitably follows. As certain smooth muscle cells become exhausted and necrosed, their place is taken by collagenic connective tissue. Thus there is a gradual but persistent evolution of the sclerosing process. It must be reemphasized that the sclerotic changes in the arterioles are the result rather than the primary cause of the hypertension.

TREATMENT OF VARICOSE ULCERS

To the Editor—Will you please describe the best local treatment for varicose ulcers? Please omit name
M D Pennsylvania

ANSWER—Assuming that the leg ulcer in question is truly a varicose ulcer and not a traumatic, thrombophlebotic, syphilitic or trophic lesion, the first step toward a rational treatment is to ascertain the condition of the varicose veins that are responsible for the chronic skin defect. If the deep veins are patent and if the superficial veins do not exhibit any signs or symptoms of a latent or manifest infection, a complete obliteration of the dilated saphenous system is desirable by means of injections of sodium morrhuate or potassium oleate, thereby eliminating back pressure, venous stasis and interference with blood flow through the capillary bed. It may be necessary to do a preliminary high saphenous ligation at the saphenofemoral junction, should the long saphenous vein show valvular incompetence in the thigh. The elimination of the actual cause is the most important factor in bringing about a permanent cure of the ulcer. Should the ulcer however, be acutely inflamed, exhibiting a massive secretion and a phlegmonous wall, a few days of absolute rest in bed, elevation and hot boric acid dressings should precede any other treatment.

Locally the ulcer requires an even, elastic snugly fitting support, obtained by Unna's paste boot or an elastic adhesive tape, which is evenly and tightly applied from the toes to the knee. A soft marine or rubber sponge placed above the ulcer site is a soft cushion over a tender area and absorbs some of the secretion. Directly over the ulcer one may place a flat pad of gauze dipped into Unna's paste (zinc oxide, 100 Gm., gelatin, 100 Gm., glycerin 100 cc., water, 200 cc.) If the adhesive dressing is used a mildly mentholated zinc oxide paste can be substituted.

Should the ulcer fail to heal under such management one must consider (1) a disturbance of arterial circulation, evidenced by absent or diminished pulses, drop in skin temperature, dependent rubor and pallor on elevation; (2) the possibility of a nonvaricose ulcer, which may be present with coexisting but incidental veins; and (3) an extensive induration around the ulcer which interferes with the blood supply, or a large sized defect which is not apt to heal spontaneously. Such indurated ulcers may be softened up by injecting rather large doses of 0.5 per cent procaine hydrochloride solution under the base, which procedure may be repeated a few times and is a simple substitute for the undercutting of ulcers. If the defect is too large, small seed grafts placed under the granulations with the blunt end of a Hagedorn needle, will quickly diminish the uncovered area and serve as centers of epithelization. Thiersch grafts usually fail in this location.

When the ulcer is healed, the further objects of treatment must be to prevent recurrence and to soften up the indurated area. Both are usually accomplished by prolonged (from two to three months) applications of an elastic support, again preferably the Unna paste boot. Periphelebitic indurations may yield to small very cautiously applied doses of x-rays.

CELLULITIS OF SCALP AND OSTEOMYELITIS OF THE SKULL

To the Editor—Will you please send me information as to the following: Diagnosis including differential diagnosis of cellulitis of the scalp, subaponeurotic abscess and subperiosteal abscess of the scalp. Treatment and management for these conditions. Information concerning osteomyelitis of the skull resulting from abscess of the scalp especially as to how long a period is required for its development.

WILLIAM O. McLANE, M.D., Jackson, Minn.

ANSWER—Cellulitis and erysipelas are common on the scalp and have the same characteristics as elsewhere. There is usually a brawny edema of the skin and there may be great edema of the eyelids and face. Usually wet dressings are used until pus forms.

A subaponeurotic abscess is usually quite serious. Here the pus spreads widely and may point in the neighborhood of the eyebrow, the temporal crest, the zygoma or the occiput. It is usually associated with infected wounds or disease of the cranial

bones. One or more incisions should be made in the regions where the pus appears to be pointing, with avoidance of injury to nerves and blood vessels.

A subperiosteal abscess is nearly always associated with injury or disease of the cranial bones. It is limited to the bone affected, but there may not be necrosis of the bone. Prompt incision should be made. In case of specific streptococcal infection, serum may be used as in erysipelas.

Abscess or infection may be in contact with the bone for some time without necrosis, but early incision should be made to avoid osteomyelitis. The time varies as well as the virulence of the infection. The staphylococcus is the most common organism present in both regional and metastatic infections. In the treatment, osteomyelitis should be treated as if in the long bones, that is, adequate drainage, removal of dead bone, cleansing of the wound and wide drainage.

In the differential diagnosis, several conditions should be considered. Superior longitudinal sinus thrombosis may produce edema and congestion of the scalp. There may be cortical anesthesia, ankle clonus and increased knee jerks, with local tenderness or even small abscesses.

Extradural abscess or local leptomeningitis may be associated with a hard, puffy tender, local swelling known as "Pott's puffy tumor" over the scalp at the site of the abscess, the result of edema. Focal symptoms may be present.

A hematoma may be present, above the aponeurosis, beneath it, or under the pericranium. Hematomas are of significance only in that they may be the result of grave injury to the skull and brain underneath.

Cystic and solid tumors may occur. Sebaceous cysts are common and, when they ulcerate, are called Cock's peculiar tumors.

Dermoid cysts occur near the anterior or posterior fontanel, at the root of the nose near the occiput, at either angle of the orbit, near the ear, or in the temporal region. They are often closely attached to the bone.

Simple serous cysts or meningococles are seen near the sutures of the skull.

Aneurysms are easily diagnosed by the evidence of their vascular nature.

Nevi and adenomas are not uncommon on the scalp.

A cephalhematocoele is a rare tumor formed of cavernous venous spaces in the scalp communicating through the bone with the superior longitudinal sinus.

Papillomas may resemble a horn or wart.

Lipomas are rare on the scalp.

Plexiform neuroma may form a pendulous growth.

Sarcoma of the scalp usually extends from the bone underneath.

Epithelioma may arise, from a wart, a scar or an ulcerated sebaceous cyst.

Pneumatocoele may arise from the sinuses after injury.

Chronic infections from gummatous osteomyelitis, tuberculosis or actinomycosis together with many other conditions may be diagnosed from biopsy or laboratory tests together with a history and careful general examination.

DENTAL DECAY IN A CHILD

To the Editor—I have a patient a girl 10 years of age who has lost three permanent molars within the last six months because of crumbling followed by decay. She appears to be a normal healthy child and her only visible abnormality is that she is about 20 pounds (9 Kg.) over weight weighing about 88 pounds (40 Kg.). She is a member of one of the better families and has a nourishing diet and takes excellent care of her teeth. I have thought of a lack of vitamins and have given her various cod liver oil and haliver oil preparations. I also am trying to reduce her weight to normal by a simple reduction in diet. Any advice you can give me to arrest the brittleness and crumbling of this child's teeth will be greatly appreciated.

F. CLAYDE BEDSAUL, M.D., Floyd, Va.

ANSWER—Brittleness and crumbling followed by decay of the molars of a 10 year old child can be interpreted only as a type of decay beginning in deep pits and fissures of the enamel of the occlusal (chewing) surfaces of the teeth. This form of decay usually penetrates the enamel through a small opening and spreads rapidly through the dentin, undermining the enamel crown and causing it to become brittle and to crumble. Dentin containing many interglobular spaces, undercalcified zones, is considered to be associated with rickets, a disease that is likely to occur at the same time as the development and calcification of the first permanent molars. After the teeth are fully formed and erupted, little can be done to change their character or to harden the enamel or improve the quality of the dentin. Vitamin D administered at the time of the formation of the teeth affects the process of calcification favorably but appears to have little or no effect in this sense after eruption. Even

though it is stated that this girl has a nourishing diet, the fact that she is overweight and susceptible to tooth decay warrants a careful investigation of her dietary habits. In spite of frequent statements to the contrary, as far as known there is no specific dietary deficiency involved. Yet caries is much more likely to be found in children whose carbohydrate intake is high, especially the highly refined forms of sugars and starches, and whose protein, mineral and vitamin consumption is low. Proper management of such cases has to do not only with increasing the intake of the preceding and rigidly limiting carbohydrates to energy requirements but also prompt recognition and immediate treatment of the initial lesions of caries by the dentist. Some foods that require vigorous chewing should be eaten at each meal, and each meal should be concluded with uncooked fruit or fruit cooked with a minimum amount of sugar, or some similar dessert instead of cake and highly sweetened pastry. Candy and food between meals should be prohibited. It would be advisable to have her dentist fill all deep pits and fissures in the molars as soon as these teeth are fully erupted (Hyatt's method). In children susceptible to dental decay, wholly successful management is difficult of attainment.

CHRONIC GLOSSITIS

To the Editor—I have a patient who has a sore tongue, also the surrounding mucous membrane of the mouth is sore. It is red. The tongue is clear of a membrane and is not coated. The patient had a very severe grade of secondary anemia which is now improving under treatment. Will you kindly state the possible etiology and treatment for this condition?

J S DURCAN M.D., Gary Ind

ANSWER—The description of a chronic red tongue and redness of the adjacent oral mucous membrane with great soreness, is suggestive of a chronic disease of the tongue known as Moeller's glossitis. The best article on this is by F G Harris (*J Cutan Dis* 33 742, 1915). The etiology in most cases is obscure. Most of Moeller's cases were in persons having intestinal worms, but Harris's cases and those reported by others did not present such infestation. Engmann and Weiss (*Arch Dermat & Syph* 1 119 [Feb] 1920) reported a case in which endamebas were found in tooth abscesses. On extraction of the teeth and treatment with emetine, the patient recovered.

Zinsser (*Handbuch für Dermatologie und Geschlechtskrankheiten* 14 101) states that all cases of Moeller's glossitis are due to pernicious anemia. While his statement finds little support in the case histories of Moeller's glossitis, his advice, that in all such cases the blood should be carefully studied and watched for a long time, is certainly good.

The patient's own experience as to diet may be safely followed, avoiding foods that cause pain, except in severe cases, in which all foods cause pain. Attempts to anesthetize the tongue before meals may then be made, using phenol in glycerin 5 per cent or stronger or orthoform powder on the tender areas, rinsed off before eating. Sharp tooth corners should be smoothed down. All foods should be soft.

Röntgen treatments are said to relieve the pain temporarily. They should be kept below the erythema dose. Use of ultraviolet radiation is also credited with temporary relief of pain.

Hutter, Middleton and Steenbock found that rats (Vitamin B Deficiency and the Atrophic Tongue, *THE JOURNAL*, Oct 21, 1933 p 1305) after about thirty-nine days on a diet deficient in vitamin B₁₂ lost the normally very sharp papillae of the tongue leaving a smooth dorsum much like that of the atrophic tongue of man. When vitamin B₁₂ was supplied, the papillae reappeared and the tongue appeared normal. They therefore suspected that vitamin B₁₂ deficiency might have some relation to the atrophic tongue. Their effort to cure such tongues by diets rich in vitamin B₁₂, however, were not successful enough to be convincing. Tomato juice or yeast by mouth and liver extract intramuscularly could be tried in the case under discussion if this has not already been done.

LEMON WITH FISH AND CHEESE WITH PIE

To the Editor—I Can you enlighten me through the columns of *THE JOURNAL* as to the origin and the significance if any of the custom of serving a slice of lemon with fish. I have wondered whether it originated or was connected in some way with the issuance of fresh lime juice to British seamen after its discovery as a preventive of scurvy. 2 What was the origin of serving cheese with apple pie? Please omit name.

M D California

ANSWER—1 The custom of serving lemon with fish probably originated in Italy and other southern countries where lemons grow abundantly. All the natives of these countries use lemon juice on almost every food they eat. They put it

on most of their vegetables, on shell fish and on fish and fowl. This is probably the most logical place where this custom may have originated.

2 The custom of eating cheese with pie may have originated with the Italians eating home-made cheese with apples and pears. Then they started using such cheese as either Parmesan ungrated, in whole pieces, or Bel Paese with raw fruit. The British took up the custom of using raw fruits instead of stewed fruits in their deep dish pies and with it served a piece of cheese as the Italians had done. The custom was probably brought to the United States, particularly the New England states, where the cheese used was the local store cheese or American cheese.

THROMBOPHLEBITIS IN INJECTION OF VARICOSE VEINS

To the Editor—A woman has a thrombophlebitis in one of the varicosities of the leg. How long should one wait before using the injection method of treating the other varicose veins? Would it be correct to go ahead on the well leg while waiting? Kindly describe the technique of determining the patency of the deep veins. Please omit name.

M D New Jersey

ANSWER—The correspondent does not state whether the patient has a deep or a superficial thrombophlebitis. Assuming that the infection is only in the previously dilated saphenous vein, it is wise to wait until all signs of local inflammation, such as redness, hardening of the wall of the vein, and increased skin temperature as compared with the unaffected side, have disappeared. It might also be advisable to look for the source of infection in the tonsils, teeth and cervix. There is no arbitrary period for starting the injections, but it takes usually from six weeks to three months before the injections may be safely given. In such a case it is wise to use small provocative doses of the sclerosing solution, not more than a few drops at a time and observe the inflammatory reaction following such a minute injection. If the veins of the other leg seem entirely free from infection, one can cautiously proceed with treatment on that side. However, it must be borne in mind that injections on the unaffected side may light up the subsiding process on the affected side.

The patency of the deep veins is determined by the test of Perthes. Following the constriction of the saphenous trunk by a towel, the patient is asked to flex and extend the knee vigorously ten times. During the exercise, blood is sucked into the deep veins and the superficial varicosities collapse. When the pressure of the towel is released, the filling from above demonstrates the amount of blood expressed into the deep veins. If the deep veins are not patent or if there is a deep venous valvular insufficiency, no diminution of the superficial veins will take place.

MULTIPLE MISCARRIAGES

To the Editor—Will you please advise me regarding the proper procedure in the following case. A normal appearing woman aged 26 started menstruation at 13 years. The normal cycle continued until six years ago then she would menstruate one week pause one week then menstruate again. With the onset of the irregular cycle dysmenorrhea occurred. She has been married five years and has been pregnant twice miscarrying at three months. The basal metabolic rate is 16+. Her sister has been pregnant twice with hyperemesis gravidarum and in spite of late hospitalization in both instances no procedures were successful except emptying of the uterus. How can I arrest another miscarriage? Both women are anxious to be mothers. Please do not use my name.

M D Illinois

ANSWER—The onset of dysmenorrhea after a few years of painless menstrual periods may have its origin chiefly in the psyche or in an adenomyosis of the uterus. Either cause may be difficult to determine. The mental reaction of the patient may be determined after a number of conversations. Adenomyosis or endometriosis of the uterus can be diagnosed with certainty only by means of an examination of the entire uterus. Microscopic examination of curetted material does not often help. However, clinically a diagnosis may often be made by the presence of atypical bleeding severe dysmenorrhea that appears after a long period of painless periods, and a sign recently pointed out by Halban namely, a marked cyclic enlargement of the uterus in the premenstrual phase of the period. The uterus diminishes in size immediately after the menstrual flow ceases.

Repeated miscarriages are often difficult to prevent. Occasionally careful macroscopic and microscopic examination of the expelled products of conception throws some light on the cause of the miscarriages. Recent work has shown that estrogenic substance stimulates uterine activity and that its antagonist, the hormone of the corpus luteum, inhibits the muscular activity of the uterus. Hence estrogenic substance

is advocated not only for cases of dysmenorrhea due to spasmodic contractions of the uterus but also for cases of threatened abortion and habitual abortion when no apparent cause can be detected. A prescription that has seemed to help some women is the following:

R _x	Red mercuric iodide	Gm or Cc	
	Arsenic trioxide	añ	0.065 gr. i
	Ferrous carbonate	12	5 iii
	Mix and make sixty capsules		
Sig	One capsule three times a day		

Patients with hyperemesis gravidarum should be placed in a hospital early in the course of the illness and treated energetically along the customary lines. When hypodermoclysis, proctoclysis, sedatives and other drugs fail to stop the vomiting, duodenal feeding usually accomplishes the desired result.

POLYNEURITIS IN MONOTYPE CASTING

To the Editor—I have a patient who for the last five years has been employed as a monotype operator. Six months ago severe neuritic pains suddenly developed in both arms and persisted for weeks. This condition was followed by muscular atrophy. I first saw him last week. He gives a history of having an exfoliation of the skin over both hands a few weeks after the onset. What can be done to determine the cause of the polyneuritis? Can you refer me to any literature concerning polyneuritis as an occupational disease in monotype work? Please omit name and address.

M D Illinois

ANSWER—There are two processes in monotype casting. The first is the striking off of symbols on a keyboard, which work is similar to typewriting, the second is the use of these strips of paper produced by the keyboard machine, which are fed into the caster and serve as molds for casting the type. In some machines the two operations are combined.

There is no hazard in the first part of the process beyond the possible overuse of the hands and arms in typing. In the second part of the process there is a distinct lead hazard, although this is not a severe one. However one would expect the form of neuritis to be an extensor paralysis resulting in wrist drop if lead was the important factor.

In order to determine the possible toxic effect of lead in the case outlined the usual tests for lead poisoning should be tried.

(a) Examination of the blood for stippling, polychromatophilia and secondary anemia.

(b) Examination of the urine for lead to determine whether or not there is more than 0.05 mg. of lead per liter, and whether hematuria or hematuria is present.

(c) Examination of the patient for other symptoms of lead poisoning such as the lead line of the gums, constipation, abdominal pain, wrist drop and foot drop.

The dangers of lead poisoning in monotype casting are described in *Industrial Poisons in the United States* by Dr. Alice Hamilton in which there is also a discussion of lead poisoning. More recent information on lead poisoning appears in *Industrial Toxicology* by the same author, published by Harper & Brothers in 1934, which contains an excellent bibliography.

CHRONIC DUODENITIS

To the Editor—I have under my care at the present time a patient who has had a gastric ulcer during the past six years. At the present time his symptoms are the same as those of a bad ulcer case. Complete examination of the stomach, intestine and gallbladder has shown that the ulcer area is healed and that all the trouble lies in the duodenum, the diagnosis by roentgenologists being duodenitis. I find nothing in my books on the treatment of this condition. I might say in passing that the usual ulcer treatment brings absolutely no response in this patient and alleviates none of the symptoms of which he complains. Can you suggest any mode of treatment that might produce an eventual clearing up of this condition? I have been tempted to try Synodal and also feeding through a duodenal tube that has passed below the duodenum. What are your opinions of these ideas and their possibilities?

ALGER D. POWELL, M.D., Ataca, Ohio

ANSWER—Alcohol, tobacco, spices and carbonated drinks should be strictly avoided in the treatment of chronic duodenitis. Elimination of foci of infection in the teeth, tonsils, paranasal sinuses, gallbladder, appendix and prostate should be attempted. Stomach secretions should be regulated with the use of alkalis if hyperacidity is present, and with dilute hydrochloric acid if a hypochlorhydria is found. Atropine is used to control spasm and irritation. Bismuth subnitrate alone or with alkali is used for its soothing effects. The instillation of silver salts or irrigation and lavage may be attempted with the duodenal tube. If symptoms persist surgical intervention is necessary. A pyloroplasty after the method of Judd and Nagel, may be the method of choice. Synodal is a proprietary preparation given intravenously while the results reported have been enthusiastic; the evidence available is hardly such as to indicate extraordinary merit.

CONGENITAL EXTRA LUMBAR VERTEBRAE

To the Editor—Please send without delay all information pertaining to congenital extra lumbar vertebrae (sixth lumbar) and especially as regards traumatism to the back when this condition is present.

FLOYD G. PATTERSON, M.D., Du Bois, Pa.

ANSWER—The occurrence of six lumbar vertebrae is a fairly common condition.

Whether the sixth lumbar vertebra predisposes the back to additional trauma is controversial. The condition is usually found incidentally (or accidentally), that is, when films are made of the spine incident to the study of nearby tissues, and roentgenographic studies follow an accident to the lumbar area.

In a discussion of numerical variations of the spine, Stender (Diseases and Deformities of the Spine and Thorax, St. Louis, C. V. Mosby Company, 1929) states that in the lumbosacral section one finds a caudal assimilation consisting in sacralization of the fifth lumbar in various degrees, ranging from a large, bifid transverse process to complete sacralization of the fifth lumbar segment, the cranial assimilation consists in lumbarization of the first sacral vertebra whereby the number of lumbar vertebrae is increased to six, while that of the sacral segment is decreased to four.

Bohart reported approximately 44 per cent of anomalies and anatomic variations in 1,000 symptomless spines.

In the routine examination of 931 symptomless spines of industrial employees Cushman and Maier found twenty-five instances of six lumbar vertebrae.

Gadow (Evolution of the Vertebral Column, Cambridge University Press, 1933) states that the rhinoceros has four lumbar vertebrae, the zebra six lumbar vertebrae and *Equus Przewalski* six lumbar vertebrae.

PILONIDAL CYST

To the Editor—Can you tell me whether there is any preparation that will close in a pilonidal cyst? I have used Beck's paste with fair results but have been unable to close it entirely. This patient absolutely refuses to be operated on. Please omit name.

M D New York

ANSWER—It is probable that some sclerosing agent might obliterate the pilonidal cysts or sinuses, but no reports of the successful use of any have been seen. The lining must be completely destroyed or removed.

SYPHILIS LATE IN PREGNANCY

To the Editor—The patient is five months pregnant and has a 4 plus Wassermann reaction. When she was seen five years ago with a secondary eruption, she received one course of neoarsphenamine and mercury. She is unusually sensitive to neoarsphenamine. A recent attempt on two occasions to give even small doses of this drug caused marked vomiting for twenty-four hours. Would you consider intramuscular injections of bismuth compounds biweekly for the remainder of the pregnancy sufficient therapy to produce a normal fetus? If not, what additional therapy is recommended in such a case? I would appreciate your advice. Please omit name.

M D New York

ANSWER—Intramuscular injections of bismuth compounds for the remainder of the pregnancy will most likely not be sufficient to guarantee the birth of a healthy baby. The placenta at the present stage of gestation is fully developed and it will require neoarsphenamine to destroy the spirochetes in this organ. While bismuth compounds will have a deleterious effect on the spirochetes in the placenta, neoarsphenamine is much more potent in destroying them. In spite of the patient's sensitivity, neoarsphenamine should be administered. Before each injection of arsphenamine it is advisable to give calcium gluconate intramuscularly and atropine. The dose of arsphenamine should be 0.15 Gm. and should be given slowly with the patient lying down. The patient should remain lying down for one or two hours after each injection. It is best to alternate a few injections of arsphenamine with a few injections of a bismuth compound and continue this to term.

HISTAMINE IN SEASONAL URTICARIA

To the Editor—I should like to know something about the use of histamine injections in the treatment of seasonal summer urticaria lasting about two months a number of skin test reactions being positive.

CORNELL G. GRAY, M.D., Hanover, Pa.

ANSWER—Search of the literature dating back to the time when histamine began to play a part in the discussions of allergic conditions has failed to reveal any article dealing with the use of histamine injections in the treatment of seasonal

urticaria or any other form of urticaria. There is, however, some work on the treatment of bronchial asthma by injections of histamine.

In this article, by Ramirez, the injections were begun with small doses and increased much as pollen extracts are increased, although in each case there came a point at which constitutional reactions characteristic of histamine poisoning resulted. These symptoms consist of prostration, perspiration and other less well marked changes and Ramirez decided that the treatment of asthma by histamine injections was not successful.

Histamine has also been used by Skouge (Percutaneous Histamine Therapy, *Nord med tidsskr* 6 1252 [Oct 21] 1933) in the treatment of various forms of rheumatism myalgia neuralgia, varicose ulcers, furuncles and arsphenamine infiltrations, with complete relief from pain in about 80 per cent of the cases, the results here were sometimes temporary.

IRIDOTASIS—IRIDENCELEISIS

To the Editor—What is the origin of the terms iridencleisis and iridotasis? It may be well understood as to what these operations on the iris are but very few know why these terms are selected and no dictionary or work on ophthalmology gives the derivation of them.

H W WOODRUFF MD Joliet Ill

ANSWER.—Iridotasis is evidently a simplification or corruption of "iridodesis," the name of the old operation for attaching a portion of the iris into an opening in the cornea. The word is derived from the Latin noun *irido* plus the Greek *deiosis* meaning a binding.

The origin of iridencleisis is not perfectly clear. It is probably derived from the Latin noun *irido* or *iriden* (combining form) and the Greek *κλειστός* meaning "closed," "enclosed" or "included." The combination denotes the "iris enclosed or included in the wound."

CHRONIC CYSTIC MASTITIS

To the Editor—A woman aged 39 married with two children whose family and past histories are negative had an enlargement of one breast five months ago which became painful. The pain shortly after subsided and disappeared. At present the breast is soft. The size and appearance of the nipple are the same as of the other breast. There are no dimples or any other signs. The enlargement however though not increasing still persists. Her general health is good. Please advise diagnosis and treatment if any. The woman is neither pregnant nor nursing. Please omit name.

MD New York

ANSWER.—Such an enlargement of the breast may be similar to chronic cystic mastitis, which is now believed to be the result of a disturbance in the female hormones. Such changes in the breast may cause either hyperplasia or cystic changes in either one or both breasts. In the absence of any further changes indicative of some other condition, no treatment of the breast is indicated. Examination of the pelvic organs might be in order.

ALBUMINURIA AFTER SCARLET FEVER

To the Editor—A boy aged 10 years had scarlet fever ten months ago. The attack was mild and convalescence uneventful except that he has continued to have 1+ albumin in the urine. I should like to know the prognosis as to this albuminuria and just how strict I should be as to his diet and exercise. Kindly omit name.

MD Texas

ANSWER.—In the absence of blood and granular casts, the prognosis should be good. As a rule little restriction in diet is necessary for a case of this kind. The patient will frequently do well on a high protein diet. Should edema develop, a salt free diet ought to be instituted.

LOCAL ANESTHETIC FOR TONSILLECTOMY

To the Editor—Have you any information regarding the use of nupercaine for injection for local tonsillectomy in a patient who has had aggranulocytic angina? I should like to know as soon as possible if it would be safe to proceed using nupercaine. The patient is in fair physical condition—the white count is 7,200—but he has a myocarditis which has kept him from work.

A L LINGHORST MD Elgin Ill

ANSWER.—We have been able to find no unfavorable reports regarding the use of nupercaine. If the patient is otherwise in condition to be operated on the use of this preparation for local tonsillectomy should be perfectly safe. If there is any doubt regarding its use the employment of 1 per cent procaine hydrochloride by the nerve blocking method would be devoid of risk. The procaine solution in ampules has incorporated in it about 1 20,000 epinephrine giving a perfect anesthesia without any edema so that the line of cleavage may easily be found.

Medical Examinations and Licensure

COMING EXAMINATIONS

- ALASKA Juneau March 5 Sec Dr W W Council Juneau
AMERICAN BOARD OF DERMATOLOGY AND SYPHILIOLOGY *Written (Group B candidates)* The examination will be held in various cities throughout the country April 29 *Oral (Group A and Group B candidates)* New York June 10 Sec. Dr C Guy Lane, 416 Marlborough St Boston
AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written (Group B candidates)* The examination will be held in various cities of the United States and Canada March 23 *Final oral and clinical examination (Group A and Group B candidates)* Atlantic City N J June 10 11 *Group B application lists close Feb 23 and Group A application lists close May 10* Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh
AMERICAN BOARD OF OPHTHALMOLOGY Philadelphia, June 8 and New York June 10 *Application must be filed at least sixty days prior to date of examination* Sec Dr William H Wilder 122 S Michigan Blvd Chicago
AMERICAN BOARD OF OTOLARYNGOLOGY New York June 8 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha
AMERICAN BOARD OF PEDIATRICS Atlantic City N J June 10 and St Louis Nov 19 Sec Dr C A Aldrich 723 Elm St Winnetka Ill
CALIFORNIA Regular Los Angeles Feb 4-7 *Reciprocity* Los Angeles March 13 Sec Dr Charles B Pinkham 420 State Office Building Sacramento
CONNECTICUT Basic Science New Haven Feb 9 *Prerequisite to license examination* Address State Board of Healing Arts 1895 Yale Station New Haven Regular Hartford March 12 13 *Endorsement* Hartford March 26 Sec Dr Thomas P Murdock 147 W Main St Meriden Homeopathic March 12 Sec Dr J H Evans 1488 Chapel St New Haven
MAINE Portland March 12 13 Sec. Board of Registration of Medicine Dr Adam P Leighton Jr 192 State St Portland
MASSACHUSETTS Boston, March 12 14 Sec Board of Registration in Medicine Dr Stephen Rushmore 144 State House, Boston
NATIONAL BOARD OF MEDICAL EXAMINERS Paris I and II The examinations will be held in medical centers where there are five or more candidates, Feb 13 15 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia
NEVADA Reciprocity Feb 4 Sec Dr Edward E Hamer Carson City
NEW HAMPSHIRE Concord March 14-15 Sec Board of Registration in Medicine, Dr Charles Duncan, State House Concord
NEW YORK Albany Buffalo New York and Syracuse, Jan 28 31 Chief Professional Examinations Bureau Mr Herbert J Hamilton Room 315 Education Bldg Albany
OKLAHOMA Oklahoma City March 12 13 Sec, Dr J M Byrum Mammoth Bldg Shawnee
PUERTO RICO San Juan March 5 Act Sec. Dr Ramón M Suarez Box 536 San Juan
VERMONT BURLINGTON Feb 13 15 Sec Board of Medical Registration Dr W Scott Nay Underhill
WISCONSIN Basic Science Madison March 16 Sec Prof Robert A Bauer 3414 W Wisconsin Ave. Milwaukee
WYOMING Cheyenne Feb 4 Sec, Dr W H Hassed Capitol Bldg, Cheyenne

Tennessee October Examination

Dr H W Qualls, secretary, Tennessee State Board of Medical Examiners, reports the written examination held in Memphis Oct 1-2 1934. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. Nineteen candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad	Number Passed
Harvard University Medical School	(1933)		1
St Louis University School of Medicine	(1934)		1
University of Tennessee College of Medicine	(1934 17)		17

Five physicians were licensed by endorsement from September 15 to October 25. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
College of Medical Evangelists (1930) N B M Ex.	(1929)	California,	
Kentucky School of Medicine	(1906)	Kentucky	
Woman's Medical College of Pennsylvania	(1932)	Ohio	
Medical College of Virginia	(1933)	Virginia	

Vermont Endorsement Report

Dr W Scott Nay, secretary, Vermont State Board of Medical Registration, reports 7 physicians licensed by endorsement from Aug 6 to Oct 9 1934. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Johns Hopkins University School of Medicine	(1931)	N B M Ex	
Tufts College Medical School	(1932)	Mass	
Long Island College of Medicine	(1933)	New York	
Hahnemann Med College and Hosp of Philadelphia	(1931)	Penna	
Woman's Medical College of Pennsylvania	(1933)	N B M Ex	
University of Vermont College of Medicine	(1933)	(1934)	N B M Ex

Book Notices

The Autonomic Nervous System By Albert Kuntz Ph.D. M.D. Professor of Micro Anatomy in St. Louis University School of Medicine Second edition Cloth Price \$7.50 Pp 697 with 73 illustrations Philadelphia Lea & Febiger 1934

The topics presented in this valuable book include the morphology and distribution of the autonomic nervous system, the structure of the ganglion cells, the central autonomic centers and conduction pathways the physiology of the autonomic nervous system, the development of the autonomic nervous system the innervation of the heart, the blood vessels, the respiratory system the digestive tube, the biliary system the glands, the urinary organs and the sex organs, the involuntary innervation of the eye, the autonomic innervation of skeletal muscles, the pathology of the autonomic nervous system, visceral sensitivity and referred pain, autonomic imbalance, the autonomic nervous system in disease, and the surgery of the autonomic nervous system. The author does not say for whom this book is intended, but it is clear that all who are interested in this vital subject which assiduous laboratory and clinical research is gradually lifting from darkness into light and which is daily being correlated with banal but little understood visceral phenomena and with the unfolding panorama of diseases of the autonomic nervous system, will find in it a vast store of information arranged in orderly and available fashion. The reader may be somewhat awed by the first chapter, on the morphology and distribution of the autonomic nervous system, for here a master anatomist throws him unceremoniously and headlong off the deep end. If the reader will persevere, however he presently launches into the body of an admirably clear and concise work. The histologic discussions particularly are beautifully illustrated and are worthy of unstinted praise. To orient oneself anew with respect to any phase of the autonomic nervous system is, to say the least, a time consuming task and requires access to a library well stocked with current periodicals. The author has succeeded commendably in culling what appears to be of greatest importance and reliability, and in turning the various facets of the subject to the reader in well balanced relationship for his inspection and deliberation. Unfortunately many problems to which one would like to know the answers are as yet unsolved, but when this is the situation, the reader wishes to know this also. Such problems as the autonomic innervation of skeletal muscle, still hotly disputed, are presented with fairness, restraint and understanding. Various captions in the chapters are clearly indicated, the whole work is carefully indexed, and any information sought may instantly be found. A bibliography of 117 pages tells the reader where he may carry on his search should this be desired.

Diffuse Sclerosis (Encephalitis Perilaxialis Diffusa) By L. Bouman M.D. Professor of Psychiatry and Neurology Utrecht University Cloth Price \$5 Pp 160 with 64 illustrations Bristol John Wright & Sons Ltd. 1934

Diffuse sclerosis, also known as Schilder's disease and under many other names, has attracted much attention during the last twenty years, though it has been known for more than fifty years. Strümpell for instance, mentions it even in the oldest editions of his textbook, but the pathologic basis was first emphasized clearly and properly by Schilder. In diffuse sclerosis a vast destruction of the subcortical white substance mainly of the occipital and temporal lobes, takes place, producing a clinical picture that can sometimes be diagnosed at the bedside. Blindness, and deafness setting in acutely or subacutely, combined with speech, motor and often psychic disturbances are the frequent symptoms and signs. In many cases, however, neither the clinical nor the histopathologic picture is characteristic enough to enable one to make a correct diagnosis. Nor is it always possible to make a definite diagnosis post mortem as the main histopathologic feature, demyelination (loss of myelin) in the white substance of the central nervous system, occurs also in multiple sclerosis, postvaccinal encephalitis, a number of hereditary and familial nervous diseases neurosyphilis and many other conditions. The foregoing features are all carefully discussed by Bouman on the basis of his personal experience and the study of the literature. Though the review

is down to the present and the subject is covered fully, no definite answer is given to such problems as whether diffuse sclerosis possesses specific clinical or pathologic features and whether it can safely be differentiated from similar conditions. As a matter of fact, the part of the monograph dealing with the microscopic changes of diffuse sclerosis is obscure. It is largely made up of quotations of various opinions, mostly confusing and misleading. The book would be much more valuable if these unnecessary and obscure histopathologic discussions (pp 124-142) had been omitted. Another distracting feature is the abundance of quotations in original German and French and the frequent use of German words whenever the author had difficulty in finding a suitable equivalent in English. The book is beautifully printed and the illustrations are for the most part clear, but the price is decidedly out of proportion to the size and the general merits of the monograph.

Developmental Anatomy A Text Book and Laboratory Manual of Embryology By Leslie Brainerd Arey Robert Laughlin Rea Professor of Anatomy Northwestern University Third edition Cloth. Price \$6.50 Pp 593 with 547 illustrations Philadelphia & London W B Saunders Company 1934

With all the changes of recent editions, the main feature of this book is the presentation of developmental processes from a three dimensional point of view. This can be referred back to the extensive dissections of embryos by C. W. Prentiss, on whose book this one was originally based. The value of the method stands out particularly in the chapters on the coelom, the mesenteries and the heart. The original emphasis on points of practical value to the medical student and practitioner is maintained with a corresponding stress on abnormal development. The laboratory manual remains substantially as it was, the sections on general embryology and organogenesis have been thoroughly revised and some new figures added. The author's method of documenting his statements by references to the original literature is helpful to the teachers and the very few students (cheer!) who are interested in the evidence on which the general conclusions are based. The account of the physiology of the female reproductive system is judicial, although the task is a difficult one because of the rapid accumulation of data in recent years and the numerous conflicts of opinion on fundamental questions. Fetal age and the duration of pregnancy are given the space they deserve. The illustrations are the most conservative feature of any textbook, for it is expensive to change them. In the chapters on the development of the external form and the brain, the retention of various old illustrations is to be regretted. The latter chapter suffers more than any other from a lack of first-hand knowledge of the material. The chief practical value of a study of brain development at present is the establishment of landmarks for reference in the adult brain. This has not received adequate emphasis, nor has the value of morphogenesis in unraveling the intricate relations in the fore brain been fully exploited. There is little else to criticize. The illustrations of sex differences in the external genitalia of young embryos are misleading, since they represent exceptional conditions that have proved to be inadequate for diagnosis in some cases at least. In figure 195 it is hardly apparent that in early stages the mesonephros extends through most of the thoracic region and the pronephros is almost entirely confined to cervical levels. Typographic errors are rare and never serious. It is gratifying to see that the price has not been increased despite the enlargement of the book.

Technique du traitement des fractures Par Lorenz Böhler directeur de l'Hôpital des accidentés Vienne Traduction d'après la quatrième édition Par M. Boppe chirurgien des hôpitaux de Paris Préface du Professeur Hartmann Cloth Price 160 francs Pp 652, with 1,046 illustrations Paris Masson & Cie 1934

This is a translation of the fourth edition of Böhler's book, which originally appeared in German. The mechanics of fractures and the displacement of the fragments are illustrated in a way that even the beginner can understand. The author illustrates to a high degree the value of skeletal traction, in the popularization of which method he has occupied so important a place. He describes in detail the method of local anesthesia in the treatment of fractures and dislocations, a method that owes its popularity to his pioneer work. It is noteworthy that in the treatment of fracture of the neck of the femur by

the Whitman abduction method, the assistant is obtaining internal rotation of the leg by turning the foot and ankle. This is a mistake, because the internal rotation should be done above the knee in order to spare the delicate structures of the knee from the trauma due to the twist and rotation that is necessary when internal rotation is accomplished by turning the foot and ankle. Illustrations 143 and 144 on the circulation of the carpal scaphoid are highly instructive. The Beck method of perforations in the treatment of pseudarthrosis is described and illustrated. The English reading surgeon will be interested in what this edition has to offer over the original German and small English translation, which has been off the press for about four years. A careful comparison discloses that the French edition has nothing to offer in addition. Again Steinberg, the translator of the first German edition, is to be highly complimented. While the English edition has 234 illustrations and the French edition 1046, it does not seem worth the difference in price.

Maternal Mortality in Philadelphia 1931-1933. Reports of Committee on Maternal Welfare. Philip F. Williams M.D. Chairman. Paper. Price \$1. Pp 143 with illustrations. Philadelphia: Philadelphia County Medical Society. 1934.

This is packed full of valuable information regarding maternal mortality in a large city. A proper review of it would require many pages. The study was conducted on the lines pursued by the committee of the Academy of Medicine of New York in 1933, thus making the two results comparable to some extent. As always with statistical studies it is impossible to find a common ground, common definitions and complete (if not biased) original entries. It is stated that while the birth rate in Philadelphia during the last thirteen years has dropped from 41,343 to 30,753, the maternal death rate has had no reduction, yet a table reads that the death rate was 6.3 in 1932 and 4.4 in 1933 per thousand total births. There has been a decrease in deaths from puerperal infection but the gain is made up by loss of mothers from other causes.

Seven hundred and seventeen deaths were studied as of 1931, 1932 and 1933. Septic abortion heads the list with 22.6 per cent, septicemia showing a percentage of 16.6, eclamptic states 11.9 and hyperemesis 3.3. The figures compared with those issued by the state of Pennsylvania again show that urban mortality rates are nearly double those of the rural districts.

The difficulty in arriving at just conclusions is shown by the joint coding of the causes of death, e.g., in reporting an influenza death during pregnancy, and this point is emphasized in the chapter devoted to comparison with mortality rates in foreign countries. "Until a uniform procedure for preference in joint causes found in maternal deaths is adopted, any comparisons between countries will be useless and futile."

Hospital deliveries showed 72 per cent spontaneous and 28 per cent operative, and the mortality of all the hospitals was 9.1 per thousand.

The incidence of cesarean section in Philadelphia hospitals varied from 0.3 to 11.1 per cent, the largest maternity service showing 4.8 and the average being 2.6 per cent. There were (in the three years) 1,775 cesarean sections, with 98 deaths or 5.52 per cent. Two "lost" cesarean deaths were discovered after the tables were made. The mortality of classic cesarean section was 74.5 per cent of the total ninety-eight deaths and 14.3 per cent for the low cervical, again proving beyond, now beyond justifiable doubt the immense superiority of the low cervical cesarean operation.

The figures show an increase of operative deliveries and at the same time an increase of fetal injuries and deaths of 62 per cent in ten years. In Philadelphia 73.5 per cent of all live births occurred in hospitals.

It was impossible to compare the results of home delivery with those of institutional, and one does not know what significance to attach to the figures. Of ninety-eight septic deaths seventy-seven are accredited to intrahospital infection, and of the seventy-seven patients sixty-six were "planned admission" cases.

A careful analysis of the deaths is made from many angles, and a good discussion of each factor is given, also recommendations for prevention. One might disagree with some of the opinions regarding preventability of these deaths. It is hard to judge what should have been.

This report is a valuable addition to our obstetric statistics and will help all teachers to teach and do better obstetrics, and hospitals to improve their service.

Biothérapie chirurgicale anti-infectieuse. Ses procédés. Vaccins sérum thérapeutique par le choc. Immunisation transfusion leucocytothérapie bactériophagothérapie. Ses applications ses limites. Par J. P. Lamare et Maurice Larget-Chirurgiens de l'Hôpital de St. Germain en Laye. Paper. Price 30 francs. Pp 264. Paris: Librairie Louis Arnette. 1934.

This readable work is divided into two sections. In the first is a concise presentation of most of the well established ideas on vaccines, serum, blood transfusions, therapy of shock, non-specific leukocytic stimulation, and bacteriophage. Particularly helpful are the suggestions and contraindications for the use of serums and vaccines. The second portion of the book deals more with the specific diseases in which one or more of the foregoing therapeutic procedures is indicated. The portion on osteomyelitis and puerperal sepsis is quite extensive, but vaccine therapy in ulcerative colitis is not considered nor is the subject of preoperative preparation dealt with to any extent. It is probable that the authors feel that these two subjects are not sufficiently established to warrant more emphasis. No bibliography is included, although generous and frequent mention is made of other workers in this field. The book appears to be one to which one may turn for the present-day conception of these subjects but with no new or original additions. It is primarily a reference book for the clinician, not the investigator.

Osteomyelitis. Its Pathogenesis, Symptomatology and Treatment. By Abraham O. Wilensky A.B. M.D. F.A.C.S. Attending Surgeon to the Bronx Hospital and Dispensary. New York. Cloth. Price \$8. Pp 454 with 104 illustrations. New York: Macmillan Company. 1934.

The author bases his book on the conception that the pathologic changes which occur in cases of osteomyelitis are of vascular origin and are to a large degree mechanistically determined. He has delved into the field of bacterial infection, neurology, otology, rhinology and the history of medicine. He has taken much from his writings that have appeared in many periodicals and from numerous other sources. The historical development of knowledge concerning osteomyelitis is an interesting chapter. The author likes the Orr treatment but does not like the use of maggots. It is surprising that the work of Starr, a pioneer whose work forms a milestone in the pathogenesis and rational early treatment of osteomyelitis, has been entirely neglected. His name does not even appear in the index. Nor does the name of Platt appear. The work of Dean Lewis appears in four places, which are purely statistical. The excellent work of the Englishman Kennon is entirely neglected. Lincoln, Neb., would resent the statement on page 226, where Orr is credited to Kansas City.

Krankheiten der Leber und der Gallenwege. Eine Darstellung für die Praxis. Von Professor Dr. F. Rosenthal. Fachbücher für Ärzte. Band XVI. Herausgegeben von der Schriftleitung der klinischen Wochenschrift. Cloth. Price 18.80 marks. Pp 216 with 6 illustrations. Berlin: Julius Springer. 1934.

This is an excellent little treatise on diseases of the liver and the bile tracts. It is replete with discussions on the newer phases of physiology of the liver and their clinical application as well as with a fairly thorough description of pathologic anatomy, clinical considerations and methods of treatment. The technic of the commoner and more useful laboratory procedures as the tests of liver function, are described in sufficient detail. Discussions of differential diagnosis when necessary, are not lacking. Especially creditable are the sections devoted to the cirrhoses of the liver. Under the caption of diseases of the extrahepatic biliary tract the new subject of biliary dyskinesia and the causes, symptoms and treatment are described quite well. One would wish that more space were given to the acute disorders of the gallbladder and that mention of the effect of obstruction of the common duct on the pancreas were made. The bibliography is meager although many more authors are mentioned in the text without their names appearing in the list. With the exception of the work of Mann and Magath and of Graham and Cole, English and American authors are quoted rather meagerly. However, it is quite an acceptable piece of work of its size.

Medicolegal

Paternity Blood Grouping Tests to Determine Paternity—The plaintiff sued the defendant for damages for a carnal assault, alleged to have been committed by the defendant, as a result of which the plaintiff gave birth to a child. The defendant, denying all of the material allegations of the complaint, requested the court to require the plaintiff and her child to submit to a physical examination pursuant to the provisions of section 306 of the Civil Practice Act of New York, and, in connection therewith, to permit the taking of samples of blood of the plaintiff and her child for examination and analysis. Section 306, Civil Practice Act of New York, provides in part as follows:

In an action to recover damages for personal injuries if the defendant shall present to the court satisfactory evidence that he is ignorant of the nature and extent of the injuries complained of the court by order shall direct that the plaintiff submit to a physical examination by one or more physicians or surgeons to be designated by the court or judge.

The examination sought, said the Supreme Court of New York, Kings County, is clearly relevant to the issue of paternity. The question to be determined is whether the Landsteiner blood grouping test, which is here sought to be applied is generally recognized as sufficiently trustworthy for use as an aid in ascertaining facts in a legal proceeding. If so, the court said, then by general common law principles the proposed examination should be permitted. The law has at all times said the court, even though on occasions haltingly, appreciated the need of keeping abreast of achievements in fields other than its own. It has thus recognized as trustworthy and has made use of, numerous scientific advantages. The Binet Simon Intelligence Test was used during the course of a Connecticut trial *State v. Wade* 96 Conn. 238, 113 A. 458. Experts are permitted to testify that a given specimen of blood is human and evidence of fingerprints is admitted to prove identity. *People v. Roach* 215 N. Y. 592, 109 N. E. 618. With respect to the present case, the court said, research of medical journals and foreign law reports discloses that many thousands of similar cases have been before the courts of European nations. The evidence submitted on the hearing of this case, continued the court and a reference to scientific works cited in support of the application, lead to a conclusion in keeping with that of the Supreme Italian Court of Cassation (*Lattes, Individuality of the Blood*, p. 254), where the following appears:

As regards the reliability of the results obtained by this method the latest studies and investigations show that though the determination of the blood groups affords no positive evidence for a declaration of filiation in a given case it does on the other hand furnish incontrovertible evidence for the exclusion of this relationship when the child's blood group does not agree according to a definite scheme with that of the supposed father.

Naturally, continued the court, the application of scientific tests will not be permitted where such tests have not attained definite and dependable results accepted generally by those qualified to judge. Thus, a federal court has refused to permit the use of the systolic blood pressure deception test because it had not gained sufficient scientific recognition. *Frie v. United States* 54 App. D. C. 46, 293 Fed. 1013, 34 A. L. R. 145. The Landsteiner blood grouping test, on the other hand, has been generally accepted by the medical profession, said the court. The Supreme Court was convinced that the reason and the exigencies in the present case fully justified the granting of the application, subject to such restrictions and directions as the court might deem proper. On appeal, however, to the appellate division of the Supreme Court, second department, the order directing the plaintiff and her child to permit the taking of blood for the purpose of determining the defendant's paternity of the child was reversed. The appellate division of the Supreme Court stated that the plaintiff might submit to the taking of a specimen of her own blood, but it plainly would determine nothing. She admits that she is the mother of the child. A blood test of the defendant and the child might possibly determine the defendant's nonpaternity but it was not claimed, nor

was there any evidence in the record to show, that the test would determine the defendant's paternity. The child was not a party to the action, continued the court, and while the court of chancery has an inherent jurisdiction over the welfare of an infant a ward of the court, nothing in this case indicated in the slightest that the welfare of the child was in any way involved or that the blood test could possibly be beneficial to the child. Section 306 of the Civil Practice Act, concluded the court, had no application to the facts of the case.—*Bruschel v. Manowitz (N. Y.)*, 271 N. Y. S. 277, 272 N. Y. S. 165.

Compensation of Physicians Liability of Corporation for Services Rendered at Agent's Request—Deering, an employee of the Shredded Wheat Sales, Inc., employed the plaintiff-physician to treat a boy injured by one of the corporation's trucks, promising, according to the plaintiff's testimony that the corporation would pay for the services rendered. Deering reported the accident and the name of the attending physician to the corporation and, at its request, reported the boy's progress weekly. Later, Gale, one of the corporation's assistant sales managers, came from Boston to Providence, where the child had been injured, to investigate the case and visited the boy in the hospital. On the corporation's failure to recompense the plaintiff-physician, he brought suit against the corporation and Deering. The trial court, on the motion of the defendants, granted a non suit and the plaintiff appealed to the Supreme Court of Rhode Island.

We note, said the Supreme Court, that the name of the plaintiff appears in the pleadings as "Dr. James Hamilton." The designation "Dr." is a title and is no part of the name of the plaintiff. It is therefore improper pleading so to designate the plaintiff. For the purposes of the motion for a non suit, continued the court, the plaintiff is entitled to every inference of fact favorable to him which can reasonably be drawn from the testimony. In view of the reports made to the corporation and the interest it evinced in the boy's condition, it would be natural to expect that the corporation should make some inquiry to ascertain whose credit had been pledged for the boy's care. When Gale was in Providence investigating the case, he knew that the plaintiff was rendering his services at the request of an employee of the corporation. It would have been unreasonable for the officials of the corporation to assume that the employee expected to pay for the treatment. As the corporation at that time had knowledge that its agent had contracted for the medical care of the child, it should have investigated the matter. If inquiry had been made, the facts would have been learned. The officials of the corporation, by closing their eyes to available information, are charged with the knowledge which it was their duty to ascertain. Had the corporation desired not to be bound the services could and should have been ordered discontinued. Having failed to speak when it should, the corporation may not speak now when it would. The Supreme Court concluded that from the uncontradicted evidence the jury might reasonably have found that the corporation knew, or had reason to believe, that the plaintiff was rendering services and charging them in good faith to the corporation. The case should have been submitted to the jury. The action of the trial court nonsuiting the plaintiff was therefore declared erroneous, and a retrial of the cause was ordered.—*Hamilton v. Shredded Wheat Sales Inc. (R. I.)*, 172 A. 614.

Society Proceedings

COMING MEETINGS

American Orthopsychiatric Association	New York	Feb. 21-23	Miss Mary A. Clarke	50 West 50th Street	New York	Secretary
Annual Congress on Medical Education and Licensure	Chicago	Feb. 18-19	Dr. William D. Cutter	535 North Dearborn Street	Chicago	Secretary
Pacific Coast Surgical Association	Santa Barbara	Calif. Feb. 21-23	Dr. Edgar L. Gilcrest	384 Post Street	San Francisco	Secretary
Southeastern Surgical Congress	Jacksonville	Fla. March 11-13	Dr. Benjamin T. Beasley	478 Peachtree Street	N. E. Atlanta	Ga. Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Hygiene, Baltimore

20 513 660 (Nov.) 1934

- Varieties of Typhus Virus and Epidemiology of American Form of European Typhus Fever (Brill's Disease) H. Zinsser Boston—p. 513
- Age and Seasonal Incidence of Minor Respiratory Attacks Classified According to Clinical Symptoms S. D. Collins and Mary Gover Washington, D. C.—p. 533
- Seasonal Distribution of Measles, Scarlet Fever, and Diphtheria for Periods of High and of Low Incidence Sarah M. Hindman and G. E. Harmon, Cleveland—p. 555
- Effect of Certain Environmental Factors on Urban Infant Mortality Rates Marjorie T. Bellows and L. J. Reed Baltimore—p. 565
- Age Variations of Systolic Blood Pressure in United States Army Officers Rachel M. Jeness Baltimore—p. 574
- Further Observations on Staphylococcus Food Poisoning E. O. Jordan and W. Burrows Chicago—p. 604
- Air Borne Infection Study II Droplets and Droplet Nuclei W. F. Wells Boston—p. 611
- Id. Study III Viability of Droplet Nuclei Infection W. F. Wells Boston, and W. R. Stone Cambridge Mass.—p. 619
- Sex Ratio of Pneumonia Mortality and Its Possible Relation to Occupation J. A. Doull, G. E. Harmon, and B. Fisher Cleveland—p. 628
- Incidence and Distribution of Ascaris Lumbricoides Trichuris Trichiura and Hymenolepis Nana in Mississippi A. E. Keller and W. S. Leathers Nashville Tenn.—p. 641

American Journal of Pathology, Boston

10 713 854 (Nov.) 1934

- Functional Reactions of Human Thyroid Contribution to Its Histophysiology N. Goormaghtigh and F. Thomas Ghent Belgium—p. 713
- *Unique Infection in Man Caused by New Yeastlike Organism Pathogenic Member of Genus *Sepedonium* G. H. Hansmann and J. R. Schenken Washington D. C.—p. 731
- Free Growth Period of Tubercle Bacilli in Guinea Pig Omentum as Related to Hypersensitive State C. E. Woodruff Nashville Tenn.—p. 739
- Syphilitic Aneurysm of Left Coronary Artery with Concurrent Aneurysm of Sinus of Valsalva and Additional Case of Valsalva Aneurysm Alone G. A. C. Snyder and W. C. Hunter Portland Ore.—p. 757
- Adamantinoma of Upper Jaw Report of Case Leila S. Ghosh New York—p. 773
- Congenital Atresia of Tricuspid Orifice and Anomalous Origins of Coronary Arteries from Pulmonary Artery D. M. Grayzel and R. Tennant, New Haven Conn.—p. 791
- Calcification in the Brains of Equidae and of Bovidae E. W. Hurst Princeton N. J.—p. 795
- Focal Fat Infiltration in Liver M. A. Simon Cleveland—p. 799
- Meningioma of Tuberculum Sellae with Hyperostosis Report of Case with Autopsy Findings P. C. Bucy and F. E. Kredel Chicago—p. 805
- Primary Intramedullary Neurogenic Sarcoma of the Ulna Report of Case J. H. Peers Boston—p. 811
- Relation of Increased Intra-Abdominal Pressure to Liver Lesions of Elephasia M. B. Strauss and S. Maddock Boston—p. 821
- Changes Produced in Central Nervous System of Mouse by Virus of St. Louis Encephalitis J. E. Smadel and Elizabeth Moore St. Louis—p. 827

Infection in Man Caused by Yeastlike Organism—

Hansmann and Schenken report the case of a chronic infection produced by a yeastlike organism belonging to the genus *Sepedonium*. The infectious agent was apparently localized in the skin and the regional lymph nodes for a period of about fifteen years. The skin was thickened and scaly throughout the course of the disease except during the last three months of life when the characteristic papular lesions developed. It is possible that this fungous infection could have been a secondary infection engrafted on a nonspecific scaly dermatitis but the presence of the yeastlike organism in the skin and lymph nodes for at least a year and a half before the lesions became papular and the fact that the enlargement of the lymph nodes

was an early observation make this possibility seem quite improbable. It is the authors' opinion that the disease was initiated by the fungus. The appearance of the organism in tissue, the large spiculated chlamydospores on artificial culture medium and the animal pathogenicity of the organism are the characteristic features by which subsequent cases may be recognized. The infecting organism is similar in the chronicity of the infection it produced, the macroscopic appearance of its growth on artificial culture medium and the formation of spores on lateral branches to the so-called oidium mentioned in medical literature. However, the large spiculated spores, the delicate mycelium and the animal pathogenicity are distinctly different from *Oidium Gilchristii*. Although the authors appreciate that the taxonomy of this large group of imperfect fungi to which this organism belongs, is artificial and often unsatisfactory, it would appear that this organism could not be classified more satisfactorily for the present than with the genus *Sepedonium* since no spore formation from the copulation of hyphae was observed.

Syphilitic Aneurysm of Coronary Artery with Aneurysm of Sinus of Valsalva—In addition to the recognized causes of aneurysm of the coronary arteries such as mycotic-embolic infection and arteriosclerosis, Snyder and Hunter offer another, syphilitic arteritis. They know the accepted belief is that the coronary arteries are rarely affected by syphilis distal to their intra-aortic segments. However, in one of their two cases there is a condition which modifies the usual circumstances, so that they do not hesitate to term the coronary lesion syphilitic. Undoubtedly the involvement of the left coronary artery was dependent first on the localization of an active syphilitic aortitis in the left posterior sinus of Valsalva and secondly on the direction of burrowing of the enlarging sac, which finally brought it into intimate contact with the main left coronary artery. There must then have been a spread of *Spirochaeta pallida* from the wall of the Valsalva sac to the wall of the coronary artery with resultant destruction fusion of the walls of the two juxtaposed structures and, finally, the formation of a true aneurysm in the weakened coronary artery. As evidence of the syphilitic nature of the lesion the authors submit the microscopic observation of obliterative endarteritis of the vasa vasorum, perivascular collars of plasma cells and lymphocytes, microscopic gummas, destruction and scarring of the media and adventitial fibrosis. A careful study of the aorta, coronary arteries and myocardium failed to disclose anything that could be interpreted as rheumatic disease. The vascular changes in the coronary artery of this case were quite different from the commonly observed adventitial cellular infiltration accompanying coronary arteriosclerosis. In addition to aneurysm of the coronary artery there was recent thrombotic occlusion of the sacculum and the lumen of the vessel adjacent to it. Death evidently supervened shortly after the thrombus formed for only the earliest indications of infarction of the myocardium were present. In the other case it is possible that the incipient heart block, not evident clinically but suggested by the prolonged atrioventricular conduction time and the inverted T waves of the electrocardiogram may have been caused by digitalis but the authors feel that the Valsalva aneurysm together with degenerative and fibrotic changes in the adjacent myocardium afford a more plausible explanation for these phenomena. Another factor contributing to cardiac failure was aortic insufficiency. The right cardiac hypertrophy probably was due to increased pressure in the lesser circulation bed due both to the stenosis of the pulmonary valve region by the Valsalva sinus aneurysm and also to pulmonary arteriosclerosis which in turn probably followed increased circulation pressure from left heart failure on the basis of aortic insufficiency and stenosis of the mitral area from the Valsalva aneurysm. The presence of plasma cells and lymphocytes in the walls of the pulmonary arteries suggests that the sclerosis of these vessels may in part at least have been the result of syphilis. The lesions in the bases of the lungs exhibited the characteristics of gummas and bore scarcely any resemblance to tubercles. Although the spirochete stains failed to demonstrate the organism the authors believe from the microscopic appearance of the lesions and the known syphilitic nature of the aortic disease, that the pulmonary foci are syphilitic as well. The aortic involvement was much more extensive than is usual in syphilis,

and a second saccular aneurysm has developed in the abdominal division of the vessel

Focal Fat Infiltration in Liver—Simon submits a case of localized fat infiltration of the liver resembling lipoma in the gross and not identical with any similar lesion reported in the literature. It is possible that other cases thought to be lipoma of the liver are of the same nature. The lesion does not correspond to the usual picture of lipoma in that there is no trace of capsule and the supporting tissue is made up in considerable part of remnants of the capsule of Glisson. There are no features indicative of malignant neoplasm. That the condition is a localized fat infiltration is supported by the fact that peribiliary structures including bile ducts are found within the mass. There is no positive indication of marginal compression and between the normal liver cells and the fatty mass there is a zone, interpreted as transitional, in which many liver cells show small fat droplets. The process differs from ordinary fat infiltration of the liver in that all the cells within the mass show almost complete distention of cytoplasm by a single, large fat globule.

American Journal of Physiology, Baltimore

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- Physiologic Production of Sympathin in Liver G. P. Whitelaw and J. C. Snyder Boston—p. 247
- Study of Intragastric Factors in Regulation of Gastric Acidity C. M. Wilhelmj, L. C. Henrich and F. C. Hill Omaha—p. 251
- Platelets and Spontaneous Syncreisis of Blood Clots L. M. Tocantins Philadelphia—p. 278
- Manifestations of Segmentation in Myelinated Axons J. Erlanger and E. A. Blair St. Louis—p. 287
- Middle Ear Pressure and Auditory Acuity Eva Thompson, H. A. Howe and W. Hughson Baltimore—p. 312
- *Voluntarily Induced Increases in Rates of Certain Involuntary Physiologic Processes of Human Subject T. M. Carpenter and R. G. Hoskins Boston and F. A. Hitchcock—p. 320
- Basal Metabolism in Old Age J. R. Matson, Columbus Ohio and F. A. Hitchcock—p. 329
- Respiratory Quotient of Muscle of Depancreatized Dogs H. E. Himwich, W. Goldfarb, N. Rakeiten, L. H. Nahum and D. Du Bois New Haven Conn.—p. 352
- Reciprocal Changes in Reflex Activity of Fore Limbs Induced by Post-brachial Cold Block of Spinal Cord T. C. Ruch and J. W. Watts, New Haven Conn.—p. 362
- Factors Determining Block of Conducted Cardiac Impulse A. S. Gilson Jr. St. Louis—p. 376
- Time Curve After Insulin M. Caroline Hrubetz New York—p. 384
- Relationship of Urea Clearance to Renal Blood Flow D. D. Van Slyke, C. P. Rhoads, Alma Hiller and A. Alving New York—p. 387
- Effects of Novocainization and Total Section of Nerves of Renal Pedicle on Renal Blood Flow and Function C. P. Rhoads, D. D. Van Slyke, Alma Hiller and A. S. Alving New York—p. 392
- Utilization of Calorigenic Action of Diiodothyronine and Thyroxine in Muscular Exercise A. Canzanelli, M. Segal and D. Rapport Boston—p. 410
- Use of Ethyl Alcohol as Fuel in Muscular Exercise A. Canzanelli, Ruth Guild and D. Rapport Boston—p. 416
- Experimental Diabetes Insipidus Its Relation to Anterior and Posterior Lobes of Hypophysis C. P. Richter Baltimore—p. 439
- Peripheral Circulation During Experimental Fever J. O. Pinkston Boston—p. 448
- Quantitative and Qualitative Ovarian Response to Distributed Dosage with Gonadotropic Extracts L. C. Maxwell Santa Barbara Calif.—p. 458
- Effect of Viosterol on Calcium Content of Dog's Bile K. K. Jones and G. H. Laing Chicago—p. 471
- Respiratory Metabolism of Infrahuman Primates J. M. Bruhn New Haven Conn.—p. 477
- Effect of Chronic Experimental Liver Damage on Blood Sugar Response to Insulin R. G. Sprague Chicago—p. 488
- Pregnancy Urine Given by Mouth to Gonadectomized Rats Its Effect on Spontaneous Activity and on Reproductive Tract C. P. Richter Baltimore—p. 499

Voluntarily Induced Increases in Rates of Involuntary Physiologic Processes—Carpenter and his associates determined the total respiratory exchange, pulse and respiration rates, and systolic and diastolic blood pressures in a person in the typical basal postabsorptive condition and in periods of five and ten minutes during which he voluntarily produced an increase in all the factors without apparent visible effort. The increases produced were from 13 to 32 per cent in the oxygen absorption, from 17 to 26 per cent in the pulse rate, from 9 to 28 per cent in the systolic pressure and from 4 to 27 per cent in the diastolic pressure. These changes were devoid of alterations of affect. Only when the subject lay practically nude was it possible to detect any indication of effort on his part. Under the ordinary condition of measurement of basal metabolism the

causes for the increased values would have remained obscure. The observations demonstrate that it is possible for a person to maintain himself in a condition that is not basal but which under the ordinary rules of measurement would be considered conforming to the usual conditions of basal metabolism measurements. The metabolic rate measured under the usual prescribed basal conditions is therefore not necessarily the basal rate.

Canadian Medical Association Journal, Montreal

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- Clinical and Mycologic Study of Suppurative Ringworm A. M. Davidson P. H. Gregory and A. R. Birt Winnipeg, Man.—p. 587
- *Acute Pancreatic Necrosis Review of Twenty Cases J. R. Parry and K. Murray Hamilton Ont.—p. 592
- Sprengel's Deformity Failure of the Scapula to Descend Report of Case in Infancy M. L. Blatt Chicago and M. Scandifio Toronto.—p. 596
- Aneurysm of the Aorta with Compression of Spinal Cord. R. A. Gregory Boston—p. 598
- *Relationship of Sedimentation Rate in Rheumatic Infection in Childhood to Alteration in Albumin-Globulin Ratio R. R. Struthers and H. L. Bacal Montreal—p. 603
- Methods of Treating Persistent Pyelitis in Children H. M. Kenb Montreal—p. 605
- *Study of Twenty Four Hour Blood Sugar Curve in Diabetic Patients. P. H. Sprague and Dora A. Newson Edmonton Alta—p. 609
- Early Diagnosis in Rectal Cancer and Prognosis on Basis of Dukes Classification E. A. Daniels Montreal—p. 612
- Clinical Observations on Use of Evipan K. M. Heard Toronto—p. 614
- Grading of Malignancy in Terms of Cytomorphology of Blood. O. C. Gruner, Montreal—p. 623
- *Postoperative Activity of White Blood Cells as Measured by Their Lipid Content E. M. Boyd, Rochester N. Y.—p. 626
- Some Reflections on Arthritis J. A. Nutter Montreal—p. 633
- Semilunar Cartilages of Knee G. G. Corbet St. John N. B.—p. 635
- Comparative Study of Habitual Use of Barbiturates and Coal Tar Derivatives as Furnished by Reports from Various Hospitals Throughout the United States O. Lowy Newark N. J.—p. 638
- Trypsamide Treatment of General Paresis J. N. Senn Whitby Ont.—p. 642
- Contusions of the Eyeball W. H. Brown Edmonton Alta—p. 645
- Periodic Health Examination and the General Practitioner H. M. Harrison Toronto—p. 650
- Maternal Mortality in Ontario J. T. Phair and A. H. Sellers Toronto.—p. 655

Acute Pancreatic Necrosis—Parry and Murray discuss twenty cases of acute pancreatic necrosis. The exciting agent is unknown, as is also the route it employs. Infected bile or duodenal contents injected under pressure into the pancreatic duct of an experimental animal causes an acute necrosis of the pancreas closely resembling that seen in man. As yet no satisfactory explanation has been offered in the cases in which the common bile duct and pancreatic duct enter the duodenum separately. Patients suffering from biliary colic who are not rendered relatively free from pain by the hypodermic administration of one-fourth grain (0.015 Gm.) of morphine, repeated in from two to four hours, are probably suffering from some complication of gallstone colic, and acute pancreatic necrosis is an important complication. Although acute pancreatic necrosis carries a higher mortality (40 per cent in the authors' series), there is reason to believe that it is probably not so high as has been heretofore supposed, because undoubtedly many patients who survive do not come to operation. Often the diagnosis may be made before operation if the triad of symptoms and signs is kept in mind, viz. (1) the patient's general condition more acute than is usually seen in biliary colic, (2) pain and tenderness localizing to the left of the midline just above the umbilicus and (3) palpation of an indefinite thickening in the epigastrium (often it is not palpable until the patient is relaxed under the anesthetic). As a prophylactic measure, the removal of infected gallbladders would prevent many of these cases. When a diagnosis of acute pancreatic necrosis is made, immediate surgical attack on the pancreas is not required.

Sedimentation Rate in Rheumatic Infection and the Albumin-Globulin Ratio—Struthers and Bacal observed that alterations in the sedimentation rate which have been shown to occur associated with rheumatic infection in childhood are associated with definite alterations in the albumin globulin ratio. With a rise of the sedimentation rate there is a drop in the concentration of albumin and a rise in the concentration of globulin, and vice versa. The method that they used for the estimation of the albumin-globulin ratios is a combination of the Howes-Kjeldahl and Van Slyke methods. From their

present knowledge it would appear that alterations in the sedimentation rate are dependent on surface tension of the blood and corpuscle volume, hemoglobin concentration and hydremia

Twenty-Four Hour Blood Sugar Curve in Diabetic Patients—Sprague and Newson determined the blood sugar curve in a diabetic patient, aged 12, over a period of twenty-four hours. Blood was taken at intervals of three hours. During this time insulin was administered once, at 4 30 p m, and the patient was given his usual diet of 1,500 calories, each meal of which had a dextrose value of 50 Gm. The blood dextrose determinations were carried out as described by the Schaffer-Hartman method. When these results were plotted, some of the phenomena the authors had been at a loss to understand in adjusting the insulin dosage were indicated. For the first six hours the results corresponded with what would be expected, in that there was slight postalbuminary hyperglycemia, which gradually subsided. At this point, because of a misunderstanding, 15 units of insulin was administered. There was a marked fall in the blood sugar level which continued on down and reached its lowest point about 11 p m. From this time on there was a marked increase, reaching a peak of 0.237 per cent at 5 a m. This increase took place in spite of the fact that no nourishment was taken after 5 p m the preceding evening. That this was apparently not an unusual condition was indicated by the fact that the parents found the patient in a comatose state on several occasions late at night and that it was almost impossible to obtain a morning specimen of urine which was sugar free. It was also recalled that all of the patient's episodes of insulin shock had occurred late in the evening. It occurred to the authors that it might be possible to control the glycosuria better by giving the morning insulin at 4 30 a m. before the blood sugar had reached its peak. When this was done it was found that the morning specimen of urine was sugar free, and coincident with this the patient felt better. This study led the authors to carry out similar curves on other diabetic patients.

Postoperative Activity of Leukocytes—Boyd performed a differential lipid analysis of the white blood cells on ten patients before they underwent surgical operation and at intervals of from three to seven days afterward. In one group of seven cases the postoperative course was normal and in the second group of three cases the postoperative course was prolonged, owing to serious complications. One death occurred. The changes in the lipid content of the white blood cells varied according to whether recovery from operation was normal or complicated. In those patients who returned to normal health in the usual time, the striking changes in the blood leukocytes were a rise in the level of phospholipid and free cholesterol (in certain cases an increase of more than 200 per cent was recorded for these lipids). In such leukocytes the values for neutral fat and cholesterol ester were usually low. On the other hand, when the patient did not respond normally to operation and marked postoperative complications developed, the changes in the leukocytes were the exact opposite of this, phospholipid and free cholesterol fell to a third or a half of their value before operation, and neutral fat and cholesterol ester tended to increase in amount. The group of variations in lipids for the former cases corresponds to those characterizing increased tissue activity, those in the latter group, decreased tissue activity. It is therefore possible to follow changes in the activity of the blood leukocytes by measuring their lipid content. The most significant variations occur in phospholipid and free cholesterol. Routine analyses may be restricted to one or both of these. The test may be performed in about three hours. Its use as an aid to prognosis, diagnosis and treatment is discussed and illustrative cases are cited.

Canadian Public Health Journal, Toronto

25: 513 562 (Nov.) 1934

- The Place of Industrial Hygiene in a Municipal Health Program F G Pedley, Montreal—p 513
Milk Control for the Small Town M H McCrady Montreal—p 519
Recent Health Legislation in Canada By the Editorial Board in Cooperation with the Provincial Departments of Health—p 524
Whooping Cough Public Health Problem N E. McKinnon and Mary A. Ross Toronto—p 533
Health Education in a Small City D V Currey St. Catharines Ont.—p 538
Prevention of Tuberculosis Through Traveling Clinics A LeBoeuf Quebec—p 544

Endocrinology, Los Angeles

18: 667 766 (Nov Dec) 1934

- Human Corpus Luteum and Progesterin J P Pratt, Detroit—p 667
Interrelationship of Adrenal Cortex and Anterior Lobe of Hypophysis H B Shumacker Jr and W M Firor Baltimore—p 676
*Hypothyroidism Induced by Complete Removal of Normal Thyroid Gland in Treatment of Chronic Heart Disease H L Blumgart and D Davis Boston—p 693
Simulation of Progressive Muscular Atrophy by Exophthalmic Goiter J B Ayer J H Means and J Lerman, Boston—p 701
*New Procedure for Demonstration of Estrin in Blood of Women C F Fluhmann San Francisco—p 705
Production of Ovulation by Gonadotrophic Extracts L. E. Casida, Madison, Wis—p 714
*Experimental Studies on Hypophysis Cerebri III Effect of Several Pregnancies in the Albino Rat S I Stein Minneapolis—p 721
Cortico-Adrenal Influence on Blood Sugar Mobilization R L Zwemer and Ruth C Sullivan New York—p 730

Hypothyroidism Induced by Removal of Normal Thyroid in Heart Disease—Blumgart and Davis outline the development characteristics and control of the hypothyroid state induced by total ablation of the normal thyroid, with especial reference to the signs and symptoms of hypothyroidism, the basal metabolic rate and the serum cholesterol. They describe a method of thyroid medication whereby the hypothyroid level, after total thyroidectomy, may be controlled so that patients with heart disease may be free from the distressing symptoms of myxedema and yet gain the benefits afforded by reduction in the work of the heart. In addition to the foregoing manifestations of hypothyroidism, which are present at a basal metabolic level of from minus 25 to 30 per cent, the authors have also observed the development of a mild anemia and a lowering in the free hydrochloric acid in the gastric secretion. No clinical symptoms have been associated with these changes. At this controlled level of metabolism they have also noted changes in electrocardiographic tracings and heart size characteristic of mild hypothyroidism. These changes were not accompanied by a decreased functional myocardial capacity, on the contrary, these patients with chronic heart disease have shown improvement in the face of such changes. Kidney function and carbohydrate tolerance are not diminished in these patients. In brief, hypothyroidism can be induced by total ablation of the normal thyroid, and the level of the hypothyroid state thus induced may be controlled, so that the patients remain comfortable and yet gain the benefits afforded by reduction in cardiac work. Under these conditions of reduced metabolism, the relief that has been afforded many patients with chronic heart disease has been definite. The symptoms that characterize the level of hypothyroidism maintained in these patients after operation are slight and, in the patients' opinion insignificant in comparison with the benefits derived.

Demonstrating Estrogenic Substance in Blood—Fluhmann describes the technic of a biologic test for the demonstration of estrogenic substance in the blood. The test depends on the injection of small amounts of untreated serum into spayed mice. A positive result is indicated by the production of a "mucification" of the vaginal mucosa. The method may be applied to quantitative studies, provided a sufficient number of test animals are employed. The examination of eighty specimens of blood obtained from forty-six women at different stages of the menstrual cycle shows that in this series the maximal concentration of estrogenic substance was reached during the middle of the interval, a secondary rise occurred at the time of the flow, and it was diminished just before and just after menstruation.

The Hypophysis Cerebri and Pregnancies—Stein studied a group of ten virgin white rats in comparison with a group of ten litter mate test animals, which had had three pregnancies in rapid succession. The average body weight of the test animals was 38 Gm. heavier than the controls, which proves to be a significant difference; however, the body length of the test animals was not significantly greater than that of the controls, being only 0.8 cm. The average weight of the whole hypophysis in the test group was not significantly greater than that of the control. Evidence is submitted that utilizing every tenth section cut at 5 microns was sufficient to determine the relative size of the various lobes in the rat's hypophysis by the paper weight method. The posterior lobe of the test animals was proved to be increased over that of the controls, but the anterior and intermediate lobes showed no significant differences. A differen-

tial count of the cells in the anterior lobe (based on counting about 9,000 cells in each hypophysis) showed no significant difference between tests and controls. The average percentages for the test animals were 70.5 per cent chromophobes, 25.8 per cent acidophils and 3.7 per cent basophils, for the control group the corresponding figures were 72.9, 23.6 and 3.5. The cells in the two groups were apparently equal in size, for the 'average number of cells per field' were practically equal in number for the test and control groups. From the standpoint of number, size, shape, nuclear pattern, staining reaction or distribution of cells in the gland, no definite or unique histologic feature could be found in the hypophysis of the pregnant group. No special cell that could be designated 'pregnancy cell' as described by others for the rat was evident.

Journal of Comparative Neurology, Philadelphia

60 185-354 (Oct. 15) 1934

- Tonic Neck Reflexes in Lesions of Cerebral Cortex in Dogs. F. M. Lissitz and A. S. Pentzik. Kharkov. U. S. S. R.—p. 185.
Studies on Cerebellar Function in the Teleost. I. Reactions Resulting from Cerebellar Ablation. H. Tuge. Sendai, Japan.—p. 201.
Id. II. Is There a Cerebellotectal Path? Marchi Method. H. Tuge, Sendai, Japan.—p. 225.
Topographic Relations of Cortical Lesions to Thalamic Nuclei in the Albino Rat. W. H. Waller. Ithaca, N. Y.—p. 237.
Development of Behavior in Chick Embryos. Appearance of Somatic Movements. D. W. Orr and W. F. Windle. Chicago.—p. 271.
Id. Spinal Cord Structure Correlated with Early Somatic Motility. W. F. Windle and D. W. Orr. Chicago.—p. 287.
Relationship Between Circumolivary Pyramidal Fascicles and Pontobulbar Body in Man. R. L. Swank. Chicago.—p. 309.
Volume of Neocortex of the Albino Rat and Changes It Undergoes with Age After Birth. C. G. Smith. Toronto.—p. 319.
Water and Solid Content of the Brains of Albino Rats Treated with Growth Hormone. H. S. Rubinstein and L. M. Fox. Baltimore.—p. 349.

Journal of Pediatrics, St. Louis

6 727-886 (Dec.) 1934

- *Study of Forty Cases of Persistent Pyuria. Pearl Summerfeldt and A. Brown. Toronto.—p. 727.
Chronic Pyuria (Congenital Defect). Presacral Sympathectomy. Case Report. Pearl Summerfeldt and A. Brown. Toronto.—p. 735.
Amebiasis in Children. S. J. Nichaman, H. G. Poncher and Marion Hood. Chicago.—p. 741.
Amebic Abscess of Liver. Report of Case in Child Five Years Old. L. A. Sweet. Peiping, China.—p. 750.
*Gangrene of Extremity in a New Born Infant. Review of Literature. F. C. Dohan. Merion, Pa.—p. 756.
Relation of Correct Weight and Blood Findings to Physicians Estimates of Nutrition of School Children. Regine K. Stux and C. V. Kiser. New York.—p. 763.
The Problem of Free Diphtheria Immunization in the School. E. H. Schorer and M. Polsky. Kansas City, Mo.—p. 771.
Acute Infectious Croup. Part III. General Study of Acute Obstructive Infections of Larynx, Trachea and Bronchi with Analysis of Seven Hundred and Twenty Seven Cases. A. H. Neffson and S. M. Wishik. New York.—p. 776.
*Idiosyncrasy to Ammoniated Mercury Ointment. Report of Two Cases. P. Harper. New Haven, Conn.—p. 794.
*Exanthem Subitum with Encephalitic Onset. M. J. Wallfield. Brooklyn.—p. 800.
Auricular Flutter in a New Born Infant. Case Report. J. Sherman and R. A. Schless. Philadelphia.—p. 802.
Auricular Fibrillation as an Early Toxic Digitalis Manifestation. Further Observations on This Drug in Children with Congestive Heart Failure. A. Jezer and S. P. Schwartz. New York.—p. 811.
Fluoroscopically Controlled Enema Reduction of Intussusception. E. D. Huntington and R. E. Williams. Chicago.—p. 819.

Study of Persistent Pyuria.—Summerfeldt and Brown present results of the study of forty cases of persistent pyuria. The investigation included clinical, intravenous pyelography and cystoscopic examination. From a clinical point of view a complete urologic investigation is indicated in any case of pyelitis in which the urine shows pus over a period of four weeks. The investigation has shown that the great majority of cases of chronic pyuria are due to inadequate drainage due to an obstruction of the urinary tract. The treatment has been directed to relief of the obstruction present. The immediate results are fairly satisfactory, but the end results as far as kidney infection is concerned are indefinite. In these treated cases though there may be recurrence of pus in the urine, there is noted a definite improvement in the general health of the patients.

Gangrene of Extremity in New-Born.—Dohan reports a case of gangrene of the left lower leg and foot, which appeared about the thirteenth postnatal day. Serologic tests of the blood

for syphilis were negative on the parents. The infant's serologic tests of the blood for syphilis were negative on repetition, following a moderately positive reaction in the first blood sample. A roentgenographic examination of the legs was negative for bony displacement but indicative of congenital syphilis. Histamine tests showed a circulatory efficiency of the non-gangrenous leg that was distinctly below normal. Blood sugar, blood coagulation, blood counts and urinalysis, as well as body temperature and other clinical observations, deviated so slightly from the normal that they were not considered positive evidence. Pathologic and bacteriologic studies were inconclusive. Trauma, infected or noninfected embolism, constricting amniotic bands and angiospasm may all play a part.

Idiosyncrasy to Ammoniated Mercury Ointment.—Harper states that local application of ammoniated mercury in two cases gave a generalized rash and stomatitis together with a peculiar cyanosis and edema of the hands and feet. It is believed that the symptoms were manifestations of an idiosyncrasy to mercury rather than the results of absorption of relatively large amounts. Presumptive evidence for this is found in the rapid development of symptoms after application of relatively small amounts of ammoniated mercury, in the experimental demonstration that the absorption of mercury in this form is relatively poor, in the rapid recovery following the withdrawal of the drug in the absence of evidence of renal damage and finally in the acute and severe reactions to skin tests.

Sudden Exanthem with Encephalitic Onset.—Wallfield reports an uncommon case of sudden exanthem, which was ushered in by symptoms simulating encephalitis in a boy 12 years of age. After a high fever of three days, a critical drop in temperature occurred, followed by a rash typical of sudden exanthem in its morphology, distribution and duration with a rapid and uncomplicated recovery. The blood picture showed the characteristic leukopenia.

Kansas Medical Society Journal, Topeka

35:445-476 (Dec.) 1934

- Treatment of Pneumonia. O. W. Bethea. New Orleans.—p. 445.
*Abortive Treatment of Volkmann's Ischemia. M. E. Pusitz. Topeka.—p. 448.
Practical Considerations of Bronchoscopy and Esophagoscopy. E. M. Seydell. Wichita.—p. 451.
Nephritis. P. W. Morgan. Emporia.—p. 455.
Some Observations on Virus Diseases. F. A. Carmichael, Sr. Ottawa, Ill.—p. 459.
Chorea Gravidarum. R. M. Brian and M. Gerundo. Topeka.—p. 461.
Addison's Disease. M. Bernreiter. Kansas City.—p. 463.

Abortive Treatment of Volkmann's Ischemia.—Pusitz reports a case of early Volkmann's ischemia in which the following operation was performed. Under general anesthesia, long incisions were made through the skin, subcutaneous tissues and the deep fascia of the forearm (the so-called vaginal fascia of Prentiss). When the deep fascia was cut, the muscle mass bulged right out of the opening. A great deal of blood escaped from these cuts. With Mayo curved scissors, the muscle bundles were separated slightly by blunt dissection. Petrolatum gauze and then dry dressings were applied over the wounds. Almost immediately after the patient had recovered from the anesthetic he stated that he felt some relief. About five hours later the fingers could be moved slightly. They were still somewhat numb but the blueness had been replaced by a pinkish coloration. The fingers were not cold. The progress of the patient was a very slow, gradual improvement so that two weeks after operation practically all the swelling had cleared up. The motion of the fingers had improved greatly, although still far from normal. The stitches were removed and a nonpadded cast was applied according to the method of Böhler. The patient was discharged from the hospital and seen periodically in the office. Callus was very slow in appearing and it wasn't until five months later that the cast was removed. At that time it was noted the patient moved his fingers fairly well, there was good flexion and extension of the wrist but there was no pronation and supination. He was therefore told that he had a possible synostosis between the radius and ulna and advised to have an operation. For the time being he was placed on physical therapy. Two months later he stated that his motion with reference to pronation and supination was increasing and that he was not going to return for further operative work.

Medical Annals of District of Columbia, Washington

3: 275 294 (Nov.) 1934

- Ostitis Fibrosa Cystica Due to Hyperparathyroidism Report of Case with Operative Removal of Parathyroid Adenoma J A Cahill Jr, Washington—p 275
- *Posttonsillitic Pyemia Report of Three Cases W K Myers Washington—p 279
- Mesenteric Cyst Report of Two Cases J O Warfield Jr Washington—p 282
- Treatment of Far Advanced Inoperable Carcinoma of Breast by Intravenous Colloidal Lead Report of Case A Horwitz Washington—p 285
- Acute Phagedenic Ulcer of Leg Report of Case E A Cafritz Washington—p 286

Posttonsillitic Pyemia—Myers reports three cases of pyemia following acute infection of the tonsils. The first case is that of a white man, aged 22, whose illness began with an acute tonsillitis followed by peritonsillar abscess. The subsequent course was that of generalized sepsis. The site of a thrombophlebitis was not determined. There were septic metastases to the lungs, pleurae, pericardium, wall of the chest, right buttock and right ankle. An anaerobic streptococcus was grown from the pus several times from different locations. The patient died forty days after the onset of sore throat. In the second case thrombosis of the left internal jugular vein developed subsequent to acute tonsillitis in a youth, aged 16. There were metastatic septic lesions in the lungs and pleurae and signs of venous stasis in the basal cerebral ganglions. Streptococcus haemolyticus was recovered from the pleural fluid. The course led to death three and one-half weeks after the onset of the sore throat. The third case is that of a man, aged 36, who developed a left peritonsillar abscess in the wake of an attack of acute tonsillitis. The course of the illness was one of sepsis with an abscess of the right buttock and urinary signs of involvement of the kidney. Streptococcus viridans was recovered from the blood. The patient died six weeks after the onset of the sore throat.

Pennsylvania Medical Journal, Harrisburg

38 59 156 (Nov.) 1934

- Psychiatry from the Standpoint of the General Practitioner C M Campbell Boston—p 59
- Therapy in Pneumococcal Pneumonia Critical Review J M Johnston Pittsburgh—p 67
- Adolescence from Pediatric Point of View T O Elterich Pittsburgh—p 70
- Acute Appendicitis Report of Twenty Seven Hundred Cases H H Donaldson, Pittsburgh—p 73
- Overwhelming Infections of Upper Respiratory Tract E S Thorpe Jr, Philadelphia—p 77
- Differential Diagnosis of Genital Lesions D P McCune McKeesport—p 79
- Infection Following Mandibular Injections J M Russell Erie—p 82

Philippine Journal of Science, Manila

54 473 584 (Aug.) 1934 Partial Index

- *Hexylresorcinol as an Anthelmintic Its Efficiency Against Intestinal Parasites of Man M A Tubangui M Basaca and A M Pasco Manila—p 473
- Avian Malaria Studies IX Atabrine as a Prophylactic Drug in Sporozoite Infections of Avian Malaria P F Russell New York—p 483
- Weights of Visceral Organs of Filipinos in Different Diseases W de Leon P I de Jesus and J M Ramos Manila—p 495

Caprokol as an Anthelmintic—Tubangui and his associates investigated the efficiency of caprokol in 861 persons harboring different types of human intestinal worms. The drug was given in hard gelatin capsules and in the form of sugar coated pills, in the doses recommended by the manufacturers. It was administered early in the morning on an empty stomach and the patients were advised not to take food for at least four hours afterward. Each patient received only one treatment. Caprokol was found to suffer in anthelmintic efficiency when placed in gelatin capsules, owing most probably to the reaction of the drug with the gelatin. The capsules themselves underwent rapid deterioration if they remained intact, they were easily broken in the mouth during the process of swallowing. The sugar coated pills, besides being more efficacious than the gelatin capsules, did not appear to be affected by climatic conditions. Their anthelmintic efficiency was appreciably increased by a saline purge twenty-four hours after their administration. In infestations with ascaris and hookworms the administration of single doses of caprokol pills removed from 82 to 85 per cent of the former parasite and 74 per cent

of the latter. Of the ascaris cases from 53 to 64 per cent were found negative after the treatment and of the hookworm cases 25.4 per cent. In trichurias infestations, caprokol was found to be apparently effective, but some doubt is expressed as to the accuracy of judging the efficiency of the drug from the results of differential egg counts before and after treatment. Observations in a limited number of cases showed that caprokol is effective also against the human pinworm (*Enterobius vermicularis*) but not against the tapeworm (*Taenia saginata*).

Psychoanalytic Quarterly, Albany, N Y

3 501 682 (Oct.) 1934

- Influence of Psychologic Factors on Gastro-Intestinal Disturbances I General Principles Objectives and Preliminary Results F Alexander Chicago—p 501
- Id II Typical Personality Trends and Conflicts in Cases of Gastric Disturbance Catherine Bacon Chicago—p 540
- Id III Typical Personality Trends and Conflicts in Cases of Spastic Colitis G W Wilson Chicago—p 558
- Id IV Oral Trends and Oral Conflicts in Case of Duodenal Ulcer H B Levey Chicago—p 574
- Id V Pregenital Trends in Case of Chronic Diarrhea and Vomiting M Levine Cincinnati—p 587
- Feeling of Guilt H Nunberg New York—p 589
- Overvaluation of Love Study of Common Present Day Feminine Type Karen Horney New York—p 605

Western J Surg, Obst. & Gynecology, Portland, Ore

42 611 668 (Nov.) 1934

- History of Obstetrics President's Address F W Lynch San Francisco—p 611
- Air Embolism Complicating Abortion H Reynolds Arlington Calif and O I Cutler Loma Linda Calif—p 619
- Asphyxia Neonatorum P E Rothman Los Angeles—p 622
- *Méniere's Disease Complicated by Recurrent Interstitial Keratitis Excellent Result Following Cervical Ganglionectomy Report of Case R F Mogan and C J Baumgartner Los Angeles—p 628
- Moist Abdominal Pad Container L Friedman New York—p 632
- *Mobilization of Reticulo-Endothelial Cells as an Aid in Combating Infections S H Tashian Seattle—p 634
- Spinal Anesthesia in General Nupercaine in Particular Report of a Fatality Division II P E Spangler Portland, Ore—p 646

Méniere's Disease Complicated by Interstitial Keratitis—Mogan and Baumgartner obtained a striking result following the removal of both superior ganglions in a case of Meniere's disease with recurrent interstitial keratitis. They believe that this offers a plausible theory as to the etiology of Meniere's syndrome, as well as a suggestion for further study in the treatment of this and associated conditions. In their case the peculiar periodicity, the unilateral sweating of the body and the whiteness of the bulbar conjunctiva preceding marked hyperemia, all pointed to some altered physiology of the sympathetic nervous system, somewhat resembling Raynaud's disease. They believe that the result obtained from the removal of the superior cervical ganglions and trunks is conclusive. They feel that a disturbance of the sympathetic nervous system must be considered an etiologic factor in Meniere disease. Otosclerosis is probably due to a metabolic disturbance in the petrous portion of the temporal bone, and the authors believe that it is not illogical to assume that it likewise might be due to altered function of the sympathetic nervous system. Results will of course not be satisfactory after permanent damage has resulted, and if ganglionectomy is attempted at all it must be done early.

Reticulo-Endothelial Cells in Combating Infections—Tashian states that local immunity or the defense mechanism of the skin, has been demonstrated by experiments on animals and clinically verified. The histiocytic or reticulo-endothelial system has been shown to be by far the most important factor in local tissue resistance against infection. The absence of histiocytes indicates a lowered tissue resistance and a fertile soil for bacterial intrusion and growth. A superior nonspecific active immunity may be acquired by nutrient broth injections. The author describes a varied number of cases for guidance as to the possible use of nutrient broth. Experience with indolent cutaneous ulcers should precede its employment in other conditions. He compounds a preparation that he believes is superior to the so-called laboratory nutrient broth. In more than 1,500 injections he has had only two cases that showed a mild degree of hypersensitivity. Neither case necessitated injection of epinephrine. He presents this only as an adjunct to already established procedures to combat infections.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Physical Medicine, London

9 97 116 (Oct.) 1934

First Impressions of Short Wave Therapy W. J. Turrell—p. 99

Physical Treatment of Cardiovascular Sclerosis T. J. Hoskin—p. 103

9 117 134 (Nov.) 1934

Treatment of Rheumatism by Physical Methods W. S. C. Copeman—p. 118

Fibrositis Broad Survey D. Pennington—p. 120

Subthermal Methods of Treatment in Rheumatic Diseases C. W. Buckley—p. 123

Mineral Waters in Treatment of Rheumatic Diseases L. C. Hill—p. 125

Journal of Neurology and Psychopathology, London

15 97 192 (Oct.) 1934

*Observations on Records of Local Epileptic Convulsions D. Denny Brown and E. G. Robertson—p. 97

Apraxia in Corpus Callosum Lesions Report of Three Cases A. Bell—p. 137

*Congenital Syphilis in Mentally Defective Adults K. C. I. Paddle—p. 147

*Unusual Type of Cortical Gliosis R. M. Stewart—p. 160

Epileptic Convulsions—Denny Brown and Robertson present an account of the cerebrospinal fluid pressure respiration and muscular movement in six epileptic patients. They observed that during epileptic convulsions the pressure of the cerebrospinal fluid shows changes reflecting passively the fluctuations of venous pressure arising chiefly from involvement of the thorax in the convulsion. The cerebrospinal fluid pressure rises in sleep and there is fluctuation in drowsy states. A slow fall of pressure preceding a convulsion is evidence only of an awakening of the patient. Certain phenomena such as awakening starts or even local spinal reflexes may enhance the tendency to epilepsy and thus appear to be the direct excitant of discharge. Such effects when they occur are examples only of the addition of one nervous excitation to another. The convulsive stage of the epileptic attack is essentially an incoordinated discord resulting from the diffuse excitation of outgoing cortical neurons. Even in the most localized forms of epilepsy the essential epileptic process does not appear to be directly located in these neurons. The exhaustion of nervous activity underlying postepileptic hemiplegia is related to threshold changes in the excitability of pyramidal neurons, whereas the intervals between attacks and the fluctuations in tendency to attacks are related to an unphysiologic mechanism which has no defined anatomic place.

Congenital Syphilis in Mentally Defective Adults—Paddle states that of 1,598 adult mentally defective patients of all grades and both sexes, in whom the Wassermann and the Meimcke macroclarification tests were done on the blood serum, the cerebrospinal fluid of 1,525 was examined by the Wassermann test. Pandey's test, Lange's colloidal gold test and for increase of cells. Of these, 106 gave various abnormal reactions in the blood or cerebrospinal fluid and 1,492 were serologically negative. Of the 106, seventy-five were considered to have congenital syphilis and of the 1,492 serologically negative cases three were deemed on clinical and other grounds to be congenitally syphilitic, giving a total of seventy-eight cases of hereditary syphilis or an incidence of 4.9 per cent. The Meimcke clarification test of the blood serum in adults was more sensitive than the Wassermann test. The incidence of congenital syphilis was higher among imbeciles than among idiots or the feeble-minded and higher in crippled epileptic patients than in uncomplicated cases. There was no evidence to show that mongolism was caused by syphilis. Conditions such as cretinism, choreo-athetosis and postencephalitic lethargy were unconnected with congenital syphilis. Of the 1,525 cases, excluding ten cases of acquired syphilis with four abnormal fluids, the cerebrospinal fluid was abnormal in thirty, or 2 per cent. In seventy-six cases of congenital syphilis the fluid was abnormal in sixteen, or 21 per cent. The incidence of congenital syphilis was found to fall with advancing age but it differed in the sexes. In females it was highest in children and lowest between the ages of 31 and 40 years with a sharp rise between 41 and 50 suggest-

ing a menopausal influence on the serologic tests used. At this age the incidence among the males was at its lowest, but there was a subsequent rise.

Unusual Type of Cortical Gliosis—Stewart discusses the case of a feeble-minded man with Erb's juvenile type of muscular dystrophy who died after the disease had been in existence for twenty years. During life the patient exhibited a bilateral and symmetrical enlargement of the salivary glands. The terminal illness was ushered in by a marked and persistent hypothermia, bradycardia, low blood pressure, profuse salivation, repeated vomiting, miosis and a positive oculocardiac reflex. A sudden failure of the autonomic nervous system may have caused these unusual terminal symptoms. Pathologic examination confirmed the diagnosis of muscular dystrophy, and, in addition, revealed the presence in both cerebral hemispheres of a special type of glial hyperplasia, this took the form of small, raised wartlike nodules in the cortical gray matter, numerous in the frontal convolutions and diminishing in number toward the occipital poles in many situations accompanied by a disturbance of cytoarchitecture and by the presence of primitive nerve cells. No glial or neuromic cells of giant type were found and the visceral organs contained no tumors. The condition appeared to represent an unusual type of primary gliosis rather than an abortive form of tuberous sclerosis.

Quarterly Journal of Medicine, Oxford

3: 523 624 (Oct.) 1934

*Effect of Yeast and Wheat Embryo in Anemias II Nature of Hematopoietic Factor in Yeast Effective in Pernicious Anemia C. C. Ungley and C. V. James—p. 523

Chronic Ulceration of Colon E. I. Spriggs—p. 549

*Oxycephaly Report of Three Cases in One Family E. Skipper—p. 579

*Plasma Proteins and Cardiac Edema W. A. R. Thomson—p. 587
Epilepsy in Cysticercosis (Taenia Solium) Study of Seventy-One Cases H. B. F. Dixon and D. W. Smithers—p. 603

Effect of Hematopoietic Factor of Yeast in Pernicious Anemia—To avoid contact with traces of intrinsic factor possibly present in the gastric juice of cases of addisonian pernicious anemia Ungley and James administered by other routes yeast products that influenced blood regeneration when given orally. The negative results of parenteral therapy under such conditions supported the hypothesis that the hematopoietic effect of yeast was due not to a substance resembling the liver active principle but to the extrinsic factor of Castle. The factor was present in the 65 per cent alcohol soluble fraction of fresh (nonautolysed) brewers' yeast. Autolysis did not increase noticeably the potency of yeast for blood regeneration in pernicious anemia. There was no parallelism between the vitamin B₁₂ potency of yeast extracts as tested in rats and their effect on hematopoiesis in pernicious anemia. Including the previous series, eighteen patients with addisonian pernicious anemia have received yeast or wheat germ by mouth, and ten of them have shown some hematopoietic response. Many cases of pernicious anemia, although associated with a histamine refractory achylia, may retain the ability to secrete the intrinsic factor and a hematopoietic response to yeast is an indication of this functional activity on the part of the stomach. There was no correlation between the secretion of the intrinsic factor, as indicated by the hematopoietic response to yeast and the secretion of acid pepsin or chlorides, as determined by gastric analysis after histamine stimulation. In those cases of megalocytic hyperchromic anemia in which the response to yeast is marked, it is probable that causes other than the deficient secretion of the intrinsic factor have contributed to the development of the syndrome. The value of the observations on the hematopoietic effect of yeast in elucidating the etiology of such anemias is discussed.

Oxycephaly—During the last three years Skipper has had under observation a mother and two children suffering from oxycephaly who exhibited certain unusual features. One of them was subjected to cranial decompression. The cardinal symptoms of oxycephaly are defective vision and headache. The former is almost invariable, and is most commonly noticed during the first five years of life. It varies from slight impairment to complete blindness and is due to optic atrophy following papilledema. Papilledema has usually given place to atrophy before the patient is brought for medical examination. Atrophy

progresses to a certain extent in childhood and then remains stationary, never leading to blindness in adult life. It may result from increased intracranial pressure. Evidence of high intracranial pressure in oxycephaly is seen in the convolitional atrophy of the skull bones and in the bulging of the brain when the dura is incised at operation. In one case the intraventricular pressure was measured directly and it was much above normal. The suggestion that atrophy is caused by constriction of the nerve within the optic foramen has not been confirmed generally. Possible contributory causes may be stretching of the optic nerves from upward displacement of the brain during the vertical expansion of the skull and stasis in the retinal vessels consequent on defective return of venous blood from the head. Greig has shown that the jugular foramina may be small and the circulation in the jugular veins negligible. Intelligence is generally normal but may be impaired, poor vision undoubtedly contributing to this in many instances. The oxycephalic patient is usually a mouth breather from deflection of the nasal septum and deformity of the posterior nares. Anosmia is frequent. Uncommon symptoms are convulsions, deafness and loss of the sense of taste. The author's patients had an extremely mild degree of cranial deformity and he has found no record of any instances of oxycephaly in which the departure from the normal configuration of the skull was so slight. Usually the oxycephalic head is too high, short and broad, the first characteristic being the most striking. In his cases, which are evidently examples of delayed oxycephaly, the general shape of the head is almost normal, and only one patient is brachycephalic. Yet the cases are in all other respects typical examples of oxycephaly, and the diagnosis cannot be doubted. The crested vertex, deflected nasal septum, palatal deformity and the condition of the eyes of each patient are particularly characteristic. Roentgenograms of the skull revealing convolitional atrophy and no trace of sutures are, in conjunction with the clinical signs, diagnostic. The chief object of treatment is the prevention or the arrest of damage to vision.

Plasma Proteins and Cardiac Edema.—Thomson presents the results of an investigation of the plasma proteins in fifty-four cases, consisting of eighteen cases of heart failure with edema, sixteen of heart disease accompanied by edema, six of chronic interstitial nephritis, four of tuberculosis, a miscellaneous group of seven cases, and three junior members of the hospital staff who were used as normals. He observed a distinct diminution in the plasma proteins in cardiac edema, 87.5 per cent of the cases showing a plasma albumin content of less than 3.2 Gm per hundred cubic centimeters. In heart disease without edema there is only a slight diminution in the plasma proteins as compared with the normal, 87 per cent of the cases showing a plasma albumin level greater than 3.2 Gm per hundred cubic centimeters. In view of these observations the author suggests that plasma protein deficiency plays an important part in the etiology of cardiac edema. The main cause for the plasma protein depletion in cardiac edema is considered to be malnutrition. He also suggests that the dietary of patients with cardiac edema should contain the maximal amount of protein compatible with their digestive powers.

South African Medical Journal, Cape Town

8:741 780 (Oct. 27) 1934

- Some Problems of Preventive Medicine. E. N. Thornton—p. 743
- Native Medical Ideas and Practices in Relation to Native Medical Services. G. W. Gale—p. 748
- Cutaneous Anthrax. Its Treatment and Prevention. D. L. Ferguson—p. 754
- Dysentery. E. Holland—p. 756

Japanese Journal of Obstetrics and Gynecology, Kyoto

17:323 386 (Oct.) 1934

- Application of Atonin in the Clinic. H. Kawakami—p. 326
- Significance of So Called Conglutination Orifices Externi. Y. Katsu—p. 334
- Histologic Investigation of the Fetal Kidney. S. Tsuda—p. 337
- Effect of Substances Blocking Reticulo-Endothelial System to Production of Agglutinin of Immune Serum. T. Kubota—p. 342
- Suprarenal Function and Malignant Tumors. T. Tamura—p. 349
- Trichomonas Vaginalis in Japanese Women. T. Ohga and S. Aogi—p. 364
- Strong and Weak Points of the Spuman. S. Ito—p. 367
- Mastitis and Puerperal Psychosis. S. Ito—p. 373
- Biologic Study of Action of X Rays to Malignant Tumors Especially on Attitude of Parenchymal Tissues of Malignant Tumors to X Rays. H. Kawakami—p. 378

Presse Médicale, Paris

42:1761 1784 (Nov. 10) 1934

- Oriel's Substance in Treatment of Allergic States. P. Savy and H. Thiers—p. 1716
- Total Telerontogenotherapy in Treatment of Leukemias and Hodgkin's Disease. G. Marchal, L. Mallet, P. Cottenot and J. M. Lemoine—p. 1763
- *Hyperparathyroidism and Angiospastic Syndromes. P. Bastai and G.-C. Dogliotti—p. 1766
- Resistance of Heart to Thoracic Surgery. V. V. Zikeeff and N. A. Kidénitsch—p. 1770

Hyperparathyroidism and Angiospastic Syndromes.—Bastai and Dogliotti report five cases of partial parathyroidectomy for endarteritis obliterans (Buerger's disease). The following results occurred: (1) lowering of blood calcium more or less and approaching normal values, (2) immediate cessation of pains even when intense and of long duration, (3) subjective and objective increase in the local temperature of the affected parts and increased sweating, (4) rapid healing of wounds that had resisted all types of earlier treatment, and (5) in cases in which hypertension existed, a lowering of the arterial pressure. They believe that in a normal person the calcium-phosphorus ratio and the other elements of similar action are in perfect relationship. Thus the vasomotor action may be regulated according to the functional requirements of the organs by the simple supply of sufficient blood. In disease, however, an excess of calcium ions may cause an increase in contractility and of the angiospastic state with all its consequences. It is in correcting this factor that parathyroidectomy exerts a favorable action on endarteritis.

Policlinico, Rome

41:1881 1920 (Dec. 3) 1934 Practical Section

- *Ovarian Treatment in Hemophilia. E. Schiavo—p. 1881
- *Comolli's Distinct Sign in Fracture of Scapula. G. B. Cengiarotti—p. 1890

Treatment of a Case of Hemophilia.—Schiavo says that the oral administration of recently prepared ovarian extract, given in small doses and for a prolonged period, is valuable in the prevention and treatment of hemophilia. In his patient aged 11, amputation of a phalanx of the finger was necessary owing to osteomyelitis. The subsequent hemorrhages endangered the life of the child. The operative wound failed to heal. Oral administration of freshly prepared ovarian extract, as mentioned, checked the hemorrhage and favored the healing process of the operative wound up to recovery.

Comolli's Sign in Fractures of Scapula.—Comolli's sign for the diagnosis of fractures of the scapula, more particularly of the surgical neck and body of the scapula, was described in the *Zentralblatt für Chirurgie* 59:937 (April 9) 1932 (abstr. THE JOURNAL, July 2, 1932, p. 91). The sign is a typical swelling that develops in the region of the involved scapula shortly after the trauma. The triangular swelling is due to the fact that blood from the fracture gathers in front as well as in back of the scapula. As a result of the peculiar anatomic conditions the blood cannot escape and a cushion-like swelling corresponding to the outline of the scapula, appears. Cengiarotti reports a case of fracture of this type in which the sign appeared with clear characteristics and lasted about eight days.

Deutsches Archiv für klinische Medizin, Berlin

177:196 (Oct. 23) 1934

- *Anemia and Angina Pectoris. M. Hochrein and K. Matthes—p. 1
- Resorption of Fats in Pancreatic Insufficiency. N. Poczek and W. Fuschel—p. 14
- *Disturbances in Sodium Chloride Metabolism of Cerebral Origin. S. Molnár and Z. Gruber—p. 29
- Blood Sugar in Internal Disorders. F. W. Lapp and H. Dibold—p. 40
- Mechanism of Development of Vesicular Respiratory Sound and Its Influence on Changes of Respiratory Sound Under Physiologic and Pathologic Conditions. E. M. Schadkiewicz—p. 48
- Changes in Electrocardiogram Following Extrasystoles of Ventricles. J. von Fernbach—p. 59
- Rare and Changeable Electrocardiogram. K. Lühr—p. 65
- Internal Complications of Inflammatory Diseases of Tonsils and Indications for Tonsillectomy. O. Rimpl and T. Motloch—p. 71

Anemia and Angina Pectoris.—The assumption that anemia may be the cause of angina pectoris induced Hochrein and Matthes to study the circulation of animals particularly the

blood perfusion of the heart, during anemia and to investigate in a larger clinical material the subjective and objective signs of coronary insufficiency. They found that in the anemia of venesection (loss of blood up to 8 per cent of the total quantity) the withdrawal of the blood is compensated for by evacuation of the blood depot so that there is no reduction in the circulating blood. The arterial pressure, the pulse and the blood perfusion of the heart remain as a rule unchanged. If greater amounts of blood are withdrawn the arterial pressure and the circulation become reduced. The blood perfusion of the heart generally remains constant for longer periods, occasionally it increases or decreases together with the systemic circulation. These observations indicate that the anemia of venesection produces, as far as the heart action is concerned, no impairment but rather an improvement of the coronary circulation. Observations on patients with pernicious anemia, secondary anemia and angina pectoris indicate that the relations between anemia and angina pectoris are extremely slight. Among 297 patients with angina pectoris, the authors observed only five patients with anemia (1.7 per cent), and three of these had an organic coronary disturbance. It may be assumed that patients with anemia because they tire easily, are little exposed to the danger of overtaxing the heart. The assumption of coronary insufficiency is based on electrocardiographic signs (deep Q, abnormal ST) that are not at all typical. The authors observed patients with severe anemia who had neither subjective cardiac symptoms nor electrocardiographic changes.

Cerebral Disturbances of Sodium Chloride Metabolism

—After describing experiments on animals, Molnar and Gruber report sodium chloride tolerance tests on patients. Correct conclusions may be drawn only if the standard diet is known and after a prolonged period of observation. Disturbances in the sodium chloride metabolism, which are due to a changed nervous regulation, only rarely lead to clinical manifestations. Latent disturbances without clinical manifestations but demonstrable with the tolerance test are comparatively frequent. Of eleven patients with cerebral lesions, only one (with acromegaly and diabetes mellitus) had a normal sodium chloride metabolism. The sodium chloride metabolism may appear normal when the reduced concentration capacity of the organism for the chloride ions is compensated by a polyuria. Sodium chloride retention is due either to a weakness of the organism in the concentration of the chloride ions to an absolute or relative oliguria, or to the simultaneous appearance of these disturbances. In three of eleven cases the sodium chloride content of the blood stood at 620 mg per hundred cubic centimeters that is at the upper limit of normality already before the tolerance test, while in two others it even reached 632 mg per hundred cubic centimeters. In some patients the salt retention was dry, that is, there was no increase in weight during retention and the increased elimination was not followed by a loss of weight. A portion of the retained sodium chloride is found in the blood, but the largest part is stored in the tissues. The existence of a disturbance in the sodium chloride metabolism does not permit a localization of the lesion, for such disturbances have been observed in apparently isolated disorders of the hypophysis as well as of the striatum.

Jahrbuch für Kinderheilkunde, Berlin

143 257-320 (Nov.) 1934

Hypermotility Neurosis During Childhood. E. von Lederer and S. Ederer—p. 257

Cardiac and Circulatory Reflexes During Diphtheria in Children. H. Seckel—p. 269

*Does Roentgen Irradiation Effect Considerable Improvement in Mongolian Idiocy? W. Lange and H. Hippe—p. 306

Roentgen Irradiation and Mongolian Idiocy.—Lange and Hippe employed von Wieser's method of roentgen treatment in nine children with mongoloid idiocy. Because all of them were older children, their ages varying between 7 and 13, the authors decided to irradiate the base of the skull from five fields: the forehead, vertex, occiput and both temples. The fields were 6 by 8 cm in size, the distance was 30 cm, the filter consisted of 0.5 mm of copper and 1 mm of aluminum, the tension was 160 kilovolts and the current strength was 6 milliamperes. Depending on the character of the case, from 5 to 15 per cent of the unit skin dose was applied to each field.

The irradiation of the different fields was done at intervals of seven days, and pauses of from three to six weeks were interposed between the series. The treatment was continued on the average for about two and one-half years. The irradiations were not followed by unpleasant complications. Since two of the children left the institution before the completion of the treatment, only seven could be observed to the end and could be subjected to after-examinations. An improvement in the mental alertness was observed in only one of the cases. Superficiality and giddiness improved in one girl. The concentration capacity remained unchanged in all the children, even in one of the boys in whom the intelligence quotient had increased greatly. In all, the results of the treatment were so insignificant that no particular value can be ascribed to it. Not a single child was improved to the extent that it might later become capable of earning a livelihood.

Klinische Wochenschrift, Berlin

13 1633-1664 (Nov. 17) 1934 Partial Index

Chemical Reactions as Foundation of Pharmacologic Actions. W. Heubner—p. 1633

Content of Saliva in So Called Blood Group Ferment. O. Sievers—p. 1640

Distribution of Residual Carbon in Blood in Malignant Tumors. K. Voit—p. 1641

Analysis of Circulatory Disturbances Developing Under Influence of Low Atmospheric Pressure. W. Borgard—p. 1642

*Diagnosis of Lead Poisoning in Children. M. Kasahara—p. 1646.

Nitrogen Metabolism Following Resection of Stomach. A. S. Kondak and A. B. Rais—p. 1649

"Blood Group Ferment" in Saliva.—Sievers, after calling attention to studies by Wittebsky and particularly to those by Satoh reported in the *Klinische Wochenschrift* (13 798 [June 2] 1934, abstr. THE JOURNAL, July 28, 1934, p. 1690), describes his own studies on this subject, which have direct connection with those of Satoh in that they aimed at determining whether the amount of blood group ferment in the saliva undergoes in the course of the day certain fluctuations dependent on the meals, and whether these fluctuations are independent of the other constituents of saliva. The author was able to corroborate Satoh's statements about the decrease or the disappearance of the blood group ferment following irrigation of the oral cavity. A comparative constancy of the content of the saliva in A substance could likewise be corroborated. Further experiments were made to determine whether the disappearance of the blood group ferment leaves the diastase action of the saliva unimpaired. It was found that, whereas the blood group substance and diastase showed no decrease after breakfast but rather an increase, the blood group ferment decreased greatly. This indicates that there is no connection between the action of the diastase and the blood group ferment. Examination of the saliva during various times of the day disclosed that the blood group ferment is either lacking or greatly decreased after meals, but that it again increases to its maximum within four or five hours. The strongest ferment action could be demonstrated in the saliva taken while the person was still fasting. The author observed further that all persons whose saliva was examined had blood group ferment, although the action was not demonstrable in every experiment. Moreover, the amount of ferment may vary in the same person even if the specimens have been withdrawn under the same conditions. In other experiments it was observed that specimens of saliva that influenced heated A saliva always destroyed the A substance in Witte's peptone, but that, on the other hand, the blood group ferment action was occasionally directed only against the A substance in Witte's peptone without exerting a noticeable influence on that of the saliva. This proves that Witte's peptone is a more susceptible A substrate for the blood group ferment than is the saliva.

Diagnosis of Lead Poisoning in Children.—Kasahara points out that in Japan lead poisoning of children is relatively frequent. This is due to the fact that the powders used by the mother as well as for the nursing often contain lead. Children develop two types of lead poisoning: (1) lead anemia and (2) lead poisoning with meningeal symptoms. The first type is characterized by the following symptoms: anemia, restlessness, irritability, biting at the nipples, lack of appetite, loss of weight and occasionally nausea with vomiting. The lead line on the

gums is hardly ever demonstrable, but the teeth occasionally have grayish black or black deposits. The finger and toe nails have been known to turn black. Hematoporphyrinuria hardly ever develops, and the urine does not contain urobilin or urobilinogen. The hemoglobin is decreased, as are also the erythrocytes. Moreover, there is a considerable increase in the number of reticulocytes, and erythrocytes with basophil granules appear. In the severer cases poikilocytosis, anisocytosis and polychromasia develop. In lead poisoning with meningeal symptoms there develop, in addition to the signs mentioned those indicating pressure on the brain, manifested by protrusion or tightly stretched fontanels, tremor of the hands, convulsions, impairment of consciousness and gnashing of the teeth. The cerebrospinal fluid shows increased pressure, xanthochromia, increased protein and globulin content, slightly increased sugar content and lymphocytosis. The second form develops primarily during the warm season. Blindness due to atrophy of the optic nerve has been known to develop as a sequel. The mortality rate is about 33 per cent. The diagnosis rarely gives difficulties. The author, searching for the bandlike shadows at the end of the long tubular bones, found that these shadows are demonstrable not only on the end of the long, tubular bones but also on the shorter bones, on the flat bones and around the centers of ossification. He calls attention to the skin reaction suggested by Lewin for the diagnosis of lead poisoning and describes a modification that he found helpful. For examining the blood for the presence of basophil granules the author used the method of Manson, but he emphasizes that the hydrogen ion concentration of the dye solution is important. He found that, if Manson's method is used, a pH of 5.54 is most satisfactory.

13 1665 1704 (Nov. 24) 1934 Partial Index

Metabolism of Bile Pigments H. T. Schreus and C. Carrie—p. 1670
*Elimination of Follicle Maturation Hormone (Prolan A) and of Estrogenic Substance in Urine of Patients with Skin Diseases R. M. Bohnstedt—p. 1675

*Strengthening of Antithyroid Protective Action of Blood by Thyrotropic Hormone of Hypophysis H. Eitel and A. Loeser—p. 1677

*A Vitamin and Cholesterol Metabolism J. A. Collazo, Isabel Torres and Sanchez Rodriguez—p. 1678

Failure of Insulin Therapy in Diabetes Complicated by Impairment of Liver R. Engel—p. 1682

Cardiac Activity and Sympathetic Poisons Influence of Intravenous Injection of Atropine on Cardiac Action G. W. Parade and G. Jager—p. 1684

Follicle Maturation Hormone and Estrogenic Substance in Urine During Skin Diseases—Bohnstedt observed increased elimination of the active principle of the anterior hypophysis and of estrogenic substance, respectively, in several dermatoses, but he thinks that so far the elimination of these substances may be considered significant only in acne rosacea. The urine of two patients with symmetrical dysmenorrheal dermatitis contained greater amounts of the follicle maturation hormone. However, in four women with eczema in whom the cutaneous manifestations became exacerbated during menstruation, estrogenic substance was not present in the urine nor could the follicle maturation hormone be detected in larger quantities. In case of hypofunction of the testicles as the result of inflammatory disturbances (orchitis fibrosa) or of atrophy, an increased elimination of the active principle of the hypophysis may become manifest. The author thinks that more general conclusions are as yet premature and that further investigations will be necessary.

Strengthening of Antithyroid Protective Action of Blood by Thyrotropic Hormone of Hypophysis—In former studies Eitel and Loeser showed that the thyroid activating effect of the thyrotropic hormone of the anterior hypophysis is no longer demonstrable following preliminary treatment with blood for approximately 1 cc. of injected serum was found to counteract the effect of one guinea-pig unit of the thyrotropic substance. Sheep's blood proved to be most effective. The authors show that the antithyroid protective action of the blood may be increased by preparatory treatment of the donor animals with thyrotropic hormone. They injected sheep daily for several weeks with 1,000 guinea-pig units of the thyrotropic serum. Specimens of blood were withdrawn on the thirteenth, twenty-first and twenty-eighth days and were examined. The first specimen revealed a considerable increase and after four weeks of treatment the antithyroid protective

action of the blood was six times as great as before the injections of the thyrotropic substance. Preparatory treatment with thyroxine was found to work no changes in this respect, and the blood of patients with exophthalmic goiter likewise was found to have no essential protective action. The antithyrotropic substance is contained in the serum and in small quantities also in the corpuscles. The site of formation of the antithyrotropic substance is still unknown. It can hardly be in the hypophysis, for the oral administration of large amounts of dried anterior hypophyseal tissues does not counteract the thyroid activating action of the thyrotropic hormone. Moreover, Anderson and Collip found that the blood of hypophysectomized rats even contains the antithyroidal principle.

Vitamin A and Cholesterol Metabolism—Collazo and his associates demonstrate that vitamin A exerts a great influence on the cholesterol metabolism. They found that in rats with A avitaminosis the cholesterol content of the serum as well as of the organs is considerably reduced, while in rats with A hypervitaminosis it is increased.

Munchener medizinische Wochenschrift, Munich

81 1789 1836 (Nov. 22) 1934 Partial Index

Treatment of Placental Hemorrhages F. von Mikulicz Radecki—p. 1797

Predisposition to Multiple Spasms and Relations to Allergy H. von Hoesslin—p. 1799

Practical Significance of Spirometry of Lungs K. Schirlitz—p. 1803

Simulation of Diabetes for Seventeen Years G. Jungmichel—p. 1809

*Therapy of Pulmonary Infarcts P. Meissner—p. 1811

Treatment of Rheumatic Polyarthritis K. Patschkowski—p. 1811
Indications for and Results of Short Wave Therapy in Surgery A. Lob—p. 1812

Therapy of Pulmonary Infarcts—Meissner points out that Trendelenburg's operation for pulmonary embolism, although quite successful in suitable cases, should be resorted to only in rare instances. Then he discusses the smaller embolisms that are not immediately fatal. If the embolism occurs in the peripheral portions of the lung hemorrhagic pulmonary infarcts develop and the ensuing symptoms are dyspnea, anxious facial expression, profuse sweating, rapid pulsation, eventually cyanosis and piercing pleural pain that radiates upward into the shoulder. Annoying continuous hiccup develops quite frequently in such cases. The temperature does not rise high, but an irritating cough develops and, if the infarct is rather extensive the patients have a hemorrhagic sputum. Since the most painful symptoms are due to irritation of the phrenic nerve, the author treats these cases by anesthetization of this nerve. He uses from 15 to 20 cc. of a 1 per cent solution of procaine epinephrine. The anesthetization of the phrenic nerve always results in a considerable reduction or complete cessation of pain and produces considerable improvement. The diaphragm is more or less immobilized and the danger of a new embolism is greatly reduced. The pain conduction is interrupted, the patient becomes quieter, the respiration is more free, the hiccup disappears, the hemorrhagic sputum is more easily ejected and swallowing of food is no longer painful.

Zentralblatt für Gynäkologie, Leipzig

58: 2769 2832 (Nov. 24) 1934

Physiology of Formation of Milk K. J. Anselmino and F. Hoffmann—p. 2770

Myomas and Malignant Tumors of Uterus L. Brings—p. 2775

Colloid Cancer of Uterine Cervix O. Tilmann—p. 2779

*Destruction of Interstitial Portion by Electric Needle for Sterilization of Tubes F. A. Scheffzek—p. 2786

More Exact Prognosis in Old Primiparas A. L. Sherbak—p. 2790

*Functional Disturbances of Female Sex Organs Following Artificial Abortion N. Kakuschkin—p. 2793

Sterilization by Destruction of Interstitial Portion of Tube—Scheffzek destroys the interstitial portion of the tube by electrical coagulation. The abdomen is opened by a transverse fascial incision, the length of which does not have to exceed 7 cm. even if the layer of abdominal fat is considerable. The tube is severed transversely at its junction with the uterus. A thin electric needle is then introduced into the lumen of the tube and the interstitial portion of the tube is destroyed down into the uterine cavity. Then the needle is introduced into the lateral portion of the tube and the tubal canal is destroyed. The author employed this method in 182 women. It proved

successful in spite of the fact that the majority were unruly, insane women in whom it proved impossible to enforce post-operative rest

Disturbances of Sex Organs Following Artificial Abortion—Kakuschkin reports observations on 1,921 women. He cites statistics indicating that hardly one sixth of the women remain free from abortions, that more than four fifths resort to artificial interruption of pregnancy, and that more than one fourth interrupt all their pregnancies. The average number of abortions for each woman was 2.34, while the average of normal deliveries was only 1.87. In evaluating the influence of abortion on the function of the female sex apparatus the author considers fertility, menstrual function and libido. He found that over 50 per cent became sterile; that is, they did not become pregnant for more than two years following the abortion. Examination of the women who had become sterile following abortion revealed inflammatory changes in the uterine adnexa, inflammations in the pelvis, catarrhal processes in uterus and vagina, atrophic processes, pathologic position of the uterus, deficient development of uterus and vagina and neoplasms in the uterus and ovaries. It is of course not certain whether all these changes were the true causes of the sterility in the different cases. He assumes that other changes, for instance those in the secretory function, may cause the sterility. Disturbances in the menstruation were observable in 150 cases. The libido was reduced in a number of women. The author assumes that the reduced libido as well as other postabortive disturbances are the result of a hormone trauma.

Klinicheskaya Meditsina, Moscow

12 1217-1394 (No. 9) 1934 Partial Index

- Role of Nervous System in Inflammation. V. P. Sakharov —p. 1235
- Clinical Significance of Study of Fractional Albumin in Cerebrospinal Fluid in Neuropsychiatry. A. E. Kulkov and V. I. Veyland —p. 1240
- Hepatocardiac Factor in Cardiac Insufficiency. D. Pletnev and O. Sokolnikov —p. 1248
- Increase in Intraspinal Tension. M. B. Krol —p. 1258
- Tumors of Linea Mediana (Tumors of Fourth Ventricle). N. M. Itsenko —p. 1366
- Symptoms of Lesions of Central Nervous System Following Neoparsphenamine Injections. N. S. Chetverikov and A. Ya. Kavyrshin —p. 1374

Tumors of Linea Mediana—According to Itsenko, Cushing was the first to separate the group of tumors limited to the fourth ventricle of the brain and the vermis. Of the author's fourteen cases, verified either at operation or at necropsy, four were tumors of the fourth ventricle, while ten involved the vermis with a partial extension into the cerebellum proper. The author considers the following as basic symptoms of the syndrome of tumors of the median line: 1. A characteristic posture of the head and at times of the entire body. He views this phenomenon as a complicated postural reflex rather than an adaptation to relieve the dynamic block in the ventricles. 2. Marked difficulty experienced by the patient in attempting to change from a horizontal to a vertical posture. 3. Dependence of headache on the change of position of the head. 4. Paroxysmal periodic character of the headaches. 5. Variability and inconstancy of certain symptoms as to their localization and intensity. 6. A number of cerebellar symptoms, particularly of the vermis, without a definite unilaterality. The less characteristic symptoms are: (1) seizures of tonic convulsions of decerebrate rigidity type, (2) diminution of tendon reflexes in the lower extremities, (3) papilledema, (4) Kernig's sign, (5) involvement of various cranial nerves, (6) pain in the back of the neck and tenderness along the occipital nerve, (7) failure to obtain fluid on cisternal puncture, (8) constant and pronounced hydrocephalus, (9) rather acute onset, rapid course, at times galloping, and (10) death characterized by respiratory paralysis. The author offers differential points in the diagnosis of tumors involving the fourth ventricle and those involving the vermis. The following are more characteristic for tumors of the fourth ventricle: periodicity of headaches, dependence of headache on the position of the head, production of symptoms on changing from the horizontal to the vertical position, involvement of cranial cerebral nerves, variability and inconstancy of symptoms and characteristic mode of death. In the tumors of the vermis the cerebellar symptoms are more marked than in those of the fourth ventricle.

Lesions of Central Nervous System Following Injections of Neoparsphenamine—Chetverikov and Kavyrshin report three cases in which symptoms of meningo-encephalitis developed after injection of neoparsphenamine. In two cases neoparsphenamine was administered for the treatment of malaria and in one for psoriasis. In the first case symptoms developed after a second dose, 0.45 Gm. of neoparsphenamine, administered nine days after the initial dose of 0.3 Gm. In the second case, 0.6 Gm. of neoparsphenamine was administered two days after the initial dose of 0.45 Gm. In the third case symptoms developed after the third injection of 0.6 Gm. administered two days after the second injection. The clinical onset in the three cases was abrupt and stormy, suggesting a diffuse involvement of the entire central nervous system, a meningo-encephalitis. The symptoms were fever, headache, vomiting, general weakness, pain in the lower extremities, loss of consciousness, disturbances of the pelvic organs and involvement of the upper and lower extremities, with sensory disturbances and paresis of the cranial nerves. Such cases not infrequently terminate lethally. In the authors' cases the cerebral symptoms subsided in the course of from two to three weeks, the process remaining localized in the spinal cord and leading to paralysis of all the extremities or of only the lower ones. The subsequent course is chronic with a gradual but insignificant improvement in symptoms. The more marked symptoms are those caused by the involvement of the thoracic and the lumbosacral segments of the cord. The authors conclude that lesions of the spinal cord are more permanent than those of the brain. They believe that an increased permeability of the hemato-encephalic barrier is an important factor enabling neoparsphenamine to permeate the central nervous system. The condition of the vegetative endocrine apparatus as well as that of the metabolism and colloids play a part. The dose and the interval between doses are of significance for each case. The authors recommend the following prophylactic measures: 1. Maximal precautions must be observed in the presence of defective functioning of the vegetative endocrine apparatus. 2. The permeability of the hemato-encephalic barrier should be determined in all such cases. 3. The treatment in women must be interrupted in the premenstrual and menstrual periods. 4. Preference is to be given to small fractional doses, while the intervals between the doses must not exceed the established norms. 5. The injection of neoparsphenamine should be performed slowly.

Vrachebnoe Delo, Kharkov

17 481-544 (No. 8) 1934 Partial Index

- Paraffin Therapy. New Method of Thermotherapy. A. P. Kirichinskiy, E. I. Kichina and Ya. I. Mintz —p. 481
- Determination of Blood Pressure Through Auscultation of Heart. V. F. Martynov —p. 487
- Effect of Oxygen Inhalations on Blood Sugar of Tuberculous Patients. P. O. Drabkina —p. 490
- Vegetative Nervous System of Nurslings in Cerebrospinal Meningitis. Ts. S. Zhurakhova and E. P. Ovcharenko —p. 491
- Treatment of Polyarthritides with Methenamine and Milk. P. P. Litsyn —p. 499
- Treatment of Tetanus. L. D. Yampolskiy —p. 501
- Glycolysis and Respiration of Tissues in Experimental Tar Cancer. D. E. Rybkina —p. 509

Paraffin Therapy—According to Kirichinskiy and his associates, the therapeutic value of paraffin is based on the physical qualities of this substance (contractibility, elasticity, conductivity of heat and so on), which make it fit for hot applications in certain diseases, principally of rheumatic origin. The founder of the paraffin treatment method was Barthe de Sandfort, who used it as early as 1910 in Paris. The authors have used it since 1932 in a somewhat modified form. Instead of pouring paraffin on the affected extremity, they put the member into liquid paraffin in a specially fitted box. This modification has the advantage of transmitting more heat to the tissues. Insignificant alterations of pulse and of body temperature are observed; the perspiration is more abundant as the sittings are repeated and this is accompanied by marked relief of pain. Every sitting lasts from one-half to one hour. The authors studied 200 cases treated according to this method and found a marked improvement of the condition in 80.4 per cent. In 11.6 per cent no changes were noted and in 3 per cent there was a change for the worse.

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THE INFLUENCE OF THE CEREBRAL CORTEX ON GASTRO-INTESTINAL MOVEMENTS

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After the publication of Cushing's¹ address on peptic ulcers and the interbrain and Keller's² paper on ulceration of the digestive tract following experimental lesions of the hypothalamus, it seemed desirable to study the effects of hypothalamic lesions on the gastro-intestinal tract of monkeys. Since monkeys had not previously been used in such experiments it was essential that a careful study be made of their gastro-intestinal tracts under laboratory conditions as a basis for interpreting changes that might follow hypothalamic lesions.

For this purpose complete autopsies were performed on all animals (eighty in number) that died or were killed during the year 1932-1933 (at the Laboratory of Physiology at Yale University School of Medicine),³ attention being directed particularly to the intestine. In the course of these autopsies, intussusception with intestinal obstruction was found to be the cause of death in three otherwise healthy animals, all three intussusceptions occurred in monkeys that had been subjected to bilateral removal of parts of the frontal lobes (including the premotor area). Though suggestive of a relation between cortex and intestine these observations would in themselves allow no definite conclusions, even though in 300 primate autopsies obstructive intussusception had not previously been encountered (1930-1933). We⁴ were therefore led to investigate the influence on the gastro-intestinal activity exerted by the cerebral cortex. In the present paper a brief summary is presented of the results, with special reference to their clinical significance.

REVIEW OF THE LITERATURE

Stimulation—During the latter part of the nineteenth century, experimental evidence accumulated which indicated that the cerebral cortex influenced gastro-intestinal

movements. In 1876 Bochefontaine⁵ pointed out that faradic stimulation of the region of the sigmoid gyrus of the dog caused peristaltic contraction of the pyloric region of the stomach, followed by inhibition of the pylorus itself, and that sometimes such stimulation caused increased movements of the small and large intestines. Often peristalsis of the large intestine so induced was so forceful that it carried the fecal contents ahead of it. These observations were substantially confirmed by Hlasko⁶ and Openchowski⁷ and greatly extended by Bechterew and Mislowski⁸ and by Osipov.⁹ Bechterew and Mislowski found that stimulation of certain points near the cruciate sulcus gave rise to vigorous movements of the gastro-intestinal tract whereas excitation of others caused inhibition of these movements. Page May,¹⁰ who used both dogs and monkeys, was unable to confirm Bechterew's results. More recently Sheehan¹¹ has found that stimulation of the monkey's frontal lobe rostral to the motor area causes no effect on the "resting" (unfed) stomach but frequently leads to prompt inhibition of peristalsis in the "active" (fed) stomach.

Release—Only three years after Bochefontaine published his results, Ott and Field¹² observed that quiet peristalsis in the cat's intestine became very active after the brain had been sectioned posterior to the thalamus. Similar results were obtained by Bechterew¹³ and by Lurje,¹⁴ indicating that some part of the brain rostral to the section exerts an inhibitory influence on peristaltic movements. In view of the work of Cushing¹ and of Beattie and Sheehan,¹⁵ it is quite possible that the inhibitory influence may emanate to some extent from the hypothalamus, but the earlier studies on cortical stimulation, the more recent ones of Sheehan,¹¹ and the observations on experimental intussusception,⁴ indicate that the cortex also plays an important part in regulating and inhibiting the activity of the intestine.

EXPERIMENTAL RESULTS

Under light ether anesthesia, various parts of the cortex were stimulated faradically for periods of from

5 Bochefontaine Étude expérimentale de l'influence exercée par la faradisation de l'écorce grise du cerveau sur quelques fonctions de la vie organique Arch de physiol norm et path 3 140 1876

6 Hlasko Bernhard Beiträge zur Beziehung des Gehirns zum Magen Inaugural Dissertation Dorpat E J Karow 1887

7 Openchowski Ueber Contenten und Leitungsbahnen für die Musculature des Magens Arch f Anat. Physiol (Physiol Abt.) 13 549 1889

8 Bechterew Vladimir and Mislowski N Ueber centrale und periphere Darminnervation, Arch f Physiol (suppl Band) 13:243 1889

9 Osipov V P Ueber die Rindencentra des Dickdarmes Obozr Psichiat. Neurol 3 193 1898

10 May W P The Innervation of the Sphincters and Musculature of the Stomach J Physiol 31:260 271 1904

11 Sheehan D The Effect of Cortical Stimulation on Gastric Motility in the Monkey J Physiol to be published

12 Ott S and Field G B W A New Function of the Optic Thalamus J Nerv & Ment Dis 6 654 1879

13 Bechterew Vladimir Die Functionen der Nervencentra ed 3 Jena Gustav Fischer 1911

14 Lurje quoted by Schwab E Die Innervation des Darmes in Muller L R Lebensnerven und Lebenstrieb ed 3 Berlin Julius Springer 1931

15 Beattie J and Sheehan D The Effects of Hypothalamic Stimulation on Gastric Motility J Physiol 81 218 (May 21) 1934

Read before the Section on Nervous and Mental Diseases at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

From the Neurosurgical Service of the Hospital of the University of Pennsylvania, Philadelphia, and the Laboratory of Physiology, Yale University School of Medicine, New Haven, Conn.

1 Cushing Harvey Peptic Ulcers and the Interbrain Surg Gynec & Obst 55 1 (July) 1932

2 Keller A D Ulcerations of the Digestive Tract Following Experimental Lesions in the Hypothalamus read before the Federation of American Societies for Experimental Biology, Philadelphia, April 30, 1932, published subsequently by Keller A D Hare W K and D'Amour M C Proc Soc Exper Biol & Med 30 772 (March) 1933

3 Watts J W and Fulton J F The Effect of Lesions of the Hypothalamus upon the Gastro-Intestinal Tract and Heart of Monkeys Ann Surg to be published

4 Watts J W and Fulton J F Intussusception The Relation of the Cerebral Cortex to Intestinal Motility in the Monkey New England J Med 210 883 (April 26) 1934

one to two minutes, precautions being taken to prevent the spread of the current.⁴ With the abdominal cavity open and the intestine floated in warm saline solution, the visceral organs were observed directly. When the premotor area was stimulated, a latent period of about twenty seconds usually elapsed before changes in the gastro-intestinal tract occurred. A marked increase in peristaltic activity of the cecum and lower part of the small intestine was generally the first change noted but in some animals striking 'peristaltic rushes' were initiated in the colon by such a stimulus. Vigorous peristalsis of the small intestine also occurred, but more often ringlike bands of contraction developed during application of the stimulus and these as a rule were not transmitted. The persistence of such sharply defined bands of contraction in one segment, aided by peristaltic waves from cephalad segments resulted in some instances in the invagination of the active portion of the intestine into the lumen of the passive segment lying in continuity with it. Often the intussusceptions so produced were multiple, usually formed in the ileum, and did not persist permanently, i.e., did not cause obstruction under the conditions of the experiment.

Vigorous intestinal movements could be produced by stimulation of many parts of the premotor area but not from every point within this area. The portion bordering on the superior precentral sulcus, from which Bucy and Fulton¹⁶ obtained ipsilateral movements of the extremities gave the most consistent increase in intestinal activity. Once activity had been aroused in the intestine by premotor stimulation, faradization of the prefrontal region and the postcentral gyrus sometimes caused augmentation of activity but primary stimulation of these regions in the intact cortex were without effect. In one animal from which the premotor area had been extirpated five months previously, stimulation of the prefrontal region and the postcentral gyrus caused a slight increase in peristalsis but never obstruction. In no experiment did stimulation of the motor area even when very strong influence movements of the intestine. In some experiments cortical stimulation caused increased secretion of gastric juice. Bilateral vagotomy abolished most of the cortical responses, though occasionally strong stimulation of the premotor area in such a preparation caused a slight increase in peristalsis. The consequences of sympathectomy were not studied.

COMMENT

Cortical Autonomic Epilepsy—The experiments just described suggest an explanation of the long recognized visceral symptoms and signs associated with focal seizures in man, especially those which occur in the absence of increased intracranial pressure. When pressure is increased, the symptoms of nausea and vomiting cannot be attributed solely to cortical derangement. In uncomplicated focal seizures, however, visceral phenomena may be of localizing significance. Watts and Frazier¹⁷ recently presented case histories of two patients in which manifestations such as nausea, epigastric distress and vomiting served to abort, or were substituted for, epileptic convulsions. In one instance, nausea followed by vomiting aborted individual focal seizures affecting the extremities. In the other instance several focal convulsions occurred early in the anamnesis, then fol-

lowed an interval of four years in which there were periodic episodes of nausea, epigastric distress and vomiting, but no convulsions. After four years the characteristic convulsive seizures were resumed.

In their study of the cerebral localization of epileptic manifestations, Penfield and Gage¹⁸ observed that an aura of pain or epigastric distress may arise from activity of the cerebral cortex. Under local anesthesia in conscious patients they found that stimulation of area 7a caused pain in the right lower quadrant of the abdomen in one case, and stimulation of the same area elicited an epileptic attack preceded by the usual epigastric aura in another.

The observations of Penfield and Gage¹⁸ established sensory autonomic representation in the cortex for the gastro-intestinal tract in man. The experiments of Watts and Fulton⁴ establish motor autonomic representation in the cortex for the gastro-intestinal tract in the monkey. Correlating these results with occurrence of epileptic manifestations such as nausea and vomiting, associated with focal epileptic convulsions or occurring alone as in the patients described, led Watts and Frazier¹⁷ to postulate motor autonomic representation for the gastro-intestinal tract in the cortex of man. It is probable, therefore, that nausea, epigastric distress and possibly vomiting may be the result of neuronal discharge from the motor autonomic portion of the cerebral cortex. We also believe that the epigastric aura and other abdominal sensations usually are not 'referred' sensations but rather the result of vigorous and probably abnormal, movements of the gastro-intestinal tract.

Morbid Hunger—Cases of morbid hunger following injury to the brain have been described by Paget¹⁹, Bechterew,¹³ and Sollier and Delageniere.²⁰ In 1909 Spiller²¹ reported a case of glioma occupying the whole pons, in which intense hunger was a prominent symptom, and remarked that he had observed two other cases of brain tumor presenting this symptom. It was Spiller's impression at that time that the location of the tumor was not significant in relation to the production of excessive hunger. In the following case the sudden appearance of excessive hunger was one of the first symptoms in a patient who subsequently proved to have a frontal tumor.

A man, aged 45 with a right frontal lobe tumor, in whom the sudden appearance of a ravenous appetite was one of the first symptoms, was referred to the neurosurgical service a few months ago by Dr. William G. Spiller. Associated with the onset of excessive appetite in 1930 were increased thirst, increased libido and morbid somnolence. Two years later generalized convulsive attacks developed, which usually began with the turning of the head to the left. Profuse sweating with a very offensive odor perceptible to other people was noted after each attack. On examination the man was found to have bilateral choking of the optic disks but no cranial nerve palsies and no motor or sensory disturbances. A ventriculogram showed evidence of a right frontal lobe tumor. A huge meningioma in this region was exposed by Dr. Charles H. Frazier. Because of its extreme vascularity it was considered advisable to postpone its removal until a second stage, but unfortunately the patient died before this could be done. At autopsy the brain, which was examined by Dr. Bernard J. Alpers, revealed a very large, flat meningeal fibroblastoma,

18 Penfield W. and Gage L. Cerebral Localization of Epileptic Manifestations. Arch Neurol & Psychiat 30 709 (Oct.) 1933

19 Paget S. On Cases of Voracious Hunger and Thirst from Injury or Disease of the Brain. Tr Clin Soc London 30 113 1897

20 Sollier P. and Delageniere H. Le centre cortical des fonctions de l'estomac d'après un cas d'abcès du cerveau d'origine traumatique. Rev neurol 9:1103 1901

21 Spiller W. G. Brain Tumor. J A M A 53:2078 (Dec. 18) 1909

16 Bucy P. C. and Fulton J. F. Ipsilateral Representation in the Motor and Premotor Cortex of Monkeys. Brain 56 318 (Sept.) 1933

17 Watts J. W. and Frazier C. H. Cortical Autonomic Epilepsy read before the American Neurological Association Atlantic City June 5 1934. J Nerv & Ment Dis. to be published

firmly adherent to the dura mater. It occupied almost the entire right frontal lobe, extending from the falx cerebri to the orbital gyri. The tumor completely covered areas F¹ and F², except for a small area at the frontal pole, and compressed most of F³ and the precentral gyrus. The tumor could be separated from the brain only with difficulty. The under surface of the tumor was softened and necrotic, and the entire frontal lobe under the tumor was softened.

Two years ago Fulton, Jacobsen and Kennard²² noted that monkeys after bilateral removal of the frontal areas ate several times as much as normal animals. In the belief that the ravenous appetite might be due to some metabolic disturbance Bruhn²³ studied the basal metabolic rate of these animals as well as of normal monkeys. Bruhn's results soon made it apparent that in spite of their excessive appetites and activity these animals had a normal basal metabolic rate. However, he found that the basal metabolism may be elevated after bilateral premotor extirpation, presumably owing to spasticity of the extremities. In a recent discussion of morbid hunger, Fulton²⁴ said: "In view of the abnormal peristalsis of the gut resulting from these cortical lesions, it appears to me logical to suggest that symptoms of morbid hunger may be due to increased motility of the stomach and that the cases of morbid hunger reported in the literature may also be attributed to this circumstance." This offers an explanation based on experimental evidence of a symptom that has long been a medical curiosity. It might be added that a part of the excessive appetite and the tendency toward emaciation may be the result of food being hurried through the alimentary canal at a rate that does not allow time for digestion and absorption to be completed.

SUMMARY

1 Removal of cortical influence by extirpation of both premotor areas results in increased peristalsis and in some instances in intussusception. Faradic stimulation of the premotor area and certain adjoining parts of the cerebral cortex imitates vigorous movements of all parts of the intestine. Evidence is given indicating that cortical representation for the gastro-intestinal tract contains both excitatory and inhibitory components.

2 Epigastric aura and other visceral sensations associated with focal convulsive seizures or occurring independently usually are not so-called referred sensations but result from vigorous and perhaps, abnormal gastro-intestinal movements.

3 Morbid hunger associated with brain tumors, cerebral vascular disease and accidental injury to the brain is probably due to irritation or destruction of the intestinal representation in the cortex, or of tracts arising there.

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ABSTRACT OF DISCUSSION

DR THOMAS J. HELDT, Detroit. In giving consideration to autonomic representation in the cerebral cortex, I suppose that this study may be regarded as dealing primarily with the preganglionic system of cells and fibers or of their equivalents. What are the details of postganglionic expression and how much thought has been given to stimuli more complex than those mentioned? Reference has been made to electrical stimulation and to stimulation by drugs. How much study has been

made of the more complicated sensory stimuli and the psychic factors that are so difficult to rule out and to separate at the time of stimulation by simpler methods? I am wondering whether Dr. Watts has given special study to such factors as might be involved when a securely leashed dog is presented with food just out of reach. Multiple stimuli are certainly at hand. To what extent is such a complex sensory stimulus comparable to electrical stimulation? This is probably a relative matter, but how much of a discount must be allowed for such relative and complex stimuli in the full explanation of the functions and the cerebral representations under consideration? On the basis of the reflex arc response and the postganglionic innervation of viscera, what are the possibilities of a "short circuit" and how much "short circuiting" is possible without actual central and precentral representation?

DR JAMES W. WATTS, Philadelphia. I agree with Dr. Quigley that one cannot say that movements of the gastro-intestinal tract are increased simply because there is an increase in appetite. As I said before conclusions cannot be drawn from clinical cases of ravenous appetite associated with cerebral lesions unless other factors have been excluded. In reference to one of Dr. Heldt's remarks I may say that all the experiments were done under light ether anesthesia. On several occasions when the anesthesia became light and the animal struggled vigorous peristalsis occurred in the large intestine when ether was reapplied. I do not know what to attribute this to, whether fear or the emotions played a part. However, I do not think such peristalsis is related to the associated activity of the skeletal muscles because repeatedly stimulation of the motor area (area 4) has elicited the usual vigorous movements of the extremities but no movements of the gastro-intestinal tract.

UPPER MOTOR NEURON LESIONS

AN ANALYSIS OF THE SYNDROMES OF THE MOTOR AND PREMOTOR AREAS

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NEW HAVEN, CONN.

AND

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When confronted by a patient exhibiting loss or impairment of voluntary power a clinical examiner sets about at once to determine whether the disturbance is in the muscles themselves or in the nervous system. The case history generally indicates which one is involved and if the trouble proves to be nervous in origin, the next step is to decide whether the central or peripheral nervous system is primarily concerned. In current neurologic teaching a broad distinction is made between the paralyses resulting from lesions of the "lower motor neuron" and those due to interruption of the "upper motor neuron." The lower motor neuron has its beginning in the cells of the anterior horn and its ending in the skeletal muscles. The term upper motor neuron has reference to the pathways from the cerebral cortex conveying volitional impulses, directly or through intermediate neurons, to the anterior horn cells of the spinal cord.

The symptoms of lesions of the lower motor neuron, such as occur in poliomyelitis, are identical with those produced by cutting a motor nerve, i. e., voluntary power is completely destroyed in the affected muscles, reflexes are abolished, the affected extremity is flaccid and electrical stimulation reveals the typical "reaction of degeneration" (table 1). Contractures and other

From the Laboratory of Physiology, Yale University School of Medicine and the Department of Neurology, Harvard Medical School, Boston. Read before the Section on Nervous and Mental Diseases at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

²² Fulton, J. F., Jacobsen, C. F. and Kennard, Margaret A. A Note Concerning the Relation of the Frontal Lobes to Posture and Forced Grasping in Monkeys. *Brain* 55: 224 (Dec.) 1932.

²³ Bruhn, M. J. The Respiratory Metabolism of Infrahuman Primates. *Am. J. Physiol.* 100: 16 (July) 1934.

²⁴ Fulton, J. F. Some Functions of the Cerebral Cortex. Lecture I. Autonomic Representation in the Cerebral Cortex. *J. Michigan M. Soc.* 33: 175 (April) 1934.

deformities are prone to develop, owing to unopposed action of nonparalyzed muscles

The conventional distinctions between upper and lower motor neuron lesions are indicated in table 1 (after Campbell Thomson and Riddoch¹). The symptoms of lesions of the upper motor neurons are however, much less uniform than is indicated in the table, and considerable confusion exists as to their nature. This is due in large measure to the fact that lesions observed clinically seldom involve a single projection system. Furthermore, previous physiologic studies bearing on the subject have generally not been described in clinical terms and their significance has accordingly escaped notice. It is therefore proposed in the present paper to interpret the upper motor syndromes of clinical neurology in the light of recent neurophysiologic investigations on monkeys and the higher apes, the terms of clinical literature being used for descriptive purposes.

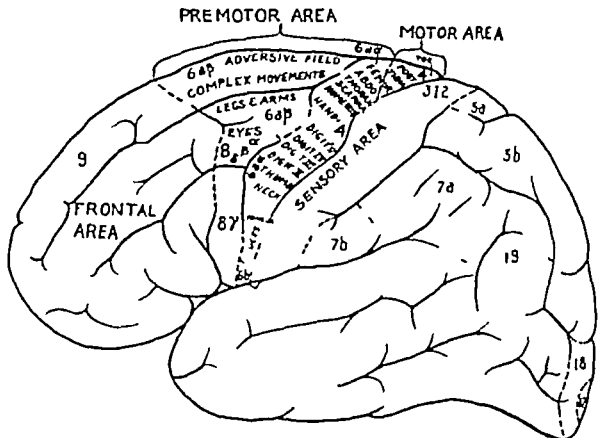
CORTICAL PROJECTION SYSTEMS RESPONSIBLE FOR VOLUNTARY MOVEMENT

In the past, the upper motor neuron has been identified solely with the pyramidal tract in the erroneous belief that voluntary reactions are mediated only through the corticospinal pathways from the motor area.² From observations on man and chimpanzees it is now known that the region of the cerebral cortex lying anterior to the motor area,³ generally referred to as the "intermediate precentral" or premotor region and shown in the accompanying illustration, also mediates voluntary reactions through its own corticospinal tracts or through its subcortical connections. In monkeys and chimpanzees from which the motor areas have been completely removed and the pyramidal tracts degenerated, voluntary movements of a fairly high order of complexity are eventually regained. When the premotor areas are also removed from both cerebral hemispheres, these movements disappear and

shown that corticospinal fibers from the premotor area actually pass to the spinal cord along with the pyramidal fibers of the motor area.⁴

EXPERIMENTAL LESIONS OF THE "UPPER MOTOR NEURON"

A Ablation of the Motor Area—When the cells of origin of the pyramidal tract are removed in man or chimpanzee by ablation of the motor area, the affected extremities exhibit complete paralysis of voluntary



Foerster and Penfield's map of the principal areas in the human cortex with Vogt's numerical designations. The exposed surface of area 4 is relatively small. The chief exposed area of electrical excitability lies in area 6.

movement for a period varying from two days to a week. During this period the limbs are flaccid with depressed or absent reflexes, and marked wasting of the muscles is likely to set in. There is no vasomotor disturbance, however, and no gross change in electrical reactions, though the excitability as determined by chronaxia measurement is said to be altered.⁶ Voluntary motor power begins to return, generally within the first week, appearing first at the hip and shoulder, then at the knee and ankle, and finally in the digits. At no stage during the recovery of voluntary power in the chimpanzee do the extremities become spastic; deep reflexes generally reappear when voluntary power returns, and the knee and biceps jerk may in the course of time become somewhat hyperactive, even though the extremities themselves remain flaccid. The Babinski and Chaddock reflexes develop when the deep reflexes return and remain permanently present,^{6b} while the fanning sign of Babinski and the Hoffmann and Rossolimo reflexes are absent (table 3⁷). A pure motor area lesion causes no "intellectual" deficit, i. e., no loss of memory or mental confusion, even when bilateral.⁸

TABLE 1—Upper and Lower Motor Neuron Lesions as Conventionally Contrasted*

	Lesion of Upper Neuron	Lesion of Lower Neuron
1. Wasting	Slight	Marked
2. Reflexes	Deep Increased Babinski present	Abolished
3. Rigidity	Spastic	Flaccid
4. Electrical reactions	No change	Reaction of degeneration
5. Contractures	Marked and according to set patterns	Irregular

* After Campbell Thomson and Riddoch.¹

the animal becomes permanently paralyzed. In any consideration of the upper motor neuron, therefore, one wishes to know to what extent the lesion involves the pyramidal pathways from the true motor area, and to what extent the nonpyramidal premotor pathways. This can be readily ascertained through a knowledge of the symptoms produced by isolated lesions of the motor and premotor areas respectively. Section of the pyramids themselves, as for example at the decussation, cannot answer the question, for it has recently been

1. Campbell Thomson, H. and Riddoch, G. *Diseases of the Nervous System*, ed. 4. London, Cassell & Co. 1925.
2. Fulton, J. F. and Kennard, Margaret A. *A Study of Flaccid and Spastic Paralysis Produced by Lesions of the Cerebral Cortex*. Research Nerv. Ment. Dis. 13: 158 (April) 1934.
3. Bucy, P. C. *The Relation of Cytoarchitecture of the Frontal Lobes of Primates to Functional Activity*. Arch. Neurol. & Psychiat. to be published.

4. Kennard, Margaret A. *Corticospinal Fibers Arising in the Premotor Area of the Monkey as Demonstrated by the Marchi Method*. Arch. Neurol. & Psychiat. to be published. Hoff, E. C. *The Distribution of Bouton Terminations of Corticospinal Fibers Arising in the Premotor Area of the Monkey*, *ibid.*, to be published.
5. (a) Leyton, A. S. F. and Sherrington, C. S. *Observations on the Excitable Cortex of the Chimpanzee, Orang Utan and Gorilla*. Quart. J. Exper. Physiol. 11: 135 (July) 1917. (b) Fulton, J. F. and Keller, A. D. *The Sign of Babinski: A Study of the Evolution of Cortical Dominance in Primates*. Springfield, Ill., Charles C. Thomas, 1932. (c) Foerster, O. and Penfield, W. *Der Narbenzug am und im Gehirn bei traumatischer Epilepsie in seiner Bedeutung für das Zustandekommen der Anfälle und für die therapeutische Bekämpfung derselben*. Ztschr. f. d. ges. Neurol. u. Psychiat. 125: 475 1930.
6. Bourguignon, G. *La chronaxie chez l'homme. Etude de physiologie générale (normale et pathologique) des systèmes neuromusculaires et sensitifs*. Paris, Masson et Cie. 1923.
7. (a) Kennard, Margaret A. and Fulton, J. F. *The Localizing Significance of Spasticity, Reflex Grasping and the Signs of Babinski and Rossolimo*. Brain 56: 213 (July) 1933. (b) Schick, William. *Reflex Changes After Injury to the Pyramidal Tract in the Macaque*. Gibbon and Chimpanzee. Arch. Neurol. & Psychiat. 30: 501 (Sept.) 1933.
8. Jacobsen, C. F. *Influence of Motor and Premotor Area Lesions upon the Retention of Skilled Movements in Monkeys and Chimpanzees*. A. Research Nerv. Ment. Dis. 13: 225 (April) 1934. *Functions of the Frontal Association Areas in Primates*. Arch. Neurol. & Psychiat. to be published.

B Premotor Lesions—Following isolated removal of the premotor area, profound motor disability occurs, which lasts, both in man and in the chimpanzee, for four or five days. Immediately after such a lesion, however, the affected extremity becomes highly spastic, no wasting occurs, electrical excitability is normal, and certain characteristic pathologic reflexes, such as forced grasping, the fanning sign of Babinski and the signs of Rossolimo, Mendel-Bechterew and Hoffmann, develop (table 3). There is also profound vasomotor disturbance, the affected extremity losing for a time its power of reflex vasodilatation and sweating.⁹ Voluntary power begins to return simultaneously in all parts of the extremity, generally from four to five days after the lesion, but skilled movements, such as those necessary to play the piano, to "finger" a violin or to tie a shoe-lace, become permanently impaired and the impairment can be demonstrated long after such a lesion has occurred. Spasticity, forced grasping and vasomotor disturbance, however, tend to disappear with the return of voluntary power.¹⁰ In chimpanzees these symptoms reappear in all four extremities when a premotor lesion is made in the opposite hemisphere. This indicates the existence of bilateral representation in each hemisphere.¹⁰

Following premotor lesions there is some "intellectual" deficit in that the "memory" for acquired skilled movements is lost, but reeducation is possible.⁸

C Combined Motor and Premotor Lesions—When the motor and premotor areas are simultaneously removed from one hemisphere, the affected extremities are at first flaccid with depressed reflexes (pyramidal tract effects), but strong spasticity, reflex exaggeration and vasomotor disturbances are prone to develop within three or four days (nonpyramidal premotor effects). The signs of Babinski, Chaddock (pyramidal), Rosso-

The symptoms present in hemiplegia therefore are usually those of a combined motor and premotor lesion with both the pyramidal and nonpyramidal reflexes demonstrable.¹¹ The size and approximate position of the lesion may be estimated from the reflexes actually present, and from this some indication as to prognosis can be obtained, for if only pyramidal tract signs are exhibited the return of motor power will be more extensive than if the premotor reflexes are present as well, and, conversely, if only premotor reflexes are

TABLE 3—*Reflex Changes Following Unilateral Upper Motor Neuron Lesions (Cortical)*

	Motor (Pyramidal)	Premotor (Non pyramidal)	Combined Motor and Premotor
Babinski	+	0	++
Chaddock	+	0	+
Spasticity	0	++	++
Toe fanning	0	+	++
Rosolimo	0	+	++
Mendel Bechterew	0	+	++
Forced grasping	0	+	++
Hoffmann	0	+	++
Tendon	++	++	+++
Abdominal	0	?	0
Vasomotor disturbance	0	++	++

* Depressed or absent in early stages following a motor area lesion

present without pyramidal tract signs the ultimate prognosis is even better.

THE SYNDROME OF THE MOTOR AREA

It is thus possible readily to differentiate motor from premotor pareses on the basis of the specific reflexes indicated in table 3. The pure motor area syndrome, however, rarely occurs clinically, but it is seen following discrete gunshot wounds, occasionally from small sharply localized tumors, and it has been produced by neurosurgeons¹² in the treatment of athetosis and focal seizures (excision of cortical scars). The characteristics of the syndrome may be summarized as follows:

1 **Motor Power**—There is gross loss of motor power in specific muscle groups. Thus, if the motor area for the hand has been removed the digits are completely paralyzed for days or weeks, if the lesion is sharply restricted, motor power in other muscles of the same extremity, e. g., biceps or triceps, may be entirely normal. The focal character of motor area paralysis is their most striking characteristic. Foerster and Penfield,¹³ for example, describe paralysis of the interossei of two fingers produced by a tuberculoma the size of a pinhead in the finger representation.

2 **Focal Seizures**—With expanding lesions of the motor area, focal seizures of the jacksonian type are common. Such seizures begin characteristically with a single muscle group, such as the flexor of the index or hallux, and proceed to involve other muscles of the extremity in definite sequence. The "march" of symptoms in such cases often is exactly the same in all seizures. The motor area seizures thus stand in sharp contrast with the premotor, which begin with a complex pattern of movement generally involving a whole extremity.

3 **Reflex Changes**¹⁴—These have been enumerated in table 3. They vary to a certain extent with the nature of the lesion. If a given area is surgically excised, all reflexes in the affected muscle are abolished.

¹¹ Davison Charles and Bieber Irving. The Premotor Area and Its Relation to Spasticity and Flaccidity in Man. Arch. Neurol. & Psychiat. 32: 963 (Nov.) 1934.
¹² Foerster and Penfield. Sachs E. Unpublished data. Spurling G. Unpublished data.

TABLE 2—*Symptoms of Voluntary Paralysis*

	Upper Motor Neuron Lesions		Lower Motor Neuron Lesions (Anterior Horn Cells or Peripheral Motor Nerve)
	Pyramidal (Motor Area)	Nonpyramidal (Premotor Area)	
1 Rigidity	Flaccid or normal	Spastic	Flaccid
2 Deep reflexes*	Depressed at first	Greatly augmented	Abolished
3 Superficial reflexes (lower limbs)	Flexor exaggeration with Babinski	Extensor exaggeration	Abolished
4 Muscular atrophy	Marked	None	Very marked
5 Electrical reactions	Transient depression	No change	Reaction of degeneration
6 Contractures			
Lower limbs	Flexion	Extension	Irregular depending on treatment and on action of nonparalyzed muscles
Upper limbs	Slight and variable	Flexion and adduction	

* See table 3

limo, Mendel-Bechterew and Hoffmann together with the fanning sign of Babinski (nonpyramidal) are likely to be permanently present (table 3).

A capsular hemiplegia in man may destroy chiefly the motor pyramidal radiations (if at the genu) or chiefly the premotor radiations (if in the anterior limb), but there is much overlapping in the two projection systems as they pass through the capsule, and a vascular accident in this region generally destroys both systems.

⁹ Kennard Margaret A. Vasomotor Representation in the Cerebral Cortex. Science 70: 348-349 (April 13) 1934. Vasomotor Disturbances Resulting from Cortical Lesions. Arch. Neurol. & Psychiat. to be published.
¹⁰ Bucy P. C. and Fulton J. F. Ipsilateral Representation in the Motor and Premotor Cortex of Monkey. Brain 56: 318 (Sept.) 1933.

for a variable period. If on the other hand, the lesion has been made by a gradually expanding tumor, the initial stage of reflex depression may be minimal or entirely absent. The only well recognized pathologic reflexes in the lower extremity associated with interruption of the pyramidal tracts are those of Babinski and Chaddock.

4 *Flaccidity*¹³—Resistance to passive manipulation of an extremity whose pyramidal control has been destroyed is generally less than normal and is certainly never increased. This is true despite the fact that some of the deep reflexes, such as the knee and the ankle jerk, may be exaggerated. Knee and ankle clonus are generally not demonstrable, and changes of resting posture with alteration of the position of the body in space do not occur. During the Great War, Head¹⁴ described cases of cortical "hypotonia" following shrapnel injuries of the postcentral convolution. Careful scrutiny of his case histories indicates that in all instances the lesion was adjacent to the central sulcus and therefore undoubtedly involved the motor area within the sulcus. In view of recent experimental studies it seems likely that the "hypotonia" in these cases is due, not to the postcentral involvement, but to the destruction of the motor area itself.

5 *Miscellaneous Symptoms*—There is no loss in the patterns of movement in motor area lesions, and if a specific muscle, e. g., of the finger, is weak the remaining muscles of the extremity are capable of carrying out any previously acquired skilled movements with accustomed dexterity, which is in sharp contrast with premotor lesions. Similarly there is no vasomotor disturbance or other signs of autonomic involvement with motor lesions.

THE SYNDROME OF THE PREMOTOR AREA

The differences in the motor and premotor syndromes might be predicted on the basis of their differing response to faradic stimulation. Stimulation of the motor area gives sharply restricted focal responses, whereas stimulation of the premotor region evokes complex patterns of movement. In keeping with this isolated extirpation of the premotor area, or gradual destruction of it by tumor, gives rise to a series of disturbances that generally appear in clinical cases in the following chronological sequence.¹⁵

1 *Disturbance of Skilled Movements*—Appearing first in clinical cases and persisting longest after experimental lesions, disturbance of skilled movements may be regarded as the primary symptom of a premotor lesion. Long before any impairment of the grip occurs or of gross movements such as those involved in walking and climbing are found, awkwardness may be present and skilled acts such as those previously enumerated are rendered impossible. The deficit is then one involving the coordinated activity of the musculature as a whole.

2 *Seizures*—The seizures from premotor lesions begin similarly with a complex movement, generally with turning of the head and eyes to the opposite side ("adversive" seizures), followed by a complex pattern of movement affecting one or both extremities on the opposite side and often involving to a slight extent the extremities on the same side.

3 *Reflex Changes*—After skilled movements have become affected, deep reflexes become markedly increased, and such pathologic signs as those of Rossolimo, Mendel-Bechterew and Hoffmann generally develop (table 3).

4 *Spasticity*—With the appearance of the foregoing reflexes, the resistance of the extremity to passive manipulation gradually increases, and strong spasticity may ultimately result.

5 *Forced Grasping*¹⁶—A special manifestation appearing late in the anamnesis of clinical cases and disappearing early following experimental lesions is the prehension phenomenon generally referred to as "forced grasping." It is pathognomonic of a premotor lesion. If forced grasping is poorly developed it can generally be brought out by placing the patient in the lateral position with the affected extremity uppermost, which is the maximal position for the reaction. The Babinski response is generally not present, although lateral deviation of the toes may occur, occasionally exaggerated flexion of the toes is seen in response to plantar stimulation.

6 *Vasomotor Disturbances*¹⁶—The temperature regulation in the affected extremities after a premotor lesion may be disturbed, owing to paralysis of the mechanism for reflex dilatation and reflex sweating.

When lesions occur in the spinal cord or the brain stem usually both the pyramidal and the nonpyramidal components of the upper motor neuron are affected, and the mixed syndrome is the result. Upper motor neuron lesions of this type are even more complex than those originating in the cortex, since the subcortical motor projection systems are often involved along with cortical systems. But the subcortical extrapyramidal systems are of no concern in this paper, since in mature animals they do not mediate voluntary movements.

SUMMARY

Paralysis of voluntary movement may be due to lesions of either the upper or the lower motor neurons. The manifestations of lower motor neuron lesions are identical with those following section of a motor nerve. Manifestations of upper motor neuron paralysis are various, and in the past no attempt has been made to dissociate the symptoms produced by destruction of the pyramidal pathways from those produced by interruption of other voluntary projection systems from the cortex. Recent studies on the specific components of upper motor neuron lesions in monkeys, apes and man allow the following conclusions:

1 Lesions restricted to the pyramidal tracts or to their cells of origin cause flaccid motor paralysis, muscle atrophy, transient depression of all reflexes, and the positive signs of Babinski and Chaddock, after complete destruction of the pyramids, the signs of Babinski and Chaddock persist permanently, but the paralysis, flaccidity and reflex changes tend with time to disappear.

2 Lesions of the premotor projection area of the cortex, which also mediate voluntary movements, give rise to spastic paralysis, disturbance of skilled movements, forced grasping, vasomotor disturbances, increased deep reflexes and the signs of Rossolimo, Mendel-Bechterew

13 Fulton and Kennard²; Kennard and Fulton¹.

14 Head: Henry: Sensation and the Cerebral Cortex. Brain 41: 57 1918; reprinted in Head: Henry: Studies in Neurology 2: 716 1920.

15 Kennard, Margaret A., Viets H. R., and Fulton J. F.: The Syndrome of the Premotor Cortex in Man: Impairment of Skilled Movements, Forced Grasping, Spasticity and Vasomotor Disturbance. Brain 57: 69 (May) 1934.

16 Richter C. P. and Hines Marion: Experimental Production of the Grasp Reflex in Adult Monkeys by Lesions of the Frontal Lobes. Am. J. Physiol. 101: 87 (July) 1932. Adie W. J. and Critchley M.: Forced Grasping and Groping. Brain 50: 142 (June) 1927. Fulton J. F.: Forced Grasping and Groping in Relation to the Syndrome of the Premotor Area. Arch. Neurol. & Psychiat. 31: 221 (Feb.) 1934. Viets H. R.: Forced Grasping in Man and Its Localizing Significance. New England J. Med. 210: 675 (March 29) 1934.

and Hoffmann. Forced grasping and vasomotor disturbances are transient but disturbance of skilled movements and the signs of Rossolimo and Hoffmann tend to persist.

3 Hemiplegia in man is generally produced by combined destruction of motor and premotor components of the upper motor neuron, and hence such cases generally exhibit combinations of the foregoing symptoms with more severe ultimate motor paralysis than when only the pyramidal tracts are involved. The prognosis can be inferred from the extent to which the two systems are involved.

ABSTRACT OF DISCUSSION

DR. I. S. WECHSLER, New York. The most outstanding sign of frontal lobe impairment is akinesia both motor and psychic. The akinesia is probably due to lack of attention, and so is the memory defect. Memory consists of attention, association, retention and recollection. The frontal lobe patient lacks the first element of memory. The next defect is inability to associate, hence the loss of recent memories. Another frontal lobe sign or symptom is loss of inhibition. From these defects derive some of the mental symptoms, although it is difficult to speak in psychiatric terms of frontal lobe syndromes. Heretofore acute flaccidity in hemiplegia used to be explained by shock, no one really knowing what "shock" means, and chronic flaccid hemiplegia by a parietal lobe lesion that is, by loss of tonus due to cortical or posterior column type of sensory impairment. If what the authors say is correct and I think it is, there is a better explanation. It may be that the flaccidity is due to the overactivity of the premotor area 6 when the motor area 4 is destroyed. The work of Olmstead and Warner showed the role of the frontopontocerebellar pathways on tonus stimulation of the cut fibers in decerebrate preparations induced flaccidity. The question of bilateral innervation is of importance because it throws light on bilaterality of signs in unilateral lesions. The usual explanation given is that the patient has more than one lesion. This is often true in vascular disease, but, if bilateral innervation is correct temporary and minor signs opposite to the paralyzed side may be due to impairment of ipsilateral fibers. As to grasping and groping experimental work points fairly conclusively to the frontal and premotor areas. I should like to suggest that the carphologia observed in infectious and other deliriums and in patients who show certain mental pictures is a grasping and groping phenomenon. The question of flaccidity and spasticity may throw light on the problem of hemiplegia in flexion and hemiplegia in extension. It may well be that the explanation lies in the involvement of different parts of the brain or different fiber systems. Thus, if the premotor area is affected, the hemiplegia is in extension, if the motor, the hemiplegia is in flexion.

DR. JOHN L. ECKEL, Buffalo. I have followed the work of these contributors for a number of years and feel that they are attacking this very complex problem in the only way that will insure accurate results. I agree with Dr. Bucy that the interpretation of symptoms from lesions due to a surgical condition, or resulting from disease of vessels, or any other process, is rather unsatisfactory. Some years ago Dr. Winkelman and I endeavored to work out the origin and course of the frontopontocerebellar tract from pathologic material only, and our results were rather disappointing because of either too much destruction of tissue or of overlapping of lesions. The value of the work of these investigators is that they have established their syndromes experimentally and then correlate clinically in man as opportunity arises. Drs. Fulton and Viets had one or two clinical cases in man showing a premotor syndrome, which proves the point of their paper. If the authors would give the symptomatology and results of examination of that case it would help to fix the problem in the minds of those present. The great value to the clinician of this presentation is the table. When this appears in print one may carry it with him to the bedside and compare the symptoms of his patient with the chart, which will assist greatly in properly evaluating the symptoms at the bedside. The work of the authors clears up

many of the confusing symptoms and signs that one finds in various types and degrees of hemiparesis and hemiplegia. Their work leaves the thought with me that the vast majority of lesions will show combined symptoms. A purely focal lesion in area 6, resulting from gunshot wounds, a stab wound, a focal thrombosis or a small expanding lesion will show wholly premotor symptoms while those situated deeper in the brain at the capsule or in the spinal cord will of necessity show combined symptoms of motor and premotor area involvement.

DR. J. B. AYER, Boston. It is not uncommon to have a hemiplegia which, as time goes on, recovers unequally. The leg function will return rather better than the arm function, and both as a rule will be spastic in character. That is the usual picture, with the finer movements of the hand lagging behind the movement of the lower extremity. That perhaps can be explained by the authors' physiologic work. I have two cases in mind in which, after months in one and after two years in the other the arm remained absolutely inactive, and while not flaccid the reflexes are not very lively. There is a little atrophy, which perhaps might be secondary in type. The sensation is perfect. It is not a spastic arm in any sense of the word. The leg has become absolutely spastic. How is one going to explain that? One could think that from the physiologic analysis, area 4 has been completely obliterated so far as the arm is concerned, but not so far as the leg is concerned. Then the question of the premotor control comes in and it brings up a very important question. Is there localization in the premotor area? Can the premotor area pick out the leg area and omit the arm area in producing spasticity?

DR. WAITER FREEMAN, Washington, D. C. There are a few signs in patients with lesions of the frontal lobes that might also be observed in animals. In patients with slight lesions in the premotor area, and without disturbance of the motor area (apparently because there is no Babinski sign) one is apt to get a strongly positive Mayer sign. This is produced by forced flexion of the fourth finger, and the sign is the adduction and opposition of the thumb. In the same way, in the lower limb by tapping at the base of the toes one can sometimes produce a slight clutch reaction which is very much like that found in the infant. The authors and I suffer some disagreement, possibly, over the term "spasticity." Spasticity, as I understand it, is a condition in which there are pathologic reflexes and also the characteristic lengthening and shortening reaction that one finds ordinarily in the classic hemiplegia. In individuals presenting lesions in the premotor area on the other hand, one observes a condition of tonic preparation or tonic innervation, which of course is the main cause of the impairment of skilled movements. In cases of hemiplegia speaking of homolateral innervation, there is weakness of such muscles as the sternocleidomastoid and the lingual muscles on the homolateral side. Homolateral innervation is equally well shown during convulsive seizures in which, for instance, given a jacksonian seizure of the left side, the head turns to the left by a spasmodic contraction of the right sternocleidomastoid muscle, and in the same way the tongue is apt to be forced over toward the left and bitten on the left side, indicating that the right lingual muscle is in a state of convulsion.

DR. PAUL C. BUCY, Chicago. The work on the cerebral cortex being done in the authors' laboratory is constantly clarifying clinical problems. There is one that has not been mentioned to which I wish to draw attention—the flaccid hemiplegias of cortical origin. Such a paralysis is usually associated with sensory changes and atrophy. The lesions that give rise to these hemiplegias are in the region of the Rolandic fissure, involving the postcentral gyrus and area 4 but sparing area 6, the premotor area. The atrophy that occurs is probably not the result of "trophic" disturbance but rather an atrophy of disuse—disuse not only because of the absence of voluntary activity but because of the absence of reflex activity as well, practically no spasticity being present, as area 6 is still intact. In connection with the point Dr. Ayer brought up, it is common experience that in hemiplegia the lower extremity usually shows marked recovery, whereas the arm remains more completely paralyzed. This recovery has commonly been explained as due to the subsidence of edema and local vascular change about the more permanent area of damage in the internal capsule. And although this may play a minor role it does not

explain why the leg always recovers considerably whereas the arm recovers but slightly if at all. It would seem rather that the recovery of the lower extremity is due to innervation from the ipsilateral cerebral hemisphere, in which the lower extremity is much more extensively represented than the upper.

DR. HENRY R. VIETS, Boston. I should like to add a word in regard to this work on the premotor areas and its clinical application. Dr. Kennard, Dr. Fulton and I were able to work out, in one patient, a syndrome, which was referred to by Dr. Eckel. In that paper (*Brain* 57:69 [March] 1934) we described the syndrome of the premotor cortex in man. Many neurologists thought we were going pretty far in describing a syndrome based on one case. As a matter of fact, the physiologic experimental work and investigation of the literature and one or two other cases that we have seen seemed to build up a group of symptoms we could justifiably call a syndrome. That syndrome consisted of the loss of or the diminution of skilled movements, spasticity, vasomotor changes and forced grasping. Even the order in which I have given them is of some significance. The patient we studied most carefully happened fortunately, to have both a vocation and an avocation, which was of great help to us. His position was that of a shoe salesman, and his avocation was that of playing the piano. He noticed first difficulty in tying shoe laces. Loss of that skilled movement long preceded any other symptom. Finally there was difficulty in playing the piano, which of course is a very skilled movement. Then the syndrome proceeded through spasticity, followed, to be sure, by motor symptoms of the convulsive type, with vasomotor changes and very marked forced grasping in one hand. A removable tumor was found at operation, and since that time (it is now nearly a year) these symptoms have gradually decreased in the opposite order. He began to lose his forced grasping fairly early, then the vasomotor changes disappeared, and finally the spasticity, and now the patient reports that his only difficulty is in using his left hand to play the piano. That, of course, was a very enlightening case and seemed to justify our speaking of the premotor syndrome in man.

DR. J. F. FULTON, New Haven, Conn. I agree with Dr. Wechsler that flaccidity of cortical origin is probably due to the unopposed action of the premotor area and that the predominant action of the premotor area on the lower center is one of inhibition. When therefore this area is removed, the reflexes that underlie the spastic state are released and the manifestations of decerebrate rigidity and the reflex changes associated with it develop. Dr. Ayers' question has been answered in part by Dr. Bucy, but it raises a more fundamental problem of whether there is a predominance of representation in the premotor area. We have no experimental evidence as yet bearing on the point, but I think it highly probable that the superior part of the premotor area has more to do with the lower extremity than the inferior part, which, presumably, being opposite the hand area, is predominantly associated with the more highly developed integrations of the upper extremity. Dr. Freeman has raised the question of Mayer's reflex. We purposely omitted Mayer's reflex from the table because we were not quite sure about it. It is probably a premotor reflex, but the data available do not permit us to say this with certainty for the experimental animal. The clutch reflex, hyperflexion of the toes, which is very similar to forced grasping as seen in the hand is clearly a premotor phenomenon. We frequently see hyperflexion of the toes in response to plantar stimulation after removal of the premotor area, which is almost certainly the same phenomenon. Dr. Freeman has referred to. The stimulus for this work has been throughout a clinical stimulus, and discussions such as we have had provide a great incentive to carry the work forward.

Coronary Thrombosis—It is recognized that the proximal inch of the left coronary artery and its descending branch is the favorite region of localization of coronary atherosclerosis in its most extreme form. This is the standard site of coronary thrombosis—Leary, Timothy. *Experimental Atherosclerosis in the Rabbit Compared with Human (Coronary) Atherosclerosis* *Arch. Path.* 17:453 (April) 1934.

THE ADVANTAGES OF PARALDEHYDE AS A BASIC AMNESIC AGENT IN OBSTETRICS

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Analgesia and amnesia are worthy objectives in obstetrics, provided the agents used are safe and do not lead to uterine inertia and unwarranted interference, with resulting increase in maternal and fetal morbidity and mortality. Analgesia has been attained with a fair degree of success by the use of morphine, nitrous oxide, ethylene and ether or chloroform, each agent being used at the time most appropriate for it during labor. Amnesia is of more recent interest and development. That it is a worth while objective admits of no argument.

The average patient will not openly confess the apprehension with which she approaches labor, and the average physician does not appreciate the shock sustained by the nervous system. If a suitable amnesic agent or combination of agents can be found which will properly satisfy the strict requirements pertaining to labor, analgesia need not be perfect as long as the patient retains no memory of her suffering, for to her the labor has been painless.

Numerous amnesic agents and methods have been proposed and used in recent years, but the continued search for new methods indicates that such fundamental objections as tendency to uterine inertia, undue restlessness and excitement, interference with fetal respiration at birth, technical difficulties or possible harm to mother or baby, have interfered with widespread adoption of any one method. As a rule, any method of amnesia increases the need for assistance to terminate the second stage of labor, owing to the fact that the reflex, involuntary expulsive efforts alone are not as efficient as when reinforced by voluntary efforts. Any attempt to encourage voluntary efforts may so arouse the patient that amnesia will not be complete.

REQUIREMENTS OF SATISFACTORY ANALGESIA AND AMNESIA IN OBSTETRICS

There are certain fundamental requirements to which any proposed method of amnesia and analgesia should conform. To satisfy these requirements, it is often best to use two or more agents in combination whereby certain advantages may be enhanced and certain objectionable effects may be minimized.

Concerning the mother, there should be safety, a minimum of uterine inertia, preservation of reflex expulsive efforts, a minimum of excitement and no tendency to postpartum hemorrhage.

Concerning the baby, there should be safety and a minimum of interference with the establishment of respiration at birth.

Concerning the method, it should be simple, adapted to home as well as to hospital confinements, rapid in action, prolonged in effect and possess a wide margin of safety between the therapeutic and the toxic dose.

Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Fifth Annual Session of the American Medical Association, June 14, 1934.

INTRODUCTION OF PARALDEHYDE IN OBSTETRICS

It occurred to one of us (E. D. C.) in 1930 that the well known properties of paraldehyde, namely, a wide margin of safety rapid absorption rapid action and prolonged hypnotic effect with rarely any excitement or effect on the medullary centers, should make it a very desirable amnesic agent in obstetrics. At that time a review of the literature showed no reference to its use in obstetrics. No steps were taken to test its merits until the summer of 1933. At that time another review of the literature revealed a preliminary report by Rosenfield and Davidoff¹ based on the use of paraldehyde combined with pentobarbital sodium or sodium amytal in fifty cases. They reported complete amnesia in forty-seven cases and partial amnesia in three cases. There were no failures. There was no prolongation of labor, but this may have been due to the fact that delivery was accomplished by the prophylactic application of low forceps in forty-four cases, by midforceps in five cases and by internal podalic version in one case. To these authors should be given the credit for introducing paraldehyde as an amnesic agent in obstetrics.

In our own series of 100 consecutive cases we used paraldehyde as the basic amnesic agent in synergistic combination with sodium amytal and depended on nitrous oxide and ether for analgesia and anesthesia during the latter part of labor and at delivery. In nulliparas in whom the condition of the cervix and the character of the pains suggested a probable slow labor, morphine and scopolamine were used in addition to sodium amytal early in the first stage. All the women in the series were private patients and under personal supervision throughout labor.

We purposely avoided terminating labor with forceps, except in cases in which a real indication existed such as undue prolongation of the second stage or the presence of some emergency. It would seem that a high incidence of forceps delivery would not furnish as thorough a test of the amnesic effect of the method as a natural termination of labor with the help of the patient's expulsive efforts. Rosenfield and Davidoff preferred to use $7\frac{1}{2}$ grains (0.5 Gm.) of pentobarbital as a preliminary to the administration of from 4 to 6 drachms (15 to 22.5 cc.) of paraldehyde. In our own series we used 6 grains (0.4 Gm.) of sodium amytal on account of a more prolonged effect and a lessened possibility of uterine inertia, and followed this with from 6 to 8 drachms (22.5 to 30 cc.) of paraldehyde.

FACTORS DETERMINING TIME TO BEGIN TREATMENT

It is of the greatest importance in this as well as in any other method of obstetric amnesia and analgesia that each case be individualized on the basis of (1) parity, (2) degree of effacement and dilatation of the cervix, (3) frequency and duration of the pains and (4) whether or not the membranes are ruptured, these factors being listed according to their importance.

If the patient is a multipara, delivery will probably occur within the average duration of the effect of the injection which is usually from five to seven hours, whereas if she is a nullipara, the injection will have to be delayed until more progress has been made or else repeated before labor has terminated.

The degree of effacement, dilatation and softening of the cervix is more to be relied on in estimating the probable duration of labor than the pains.

Since many labors are characterized by considerable inertia in the first stage, it is important to withhold all medication until the pains are less than five minutes apart and of at least forty-five seconds duration. To begin any method of relief with pains occurring at intervals of from five to ten minutes is to invite inertia, prolongation of labor discouragement of the patient and unwarranted interference. Furthermore, the patient, particularly the nullipara, will better appreciate what has been done for her if she is permitted to experience strong pains and make definite progress for a short period before being made oblivious to the most difficult and painful part of the labor.

Rupture of the membranes tends to insure better pains and progress, but if done artificially, it should usually be postponed until the cervix is at least one half dilated and the head is well fixed in the pelvis.

Hence, any one or more of the factors of multiparity thin soft cervix, frequent severe pains or ruptured membranes lessens the possibility of inertia developing after the treatment has been given.

Since the condition of the cervix is so important from the standpoint of when and how to administer the treatment, it will be found of great advantage to be able to follow the progress of labor accurately by rectal rather than by vaginal examinations. Rectal examinations may be made more often, conveniently and safely and it one will follow the sequence of rectal then vaginal, and finally rectal with each examination in labor, the technic will not be found difficult to acquire and it will seldom be necessary to make vaginal examinations.

In any case, if rectal or vaginal examination shows that the cervix still has some length or that the cervical rim is still thick, not fully softened and not dilated more than from 1 to 2 cm., it is best to withhold all medication even if the pains occur at less than five minute intervals. This will not deprive the patient of any necessary relief at this stage of labor and will avoid aggravating a possible uterine inertia which has not yet become manifest.

THE TECHNIC OF TREATMENT AND MANAGEMENT IN NULLIPARAS

When the pains are less than five minutes apart and last for from three-fourths to one minute and the cervix is thin and dilated from 2 to 3 cm. 3 grains (0.2 Gm.) of sodium amytal may be given. If within from one-half to one hour, satisfactory progress continues and cervical dilatation has increased to from 4 to 5 cm., the second dose of 3 grains of sodium amytal may be given, to be followed within one-half hour by the rectal injection of paraldehyde.

If, however, there is very little increase in cervical dilatation after the first dose of sodium amytal the second dose should be withheld, and if progress continues to be slow but painful one-sixth grain (0.01 Gm.) of morphine and $\frac{1}{300}$ grain (0.0002 Gm.) of scopolamine in 1 cc. of 50 per cent solution of magnesium sulphate may be administered, which will usually give ample relief for several hours. Cervical dilatation will then probably be sufficient to give the second dose of 3 grains of sodium amytal followed by the rectal injection of paraldehyde one-half hour later.

In other words, in nulliparas we prefer to obtain cervical dilatation of from 5 to 6 cm. with the preliminary dose of 6 grains of sodium amytal and the occasional use of one-sixth grain (0.01 Gm.) morphine and $\frac{1}{300}$ grain (0.2 mg.) scopolamine before giving the

¹ Rosenfield, H. H. and Davidoff, R. B. A New Procedure for Obstetrical Analgesia. *New England J. Med.* 207: 366 (Aug. 25) 1932.

rectal injection of paraldehyde. Certain patients will normally show more or less uterine inertia, with no medication whatever, and to administer the complete treatment too early in labor may result in the patient going to sleep, making little or no progress and waking up, later on, disappointed to find that she is still undelivered. The hypodermic injection of morphine and scopolamine should not be given if delivery is anticipated within several hours on account of the depressing effect on the infant's respiration at birth, hence its use is practically limited to nulliparas. The preliminary and complete dose of 6 grains of sodium amytal seems to be more essential than the morphine and scopolamine in securing complete amnesia with paraldehyde.

From one-half to one hour after the full dose of sodium amytal has been given, the rectal injection of paraldehyde should be given, provided there is no evidence of uterine inertia. The bladder should be emptied at this time. An enema at the onset of labor is advisable in all cases to insure thorough emptying of the lower bowel and to facilitate retention and absorption of the paraldehyde.

From 6 to 8 drachms of paraldehyde is mixed with an equal amount of olive oil, a thorough mixture being obtained by alternately drawing up and expelling the solution with a 50 cc syringe, fitted with an ordinary adapter to facilitate attachment of the rectal tube. Sufficient air is drawn into the syringe in addition to the mixture to expel the solution, which would otherwise remain in the rectal tube. The tube should be sufficiently soft and flexible to prevent injury to the bowel wall. The larger dose (8 drachms) is preferable, since there may be some waste during injection or some expulsion after injection. Sufficient solution should be expelled from the syringe almost to fill the tube, but it should not be allowed to escape.

The injection should be made just after or between pains, never during a pain with the patient lying in the left lateral or dorsal position, preferably the latter. The index finger should be inserted with the tube to guide it under the baby's head somewhat beyond the full length of the finger. Retention and absorption are not as satisfactory if the injection is made too low in the rectum. Rotation of the tube will remove any kink or obstruction. The injection is made within half a minute and the tube is quickly withdrawn. Gauze is placed against the anus at once to prevent expulsion of the solution, the patient being turned onto her left side and cautioned to avoid straining efforts. Constant pressure against the anus is maintained for from twenty to thirty minutes, at the end of which period the patient is usually asleep and has ceased attempts to expel the solution. She may then be turned onto her back and the pressure discontinued.

It is best to refrain from rectal examination for at least one hour after the injection in order to avoid the risk of expulsion of some of the solution during the examination, progress being judged by abdominal examination, expulsive efforts and inspection of the perineum.

THE TECHNIC OF TREATMENT AND MANAGEMENT IN MULTIPARAS

Whereas in nulliparas the main problem is to withhold the rectal injection until there is sufficient progress and no evidence of primary inertia, in multiparas the main problem is to see the patient in the home or hospital early enough to give an enema and obtain the desired effect from sodium amytal and paraldehyde

before labor has progressed too far. For this reason it is important to instruct the multipara in the latter part of pregnancy to report at once any show of blood, discharge of water or onset of regular pains occurring at intervals of not less than ten minutes.

If the cervix is not fully effaced or softened and not dilated more than from 1 to 2 cm, it is best to delay treatment until it is evident that there will be no inertia. When the cervix becomes thin and is dilated from 2 to 3 cm, 6 grains of sodium amytal may be given at once if the pains are severe, but it is given in two doses of 3 grains each at an interval of from one-half to one hour if the pains are less severe and the progress is slow. If quick action is desired, the powder may be given without the capsules. The most desirable time to administer the rectal injection of paraldehyde in the multipara is when the cervix is fairly thin and dilated from 3 to 4 cm. If the membranes have already ruptured, the treatment may be given earlier, as there is less chance of uterine inertia. If the cervix is fully dilated and the head is low in the pelvis when the patient is first seen, delivery will usually occur too soon for the injection to take effect. However, if the cervix is from one-half to two-thirds dilated, especially if the membranes are unruptured, the full dose (6 grains) of sodium amytal may be given at once, and if the patient is delivered before the rectal injection can be given or take effect, no harm will have been done.

The technic of the injection and the subsequent management is the same as that given for nulliparas. Nitrous oxide will often suffice for delivery, otherwise light ether anesthesia, depending on the degree of relaxation of the perineum, may be used. If precipitate delivery is threatened before the patient can be moved to the delivery room, ether may be given to retard progress until the patient can be moved and properly prepared. Solution of pituitary may then be given to offset the effect of the ether.

EFFECT OF THE INJECTION OF PARALDEHYDE

The first effect of the injection of paraldehyde may be a slight burning sensation and a desire to expel the solution. From five to ten minutes after the injection hiccups may be noticed. From ten to fifteen minutes after the injection the patient begins to doze lightly between pains and the odor of paraldehyde may be detected on her breath. From twenty to thirty minutes after the injection she is usually sound asleep between pains and may have snoring respiration. During the pains she moves her arms and legs sluggishly and may turn from side to side but makes little or no sound. The eyes remain closed or occasionally open momentarily without any apparent focusing of attention. At times she may make some fairly rational remark concerning the pain or her surroundings but as a rule her words are unintelligible or concern events that have no relation to labor, thus showing a definite disorientation. She usually seeks a comfortable position on either side, which at times seems to be responsible for slight inertia but pains usually continue with the same frequency and duration, especially if she can be kept on her back. The pulse, respiration and blood pressure show no appreciable change. While nitrous oxide may be found helpful, it is not indispensable and the patient may continue without it until ether can be given during crowning. The baby cries promptly at birth and shows no change in its behavior after birth.

AIDS IN OBTAINING COMPLETE AMNESIA

Since complete amnesia is desirable, every effort is made to avoid stimulating or rousing the patient. From the time the rectal injection is given and the patient turned on the left side, she is shielded from bright light, the attendants are instructed to converse in low tones or whisper and all unnecessary noise is avoided. Members of the family or friends are cautioned against arousing the patient and they are usually content to remain outside the room. If the patient's position is changed it is done as gently as possible. It has been found helpful to cover the patient's eyes with gauze held in place by adhesive to lessen the chance of her comprehending the situation if momentarily awakened. This is particularly important before moving her to the delivery room. It is less disturbing to move her bed to the delivery room and lift her onto the delivery table. These precautions are carried out to insure better success with the patient who may be less susceptible to the drug and who might otherwise have so-called islands of memory throughout labor. Immediately after

2 to 3 minims of solution of pituitary may be given subcutaneously, provided there is no contraindication such as persistently slow fetal heart, abnormal position of the head, or contraction of the pelvic outlet, and also provided the patient is prepared for delivery. Episiotomy under local anesthesia may be sufficient if delay seems to be due to a rigid perineum. Failing in this, a low forceps delivery may be performed.

MANAGEMENT DURING AND AFTER DELIVERY

The nullipara is not moved to the delivery room until a slight degree of crowning is apparent, not only during but between the pains. The multipara may be moved when the head begins to cause bulging. To avoid undue disturbance, the bed may be moved into the delivery room and the patient lifted onto the delivery table. She rarely remembers being transferred to or from the delivery room and does not arouse during preparations for delivery. It is to be noted that these patients require much less ether than usual and show very little resistance to it. There is no tendency to postpartum hemor-

Comparison of Methods

Methods	Amnesia								Undesirable Effects*										Deaths			
	Degree			Before Delivery		After Delivery		Total Duration of Labor		Fetal Distress			Uterine Inertia	Postpartal Hemorrhage		Method of Delivery			Deaths			
	Complete, per Cent	Partial per Cent	Failure per Cent	Nulliparas Hours	Multiparas Hours	Nulliparas Hours	Multiparas Hours	Nulliparas Hours	Multiparas Hours	Fetal ment per Cent	Rest lessness per Cent	Inertness per Cent	Fetal Apnea per Cent	Hem or rhage per Cent	Spon ta neous per Cent	Pituitary per Cent	Forceps Low per Cent	Mid per Cent	Fetal per Cent	Maternal per Cent		
	Cent	Cent	Cent	Hours	Hours	Hours	Hours	Hours	Hours	Cent	Cent	Cent	Cent	Cent	Cent	Cent	Cent	Cent	Cent	Cent	Cent	
(a) Authors 100 cases former routine								16½	8¾													
(b) Authors 100 cases paraldehyde technic	82	16	2	5	3	5	5½	16¼	9½	2	4	8	9	3	81	14	9	7	0	0		
(c) Rosenfield and Davidoff 50 cases paraldehyde technic	91	6	0	9½	4½	8	8				8		10		0		83	10	2	0		
(d) Irving et al 100 cases pentobarbital and scopolamine technic	86	14	0	7	4			14½	9½				37	3	70		—20—		2	0		

(a) This group includes sodium amytal (3 to 6 grains) morphine (one sixth grain) and scopolamine (½ grain) in 1 cc of 50 per cent solution of magnesium sulphate when indicated nitrous oxide and ether. This group includes forty three nulliparas and fifty-seven multiparas.

(b) This group includes sodium amytal (3 to 6 grains) paraldehyde (6 to 8 drachms) nitrous oxide and ether morphine and scopolamine when indicated. A group of forty three nulliparas and fifty seven multiparas.

(c) This includes pentobarbital sodium (7½ grains) or sodium amytal (6 grains) paraldehyde (4 to 6 drachms) nitrous oxide and ether.

(d) This includes pentobarbital (4½ to 6 grains) scopolamine (¼ to ½ grain) to be repeated as necessary nitrous oxide and ether in the expulsive stage.

delivery an intramuscular injection of morphine and scopolamine may be given if it is considered necessary to insure a period of several hours' sleep on return to the room. However, there will usually remain sufficient effect from the rectal injection to make this unnecessary. The family should be advised not to disturb the patient until she awakes.

AIDS IN OVERCOMING POSSIBLE INERTIA

Inertia developing during labor is not always due to the amnesic and analgesic effect of the treatment, as it is occasionally observed during the course of normal untreated cases. If it is present during the first stage of labor, artificial rupture of the membranes may be performed any time after the cervix is half dilated and will usually stimulate progress. Solution of pituitary may be dropped from a syringe into the patient's nose, to flow back over the mucous membrane. Definite response to the instillation is usually seen within ten minutes, and the possibility of a strong reaction is much more remote than with the subcutaneous injection. If there is undue prolongation of the second stage, from

rhage. On its return to the room, the bed is placed against the wall and chairs are placed alongside, which precaution is apparently unnecessary as the patient sleeps very quietly for several hours.

COMPARISON OF METHODS

Prior to the use of paraldehyde our method of relief was through the use of from 3 to 6 grains of sodium amytal early in labor, followed by nitrous oxide and ether. In nulliparas, morphine and scopolamine were often given intramuscularly following the sodium amytal.

It seemed best, therefore to compare the results obtained in 100 consecutive cases treated according to the outlined method with those obtained in an equal number of cases relieved by the addition of paraldehyde to these measures. In both series the cases were taken consecutively, with the exception of instances in which some complication, increasing the risk to the mother or baby, made it unfair to include the case.

The accompanying table presents a comparison of the two series, the series reported by Rosenfield and

Davidoff and the series in which the pentobarbital-scopolamine method was used² (apparently the method of choice with many obstetricians) in regard to the most important considerations involved in analgesia and amnesia and enables one to estimate the advantages or disadvantages of paraldehyde.

Comparing methods *a* and *b* in the table, it is seen that the addition of paraldehyde to the measures of relief formerly used resulted in no increase in the length of labor or the frequency of postpartum hemorrhage. There was a decrease in the frequency of uterine inertia and fetal apnea, but this is possibly due to the fact that morphine and scopolamine were used less frequently. There was a slight increase in the number of spontaneous deliveries and a slight decrease in the use of forceps. Solution of pituitary was used approximately three times as often, usually to hasten crowning and also to avoid the necessity of urging the patient to bear down. There was no maternal or fetal mortality. In two cases, intra-uterine fetal death had occurred before labor began, and the babies were born in a macerated condition. Since the paraldehyde given during labor had nothing to do with these stillbirths, they were properly disregarded.

Comparing methods *b* and *c*, it is seen that Rosenfield and Davidoff obtained 94 per cent complete amnesia and 6 per cent partial amnesia and had no failures, whereas we had 82 per cent complete amnesia, 16 per cent partial amnesia and 2 per cent failures. Under partial amnesia we include those patients who had one or more so-called islands of memory, such as remembering transfer to or from the delivery room, induction of anesthesia with ether or gas, noticing bright lights in the delivery room and restraint of the hands. There was no remembrance of pain. Therefore, these cases of partial amnesia, in which the memory of the most difficult part of labor is limited to one or more events of so little consequence, should properly be considered successful. Analysis indicates that such factors as prolonged labor, wherein the labor outlasts the effect of the drugs (from five to seven hours), failure to administer a small second injection (from 2 to 3 drachms), expulsion of some of the injection, too rapid progress after the injection, or inability to coordinate the administration of the drugs were responsible for failure to obtain complete amnesia. Had we resorted to delivery by routine forceps in these cases, as practiced by Rosenfield and Davidoff, many of the patients would have had complete amnesia through a shortening of the labor and a lessened degree of stimulation.

These factors that often interfere with obtaining complete amnesia may be controlled as one becomes more familiar with the technic and management. This is shown by the fact that the majority of cases of partial amnesia occurred in the first fifty cases in our series, whereas in the last fifty cases, forty-seven, or 94 per cent, showed complete amnesia.

Two cases in our series were designated as failures, not in the sense that they did not derive great relief from the treatment but only because the usual amnesic effect was not obtained. These patients were probably more or less immune to the drugs used, an idiosyncrasy that may be found in the use of any drug. It is therefore possible to obtain complete amnesia in from 90

to 95 per cent of all cases and to afford great relief to the small number who fail to obtain amnesia.

Since Rosenfield and Davidoff used forceps as a routine, it enabled them to administer the treatment earlier in labor and to disregard the possibility of inertia, thereby lengthening the period of amnesia before delivery. This probably accounts for the longer duration of amnesia before delivery, although it is difficult to account for the longer duration of amnesia after delivery in their series, especially since pentobarbital is supposed to have less prolonged effect.

In our series, a patient's behavior was considered to be normal if she slept quietly between pains, made no outcry and merely turned from side to side or moved sluggishly during pains. It is admitted that these patients tend to disarrange sterile drapings and get out of position on the delivery table to a greater extent than if they were awake, but they are not at all difficult to control. Patients showing restlessness did not attempt to sit up or make any outcry but showed more constant motion, not only during but between pains. Patients showing excitement sat up in bed at times, made considerable outcries and were in a state of constant activity. According to this standard, only 2 per cent of the patients showed excitement and 4 per cent showed restlessness in our series. Rosenfield and Davidoff reported restlessness in 8 per cent of their patients. We believe that restlessness is a manifestation of barbiturate and not of paraldehyde action and is increased in some patients of a nervous temperament. It is not present to a troublesome degree in this method of amnesia.

Comparing methods *b* and *d*, it is seen that the pentobarbital-scopolamine method results in a slightly higher frequency and a slightly longer duration of amnesia before delivery, with some apparent shortening of labor, although the latter may be partly due to the more frequent use of forceps. There is a much greater frequency of fetal apnea at birth when scopolamine is used, which may be of some concern to the attendant and family, although the low fetal mortality indicates that apnea is not, of itself, a serious symptom.

Although Irving³ states that any method of amnesia in labor should be strictly a hospital and not a home procedure, we see no reason why the less favored mothers who must continue to be confined at home should not have the relief offered by this method of amnesia. The physician will require no more assistance than is usually freely available to him in the average home confinements, the apparatus for administration is very simple, the drugs are inexpensive and readily obtainable, labor is not prolonged and the frequency of forceps delivery is not increased, there is no risk to the mother or baby, and since complete amnesia can be obtained in from 90 to 95 per cent of all cases, we believe that this method more nearly approaches the ideal method of amnesia in labor than any other in use at the present time.

CONCLUSIONS

1 Analgesia and amnesia are desirable objectives in labor provided they are compatible with physiologic labor.

2 Paraldehyde as a basic amnesic agent in combination with sodium amytal or pentobarbital approaches the ideal in satisfying the fundamental requirements pertaining to labor.

² Quigley, J. P., Barlow, O. W. and Himmelsbach, C. K. Correlation of Visceral and Somatic Activity Following Administration of Hypnotics (A) Barbitol Compounds and (B) Tribrom Ethanol (Avertin Crystals and Fluid). *J. Pharmacol. & Exper. Therap.* 50: 425-439 (April) 1934.

³ Irving, F. C., Berman, Saul, and Nelson, H. B. Barbiturates and Other Hypnotics in Labor. *Surg. Gynec. & Obst.* 58: 1 (Jan.) 1934.

3 Complete amnesia may be obtained in from 90 to 95 per cent of all cases with no increase in uterine inertia, duration of labor, forceps deliveries, fetal apnea, postpartum hemorrhage, or fetal or maternal morbidity or mortality, and with a minimum of restlessness

4 There are no contraindications to its use in home confinements

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ABSTRACT OF DISCUSSION

DR HAROLD H. ROSENFELD, Boston I advocate attempting to secure complete relief of pain throughout labor and not merely of the last half because my experiences seemed to prove that this can be achieved without prolongation of labor and without any deleterious effects to either mother or baby. It is because I believe in complete relief that my larger dosage and earlier administration are somewhat at variance with the procedure advocated by Drs Colvin and Bartholomew. I start medication as soon as labor is definitely established. The index for this is the regularity and character of uterine contractions, regardless of the height of the presenting part or the dilatation of the cervix. I frequently start medication with a floating presenting part and a cervix that is not taken up. I have found that once labor is definitely established its progress is not interfered with by pentobarbital sodium. The procedure is as follows: At the outset of definite labor, $7\frac{1}{2}$ grains (0.5 Gm) of pentobarbital sodium is given in divided doses. This is followed promptly by 6 drachms (225 cc) of paraldehyde in oil by rectum. This medication is usually sufficient to carry a patient through the average type of labor for six or seven hours. If patients show evidence of conscious suffering before this time, rectal examination is made to determine whether labor can be carried to completion with gas-oxygen inhalations. If the examination reveals that the patient still has several hours of labor, from $1\frac{1}{4}$ to 3 grains (0.1 to 0.2 Gm) of pentobarbital sodium is given by mouth or by rectum. If this added dose of pentobarbital sodium fails to quiet the patient, from 2 to 4 drachms (75 to 15 cc.) of paraldehyde may be repeated by rectum. This will usually carry the average patient through a twelve or fourteen hour labor. Should labor be further prolonged, small amounts of pentobarbital sodium with or without paraldehyde may be repeated as necessary until the time arrives when she can be carried along to completion of labor with small amounts of gas-oxygen inhalations. Failure to repeat medication when necessary will result in increased restlessness and diminished amnesia. With this procedure I have found that there is no appreciable interference with the secondary forces of labor, as the patients, though asleep, bear down forcibly and usually bring the presenting part to the perineal floor. When the vertex reaches the perineal floor and partially crowns, I complete the delivery by the use of perineal forceps and episiotomy when indicated. The forceps in these instances is used to guide the head more carefully over the perineum and thereby conserve the patient's energy and pelvic floor.

DR H. F. KANE, Washington, D. C. I have used paraldehyde as the basic drug for securing amnesia and analgesia in labor in 250 cases. The safety factor for both mother and baby is of great importance. I have seen no untoward results. When the patient first complains of pain I begin to administer paraldehyde. I use no barbiturates but frequently give morphine, although many cases have been carried through labor with paraldehyde alone. If restlessness occurs, I occasionally administer one-fourth grain (0.016 Gm) of morphine. I administer 1 cc. of paraldehyde for each 10 pounds (4.5 Kg) of body weight of the mother. But that isn't enough. I add 2 or 3 cc, depending on the size of the patient. It is a little unscientific, but I have not yet determined just how much should be added. I have repeated that dose as frequently as every hour for three doses. Usually the dose given will cause the patient to sleep three or three and one-half hours. Then she begins to be restless and at the first sign of restlessness the paraldehyde is repeated. In all except cases of very rapid labor, amnesia is complete. It seems to me that paraldehyde is an agent that can be given with safety. It causes the least excitement of all the drugs I have used and is easy of admin-

istration. I administer the drug in 4 cc. of physiologic solution of sodium chloride instead of in oil.

DR R. A. BARTHOLOMEW, Atlanta, Ga. Dr Rosenfield's figures indicate clearly what can be accomplished with hospitalized cases, both in shortening the duration of labor and in obtaining practically complete amnesia throughout the entire duration of labor. However, an average duration of labor of eight to nine hours in nulliparas indicates that the second stage of labor has been very much shortened or practically eliminated by the use of forceps. Our object in avoiding the routine use of forceps was to demonstrate to those in general practice that this method is applicable to deliveries in the home and will not increase the need for forceps delivery. We would advise those trying this method for the first time to administer it first to multiparas, since the duration of labor in this class of patients comes well within the duration of amnesia obtained with paraldehyde. It is also important to develop one's ability to judge the progress of labor by rectal rather than by vaginal examinations, since the former may be made more conveniently, quickly and without risk. From the standpoint of expense, the cost of the drugs used in this method is extremely low. Furthermore, the wide margin of safety is an important advantage. This was impressed on us recently by the accidental administration of 8 ounces (236 cc) of paraldehyde instead of 8 drachms (30 cc) to a male patient in the genito-urinary department of Grady Hospital. When he was sent to the operating room over one hour later he was observed to show a much greater relaxation than usual and the error was discovered. The oil and paraldehyde were washed out as thoroughly as possible but not until he had retained the dose about one and a half hours. He slept nineteen hours and made a good recovery. Hence we may say that even an excessive dose of paraldehyde seems to have no harmful effect.

THE BEARING OF CERTAIN PHYSIOLOGIC FACTS ON GASTRO-INTESTINAL SURGERY

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William Beaumont¹ in 1833 made the first definite note on peristalsis of the stomach. His observations and experiments on Alexis St. Martin began in 1825. Beaumont had been treating this patient, who had a gastric fistula following a wound from a shotgun, for nearly three years before it occurred to him to use St. Martin as a laboratory animal and observe what occurred in the stomach during digestion. In the eight years between 1825 and 1833 he made 238 experiments. Among other things he noted that the time required for disposal by the stomach of a moderate meal is from three to three and a half hours. He showed that the agent of digestion in the stomach is the gastric juice, which acts as a solvent and contains "free muriatic acid and some other chemical principle." The other chemical principle was demonstrated a few years later by Eberle to be a specific gastric ferment called by Schwann "pepsin." He stated that gastric juice checks the process of putrefaction and that motions of the stomach produce a constant churning of its contents in two directions, transversely and longitudinally.

The introduction of roentgen rays aided greatly in the study of peristalsis. Cannon² and his associates made careful roentgenologic observations of the peristalsis of

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¹ Beaumont, William. Experiments and Observations on the Gastric Juice and the Physiology of Digestion. Plattsburgh, 1833.

² Cannon, W. B. Peristalsis, Segmentation and the Myenteric Reflex. *Am. J. Physiol.* 30: 114-128, 1912.

the stomach and bowel. It was noted that peristalsis began about the middle of the body of the stomach and proceeded toward the pylorus. To Cannon's observations many roentgenologists and physiologists have added interesting data. Gregory Cole³ of New York has described the cycles of gastric peristalsis. Alvarez,⁴ whose work was confirmed by Klein⁵ and others, has shown that active gastric peristalsis, which as fluoroscopically observed begins about the middle of the body of the stomach, really starts as ripples along the lesser curvature near the cardiac orifice and proceeds with increasing vigor until the middle of the body of the stomach is reached, where the waves can for the first time be observed roentgenologically. To the left of this point the contractions are largely tonic, so that the cardiac end of the stomach shoves food into the actively churning right portion of the stomach by continuous mild pressure, much as an elastic hopper would do.

The larger portion of the stomach is physiologically "silent" as to symptoms. All the greater curvature except a short portion near the pyloric end, where a lesion would produce obstruction, and much of both walls of the stomach, particularly in the cardiac portion, give no symptom of a lesion unless there is bleeding or perforation, or unless the growth is large enough to produce mechanical obstruction. In the physiologically active part of the stomach along the lesser curvature or at the pyloric end where mechanical obstruction may readily occur, lesions cause derangement of peristalsis and produce symptoms such as pain, regurgitation, waterbrash, heartburn, nausea or vomiting. About 80 per cent of all gastric symptoms are from trouble with the motor apparatus which includes not only the interference along the lesser curvature but mechanical obstruction at the narrow pyloric end.

REGURGITATION OF DUODENAL CONTENTS

Within recent years it has been demonstrated that at the end of normal gastric digestion, when the stomach has emptied its contents and strongly acid gastric juice has accumulated in the stomach, the pylorus opens and a reflux of the duodenal contents occurs. This reduces the acidity of the gastric juice.

A prolonged pyloric spasm or a mechanical obstruction, which prevents regurgitation of the alkaline duodenal contents, predisposes toward an increased tone of the stomach by retaining highly acid gastric contents and thus favors ulcer formation. Types of food that tend to irritate the gastric mucosa, reflex stimulation from some lesion in the abdomen, nervous impulses from worry, an imbalance between the vagus and the sympathetic system, particularly when the stimulating impulses dominate, all promote pylorospasm, increased muscle tone of the stomach, increased acidity of the gastric juice, and increased vascularity. The treatment of the patient for this condition is often more important than the treatment of the local gastric symptoms. When, however, there is an organic lesion that will not permit the reflux of the alkaline duodenal contents into the stomach, some surgical procedure may be indicated.

Before the establishment of the physiologic fact that duodenal contents normally regurgitate at the end of the

digestion of a meal, the presence of bile in the stomach was looked on with disfavor. The chief alkaline constituent of the duodenal contents is not the bile, whose color gives it prominence, but the strongly alkaline pancreatic juice, and the presence of duodenal contents in the stomach at the end of normal gastric digestion is probably a protective measure against the excessive acidity of the gastric juice that follows the emptying of food from the stomach when the acid of the gastric juice has no such buffer as the food.

PYLOROPLASTY AND GASTRO-ENTEROSTOMY

In functional pylorospasm, medical measures are usually sufficient. If not, the operation of Walter Hughson⁶—resection of the gastric branches of the vagus nerves—may be indicated. If there is in the duodenum near the pylorus a well limited small peptic ulcer, without surrounding adhesions or inflammation, an ulcer which has resisted medical measures, a pyloroplasty usually gives excellent results. If the lesion is extensive, if adhesions are abundant, if there is much scar tissue, and particularly if there is duodenitis, pyloroplasty is contraindicated, and gastro-enterostomy under these conditions is a satisfactory procedure in the majority of cases.

It was formerly rather popular to decry gastro-enterostomy as an unphysiologic and therefore unjustified operation, and one of the chief objections was that it admitted bile and duodenal contents to the stomach. But the knowledge that this is a normal procedure in gastric digestion and secures the desirable reduction of the acid values of the gastric juice justifies gastro-enterostomy, for it seems to restore this physiologic function of regurgitation of the duodenal contents which has been prevented by pyloric obstruction.

Mann and his associates⁷ have convincingly shown that in dogs the so-called surgical drainage of the duodenum almost always results in peptic ulcer. In this procedure the jejunum some distance below the duodenum is divided and the duodenum is severed at the pylorus and its end closed. The distal end of the jejunum is sutured to the pylorus and the proximal (oral) end is implanted into the small bowel lower down, thus depriving the portion of the jejunum attached to the stomach of the alkaline contents of the duodenum. These experiments show the fallacy of the Roux or Y gastro-enterostomy, which is practically surgical duodenal drainage and deprives the bowel attached to the stomach of the protective alkalinity of the duodenal contents. Entero-anastomosis between long loops of jejunum, as after anterior gastro-enterostomy or some types of partial gastrectomy, is for the same reason objectionable but doubtless diverts from the segment of bowel attached to the stomach only a portion of the alkaline duodenal contents instead of all of it, as in the Y technic.

CHOLECYSTOGASTROSTOMY FOR THE CURE OF PEPTIC ULCER

The advocacy of a cholecystogastrostomy for the cure of peptic ulcer seems to be founded on three physiologic fallacies, any one of which is fatal. It has been assumed that the union of the gallbladder to the stomach would provide a constant natural alkaline fluid, which

3 Cole L. G. The Complex Motor Phenomena of Various Types of Unobstructed Gastric Peristalsis. *Arch. Roentg. Ray* 16: 242-247, 1911. Motor Phenomena of the Stomach, Pylorus and Cap Observed Roentgenographically. *Am. J. Physiol.* 42: 618-619, 1917.

4 Alvarez W. C. The Mechanics of the Digestive Tract. ed. 2. New York, Paul B. Hoeber Inc. 1928.

5 Klein Eugene. (a) Gastric Motility. I. The Origin and Character of Gastric Peristalsis. *Arch. Surg.* 12: 571-582 (Feb.) 1926. (b) II. The Conduction of the Gastric Peristaltic Wave. *ibid.* 12: 583-590 (Feb.) 1926.

6 Hughson Walter. Reflex Spasm of the Pylorus and Its Relation to Diseases of the Digestive Organs. *Arch. Surg.* 11: 136-151 (July) 1925.

7 Mann F. C. and Williamson C. S. The Experimental Production of Peptic Ulcer. *Ann. Surg.* 77: 409-422 (April) 1923.

would tend to lower the gastric acidity and so promote the healing of the ulcer. The fallacies follow: 1 Bile has a very low alkaline value and is often neutral. The alkalinity of the duodenal contents resides chiefly in the pancreatic juice, which is highly alkaline, but pancreatic juice does not normally enter the gallbladder. The biliary coloring of the duodenal contents gives the superficial impression that bile is the most important constituent, when it is probably the least important. 2 If there is no obstruction to the common duct, the discharge of bile from a cholecystostomy is comparatively slight. Surgeons have noted that, after the inflammation has cleared up and if the common duct is open, but little bile comes from a cholecystostomy. It seems probable that but little bile would escape from a normal gallbladder connected with the stomach unless the common duct should be obstructed or ligated—a remedy worse than the disease. So even if the bile were strongly alkaline, which it is not, but little of it would be delivered into the stomach. 3 The third fallacy is that no account is taken of the effect of the gastric juice on the gallbladder. In cases in which there is obstruction of the common duct from cancer of the head of the pancreas, the acid values in the gastric juice are usually low and cholecystogastrostomy as a procedure to relieve jaundice in these cases doubtless has a definite place. But it must be recalled that in a peptic ulcer the acid values of the gastric juice are frequently quite high, and if bile goes through a cholecystogastrostomy into the stomach the acid gastric juice with its irritating effect on a mucosa unaccustomed to acid likewise goes into the gallbladder. It has also been shown experimentally that a cholecystogastrostomy is quite constantly followed by an ascending infection and an eventual hepatitis.

V-SHAPED AND MIDGASTRIC RESECTION

If a large V-shaped section of the stomach of a dog is removed with the base on the greater curvature and a small channel is left along the lesser curvature there is but little interference with gastric function. If, however, a V-shaped section is taken from the lesser curvature, the gastric motor function is upset.^{5b} This should indicate that whenever possible in a local operation on the stomach the structures along the lesser curvature should be respected and preserved. Not only is a V-shaped resection of the lesser curvature of the stomach unsatisfactory as to restoration of function, but a midgastric resection usually gives bad functional results. There is a tendency to constriction and hour-glass deformity, and the interruption of the impulses to the pyloric portion of the stomach not infrequently causes motor disturbance.

PARTIAL GASTRECTOMY

In gastric ulcers that do not readily yield to medical treatment and, of course, in cancer of the stomach a partial gastrectomy is indicated. With ulcers in somewhat inaccessible regions, as in the cardiac portion of the stomach, a local excision may be the best therapeutic procedure, but this should be accompanied either by a pyloroplasty, if the tissues of the pylorus and duodenum are normal, or by a gastro-enterostomy if they are diseased. In this way the healing of the gastric wound is promoted by decreasing the acidity of the gastric juice in providing a ready reflux of the duodenal contents and by lessening the work of the stomach by making a neasy exit which reduces the burden on its muscular apparatus. When, however, the lesion is in the body

or in the pyloric portion of the stomach, a partial gastrectomy is appropriate.

Partial gastrectomy is divided into two general classes: Billroth I, in which the stump of the stomach is sutured to the duodenum, and Billroth II, in which the stump of the stomach is united to the jejunum and the end of the duodenum is closed.

The lesser curvature of the stomach, where the initiation of motor function resides, should be respected. If in the Billroth I operation it is aligned with the upper border of the duodenum, according to nature, and the duodenum is flared open, the lower portion of the gastric stump can be readily closed, sometimes even an end-to-end union may be made. Then motor function is preserved as nearly in the natural manner as possible.⁸

Physiologists have shown that the sensitiveness of the intestinal mucosa to the acid of the gastric juice increases from the duodenum down. If the duodenal mucosa were as sensitive to the acid gastric juice as the mucosa in the lower part of the ileum, every one would probably have duodenal ulcers. It is because of this relative resistance that duodenal ulcer is not more common. When a segment of the jejunum is united to the stump of the stomach in which the acid values of the gastric juice are high, an excellent situation for jejunal ulcer is at once created. In cancer of the pyloric end of the stomach, when the acid of the gastric juice is low or even absent, it may be anticipated that if cancer does not recur the gastric juice will resume some of its acidity. If this happens, the patient would be in a more fortunate position to have the stomach contents empty on to the resistant duodenal mucosa than on the jejunal mucosa. If the gastric resection leaves much of the stomach affected by peristalsis, the stoma should always include the lesser curvature with its active part in peristalsis. But if the actively peristaltic portion of the stomach has been removed, there is no particular indication for having the opening of the gastric stoma high up. When the remaining stump of the stomach is controlled from a motor standpoint solely by tonic contractions, as from a rubber bag, the stoma may just as well be at the lowest point, for here gravity assists in emptying the stomach, but gravity plays but little part in the peristaltic part of the stomach.

In some cases the stump of the stomach cannot be brought to the duodenum, and here a form of the Billroth II operation must be employed. The Hofmeister modification of the Billroth II operation, in which the stoma is made along the lower border of the stomach and the upper part of the gastric stump is closed, is an excellent procedure. It lessens the length of the jejunal loop necessary when a Polya operation is done and gives ample egress for the stomach contents without an unnecessarily large opening that may interfere with gastric digestion. Lahey⁹ suggests freeing the oral loop of the jejunum in the Polya operation so that it does not lie below the transverse mesocolon. This should avoid the necessity of an entero-anastomosis, which sometimes arises in these cases.

When a partial gastrectomy is to be done for cancer, hydrochloric acid should be freely given for several days before operation for its antiseptic value—a function of the acid gastric juice first noted by Beaumont.

⁸ Horsley, J. S. *Surgery of the Stomach and Duodenum*. St. Louis: C. V. Mosby Company, 1933, pp. 198-209.

⁹ Lahey, F. H. A. *Method of Dealing with the Proximal Jejunal Loop in Posterior Polya Anastomosis*. Surg. Gynec. & Obst. 57: 227 (Aug.) 1933.

PERSISTENTLY RECURRING PEPTIC ULCERS

Unfortunately, there are a few cases of tendency toward peptic ulcer in which no form of therapy, either medical or surgical, seems effective. Harvey Cushing¹⁰ has renewed the interest in Rokitsansky's theory of the neurogenic origin of peptic ulcer, asserting that an imbalance between the vagal and the sympathetic impulses (usually an excess of vagal stimuli) is responsible for many peptic ulcers. Crile's¹¹ interesting work on the suprarenals is also suggestive. Certain it is that, at least in this small percentage of cases of persistently recurring peptic ulcer, some causes outside of the gastro-intestinal tract must be responsible. A discussion of this relationship, however, will carry us too far afield. Balfour¹² has proposed physiologic rest for the stomach by feeding through a jejunostomy for a period of a year or more, and in some peptic ulcers this has produced good results. But when gastric feeding is resumed in such cases the ulcers often recur. Whether complete section of the vagus nerves just below the diaphragm would add to the effectiveness of the treatment it is at present impossible to say, though it is suggestive of beneficial results. In some of these cases a total gastrectomy may be considered, though the eventual results of such a procedure as regards anemia have not been fully determined. There are a few cases in which anemia supervenes and others in which it does not seem to occur.

OPERATIONS ON THE SMALL INTESTINE

In the small intestine, the chief physiologic facts that bear on surgical operations have to do with the active, sensitive and rather delicate peristalsis of the upper part of the small intestine as compared with the lower part, and with the scanty bacterial content of the upper part of the small intestine caused by the bactericidal action of the hydrochloric acid of the gastric juice whereas in the lower ileum bacteria are abundant. Dragstedt¹³ has shown that in the upper part of the small intestine of a dog obstruction will result from an amount of pressure that in the lower ileum will not produce obstruction. The scantiness of bacteria in the upper small intestine together with the more abundant blood supply favors the healing of wounds in this region. An open technic for resection, then, without any unnecessary soiling, preferably an end-to-end union providing a wide lumen and a small diaphragm, is indicated in the upper small intestine. One row of continuous sutures with a few interrupted sutures for reinforcement seems to be better than multiple layers, which turn in much tissue and thus may cause obstruction in this sensitive bowel. The more accurate suturing of the inner coats of the bowel is usually preferable to their blind closure by the so-called aseptic technic.

In the lower small intestine, with the fat encroaching on the sides of the bowel, as has been well demonstrated by Monks,¹⁴ an end-to-end union is less desirable. The dangerous triangular space with its potentialities for infection and poor healing where the mesentery separates to surround the bowel is larger, and suturing the intestine along the fat mesenteric border becomes less

safe than in the jejunum. Here peristalsis is not so active, though it is rather strong. If the lumen is small and the fat abundant, it would seem a better procedure to close the ends as aseptically as possible, the cautery and basting stitch being used, and make a lateral anastomosis. Care should be taken to leave no pocket in the oral end of the bowel, because food accumulates in it with the peristaltic urge, and in experimental animals perforation may occur.

OPERATIONS ON THE COLON

The colon is divided by its physiologic function into right and left sides. The right side is the chief means for the absorption of water and salts, the left side is mainly for storage. If excision of the right colon is indicated, a preliminary end-to-side anastomosis of the ileum to the transverse colon should be done, with removal of the right colon at the same or at a subsequent stage. When the transverse or left colon must be resected, complete preliminary rest for one or more weeks should be obtained for this portion of the bowel by an enterostomy in the cecum and first part of the ascending colon, which will divert the entire fecal current from the left colon. This not only provides physiologic rest but reduces the bacterial content of the left colon to about the same as that of the jejunum and so increases the safety of its resection. This safety is still further augmented by the administration of an appropriate intraperitoneal vaccine. When the site of the resection has healed, the colostomy is closed.

CONCLUSION

Some knowledge of the physiologic functions of the gastro-intestinal tract—of its motion, its secretions and excretions, its contents, its power of absorption and its relationship to other organs—is essential to satisfactory surgery of the stomach and intestine.

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ABSTRACT OF DISCUSSION

DR. GEORGE W. CRILE, Cleveland. As Dr. Horsley has said, it is oftentimes more important to treat the patient than the ulcer. The ulcer after all is an end result and a symptom, not a disease primarily. That is well established by the fact that the people who are the most intelligent, the most active, who have the greatest responsibilities, worries and anxieties, are those who are most prone to the development of peptic ulcers. In certain patients, on many of whom operations for peptic ulcer had been performed before I saw them, in some cases as many as six, I have resorted to a procedure that tends to interfere with the sphincterismus at the pylorus and also with the mechanism by which the excited man, the high tempered man and the civilized man interferes with his own processes, the suprarenal-sympathetic system. I have divided the nerves leading from the suprarenal glands, and it has been interesting to note that, as soon as the suprarenal glands are denervated, the patient is relieved. Among forty patients in whom this operation was performed and who had previous operations and recurrences of the ulcer, four were surgeons. As soon as this operation is performed the sphincterismus disappears, the abnormal motility disappears, as shown by the fluoroscopic examination and of course by the immediate relief experienced by the patient. Occasionally there will be some remissions, but these are unimportant as they are rather easily controlled. I cannot state as yet how permanent these results will be. In the oldest case, operation was performed nearly five years ago. If the results prove to be permanent, I should think one would be justified in performing first a left suprarenal denervation and then a resection of the ulcer. If after three or four months the patient is relieved but not cured, the other suprarenal can be denervated.

10 Cushing, Harvey. Peptic Ulcers and the Interbrain. Surg. Gynec. & Obst. 55: 134 (July) 1932.

11 Crile, G. W. Recurrent Hyperthyroidism. Neurocirculatory Asthenia and Peptic Ulcer. Treatment by Operations on the Suprarenal Sympathetic System. J. A. M. A. 97: 1616 (Nov. 28) 1931.

12 Balfour, D. C. The Management of Recurrent Ulcer Following Partial Gastrectomy. Tr. Am. Surg. A. 37: 55, 1929.

13 Dragstedt, C. A. Acute Dilatation of the Stomach. J. A. M. A. 9: 612-615 (Aug. 19) 1922.

14 Monks, G. H. Studies in the Surgical Anatomy of the Small Intestine and Its Mesentery. Ann. Surg. 42: 543-569, 1905.

JAUNDICE

A REVIEW OF SOME EXPERIMENTAL INVESTIGATIONS

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Jaundice appears to be one of the first clinical signs to be mentioned in the history of medicine as characteristic of disease. Continuous investigation has accumulated a mass of information relative to both clinical and experimentally produced jaundice. It is not possible adequately to review all of this material at one time, either from a clinical or from an experimental standpoint. We will limit ourselves to reviewing certain experimental investigations which have added facts of interest to the knowledge of jaundice. Because our interest is largely in the field of hepatic physiology and pathology, our investigations have been limited to those phases of jaundice in which the hepatic factor appears to be paramount. The physiologic changes incident to obstructive jaundice have been reviewed by Ivy,¹ and the extrahepatic functions of bile by Schmidt,² so that these phases of the subject need not be presented here.

Jaundice may be produced in animals by many different methods, all of which have one common feature, that is, production within the animal of more bile pigment than is eliminated by the liver at the same time. As far as we are aware, true hemolytic icterus, similar to the condition as seen in the human being, has not been produced experimentally in animals, although jaundice may be produced by injections of hemolyzed blood or by injections of various hemolytic agents. Injection of these substances gives rise to excretion of hemoglobin in the bile and causes retention of bile pigment. The bilirubin that accumulates in the blood after these procedures gives a direct van den Bergh reaction. The jaundice that follows complete removal of the liver, with or without subsequent injections of hemoglobin, may be said to be a hemolytic type of icterus, since only the indirect van den Bergh reaction is obtained. Jaundice that might be termed hepatic may be produced by obstruction of the common bile duct or by impairment of the secretion of bile by injury to the liver. The latter may be produced by administration of chloroform, phosphorus, carbon tetrachloride, and other hepatic toxins. The effects of the jaundice on the animals will vary somewhat, depending on the method used to produce the jaundice and may also be complicated by the effects of the method itself.

Regardless of the method employed to produce the jaundice, the results noted may be due to three factors always present in the icteric animal: the effect on the body cells of retention of bile in the blood and tissue fluids, the effect of absence of, or alteration of, the bile in the intestinal tract, and the effect of the injury to the liver which accompanies jaundice. As yet, the effects of these three factors cannot be differentiated, except in regard to the effects of the absence of bile from the intestines which has been determined by many excellent studies on bile fistula animals. Complete loss

of bile is compatible with life for an indefinite period if adequate care and a suitable diet are maintained. There are many changes in digestion and absorption in these animals, such as Greaves and Schmidt³ have shown in the failure of absorption of vitamin D, but these changes can be controlled by proper dietary regimens. Queen, Hawkins and Whipple⁴ have added the important observation that modifications which are ineffective on the normal animal may produce marked changes and death of animals with complete biliary fistula. Thus, a short period of time after splenectomy performed on a bile fistula dog there develop an overproduction of bile pigment and marked anemia, which are progressive until death. Some similar agency may be responsible for the fact that dogs with complete obstructive jaundice gradually decline and in spite of all forms of dietary treatment usually fail to survive more than a year.

Some of the nutritional disturbances found in jaundiced animals are associated with loss of normal bile from the intestine, but other disturbances, such as loss of appetite, appear to be due to the effects of the retained bile. The anemia and diminution of plasma protein that occur in the icteric animal may be in part due to dietary and absorptive factors, but it is probable that associated hepatic injury also plays an important part. Smith and Whipple⁵ have demonstrated that hepatic injury not only decreases the amount of hemoglobin regenerated while the animal is on standard diets but also that the liver plays a major part in the formation of the plasma proteins. We have found a marked tendency to the development of peptic ulcers on the part of jaundiced animals. These ulcers are usually duodenal and may develop after a few days of jaundice or may not develop for many months, but eventually perforation of an ulcer is the chief cause of death of our animals with complete obstructive jaundice. Because we have not been able to demonstrate any changes in the acidity of the gastric or duodenal content of these animals in which ulcer develops, we are inclined to ascribe the formation of the ulcers to some general effect of the jaundice, in which the resistance of the gastric and duodenal mucosa to formation of ulcer is definitely reduced.

Certain other changes in the jaundiced animal should be noted, which are probably associated with changes in the liver and are only in part specific for jaundice. In view of the associated anemia and decreased protein content of the plasma, it might appear that large amounts of meat should be added to the diet. That the reverse is true is readily seen when the survival time of jaundiced dogs on a meat diet is compared with that of dogs fed mainly carbohydrate and the proteins of milk and eggs. After about three months of complete obstruction of the biliary outflow, few animals will survive a diet of meat for more than a week but will live for several months on a diet of milk and syrup. There is also some relationship existing between the extractions of meat and the ascites that often occurs in the

3 Greaves J D and Schmidt C L A. The Role Played by Bile in the Absorption of Vitamin D in the Rat. *J Biol Chem* 102: 101-112 (Sept.) 1933.

4 Queen F B, Hawkins W B and Whipple G H. Splenectomy in Bile Fistula Dogs. Bile Pigment Overproduction, Anemia and Intoxication. *J Exper Med* 57: 399-418 (March) 1933.

5 Smith H P and Whipple G H. Bile Salt Metabolism V. Casein Egg Albumin Egg Yolk Blood and Meat Proteins as V Factors. *J Biol Chem* 88: 689-704 (Dec) 1930. VII. Indene Hydrindene and Isatin. *ibid* pp 719-725. IX. Eck Fistula Modifies Bile Salt Output. pp 738-751. Whipple G H and Smith H P. Bile Salt Metabolism VI. Proline, Tryptophane and Glycine in Diet. *ibid* 88: 705-717 (Dec) 1930. VIII. Liver Injury and Liver Stimulation. pp 727-738.

From the Division of Experimental Medicine the Mayo Clinic. Read before the Section on Gastro-Enterology and Proctology at the Eighty-Fifth Annual Session of the American Medical Association Cleveland June 14 1933.

1 Ivy A C. Physiologic Disturbances Incident to Obstructive Jaundice. A Review. *J A M A* 95: 1068-1072 (Oct. 11) 1930.

2 Schmidt C L A. The Extrahepatic Functions of Bile. *Physiol Rev* 7: 129-150 (Jan) 1927.

terminal stages of obstructive jaundice. If sufficient injury has occurred to the liver (usually about three months of complete obstructive jaundice), feeding of meat, or the administration of beef extract, will produce rapid formation of ascites in animals that were free of ascites when maintained on a diet almost free of these substances, the animals again become free of ascites in a few days after the resumption of the original diet. There are probably other factors involved in the formation of ascites in these animals, as, for example, the reduction of the protein content of the plasma, and altered absorption from the intestine, but the effect of the extractives of meat is most striking when one observes the development of more than 3 liters of ascitic fluid in six hours in an animal weighing 15 Kg following oral administration of 15 Gm of meat extract.

Accumulation of bile pigment in the tissues may not be the most important feature of jaundice, but it is certainly the most noticeable. Because of its ease of detection and a fairly satisfactory method of quantitation, more is known about bilirubin than about the other constituents of the bile. Bile pigment continues to be formed in animals after complete removal of the liver, and there can be no doubt that hemoglobin is the material from which it is derived. Injections of hemoglobin increase the formation of bilirubin, as has been demonstrated in the bile fistula animals, jaundiced animals and dehepatized animals. Simultaneous determinations of the bilirubin content of the arterial blood flowing to various organs and tissues, and of the venous blood returning from the same organs and tissues, have demonstrated formation of bile pigment in the spleen, bone marrow and liver. Other tissues investigated do not appear to add bilirubin to the blood. It appears that the bilirubin is formed in the cells of the reticulo-endothelial system, which in mammals is greatest in the bone marrow, spleen and liver, and there is evidence to indicate that the bone marrow is normally the main site of formation of bilirubin.

It has not been proved that the hepatic cell forms bilirubin. The main evidence presented to date that the hepatic cell makes bilirubin is that the jaundice produced by certain substances, notably toluylenediamine, is prevented by removal of the liver.⁶ Toluylenediamine produces both increase in the formation of bilirubin and retardation of its excretion together with demonstrable injury to some of the hepatic cells. In order to explain the jaundice produced by this substance, on the basis that the retained bilirubin is formed by the hepatic cells, it is necessary to postulate that toluylenediamine injures the hepatic cells in such a manner that they form more bilirubin than normal and excrete less than normal. This consideration must remain as a possibility until the mechanism of the jaundice caused by toluylenediamine is conclusively determined, although it appears rather unique that injury to a cell should cause it to increase its activity in one respect and decrease it in another.

The liver may be considered as an excretory organ for bile pigment, since not only is the major amount of bilirubin formed outside the liver but accumulation of this substance in the blood and tissues occurs when hepatic excretion is impaired or prevented. Removal of the liver, or ligation of the biliary ducts, prevents excretion of bile into the intestine and bile pigment

formed outside the liver appears in the blood, body tissues and urine. Acute lesions of the liver may also produce jaundice such as follows: administration of chloroform, phosphorus, carbon tetrachloride or tetrachlorethane. We also see temporary jaundice following removal of a large amount of hepatic tissue. We have recently observed jaundice following continuous injection of dextrose for many hours at the maximal rate of tolerance. The glycogen content of the liver is increased up to 20 per cent of its weight, but the carbohydrate functions of the liver do not appear altered. Bile pigment, however, is retained in the blood and is excreted in the urine. The jaundice produced by hepatic poisons appears to be due in part to hepatic injury and in part to excessive formation of bilirubin, which cannot all be eliminated by the injured liver. The jaundice that occurs after partial removal of the liver and injection of large amounts of dextrose appears to be due to the fact that these procedures cause the hepatic cells to swell and to obstruct the bile canaliculi.

The van den Bergh reaction for serum bilirubin is indirect in animals that have become jaundiced following complete removal of the liver. The amount of bile pigment that accumulates in the blood for the first twenty-four hours after removal of the liver is comparable in amount to that which is found after an equal interval of time following ligation of the common bile duct and extirpation of the gallbladder. In the latter case the bilirubin of the blood gives a direct van den Bergh reaction. Removal of the liver when obstructive jaundice is present produces serum bilirubin with a true biphasic reaction obtained by the van den Bergh method. If the liver is removed several hours after ligation of the common bile duct and removal of the gallbladder, at a time when a definite direct van den Bergh reaction is present in the serum, the amount of bilirubin reacting directly will be subsequently unchanged. Additional bilirubin will accumulate in the blood after removal of the liver so that the total amount of bile pigment in the blood will progressively increase at the same rate that it was increasing following ligation of the common bile duct, but the bilirubin that is added to the blood after removal of the liver gives only the indirect reaction. In any other type of jaundice that we have produced experimentally there has been more or less involvement of the liver, and the direct van den Bergh reaction for bilirubin in the blood has been observed.

No important function has been ascribed to bilirubin except that of an excretory product derived from the breakdown of hemoglobin in the body. Hawkins, Sribhishaj, Robschert-Robbins and Whipple⁷ found that anemic dogs formed new hemoglobin from the entire amount of foreign hemoglobin administered but at the same time formed additional bilirubin equivalent to the entire amount of hemoglobin given. These observations indicate that new hemoglobin must be synthesized and that the bilirubin portion of the hemoglobin molecule cannot be utilized in the formation of new hemoglobin, although other portions of the hemoglobin molecule may be incorporated in new hemoglobin.

The bilirubin excreted in the bile is not reabsorbed as such but is acted on by bacteria and perhaps some intestinal enzymes to form urobilinogen and urobilin,

6 Rosenthal F, Licht H and Melchior E. Weitere Untersuchungen am leberlosen Saugtier. Arch. f. exper. Path. u. Pharmacol. 115: 138-179, 1926.

7 Hawkins W B, Sribhishaj K, Robschert-Robbins F S and Whipple G H. Bile Pigment and Hemoglobin Interrelation in Anemic Dogs. Am. J. Physiol. 96: 463-476 (Feb.) 1931.

which may be absorbed into the portal system. Most of the absorbed urobilin is absorbed by the liver and excreted again into the intestine. No urobilin is formed if bilirubin is not present in the intestine except in some instances of cholangitis in which the urobilin is formed in the infected bile ducts. McMaster and Elman⁸ found that injury to the liver prevented urobilin being excreted in the bile, and the excess pigment was excreted in the urine. Excessive excretion of bilirubin in the intestine such as follows excessive destruction of blood, increased the amount of urobilin formed, beyond the capacity of the liver to excrete it immediately, and some of the urobilin was excreted in the urine. Apparently the liver is extremely sensitive in regard to excretion of urobilin, since it appears in the urine in fevers and in many nonspecific infections that do not appear to involve the liver.

Bile salts, like bile pigment, are intimately connected with any consideration of jaundice. Additional interest is afforded by the fact that bile salts have some toxic action on the tissues. Osterhout⁹ found that the presence of bile salts decreases the permeability factor of tissues. Horrall and Carlson¹⁰ observed that the toxicity of bile depended on the rate of administration rather than on the total amount administered, and Still¹¹ concluded that the cholate radical was mainly responsible for the toxicity of bile. Sterner, Bartle and Lyon¹² have reviewed the recent literature on metabolism of bile salts. This may be briefly summarized as follows. The bile salts have one definite function in emulsifying and aiding in the digestion of fats in the intestine, and bile salts stimulate the liver to cause greater amounts of bile to be formed and secreted. Smith and Whipple⁵ have conducted a large series of studies on the excretion of bile salts by biliary fistula dogs under a number of different conditions. They found that standard diets of salmon bread produced a constant daily excretion of about 100 mg of taurocholic acid for each kilogram of body weight, whereas fasting or feeding with sugar reduced this figure to 20 or 40 mg. Feeding of liver, kidney or beef muscle produced from 200 to 300 mg of taurocholic acid for each kilogram of body weight in twenty-four hours. Casein produced from 125 to 190 mg of taurocholic acid, ovalbumin produced 50, and whole beef blood increased the excretion of bile salts, but the erythrocytes alone caused a slight decrease. Amino-acids and other substances that possess chemical structures found in taurocholic acid cause increased formation of bile acid if added to certain diets but may be without effect when added to other diets, therefore it would appear that certain amino-acid complexes were necessary for formation of bile salts but that excess of these complexes may be without further effect. Bile salts administered by vein or by mouth are quantita-

tively excreted in the bile. There are many indications that the liver is probably responsible for elaboration of bile salts, although the evidence to date is not conclusive. Mild hepatic injury, such as is produced by small amounts of chloroform or by an Eck fistula, may greatly reduce the amount of bile salts formed, but the amount of hepatic injury that may be observed microscopically does not always parallel the reduction of formation of bile salts, since phosphorus poisoning may produce extensive hepatic injury, with little reduction in the excretion of bile salts.

Our studies¹³ indicate that the normal animal is able to destroy large amounts of glycocholates or taurocholates following administration of these substances by vein or by mouth. After ligation of the common bile duct, more of the injected bile salts appear in the urine but a considerable portion of the bile salts are destroyed. If the liver is completely removed, all of the bile salts administered appear in the urine after a few hours, so that it would appear that the liver plays a prominent part in the destruction of bile acids. Additional evidence of the formation of bile salts in the liver is found in the fact that no bile salts can be detected in the blood or urine after removal of the liver, although bilirubinemia develops and bile pigment is present in the urine, and small amounts of administered bile salts may be detected.

With complete obstruction of the biliary outflow, the amount of bile salts excreted in the urine is only about half of that found in normal animals with biliary fistulas. Injury to the liver by chloroform, carbon tetrachloride or toluenylenediamine further reduces the amount of bile salts in the urine and blood. The terminal decrease in excretion of bile salts in continued obstructive jaundice does not occur until considerable secondary hepatic injury is demonstrable. At this time the ability of the liver to destroy bile salts may not be altered, so that the decrease in excretion of bile salts is obviously due to decreased formation of bile salts. Jaundice produced by hepatic toxins such as chloroform, phosphorus, carbon tetrachloride or toluenylenediamine in otherwise normal animals gives rise to excretion of bile salts in the urine, and bile salts are found in the blood. As these animals recover, the bile salts disappear from the blood and urine, but bile pigment may still be present in large amounts. Additional hepatic injury, by repeated administration of the toxic agent, may also cause disappearance of the bile salts from the blood and urine. With recovery from hepatic lesions, bile salts are excreted in the bile, and hepatic activity prevents accumulation of these substances in the blood. With further injury, the liver is unable to elaborate bile salts so that they also disappear from the blood.

SUMMARY

Jaundice may be produced experimentally by methods that involve the liver. Complete removal of the liver produces jaundice that might be termed hemolytic, and the bilirubin of the blood is found to respond "indirectly" to the van den Bergh reaction. Other forms of jaundice produced by occlusion of the bile ducts or by hepatic injury increase the bilirubin content of the blood, which is found to give a "direct" van den Bergh reaction.

Experimentally produced jaundice, continued for some time, produces certain typical effects on the animal,

8 McMaster P D and Elman Robert. Studies on Urobilin. *Physiology and Pathology*. I. The Quantitative Determination of Urobilin. *J Exper Med* 41: 503-512 (April) 1925. II. Derivation of Urobilin from the Intestine. pp 513-534. 111. Absorption of Pigments of Biliary Derivation from the Intestine. pp 719-738 (June). IV. Urobilin and the Damaged Liver. *ibid* 42: 99-122 (July). V. The Relation Between Urobilin and Conditions Involving Increased Red Cell Destruction. pp 619-640 (Nov). VI. The Relation of Biliary Infections to the Genesis and Excretion of Urobilin. *ibid* 43: 753-783 (June) 1926.

9 Osterhout W J V. Decrease of Permeability and Antagonistic Effects Caused by Bile Salts. *J Gen Physiol* 1: 405-408 (March 20) 1919.

10 Horrall O H and Carlson A J. The Toxic Factor in Bile. *Am J Physiol* 85: 591-606 (July) 1928.

11 Still E. U. On the Toxicity of Purified Bile Preparations. *Am J Physiol* 88: 729-736 (May) 1929.

12 Sterner R F, Bartle H J and Lyon B B V. The Chologogue Effect of the Intravenous Injection of Sodium Dehydrocholate with a Résumé of Literature on Bile Salt Metabolism. *Am J M Sc* 182: 22-839 (Dec) 1931.

13 Bollman J L and Mann F C. The Influence of the Liver on the Destruction of Bile Salt. *Arch Path* 16: 304 (Aug) 1933.

owing to the absence of or alteration of bile in the intestine, the presence of bile components in the blood and tissues, and the associated impairment of the liver. Survival of these jaundiced animals is limited by several factors. Nutritional disturbances, in which decreased tolerance to meat is a prominent feature, are important. There appears to be a definite tendency to the occurrence of peptic ulcer. Anemia and a decrease in the proteins of the plasma are usually found to be associated with injury to the liver. Ascites may be formed under conditions in which it does not occur in normal animals.

Formation of bile salts is somewhat reduced in icteric animals but continues to be formed in considerable amounts. Subsequent injury to the liver of the jaundiced animal may completely prevent formation of bile salts, so that they are no longer found in the blood or urine.

SLIGHT AND LATENT JAUNDICE

THE SIGNIFICANCE OF ELEVATED CONCENTRATIONS OF BILIRUBIN GIVING AN INDIRECT VAN DEN BERGH REACTION

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For years we have puzzled over the meaning of a slight increase in the value of serum bilirubin, with or without slight jaundice barely detectable either by the patient or by the trained physician. Naturally we have suspected that in at least some of these cases the liver has suffered an injury leading to dysfunction, but we could not be sure. In the hope of throwing light on the problem, we have analyzed the data in all such cases encountered at the Mayo Clinic from 1930 to 1931.

It will be remembered that in most laboratories today the concentration of serum bilirubin is classified and measured by van den Bergh's technic. At the clinic Lepehne's ring test is first applied to determine the type of bilirubin reaction. If, after the diazo-reagent has been added, a purple color appears within one minute, the reaction is said to be "direct," if the appearance is delayed from two to five minutes, it is called "delayed-direct," and if it appears after five minutes it is called "indirect." Most investigators believe that the direct reaction is given by reabsorbed bilirubin that has passed through hepatic cells normal or diseased, the bilirubin that gives an indirect reaction is supposed not to have passed through the hepatic cells. As a corollary of this, direct reactions are supposed to indicate injury to the liver or obstruction of the ducts, an indirect reaction is found in blood from all normal persons and from patients with hemolytic disease. The delayed direct reaction probably has the same significance as has the direct reaction. In this study we have disregarded all cases in which reactions were direct, because we know that a direct reaction means something is wrong with the liver or ducts. We were not so sure about the significance of the indirect reactions, hence, this analysis.

The concentration of serum bilirubin also is measured quantitatively. Using Thannhauser and Andersen's¹ modification of the van den Bergh technic, we have found that the serum of most normal persons contains less than 1.5 mg. per hundred cubic centimeters of bilirubin. In order to be safely above this usual range of concentration, we have picked out for the purpose of this study 214 consecutive cases in which the amount was 2 mg. or more per hundred cubic centimeters.

Before continuing, it might be helpful to remember that nowadays cases of jaundice are divided into three groups: (1) cases of extrahepatic jaundice, in which obstruction to the bile ducts is produced in any way, (2) cases of intrahepatic jaundice, in which the disease is in the hepatic cells, and (3) cases of hemolytic jaundice, in which the liver and bile ducts are assumed to be normal and the bilirubinemia to be due to excessive destruction of erythrocytes.

In this study not only did we hope to throw light on the meaning of increased concentrations of bilirubin with an indirect reaction but also we thought we might learn something about those many patients who claim to be bilious, liverish or toxic but in the examination of whom the usual tests of hepatic function fail to show any sign of disease.

MATERIAL

We found that the records of the 214 cases could be divided into two groups. In the first group were patients who had, as well as patients who had not, disease of the liver and gallbladder. Hemolytic disease was excluded by appropriate laboratory and clinical data. In table 1 are summarized the diagnoses made in cases in which hemolytic disease was absent, and also it is indicated whether or not visible jaundice was present. Chrometzka,² Schiff,³ Hughes⁴ and Perkin,⁵ among others, previously have noted cases in which concentrations of bilirubin were increased, the reaction was indirect and the patients had disease of the liver or gallbladder.

In the second group, some type of hemolytic disease was present in each case (table 2). Whereas most of the important types of hemolytic diseases are included in this series of cases, there are others, such as purpura, poisoning by potassium chlorate and by snake bite, and sickle-cell anemia, which may be mentioned for the sake of completeness. Extravasation of blood in the presence of pulmonary infarcts and tubal pregnancy likewise produce excessive hemolysis and bilirubinemia.

The greatest concentration of serum bilirubin encountered in this series was less than 7 mg. per hundred cubic centimeters. The concentration was 3 mg. per hundred cubic centimeters or less in approximately 75 per cent of the cases. It is interesting to note that visible jaundice occasionally is present when the concentration of serum bilirubin is less than 3 mg. per hundred cubic centimeters, on the other hand, it is rarely absent when the concentration is more than 3 mg. per hundred cubic centimeters.

1 Thannhauser J. S. and Andersen E. Methodik der quantitativen Bilirubinbestimmung im menschlichen Serum. *Deutsches Arch. f. Klin. Med.* 137: 179-186 (Aug.) 1921.

2 Chrometzka, Friedrich. Ueber die Norm des Bilirubinspiegels des Menschen und die Hyperbilirubinämie. *Ztschr. f. d. ges. exper. Med.* 67: 475-481, 1929.

3 Schiff, Leon. Serum Bilirubin in Health and in Disease. *Arch. Int. Med.* 40: 800-817 (Dec.) 1927.

4 Hughes T. A. Observations on the Bilirubin Content of the Blood. *Serum Indian. J. Med.* 12: 403-408 (Oct.) 1924.

5 Perkin F. S. Blood Bilirubin. Estimation and Clinical Significance. *Arch. Int. Med.* 40: 195-202 (Aug.) 1927.

INCREASED CONCENTRATIONS OF BILIRUBIN IN
CASES IN WHICH HEMOLYTIC DIS-
EASE WAS ABSENT

The balance between the formation of bilirubin by the reticulo-endothelial system and its excretion by the hepatic polygonal cells is well maintained in health. The balance is upset by disease, which either increases formation or retards excretion. The concentration of bilirubin is often lower than normal when the erythrocytes are deficient in hemoglobin, as in hypochromic anemia. The concentration of bilirubin increases when hemolysis is excessive, as in hemolytic disease, and when injury and dysfunction of the hepatic cell occur. Such is the modern conception of the physiologic processes relative to bilirubin.

It follows that hepatic dysfunction may well be responsible for the increased concentration of bilirubin in the cases in which hemolytic disease has been ruled out. Interestingly enough, in all cases of this series in which hemolytic disease was absent, hepatic disease or dysfunction is actually or probably present to account for the presence of an increased concentration of bilirubin. Two types of hepatic dysfunction may

TABLE 1—Cases in Which Hemolytic Disease Was Absent and in Which Concentration of Serum Bilirubin Was 2 Mg or More per Hundred Cubic Centimeters

Diagnosis	Jaundice or History of It	No Jaundice or History of It	Total
Cases in which demonstrable disease of liver or gallbladder was absent			
Negative examination	6	2	8
Functional nervous disorder	12	11	23
Epilepsy		1	1
Organic nervous disease	2	2	4
Duodenal ulcer	1	5	6
Syphilis	1	2	3
Miscellaneous		3	3
	23	20	43
Cases in which disease of the gallbladder was present			
Chronic cholecystitis	9	4	13
Chronic cholecystitis with stone	4	14	18
Chronic cholecystitis with stone and hepatitis	5		5
Chronic cholecystitis with stone and stone in common bile duct	2		2
Acute cholecystitis	1		1
Cholangitis	1		1
Stone in common bile duct	3		3
Chronic nervous exhaustion post operative cholecystostomy	3		3
	28	18	46
Cases in which disease of the liver was present			
Metastatic carcinoma of the liver		4	4
Cardiac decompensation	1	2	3
Secondary obstructive biliary cirrhosis		4	4
Latent portal cirrhosis	1	7	8
Toxic cirrhosis secondary to hyperthyroidism	3	12	15
Residual hepatitis following cincho-phen poisoning	1		1
Residual hepatitis following cutaneous infectious jaundice	9		9
	15	29	44
Grand total	60	73	133

be recognized (1) a constitutional type and (2) a type secondary to hepatic disease. Each type will be briefly considered.

Constitutional hepatic dysfunction was described by Gilbert and his associates⁶ as simple familial cholemia

and simple chronic icterus. In simple familial cholemia the concentration of serum bilirubin was increased, the skin had a slightly yellowish or sallow tint, the conjunctivae were not colored, the urine contained appreciable amounts of urobilin and urobilinogen, and the liver and spleen were affected very slightly, if at all. In simple chronic icterus the concentration of serum bilirubin

TABLE 2—Cases in Which Hemolytic Disease Was Present

Diagnosis	Cases
Leukemia	4
Malaria	6
Splenic anemia	10
Perniciou anemia	31
Chronic hemolytic icterus	16
Probable chronic hemolytic icterus	9
Total	76

was increased still further, the skin and conjunctivae had a subicteric or definitely icteric tint, the urine contained considerable amounts of urobilin and urobilinogen (at times even a small quantity of bilirubin) and the spleen and liver were often, although only slightly, affected. The forty-eight cases in our series in which there was no demonstrable disease of the gallbladder or liver belong to these groups, in addition there were ten patients who had disease of the gallbladder, and two who had disease of the liver and who had jaundice long before the development of disease of the gallbladder or liver, and these should be added to make a total of at least sixty cases in which there was some type of hepatic dysfunction. In all probability the condition of the twenty-six patients who were not jaundiced, corresponded to the condition known as simple familial cholemia, and that of the thirty-four patients who were jaundiced typified the condition known as simple chronic icterus. Cases 1 and 2 illustrate the typical features of this type of dysfunction.

CASE 1—A man, aged 32, had always been aware of slight jaundice. His mother, five brothers and one sister had the same trouble but were otherwise in good health. Physical examination revealed nothing important except the icteric sclerae. Examinations of the blood disclosed cells of normal morphology, normal fragility of the erythrocytes in hypotonic salt solution, and a normal percentage of reticulated erythrocytes. Roentgenologic examination of the gallbladder revealed that it was functioning normally. The bromsulphalein test of hepatic function disclosed retention of dye graded 1. Three readings of bilirubin ranged from 2.8 to 3.4 mg per hundred cubic centimeters of serum, once the van den Bergh reaction was delayed-direct, and twice it was indirect.

In nine other cases the jaundice likewise began at birth. In four other cases, other members of the family were similarly affected.

CASE 2—A man aged 26, complained of exhaustion and slight jaundice, which had appeared about three years before we saw him. He gave no history of cramps, colic or fever. The only important finding was the slight jaundice. Anemia and abnormal fragility of the erythrocytes were absent. The readings for serum bilirubin were 3.4, 3.6 and 4.2 mg per hundred cubic centimeters, and the van den Bergh reaction was indirect. Roentgenologic examination of the gallbladder disclosed that it was functioning normally.

Two years later the patient returned, he was still weak and tired, the jaundice was unchanged. The blood picture was not that of hemolytic icterus. The reading for serum bilirubin was 4.2 mg per hundred cubic centimeters and the van den Bergh reaction was again indirect.

Fragility of the erythrocytes in hypotonic salt solution was normal.

⁶ Gilbert A and Lereboullet P. La cholemie simple familiale, Gaz hebdo de med 49: 889-897 1902. Sur la teneur en bilirubine du serum sanguin dans la cholemie simple familiale. Compt rend. Soc de biol 58: 937-940 (June 3) 1905. La cholemie simple familiale sous importance en pathologie J med franc 110: 119 (March) 1910. Gilbert A, Lereboullet P and Herscher P. Les trois cholemes congenitales. Bull et mem Soc med d hop de Paris 24: 1203-1211 (Nov 15) 1907.

Two months later, during a bilious spell, the concentration of serum bilirubin was 63 mg per hundred cubic centimeters and the van den Bergh reaction was delayed-direct. The test of fragility of erythrocytes gave a normal result. Seven months after that, the condition of the patient and the results of laboratory examinations were similar to those found on his first examination. In addition, a bromsulphalein test of hepatic function failed to give evidence of any retention of dye.

In thirteen other cases the jaundice likewise began after birth. In one case, other members of the family of the patient were similarly affected. The onset never was spectacular. The jaundice was usually so slight that it is probable that in some cases it was present long before it was noticed. It is certain that a visible grade of icterus, easily recognizable, has escaped the attention of ten of the thirty-four jaundiced patients. Under these circumstances it is possible that jaundice and hepatic dysfunction, listed as beginning some years after birth, really had its onset at a very early age. It is also worth noting that, although seven patients were sure the jaundice had been absent at intervals, it showed no tendency to disappear permanently.

These examples of chronic and intermittent jaundice resemble cases of chronic hemolytic jaundice. It is significant, however, that no history of hemolytic crises with anemia, no evidence of increased destruction of blood or increased regeneration, or no constitutional variations in morphology of the erythrocytes peculiar to chronic hemolytic icterus were present. Moreover, the spleen was not palpable, in fact, all the criteria on the basis of which a diagnosis of chronic hemolytic icterus is commonly made were lacking in these cases. These fundamental differences from chronic hemolytic icterus were likewise noted in the cases in which jaundice was absent.

In spite of the fundamental differences, the constitutional jaundice in these cases is often considered to be of hemolytic origin. Weber,⁷ for one, Schiff for another, and Gänsslen, Zipperlen and Schuz⁸ interpreted such cases as being atypical examples of chronic hemolytic icterus. That such an interpretation is made is not surprising when one remembers that constitutional jaundice occurs in families the members of which also have chronic hemolytic icterus. Moreover, since it is known that spherical microcytosis may be lacking in certain cases of chronic hemolytic icterus and that normal fragility of the erythrocytes may be present at one time and abnormal fragility at another time, it is possible that in some of these cases later there may be evidence of hemolysis. The assumption, however, of a hemolytic origin for the hyperbilirubinemia in these cases is hardly justified without more evidences of excessive hemolysis.

Pende⁹ classified the hepatic dysfunction of this group of patients among forms of constitutional inadequacy, and van den Bergh¹⁰ expressed the belief that the elevated threshold for excretion of bilirubin in these cases is physiologic. Mogena,¹¹ on the other hand, has expressed his feeling that the increase is invariably pathologic. In our opinion, actual dysfunction of the

polygonal hepatic cells exists. When jaundice appears years after birth, we believe that some mild hepatic poison has been acting on a constitutionally inadequate and susceptible hepatic cell. The curious tendency of the jaundice to appear or to increase following emotion, nervous breakdowns, "bilious attacks," constipation or diarrhea indicates that the mechanism for excretion of bilirubin in these cases is easily influenced. The occasional occurrence of slight retention of dye, shown by the bromsulphalein test, and the occasional change of an indirect reaction to a delayed direct reaction are further evidence that actual hepatic dysfunction exists.

Especially interesting is the so-called nervous icterus which occurs in this type of hepatic dysfunction. We had as patients a physician who turned yellow after a day of excitement, a housewife whose slight chronic icterus increased when she became angry, and a woman whose chronic icterus began after a fright, all of these cases may represent examples of hepatic dysfunction due to emotion. Chrometzka mentioned a patient who turned yellow following an attack of renal colic. He also demonstrated the influence of nervousness on the content of bilirubin in the serum in the subicteric range. He found that in some cases concentrations that had been increased above normal on admission returned to normal a few days after registration. Eppinger and Hess¹² assumed that such spasmodic and emotional icterus was due to constitutional vagotonia, with spasm of the common duct of vagal origin.

Dysfunction secondary to hepatic disease appears in cases of toxic hepatitis due to chronic passive congestion and hyperthyroidism, in cases in which there are metastatic malignant growths, and in compensated biliary and portal cirrhosis (table 1). In our opinion, hepatic dysfunction in these cases of hyperthyroidism is due to hepatic injury of slight degree, but of the type described by Weller¹³ and by Beaver and Pemberton.¹⁴ The presence of hepatic dysfunction in the various types of cases in this group is confirmed by the almost universal occurrence of some degree of retention of dye.

Dysfunction secondary to hepatic injury persists after disappearance of the acute phase of toxic hepatitis and biliary disease. In one case, dysfunction, as measured by the concentration of serum bilirubin and by the bromsulphalein test, persisted months after the jaundice of toxic hepatitis resulting from poisoning by cinchophen had disappeared. In other cases a history of chronic or intermittent jaundice was obtained. One such patient, who was a missionary, stated that jaundice had first appeared when he went to the tropics, and that the jaundice reappeared whenever he returned there. In another case the initial hepatic injury seems to have been the result of hyperthyroidism, and in others of catarrhal or infectious jaundice.

CASE 3—A man, aged 36, complained of jaundice. The initial attack, at the age of 18 years had been severe and accompanied by high fever. Since that time his sclerae had been yellow at times, especially when the infection of the upper part of the respiratory tract was present. The last attack had begun six weeks before we saw him and had lasted one week. On examination, jaundice was not discernible. Anemia, erythro-

7 Weber F P. Congenital Jaundice in Man. *Proc Roy Soc Med (Clin Sect)* 21: 3-4 (Oct.) 1927. Weber F P. A Hemolytic Jaundice. *Family Internat. Clin* 3: 148-156 (Sept.) 1931.

8 Gänsslen Max, Zipperlen E and Schuz E. Die hamolytische Konstitution. *Deutsches Arch f klin Med* 146: 1-46 (Jan.) 1925.

9 Pende Nicola. Constitutional Inadequacies. Philadelphia: Lea & Febiger 1928. pp 184-185.

10 van den Bergh A H. Hemolytic Jaundice or Constitutional Hyperbilirubinemia. *Nederl tijdschr v geneesk.* 77: 4429-4435 (Sept. 30) 1933.

11 Mogena H G. The Clinical Significance of Hyperbilirubinemia. *Lancet* 1: 1187-1189 (June 8) 1929.

12 Eppinger Hans and Hess Leo. Vagotonia. A Clinical Study in Vegetative Neurology. New York: Nervous and Mental Disease Publishing Company 1915.

13 Weller, C V. Hepatic Lesions Associated with Exophthalmic Goiter. *Tr A Am Phys* 45: 71-76 1930.

14 Beaver D C and Pemberton J de J. The Pathologic Anatomy of the Liver in Exophthalmic Goiter. *Ann Int Med* 7: 687-708 (Dec.) 1933.

cytes of abnormal morphology or fragility, and an abnormal percentage of reticulated cells, were absent. The reading for bilirubin was 21 mg per hundred cubic centimeters and the van den Bergh reaction was indirect. The bromsulphalein test of hepatic function gave no evidence of retention of dye. Roentgenologic examinations of the gallbladder, after administration of dye, disclosed that the organ was functioning normally.

In this case the initial attacks as well as subsequent attacks of jaundice suggested an infectious condition. The laboratory examinations excluded chronic hemolytic icterus. In other cases, occasional slight retention of dye and a delayed-direct van den Bergh reaction support in small measure our conception of persisting hepatic dysfunction in these cases. Similarly, in all but four cases of disease of the biliary tract the history of attacks of jaundice, and the changes found at the operating table, cholangitis or hepatitis, point to previous hepatic injury, with residual injury to the liver possibly explaining the increased concentration of bilirubin. Hurst¹⁵ demonstrated hepatic dysfunction associated with cholecystitis by means of the levulose tolerance test and expressed the belief that in such cases medical treatment should follow surgical removal of the offending organ.

The decision that constitutional dysfunction, or dysfunction secondary to hepatic injury, accounts for the increased concentration of bilirubin in the individual cases of this series presenting organic disease is a difficult one to make. In some cases of organic disease the history of the jaundice permits it to be classified as constitutional. Thus, we know that the jaundice had been present in one case since birth, and in another for six years, before the development of hyperthyroidism. In two cases the jaundice had appeared at birth and had lasted for thirty-five and forty years before the appearance of symptoms referable to the gallbladder. Similarly, in five cases the jaundice, which had begun at the respective ages of 14, 20, 24, 25 and 30 years, had lasted respectively thirty-six, seven, six, ten and nineteen years before the appearance of disease of the gallbladder. Concerning these nine cases there does not seem to be much doubt that constitutional dysfunction antedated the appearance of organic injury. In the cases of disease of the gallbladder and liver without jaundice, it is often impossible to distinguish the two types of dysfunction, it is quite likely that a degree of constitutional dysfunction insufficient to produce jaundice had existed before development of the biliary and hepatic disease in some of these cases also.

Clinical Importance—Eight patients who had constitutional hepatic dysfunction made no complaints, and no disease was discoverable by physical and laboratory examinations. Six of the eight wished to be examined only because of the jaundice. It appears that constitutional hepatic dysfunction is compatible with health.

Patients with constitutional dysfunction of the liver seem to develop functional disease frequently. The disease was so classified in twenty-one cases. This series cannot be studied statistically, however, as a control series was not available and patients with functional disease make up a high percentage of any group. The data therefore do not permit the conclusion that constitutional hepatic dysfunction predisposes to functional disease. For like reason conclusions regarding

the relationship between duodenal ulcer and constitutional dysfunction cannot be made.

It does seem significant however that, in ten, or 29 per cent, of the thirty-four patients who had jaundice of the constitutional hepatic type, disease of the gallbladder eventually developed. The duration of the jaundice before the development of symptoms of disease of the gallbladder in these cases excludes the gallbladder as the cause of the jaundice. The high percentage of this group in which disease of the gallbladder developed may mean that constitutional hepatic dysfunction, at least of the grade capable of producing jaundice, predisposed to disease of the gallbladder.

Patients with either constitutional or acquired types of hepatic dysfunction frequently complain of "biliousness." Migraine and episodes of exhaustion together with anorexia, dull headaches, bad taste in the mouth and constipation, are the syndromes to which laymen apply the term "biliousness." Hunt¹⁶ recently has reviewed the relation of migraine to disease of the gallbladder and liver. He has concluded, contrary to the opinions of others that dysfunction of the gallbladder is not the cause but may be the result of repeated migrainous attacks. He has suggested that some hepatic dysfunction may be the cause of migraine in certain cases, and he has found support for this belief in the attacks of migraine provoked by magnesium sulphate introduced into the duodenum of patients who have undergone cholecystectomy, and also in the occasional good results that have followed treatment of migraine with bile salts. McClure and Huntsinger¹⁷ claim to have demonstrated hepatic dysfunction in 90 per cent of seventy-two cases of migraine. Diamond¹⁸ found elevated concentrations of bilirubin among thirty-five of thirty-eight patients who had migraine, he believed this to be evidence of hepatic toxemia. Certainly a relationship between hepatic dysfunction and migraine exists in some cases, but it is difficult to separate cause and effect. The sequence of headache and jaundice in the cases of this series suggests that the sympathetic storm, of which the headache is one expression, likewise provokes hepatic dysfunction.

Case 4 will illustrate the second syndrome described by laymen as biliousness.

CASE 4—A man, aged 24, first registered at the clinic in September 1919. He complained of jaundice and biliousness. His sclerae had always been yellow, just as his father's had been. Every few weeks, episodes of exhaustion, mental torpor, headache, constipation and gaseous indigestion occurred, during which exacerbation of the icterus took place. The attacks were precipitated by overeating. The slightly yellowish tint of the skin and sclerae was the only significant physical finding. The fragility of the erythrocytes was normal, and there was no anemia.

The patient returned again in 1923 and the symptoms and conditions found were identical. In addition, the urine contained a trace of urobilin and urobilinogen. The percentage of reticulated cells was 0.6 and 0.7. We last saw the patient in 1930, when he was 35 years of age. His condition was the same as before. No evidence of hemolytic icterus could be obtained in the laboratory. The readings for serum bilirubin were 3.4 and 1.9 mg per hundred cubic centimeters. The van den Bergh reaction was indirect. A roentgenogram of the

16 Hunt T C. Bilious Migraine. Its Treatment with Bile Salt Preparations. *Lancet* 2: 279-285 (Aug 5) 1933.

17 McClure C. W. and Huntsinger Mildred E. Observations on Migraine. Boston M. & S. J. 190: 270-273 (Feb 17) 1927. Paroxysmal Headaches. II. Observations on the Etiology, Symptomatology and Treatment of the Migrainous State. *New England J. Med.* 190: 1312-1317 (Dec. 27) 1928.

18 Diamond J. F. The Value of Routine Estimations of Blood Bilirubin with a Report of 567 Cases Including a Group of Unrecognized Toxic Hepatitis. *Am. J. M. Sc.* 170: 321-331 (Sept.) 1928.

gallbladder after oral administration of dye indicated that the organ was functioning normally

The patient in the case just reported probably had constitutional hepatic dysfunction. Patients who have hepatitis persisting after severe hepatic injury also complain of jaundice and biliousness. The attacks were said to have been precipitated by the eating of rich, greasy or fatty foods, or by constipation. In some cases, slight enlargement or tenderness of the liver, a history of having passed light-colored stools, as well as the appearance of jaundice, focused the attention on the liver as the offending organ. It is not difficult to understand why such patients are convinced that the liver is "out of order." It is also easy to see why patients who make similar complaints, but who do not have visible jaundice, likewise blame the liver for their disability. In the eyes of members of the medical profession, however, a conception of mild or functional disturbance of the liver has fallen into disrepute. However, Hurst, that able exponent of scientific medicine, has expressed the belief that such dysfunction exists at times. He has called attention to its occurrence in cases of acute alcoholism before the development of cirrhosis, in cases of hepatitis developing in the tropics, believed by him to be a form of amebic hepatitis, and in cases of cholecystitis in which symptoms persist after cholecystectomy. It does seem that the liver plays a part in producing the jaundice, but it is not always clear that the liver is the sole cause of the symptoms. In some of our cases, hepatic dysfunction, indicated by increased concentration of bilirubin, seemed to be merely the result of nervous influences.

The Significance of the Indirect van den Bergh Reaction—The indirect character of the van den Bergh reaction may be cited as evidence that hepatic dysfunction does not account for the increased concentration of bilirubin in these cases. According to the accepted teachings, the indirect van den Bergh reaction is found in the serum of normal patients and of those who have hemolytic disease, when hepatic injury takes place, the indirect reaction changes to the direct. We have seen, however, increased concentrations of bilirubin in serum giving an indirect van den Bergh reaction return to normal concentrations as healing took place in the liver that had been injured by chronic passive congestion and hyperthyroidism. In these cases the van den Bergh reaction may not be direct at any time in the course of the illness. In other cases we have seen the van den Bergh reaction change from direct to indirect, and the increased concentration of bilirubin subsequently return to normal during convalescence from hepatic parenchymal injury. A case of hepatitis caused by cinchophen in this series is a case in point. This patient had a severe attack of cinchophen hepatitis in December 1930 and January 1931. April 8, 1931, the reading for bilirubin was 2.2 mg per hundred cubic centimeters of serum, and the van den Bergh reaction was indirect. Retention of dye was graded 3. June 10, the reading for serum bilirubin was 1.8 mg per hundred cubic centimeters, and retention of dye was graded 1. August 18, the reading for serum bilirubin was 1.4 mg, and retention of dye was graded 0. It is significant that parallelism exists between the fall in concentration of bilirubin and the return of normal hepatic function, as indicated by the degree of retention of dye. In other cases the change of an indirect to a delayed-direct reaction shows that some process is at work which can change the reaction. A change in type from indirect

to delayed-direct or to direct reaction rarely takes place in constitutional jaundice and often is the case in jaundice due to organic disease. In short, an indirect van den Bergh reaction may occur in hepatic disease even when mild retardation of excretion of bilirubin occurs. In fact, we believe that a concentration of bilirubin, increased over normal, is good evidence of hepatic dysfunction, regardless of the type of van den Bergh reaction, provided hemolytic disease is not present, and, as we shall see, it may be good evidence of hepatic dysfunction in certain cases of hemolytic disease.

INCREASED CONCENTRATIONS OF SERUM BILIRUBIN IN CASES IN WHICH HEMOLYTIC DISEASE WAS PRESENT

Hepatic dysfunction in hemolytic disease has received scant attention. Excess of bilirubin in the blood serum is commonly considered to be the result of increased hemolysis. Rich,¹⁹ however, has expressed the opinion that conditions which are responsible for increased production of bile pigment are almost always associated with conditions that depress the excretory function of the liver. Well known but little emphasized pathologic changes are leukemic infiltrations in leukemia, hepatitis in malaria, severe infections and intoxication, cirrhosis in splenic anemia, and the fatty liver in pernicious anemia. The hepatic lesions in chronic hemolytic icterus are not often considered. Giffin²⁰ and Pemberton²¹ are among the authors who have given the matter some attention. Giffin²⁰ pointed out that hepatic injury develops in this disease. Pemberton²¹ in a recent study, reported that the operative data were suggestive of hepatic disease in fifty-five of 113 cases. Pathologic changes ranged from adhesion to the surrounding organs, enlargement, congestion and increased density to well marked cirrhosis with ascites. Such hepatic injury leads to changes in results of tests of hepatic function, indicating dysfunction. Retention of dye in varying degrees may occur in most types of hemolytic disease. This is especially true in cases of chronic hemolytic icterus, concerning which Giffin²² has the impression that retention of dye, graded 1 or 2, is usually present before cirrhosis develops. In all cases of this series in which a bromsulphalein test was done, retention of dye was graded 2. In the great majority of cases of chronic hemolytic icterus the direct van den Bergh test is absent. However, in an occasional case the reaction becomes delayed-direct or direct. Such reactions were not due to obstructive jaundice in Pemberton's series. They are reliable evidence of hepatic injury when disease of the bile ducts is not present. They should be so interpreted here.

The nature of the hepatic injury is questionable. Rich has expressed the belief that anoxemia due to the anemia injures the hepatic cells, producing central necrosis and a depression of excretory function. The anemia did not seem marked enough to explain the hepatic injury in all the cases of this series. However, we did not determine whether or not anoxemia was present. Rich has likewise pointed out that clinically and experimentally the reserve excretory power of the liver is so great that excessive formation of bilirubin alone rarely accounts for the jaundice, and that a

19 Rich A R The Pathogenesis of the Form of Jaundice Bull Johns Hopkins Hosp 47: 338 376 (Dec.) 1930
20 Giffin H Z Diseases of the Spleen, Oxford Med 4: 53 78 (Oct.) 1931
21 Pemberton J de J Results of Splenectomy in Splenic Anemia Hemolytic Jaundice and Hemorrhagic Purpura Ann Surg 94: 755 765 (Oct.) 1931
22 Giffin H Z Personal communication to the authors

depression of excretory hepatic function must likewise be present. The evidence for the presence of hepatic injury and dysfunction in these cases is so good that we agree that it, as well as excessive hemolysis, may be a cause of an increase in the concentration of bilirubin, in a majority of cases of hemolytic disease.

SUMMARY AND CONCLUSIONS

An analysis of 214 cases was made in which the concentration of the bilirubin was 20 mg per hundred cubic centimeters of serum or greater, and in which the van den Bergh reaction was indirect. In 138 cases, hemolytic disease was absent, in seventy-six cases it was present.

Increased concentrations of bilirubin in the cases in which hemolytic disease is absent means, in our opinion, hepatic dysfunction. The dysfunction has been found to be either constitutional or secondary to hepatic injury. In hemolytic disease, excessive hemolysis is the accepted explanation of the increased concentration of bilirubin. The almost universal presence of some degree of hepatic injury associated with hemolytic disease suggests, however, that hepatic injury and dysfunction may also be partly responsible for elevation of the concentration of bilirubin.

The indirect reaction supposedly rules out the presence of hepatic injury. Actually, however, bona fide hepatic disease has been demonstrated in many cases of this series. Moreover, we have witnessed the van den Bergh reaction change from direct to indirect during convalescence from the hepatic injury while increased concentration of bilirubin was still present. The concentration of bilirubin subsequently returned to normal. We have also seen increased concentrations of bilirubin in serum which never had given a direct van den Bergh reaction return to normal concentration as the process of reparation in the liver proceeded. For these reasons, it appears that an indirect reaction in serum containing bilirubin in amounts more than normal does not always mean hemolytic disease and in fact may definitely point to associated hepatic injury.

Some patients who complain of being bilious actually have slight hepatic dysfunction. The dysfunction may be constitutional or secondary to hepatic injury. It is not clear that all symptoms actually are due to the hepatic dysfunction, but it is probable in some instances that the hepatic dysfunction may be only one of the manifestations of a widespread sympathetic or toxic reaction.

The evidence strongly suggests that among patients who have constitutional dysfunction of the liver, at least of a degree great enough to produce jaundice, disease of the gallbladder is prone to develop. Of the cases studied, in 29 per cent cholecystic disease already has developed. Many of the remaining patients are young. The percentage may increase as these patients grow older.

The mechanism for secretion of bilirubin is a sensitive one. It is influenced by emotion and by disturbances of the sympathetic nervous system, as well as by very minor degrees of hepatic injury. An increased concentration of bilirubin may be the one laboratory evidence of dysfunction and it should be used more widely. It will in all probability disclose many unsuspected cases of mild functional and organic disturbances of the liver as well as a group of individuals of a constitutional type especially susceptible to disease of the gallbladder.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRs MANN AND BOLLMAN AND
DRs ROZENDAAL, CONFORT AND SNELL

DR I S RAYDIN, Philadelphia. In 1925 Dr Muller, Dr Elizabeth Glenn Raydin and I presented before this association some studies on the serum bilirubin in which the van den Bergh reaction for the quantitative determination was used. At that time the opinion was more or less general that the Meulengracht test was simpler and offered just as much information as did the method of van den Bergh. Of this we have never been convinced since a variety of pigments in foods may enter the blood stream and cause a rise in the Meulengracht figures, while the diazo reaction remains unaffected by them. A possible explanation for the production of jaundice following the prolonged intravenous administration of dextrose in large amounts may be found in the work of Forsgren, who showed that glycogen storage and bile formation do not take place at the same time. The patient with an obstruction of the common bile duct presents a serious surgical problem. Of major import is the tendency of these patients to bleed following operation. There is no marked change in the serum calcium or fibrinogen in these patients. Several years ago we reported that dextrose reduced the tendency to postoperative hemorrhage and this has now been adequately confirmed by other investigators. We have therefore given up the use of calcium in the preoperative preparation of jaundiced patients. Drs Mann and Bollman have called attention to the effect of the absence of bile in the intestinal tract. There can be no doubt that the daily restoration of from 150 to 400 cc of bile into the duodenum of the patient is of considerable value when the total bile is being diverted externally. The asthenia that so frequently is observed following common duct drainage is markedly reduced by this procedure. The edema that is seen in certain of these cases and is in part associated with a diminution of the plasma protein can be controlled by adequate diet and the addition of bile to the gastro-intestinal tract. However, certain of the instances of bile ascites are also in part due to a rise in the portal venous pressure incident to the hepatic ductal obstruction when sufficient collateral circulation does not take place, since ductal obstruction results in portal venous stasis. In the patient whose common duct has been obstructed for a considerable period and whose gallbladder is damaged, the bile salts, as measured by the Gregory-Pascoe reaction, disappear from the bile drainage from the liver immediately after the operation and may not again appear for some time. We believe that their reappearance indicates a return of the liver to normal activity.

DR A C IVY, Chicago. One point in the paper by Drs Mann and Bollman is in regard to the occurrence of peptic ulcer with obstruction of the common bile duct. My associates and I have been able to confirm that finding in our laboratory. If one produces, in a dog, a condition that leads to a chronic biliary tract infection, with a mild hepatitis, and an elevated icteric index, the incidence of ulcers in the various series amounts to from 40 to 80 per cent. We are now observing a series of animals in our laboratory in which we have performed a cholecystoduodenostomy with pyloric exclusion, and gastro-jejunostomy, and so far the incidence of jejunal ulcer is 60 per cent. As time goes on, I believe that the internist will find chronic biliary tract infection to be associated with ulcer of the duodenum more frequently than he has heretofore suspected. Another point that Drs Mann and Bollman pointed out is that the excessive administration of dextrose in an animal with a subnormal or even a normal functioning liver may cause jaundice. This is interesting in regard to the effect of carbohydrates on the formation of bile. Carbohydrates either have no effect on or depress the formation of bile. In other words, the act of storing of glycogen tends to suppress the elimination of bilirubin. This is evidence of a differential functional activity. Another instance is that, if one injects some bilirubin and bile salts intravenously at the same time, there results an increase in the formation of a light, limpid bile, but there is a retention of the injected bilirubin in the blood stream. The administration of bile to biliary fistula patients is a sound procedure, but according to experiments that we have performed on dogs the administration of bile to subjects with complete obstructive jaundice is deleterious. Whether or

not bile salts should be administered to increase the rate of bilirubin elimination after a common bile duct obstruction has been relieved I think is a matter that has yet to be demonstrated by actual experimental data. The "differential activity" of the liver is important not only from a therapeutic standpoint but also from a diagnostic standpoint. I should like to ask Dr. Mann whether there is any evidence indicating that the consumption of fluids in large quantities might be helpful in promoting the elimination of bile salts and bilirubin in the urine in jaundice cases. I ask that question because it is one that has been put to me frequently. Or does he think that the administration of large quantities of fluid to the jaundiced patient might be harmful in view of the fact that not only the kidney but also the liver is concerned in the maintenance of the water balance of the body, and that there is a tendency to dilution of the blood in the presence of hepatic damage?

DR. M. A. BLANKENHORN, Cleveland. There has been much disappointment in urobilinogen tests in the past because they were too complicated and too much was expected, but, when the simple qualitative test with Ehrlich's reagent is used as a method to demonstrate that bile ducts are draining the test has value. There is, however, a phase in certain liver disorders when no bile is drained into the intestine, in this phase the urobilinogen test is misleading. However, in just that same phase the galactose tolerance test has been found most useful in estimating liver damage. These two tests thus combined overcome each other's difficulties and limitations and should be better than any single test for liver disease and likewise better than employing all the tests in an effort to get an average.

DR. LEON SCHIFF, Cincinnati. I obtained a negative galactose test in twenty of twenty-one cases of obstructive jaundice due mostly to common duct stone and malignant neoplasm of the head of the pancreas. I have had cases of cirrhosis in which a positive test was obtained. In most of these cases the results were negative. A positive test may indicate some associated parenchymal damage to the liver at the time. Banks and Snell have noted the development of a positive test which subsequently disappeared in cases of cirrhosis. I had occasion to make an interesting observation in a case of catarrhal jaundice with a high galactose output. As the jaundice persisted the liver diminished in size, ascites appeared, and a subacute cirrhosis apparently developed. It was interesting to note a drop in the galactose output coincident with the development of the cirrhosis. I believe that the galactose test is of great help in the differential diagnosis of jaundice. If a negative test is obtained on one occasion, the test should be repeated a few days later, particularly if a discrepancy exists between the clinical and laboratory observations.

DR. V. C. ROWLAND, Cleveland. The paper of Drs. Rozen daal, Comfort and Snell establishes again the limitations of the indirect van den Bergh reaction as specific evidence of hemolytic jaundice. Practically the distribution of bile pigment in clinical jaundice may be determined more simply and satisfactorily by examining the serum (icteric index), the duodenal aspirate, and the feces and urine for bilirubin and urobilin. High bilirubin and bile salt content in serum and urine, with low content in duodenal aspirate and stool, indicates obstructive jaundice more directly than a "direct" van den Bergh. The reverse, a high pigment content in the duodenal aspirate and stool, with a dissociated, acholuric jaundice, indicates a hemolytic disease better than an indirect van den Bergh reaction. The conception of hepatic dysfunction either constitutional or toxic as a basis for latent or slight jaundice in the absence of hemolytic disease is logical and consistent with the physiology of other glandular organs. Toxic and infectious damage and probably also profound emotional disturbances will produce such effects on glandular cells. A bilirubin reading in excess of 15 or 2 mg. per hundred cubic centimeters of serum is abnormal and may be regarded as a sensitive liver function test, so far as the function of pigment excretion is concerned. Since the balance between the formation of bilirubin by the reticulo-endothelial cells and its excretion by the hepatic polygonal cells is disturbed in certain individuals by toxic and nervous factors, the appearance of slight jaundice after an acute digestive upset, however suggestive of gallbladder colic,

cannot be regarded as confirmatory of that diagnosis. This is often assumed when no pathologic condition can be demonstrated by cholecystography or at operation. Further data would be desirable on the probability of late gall tract disorders, especially gallstones, in individuals with a constitutional or acquired hyperbilirubinemia. As the authors indicate, it is difficult to distinguish cause from effect in these cases of latent jaundice, in relation either to organic disease or to associated functional disorders such as migraine. However, Mayo has reported a high percentage of bile pigment calculi in his series of hemolytic jaundice cases. Apparently pigment concentration leads to stone formation. In all probability, obesity and other factors conducive to ordinary cholelithiasis would tend to bring out the latent disorder. Twenty-nine per cent of the authors' patients, many of whom are still young, already show cholelithiasis. This suggests very definitely that there may be a preventive opportunity by personal hygiene and medical management in the chronic cases of latent jaundice. It will be helpful to look on all such cases as presenting potential or incipient liver disease.

DR. I. R. JANKELSON, Boston. There are two possible errors in administering galactose by mouth and estimating the amount secreted in the urine: first, incomplete absorption or delayed absorption from the intestinal tract; second, interfered with or delayed secretion to the urinary tract in the presence of pathologic changes in the tract. In order to obviate these two possible errors I have started an injection of galactose intravenously and determination of the remaining amount of galactose in the blood as a modification of the galactose test. My experience is limited but I find that in normal liver cases at the end of an hour there is no galactose to be found in the circulating blood. In liver disorders there is a variable amount of galactose left in the circulating venous blood at the end of an hour, and in some cases at the end of two hours. The amount of liver damage is judged by the quantity of galactose remaining in the blood at various intervals.

DR. FRANKLIN W. WHITE, Boston. The simplicity of the galactose and urobilinogen tests should be emphasized. They are both tests of the urine that can be easily done and repeated. The expense is very small except for the cost of the galactose. In the Harvard Teaching Service at the Boston City Hospital we have found that urobilinogen is almost invariably absent in the obstructive cases and that it is almost invariably increased in the cases that show much liver cell damage. The two tests back each other up and bridge over the gaps. The more acute the case, the more valuable these two tests become, in the more chronic cases, with opportunities for liver cell regeneration and compensation, the tests are less useful. There are bound to be exceptions. We found one case of subacute yellow atrophy in which both tests were negative. The urobilinogen and galactose tests have had a rather bad name because they have been used indiscriminately in all kinds of liver diseases. Their real value appears when they are used for a definite purpose in a limited group of cases. The urobilinogen tests should be repeated from day to day in order to get the most out of them. There is considerable variation from day to day and from time to time on the same day. I believe these two tests give real diagnostic help and should be used more.

DR. HARRY SHAY, Philadelphia. It may be of interest to point out a few additional facts regarding galactose metabolism in order to convince the most hardened skeptic of the value of the galactose tolerance test in jaundice. To use urinary excretion as a measure of galactose utilization it is obvious that there must be no renal threshold for galactose. That fact was adequately demonstrated some time ago by Folm and Berglund, and has been more recently by Harding and Van Nostrand. I bring this up because of the recent tendency, as indicated by Dr. Jankelson's discussion, to utilize the blood galactose curve in preference to the urinary excretion. Since it is reasonably certain that there is no renal threshold for galactose, I cannot see the necessity of complicating a simple laboratory procedure and converting it to one almost prohibitive for routine clinical use. Further, the determination of the blood sugar would be of no value unless the galactose level was separately determined since the metabolic factors

are not the same for galactose and dextrose. The other question of great importance is whether galactose after it passes the liver is utilized by any other tissue of the body. In a study, which my associates and I reported in 1931 it was concluded that galactose after it passed the liver was practically not utilizable by any other tissue. This has received further support in a recent work of Arcq in the *Belgian Review of Medical Sciences* in which in dogs he studied liver and muscle glycogen following intravenous injection and after oral administration of galactose. He found that in both instances the liver glycogen was definitely increased while muscle glycogen was at no time enhanced. Laquer and Meyer studying lactic acid formation by muscle suspensions found that fructose and dextrose were converted into lactic acid quantitatively while galactose remained unchanged. If the tissues other than the liver cannot utilize galactose as such, if they cannot convert galactose into glycogen or lactic acid and since there is no kidney threshold for galactose it becomes obvious that galactose is a sugar that is ideally suited for testing the carbohydrate function of the liver. This opinion has been confirmed by Frank C Mann in his studies on dogs.

DR. NORMAN W. ELTON, Reading, Pa. Drs. Rozendaal, Comfort and Snell used the name of Lepehne in connection with the ring test modification of the van den Bergh reaction. This modification is extremely important and is of great value in the detection of positive reactions that are entirely missed by the ordinary technic. I wish to suggest that the name of Lepehne be deleted from the terminology of the ring test, for in his original and only communication in which the method is mentioned he states that in his experience it afforded no advantage over the original technic in dealing with serums of low bilirubin content that it was not essential with serums of high bilirubin content and that he had discontinued its use. The true value of the ring test was not appreciated by Lepehne, and this modification should be known simply as the ring test as advocated by Magath.

DR. FRANK SMITHIES, Chicago. Regarding the paper of Drs. Mann and Bollman I think that it has been proved that when the common operative treatment for peptic ulcer consisted in nothing more than a gastrojejunostomy the greatest number of gastrojejunal ulcers was experienced largely because of the reflux of bile and pancreatic juice over the anastomosis. Since plastic or local operations on the ulcers have been performed gastrojejunal ulcers have been less frequent. In the paper of Drs. Rozendaal, Comfort and Snell ancient wisdom is emphasized, namely, people for two or three centuries have considered themselves bilious when the liver function was inefficient. Recent special tests have proved the correctness of their views. I wish to ask the following questions. In this group of patients were any observations made with regard to gastric secretory function following full meals, with or without stimuli? It appears to me that there is much significance in the relationships between velocity and quantity of the gastric and pancreatic secretion and the biliary tract secretion. Have any continuous observations been made on the same patients over a long period of time in order to observe what happens to note what may be the variation in such individuals in relationship to health or to dysfunction? With regard to urobilinogen and urobilin in pernicious anemia in 103 cases of pernicious anemia I found that at some time ninety-one of the patients showed such evidences of hemolysis and that 43 per cent showed it constantly. There is a response varying with the clinical remissions and recrudescences of the disorder in the qualitative and even the quantitative evidences of hemolysis, clinical or from the laboratory side. Twenty-two years ago I reported a group of cases which I called cachexias of malnutrition and in that group I fed the patients amino acids and bile at first recovered from human beings and then later the amino acids artificially produced. This procedure was followed by rather striking clinical improvement. Practically all these patients were what were known as chronic bilious or liver cases.

DR. FRANK S. PERKIN, Detroit. I should like to substantiate the remarks of Drs. Rozendaal, Comfort and Snell in regard to a wider use of the serum bilirubin test and its clinical applications. Some eight years ago I became particularly

interested in the fact that my normals were constant and that the range of normal was exceedingly small. An occasional individual in any series of normals would appear with a comparatively high reading. These were sometimes unexplainable. In other cases there were suggestive clues to previous liver damage, however these cases were rare. Consequently, it was felt that rises above the normal level were exceedingly significant. Various clinical applications were suggested. Apparently the test has fallen into disuse in many centers probably because too wide inferences were drawn and too much information was sought. It has definite clinical applications which are very valuable. For instance, in foretelling toxic damage to the liver in the use of the various drugs particularly of arsenic in advance of any clinical evidence. Its routine use in cases in which large amounts of arsenic are being given is very valuable. Its use is also valuable when it is felt that cinchophen should be used. Here one can tell early liver damage. Rises in slight degrees from the normal have been seen in anemias and it afforded a method of differentiation between a primary and a secondary anemia. Its use has likewise been suggested in lead poisoning.

DR. F. C. MANN, Rochester, Minn. To answer the questions we do administer fluids, but I can't answer the question whether or not they increase the elimination of bile salts.

DR. DAVID H. ROSENBERG, Chicago. Dr. Shay was the first in this country to call attention to the value of the galactose test in the diagnosis of painless jaundice. The appearance of positive galactose tests in cirrhosis seems to depend on the degree of balance that obtains between the amount of regeneration and the amount of destruction in the liver parenchyma. Dr. Rowland suggested passing a duodenal tube in order to note the presence of bile in the duodenum. It is much simpler and easier to perform a urobilinogen test on the urine for the discomfort of intubation of an anxious excitable patient is thus avoided and a fluoroscopic examination, to determine whether or not the tube has entered the duodenum becomes unnecessary. The use of the duodenal tube might well be restricted to those cases in which urobilinogen is constantly absent. The blood galactose test discussed by Dr. Jankelson is technically much more complex than either the urinary galactose or the urobilinogen test. It cannot be performed in the office and although perhaps more accurate than the urinary galactose test as an index of liver function seems to possess no practical advantage over the latter in differentiating these two types of jaundice.

DR. M. W. COMFORT, Rochester, Minn. Mild hepatic dysfunction has been recognized for many years. Many patients continue to assert that they are 'bilious' in spite of the current disrepute in which this term is held by members of the medical profession. The quantitative estimation of the serum bilirubin demonstrates that a mild hepatic dysfunction at times may actually exist in such cases. I am glad to know that Dr. Rowland has likewise encountered such patients. Dr. Smithies' questions are pertinent. Observations on the relationship between velocity and quantity of gastric pancreatic and biliary secretions should be but so far as I am aware have not yet been made. Gilbert and his associates thought that patients who had bilirubin present in the serum in a quantity above normal were susceptible to many diseases. So far we have no evidence that they are especially prone to have diseases other than cholelithiasis and cholecystitis. Both the congenital and acquired types are compatible with health.

Discovery of Reflex Action.—In 1784 a professor of anatomy in Moravia wrote a very short account of the nervous system and in attempting to explain how it worked said that physical and mental stimuli acting upon ascending nerves are conveyed directly through the ganglia and network of nerve threads to be reflected thence by means of descending nerves with a result in action. This wonderful discovery in thought of reflex action arrived at so far as we know without definite experiment is the foundation of most of what we now know concerning the way in which the nervous system works.—Collier James. The Harveian Oration on 'Inventions and the Outlook in Neurology,' *Brit M J* 2 707 (Oct 20) 1934.

NONUNION IN FRACTURE OF THE SHAFT OF THE HUMERUS

REPORT OF FIVE CASES

JAMES WARREN SEVER, M.D.
BOSTON

It is common knowledge that delayed union and nonunion occur more often in the shaft of the humerus, after fracture, than in any other long bone. This statement is, I believe, true only of fractures occurring in the middle third of the shaft, and transverse in direction. Spiral fractures that involve this region may be slow to unite, but so far I have known of no nonunions, or pseudo-arthroses. Of the following cases, three occurred in my practice and two are, fortunately for me the misfortunes of others.

Case 1 is a report of historical interest in which a fracture of the humerus, with two subsequent refractures, went on to nonunion and complete absorption of the shaft.

My interest in this subject led me to the Warren Museum at the Harvard Medical School where I found the specimen (fig 1) as well as a picture of the patient before his death (fig 2).

The history of the case was reported¹ first briefly in July 1838 and is as follows:

In the autumn of 1819, Mr. Brown, a worthy and industrious provision dealer in Derne St., now 36 years of age, in his 18th year had the misfortune to have the right humerus fractured nearly in the middle. He was holding under disadvantages, an enraged cow by the horns, and in some unexpected movement of the unruly animal, both fell, and the bone of his right arm was broken by the fall. Under the care of a judicious surgeon a reunion was favorably going on, but before the curative process had been completed Mr. Brown accidentally had another fall, and broke open the old fracture again. A short time later he slipped on the floor and suffered a third refracture in the same place. The last accident was not more than two months after the first. Notwithstanding a most vigilant and untiring devotion to the injured limb, the divided extremities would not adhere, and to the surprise of the medical attendant, the shaft of each part of the divided bone began to diminish in size, and shorten in length. By a gradual action of the absorbents the whole of the arm-bone, between the shoulder

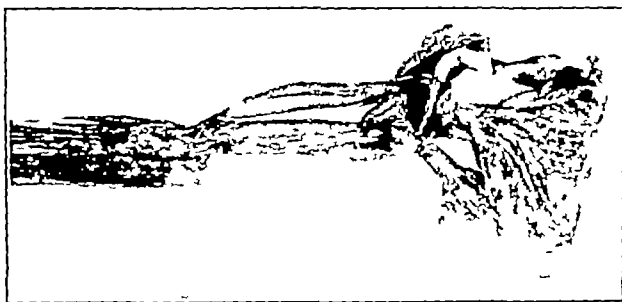


Fig 1—Arm of Mr. Brown (specimen in Warren Museum)

and elbow was at length completely removed, and that too without any open ulcer so not a single vestige was left.

In spite of his having no bone in the upper arm, it was observed that this man could write, hoe, rake, cut wood and carry a pail of water. One of his amusements seems to have been to twist his arm once and a half around in one direction, then taking up a pail of water to let it untwist, and twist once

and a half around in the other direction. He could not flex the forearm on the upper arm at will, nor could he extend the forearm when flexed.

After his death in the Boston Lunatic Hospital, in February 1871 the arm was obtained and prepared by Dr. Thomas Dwight² of the Harvard Medical School, where it now is (figs 1 and 2).

This case fortunately represents a unique condition, which, so far as I can find, cannot be duplicated. This



Fig 2—Mr. Brown (from old tintype showing sides reversed)

complete absorption must have been due to several factors. First, nonunion due to frequent fracture and the loss of the "stimulus of incompleteness" as spoken of by Hunter. Second, marked atrophy of disuse. Third, probably vital interference with endosteal as well as with periosteal blood supply. Fourth, the fact that the man became insane, from what cause could not be determined, this may have been a factor, especially if his condition was syphilitic in origin, though I never heard of syphilis affecting bone to the extent that it caused complete absorption. Pathologically, the case remains a mystery.

CASE 2—C. L., a woman, aged 35, first broke the left humerus at the age of 17 years. This was a compound fracture. What happened after that is rather vague but so far as I could find out the fracture was reduced, nonunion followed, and then a plate was applied. This became septic and had to be removed. Later a bone graft was applied a graft from the tibia being used. This failed and was followed by the insertion of silver wire which also failed. For the last ten years she has been working as a waitress and states that she can use this arm almost as well as the other.

Examination of the arm shows nonunion of the humerus, with about 2 inches (5 cm.) shortening. She can flex and extend the elbow, she can raise the arm at the shoulder but not to its full extent and only with the upper fragment of

Read before the Section on Orthopedic Surgery at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

¹ Boston M. & S. J. 18:368 (July) 1838.

² Dwight, Thomas. Absorption of the Humerus After Fracture. Boston M. & S. J. 10:245 (Oct. 10) 1872.

the humerus horizontal. At the site of nonunion there is a right angle deformity, with attempted abduction. Roentgenograms of the arm show considerable bone atrophy, marked separation of the bone ends, and various pieces of what I presume are silver wire. She is unwilling to have any further surgical efforts made in an attempt to give her a more useful arm without a written guaranty for a satisfactory result (figs 3, 4 and 5).

Probably sepsis was the cause of the first failure. The other operations proved futile. Now, with an arm that is useful but far from perfect, she would not be taking an undue chance to have a massive onlay graft applied. The chances for a favorable result are good.

CASE 3—J C W, a woman, aged 59, as the result of an automobile accident, Nov. 18, 1930, suffered a transverse fracture of the middle of the shaft of the right humerus and a comminuted fracture of the head of the left tibia into the knee joint. The fragments of the humerus, which were overriding, were readjusted under gas anesthesia and splinted in the usual

way. Callus at the site of fracture of the humerus failed to form and the patient was operated on, March 19, 1931. Fibrous tissue was found holding the ends of the bone, but no callus. A sliding graft was employed following refreshing and squaring of the bone ends. An arm and body cast was applied. The wound healed by first intention but again bone failed to form and another operation was performed, October 16. At this time the ends of the bone were found tapered off and lying in a thick fibrous capsule filled with a material that resembled synovial fluid. The graft on the lower fragment had apparently united solidly but had become separated from the upper fragment. At this time a step operation was done, with considerable overlapping of the fragments which were fastened together by chromic catgut passed through drill holes. The whole fractured area was then wrapped with a large osteoperiosteal graft from the tibia (fig 6) and reinforced by another large osteoperiosteal graft, laid on top and held in place by circular ligatures. An arm and



Fig 3 (case 2)—Appearance of patient

body cast was applied. This cast was removed December 4 and a splint applied. At this time, although the roentgenogram showed some callus, there was no union clinically. In spite of the long splinting, she again went on to complete nonunion and when last seen in April 1934, showed considerable disability of the arm. She could not get the hand back of her head and had considerable difficulty in getting her right hand on to the left shoulder. The arm was shorter and abduction was impossible. Roentgenograms at this time showed the condition of the bone (figs 7, 8, 9 and 10). She has refused further attempts to correct the condition.

I believed that this woman failed to get a satisfactory result from either operation for the following reasons. At the first operation a sliding graft was used. This may not have been from good viable bone and the fixation of the graft and fracture may not have been rigid enough. Hence the possibility of failure. At the

second operation, good bone was used. The step was cut deeply but was held only by catgut. In spite of good approximation and reinforcement by two large osteoperiosteal grafts, nonunion followed. This may have been due to poor fixation or to a cause of nonunion that mocks all theories, as some one has said.

CASE 4—G W, a man, aged 50, was caught by a pulley belt and twisted around a shafting several times and then dropped to the floor, March 27, 1931. He suffered a Potts'

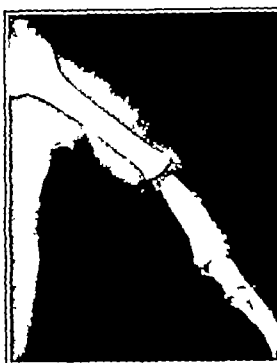


Fig 4 (case 2)—Condition of bone, Jan 30 1934 arm extended



Fig 5 (case 2)—Condition of bone Jan 30 1934 arm flexed

fracture of the right ankle, a comminuted fracture of the left knee joint, six fractured ribs, and a comminuted fracture of the middle of the right humerus. All this was followed by pneumonia. When I first saw him June 4, there was no union

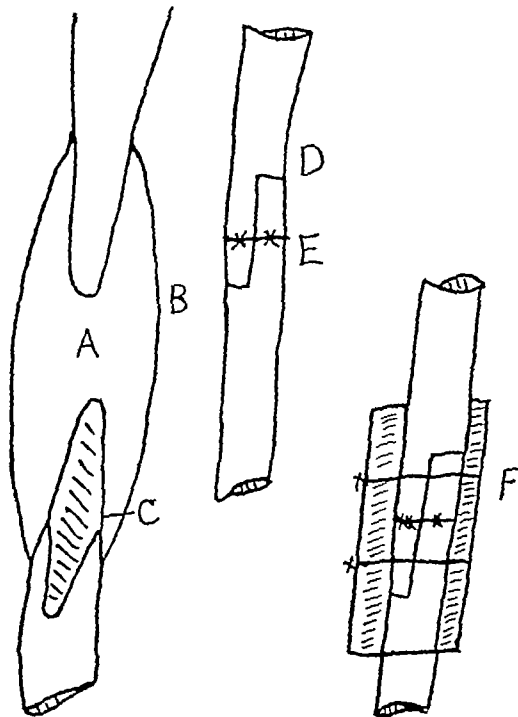


Fig 6 (case 3)—Details of operation Oct 16 1931. A sac with fluid. B thick fibrous tissue. C old graft. D lapped and counter sunk. E two strands No 3 chromic drill hole. F heavy osteoperiosteal graft wrapped about from right tibia and tied in place.

of the humerus or of the right ankle. The humerus was operated on June 19. Fibrous union was found which was cleaned out, and a step approximation of the fragments was made. This step was held by four heavy kangaroo sutures passed through drill holes. An arm and body cast was applied for fixation which he wore until about the middle of August 1931. On September 16 there was no evidence of union.

He was reoperated on, November 10. The ends of the bone were found to be surrounded by a large amount of fibrous tissue, which was removed, and the ends were refreshed. New steps were made and held by heavy chromic catgut passed through two drill holes. A beef-bone screw was also inserted for better fixation.



Fig. 7 (case 3)—Appearance of arm in April 1934

The whole area was surrounded by a heavy osteoperiosteal graft from the tibia. The fixation was good and the ends of the bone were in good position. An arm and body spica was applied, which he wore until Jan. 31, 1932, at which time the arm seemed quite solid.

April 16, he still had solid union of the arm but on November 7 roentgenograms again showed nonunion which was present when last seen, Jan. 8, 1934. The arm at that time was 2 inches short (figs. 11, 12 and 13).

Here is a person who suffered multiple fractures. In the literature I can find nothing but general statements in re-

gard to the effect of trauma as a causative factor in nonunion. Just what trauma per se does to the reparative ability of the periosteum or endosteum is apparently



Fig. 8 (case 3)—Condition of bone, Nov. 18, 1930

not known. Multiple fractures must seriously deplete or impair the ability of the bodily chemistry to produce enough new bone at various places when there is such an extra demand.

As a result of the fracture of the ankle, there was nonunion of the internal malleolus, which later had to be pegged. I cannot account for the breaking up or

gradual dissolution of the union following the second step of operation.

CASE 5—A H., a man, aged 20, fell from a ladder, Sept. 28, 1932, and fractured the right humerus at about the middle. The arm was set and a splint applied, which he wore for three months, without any evidence of union. During this period he had recovered from a musculospiral paralysis. I saw him first May 16, 1933, and advised a bone graft, which was done, June 6. A large, massive graft was removed from the tibia, and countersunk into the humerus, after the ends had been freshened. The graft was held in place by four heavy chromic gut sutures, passed through drill holes. A body and arm cast was then applied, which he wore until July 29. On this date there seemed to be good union clinically and roentgenologically. When seen again November 22 nonunion had recurred (figs. 14 and 15).

This boy did well and had apparently good union until I lost sight of him during the summer. He was in the hands, then, of a vigorous physical therapist, and probably the treatment, combined with the soft callus, resulted in fracture and absorption of the graft and failure of union. I believe that if longer fixation had been carried out and physical therapy had been neglected he would have gone on to firm and permanent union.

Now what do these cases prove? First, I believe that one should report failures as well as successes and, second, I believe that there must be some intrinsic cause for nonunion in fractures of the humerus that is not wholly understood.

Trauma from the accident itself, may so destroy the power of bone repair that union is delayed or prevented. Interference with the blood supply through the tearing of the nutrient artery may be another factor. Lack of adequate fixation, which is of the greatest importance, is another probable cause, and in the operative repair, primary internal as well as secondary external fixation is essential for a long period. However, it is practically impossible to immobilize the humerus completely in any type of external apparatus. In spite of an adequate consideration of all these factors, recurrent nonunion may, and does, occur in a certain percentage of cases.

Lack of callus formation and interposition of tissue are often factors that must be considered. The second cause is of course removed at operation, but lack of callus formation cannot be foretold. In none of these cases was there any endocrine disturbance or any abnormality in the blood chemistry. The fractures in these cases were located at about the entrance of the main nutrient artery and so may have cut off this supply.



Fig. 9 (case 3)—Condition of bone, Dec. 20, 1933

However as Kolodny³ has pointed out if the periosteal blood supply is adequate, normal union in fractures should take place, regardless of the endosteal blood supply. In these cases the endosteal supply may have been seriously impaired but the periosteal supply seemed to be ample, except as impaired by operative procedure.

Haas⁴ believes that the chief source of osteogenic cells for the repair of fractures is from the osteoblasts of the periosteum and the endosteum. The periosteum plays a relatively more active part than the endosteum. Whether direct and severe trauma, such as is suffered in modern automobile accidents, causes loss of vitality in either or both of these structures, is uncertain but may be a factor in delayed union or nonunion. In my experience with a large number of fractures of all kinds from automobile accidents delayed union in the long bones is not uncommon and more frequent than in fractures occurring without such direct trauma.

Mock⁵ states that the consensus of all investigators is that the periosteum contains the chief osteogenic

ability, and that repair can be obtained more rapidly by the use of an osteoperiosteal graft than by an autogenous bone graft alone. Except in one instance, namely, in case 4, there is no evidence of any periosteal activity in the reparative process that did occur.

On the other hand Moore and Corbett⁶ believe that periosteum is not an essential element in the healing of bone and Galle and Robertson⁷ also believe that the periosteum as such is not osteogenic and should not be depended on under any circumstances to assist

in the production of new bone. They believe, however that from a clinical standpoint its presence is of importance through its control as a limiting membrane of the circulation in a living bone.

I like to agree with the Browns⁸ that the periosteum is merely a limiting membrane and a protection to a graft while circulation is being established from the living bone, and that it acts also as a protection to the process of regeneration and union between the graft and

the parent bone. This is also Macewen's⁹ statement, who believes that periosteum is only a limiting membrane and has no osteogenic function.

Groves¹⁰ states that the periosteum is the product and not the mother of bone. All osteogenic properties of the periosteum, whether in repair of fractures or in grafting, are due to the presence of the outer layer of the bone cells adherent to its deep surface. Living bone is the chief source and origin of callus, which grows mainly from its outer or periosteal surface and, to a less extent, from its deep or medullary surface and its cut ends.

I believe that all the discussions and differences of opinion in regard to the value of the periosteum are due to the fact that some surgeons consider

the periosteum, with its layer of cortical, osteogenic cells as an entity and others speak of the periosteum without this layer. With these cortical cells it is an excellent bone producing material, without them it is merely a limiting membrane. Surgeons should decide when talking of the periosteum, as used in bone surgery, to standardize on "periosteum with."

After my experience in these cases, I have come to believe that the only operation probably worth doing is



Fig 10 (case 3) —Condition of bone Dec. 20 1933



Fig 11 (case 4) —Appearance of patient

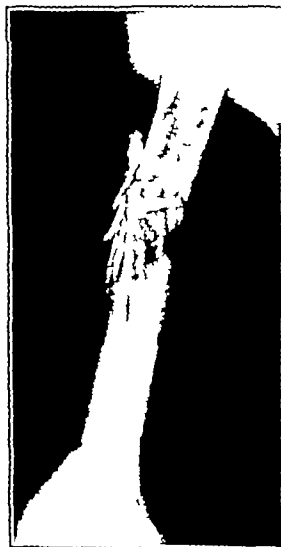


Fig 12 (case 4) —Condition of bone Feb 3 1932



Fig 13 (case 4) —Condition of bone Feb 5 1934

that advocated, and so well carried out, by Campbell¹¹ and Henderson,¹² namely, the massive or onlay graft, followed by a sufficiently long period of fixation to insure union and to carry one by the period of absorption and possible fracture of the graft. Even this operative procedure is, however, not infallible.

321 Dartmouth Street

³ Kolodny Anatole. The Periosteal Blood Supply and Healing of Fractures. *J Bone & Joint Surg* 5: 698 (Oct.) 1923.

⁴ Haas S. L. The Importance of the Periosteum and the Endosteum on the Repair of Transplanted Bone. *Arch Surg* 8: 535 (March) 1924.

⁵ Mock, H. E. Periosteal Transplants in the Repair of Delayed Union Ununited Fractures and Loss of Bone Substance. *Surg Gynec & Obst* 40: 641 (May) 1928.

⁶ Moore J. C. and Corbett J. F. Function of Periosteum. *Surg Gynec & Obst* 10: 5 (July) 1914.

⁷ Galle W. E. and Robertson D. E. The Repair of Bone. *Brit J Surg* 21 (Oct.) 1919.

⁸ Brown William L. and Brown Charles P. Further Observations on the Fate of Free Bone Transplants. *J. A. M. A.* 65: 1007 (Sept 18) 1915.

⁹ Macewen William. The Growth of Bone. 1912.

¹⁰ Groves E. W. H. Experimental Study of the Operative Treatment of Fractures. *Brit J Surg* 1: 438 1914.

¹¹ Campbell Willis. The Onlay Graft in the Treatment of Ununited Fractures of the Long Bones. *South M J* 20: 107 (Feb.) 1927.

¹² Henderson M. S. Autogenous Bone Transplantation. *J. A. M. A.* 77: 165 (July 16) 1921.

ABSTRACT OF DISCUSSION

DR. W. BARNETT OWEN, Louisville, Ky. Last year before this section I reported nine cases of nonunion of the shaft of the humerus. Eight of the nine cases followed primary operation. One case was treated conservatively. None of the cases reported had been considered under a two year period. I have



Fig. 14 (case 5)—Appearance of patient

three more cases that come under that heading that had not reached two years. I say two years because I have had some cases that appeared as if union would occur six or eight or ten months later. I find that absorption occurs and there is failure to get union. In three of the cases in which I operated, it was necessary to reoperate either because the operation was not properly done or because the vitality of the humerus was such that it did not receive the transplanted bone. In all these instances, the massive onlay graft has been used. Of twelve cases, one presented nonunion and almost complete absorption of the humerus. The other eleven cases so far have remained united. I feel that the early operation, which means trauma of a greater or lesser degree depending on the operator and the type of operation, is a factor in nonunion. I believe that primary

operation for fracture of the humerus should not be performed except for some special reason. I think the first failure, then, is due to lack of reduction and secondly to lack of adequate immobilization for a sufficient length of time. It has been my practice to apply a plaster-of-paris spica of the shoulder, the arm abducted from 90 to 120 degrees, with very little padding being used. It is difficult to immobilize the humerus for a long period. In some cases it has not been satisfactory or sufficient. Perhaps that was a factor in some of the failures. I feel that if the fracture is reduced there will be greater success. I have never seen a case of nonunion of the humerus in a young child. I have never had a failure with a case I have treated for fracture of the humerus primarily. Of all methods, the one Dr. Sever mentioned, that of Campbell and Henderson, is probably the best.

DR. WILLIAM SNEED, New York. I have one hospital in which for the last four years there have been sixty-two fractures of the humerus. Of those there are only fourteen that come under the heading of oblique and transverse. Of the transverse fractures two failed to unite, it was not possible to follow three, and two had delayed union. It is notable that a large number of the transverse fractures failed to unite or had delayed union. The average time of firm union is about six months. I wish to offer a few suggestions that I have found helpful in nonunion and delayed union. I will take, for



Fig. 15 (case 5)—Condition of bone Nov. 21, 1933

example, the complicated, compound fractures. In one notable case the lower third of the humerus was fractured, the biceps muscle was severed and both ends of the bone protruded through into the dirt. I saw this case a month after it was reduced. Three months after there was no callus formation whatever. I offer this for what it is worth. Physical therapy was begun, a window was cut out and diathermy was applied. Calcium carbonate was injected in between the ends of the bone. Within six months there was firm union. No union whatever had resulted before. I have six cases of nonunion that I have treated by this method. By taking a large needle, forcing it in between the bones, putting in the plug and pushing out the little callus, one gets in the needle injecting calcium carbonate. This causes irritation and increases blood supply. Even in the cases in which firm bony union is not obtained, there is enough dense, fibrous union, which acts very well indeed so far as function is concerned.

JEJUNAL ULCER

ROSCOE R. GRAHAM, M.B.

AND

F. I. LEWIS, M.B.

TORONTO, ONT.

A jejunal ulcer is tragic evidence of faulty judgment in the treatment of a patient suffering from gastro-duodenal ulceration.

Our remarks on jejunal ulcer are based on forty-three cases. We have ourselves operated on thirty-three patients. Included in this group were four instances of gastrojejunal fistula. We have studied four cases and confirmed the results roentgenographically but as yet have not operated in these cases. We have had an opportunity to study six cases treated by our associates. Five were proved by operation, and one was shown by roentgen studies. Twelve cases occurred following gastro-enterostomy that was performed by us. We have established a follow-up clinic for patients on whom we have operated for gastric or duodenal ulcer. A visit to this clinic includes a physical examination, a complete blood analysis, a fractional gastric analysis and roentgen studies. The latter is a joint examination by the clinician and the radiologist. In this series a true stomal ulcer was present in only one case, in that instance a silk suture was found at the base of the ulcer. In all the others the ulceration was truly jejunal. The ulcerative process would extend up to but not transgress the gastric mucous membrane. The ulcer, with two exceptions, was in the efferent loop of the jejunum.

We believe that the most constant etiologic factor in the formation of a jejunal ulcer is a gastro-enterostomy performed on young patients who for a relatively short time have suffered from an active non-stenosing duodenal ulcer, accompanied by a high percentage of free hydrochloric acid in the gastric contents. We have noted many reports in which jejunal ulcers followed gastro-enterostomy, in which the postoperative gastric analysis showed the absence of free hydrochloric acid. We believe that, unless one controls the position of the duodenal tube by radiographic confirmation of its presence in the stomach and not in the jejunum, the results may be very inaccurate. We have done routine analyses without determining the presence of the tube in the stomach and have found no free hydro

Read before the Section on Surgery, General and Abdominal at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

chloric acid, but, on repeating this examination, having proved by roentgen examination that the tube was in the stomach and not in the jejunum, we have found free hydrochloric acid present in varying amounts in every patient who presented a stomal ulcer. Further, the accepted rationale of the efficacy of a gastro-enterostomy is not wholly tenable. In other words, while following this operation—theoretically the gastric acidity is decreased by the admixture of bile and pancreatic juice with the gastric contents—we have repeatedly failed to show the presence of bile in the gastric contents when we were certain that the tube was in the stomach and not in the duodenum.

Attempts to occlude the pylorus coincident with a gastro-enterostomy we believe are illogical and productive of a higher incidence of jejunal ulceration than accompanies gastro-enterostomy alone. The brilliant results of gastro-enterostomy for scar stenosis following the healing of a duodenal ulcer are due to factors incidental to the delayed emptying of the stomach: first, the atrophy of the gastric mucous membrane, second, the absence of hypermotility and hypersecretion of the stomach, third, a low incidence of free hydrochloric acid. Artificial stenosis of the pylorus does not in any way produce these secondary factors and further prevents any possible regurgitation of duodenal contents through the pylorus and, instead of an intermittent discharge of acid gastric contents into the jejunum, pours into this portion of the gastro-intestinal tract a continuous content of high acidity. That the jejunum is unable to tolerate continuously such a physiologic state has been proved irrefutably on experimental animals. We have experienced this analogy of artificial



Fig 1 (Mrs G.)—Gastro-enterostomy five years before. Jejunal ulcer present. Roentgen examination of a patient who harbored a jejunal ulcer but the ulcer was not visualized with ordinary manipulation.

stenosis in five cases of transection of the stomach after the method of Devine, with the development of five jejunal ulcers in a relatively short time. Further, we believe that a reconstruction of the continuity of the tract by means of an anticolic anastomosis to which is added an entero-enterostomy predisposes to the development of jejunal ulcer.

A jejunal ulcer may present no clinical evidence of its presence until the patient suffers a serious hemor-

rhage or perforation or develops a gastrocolic fistula. When symptoms are present, the pain is different from the indigestion that accompanied the original ulcer. It is of a bizarre, inconstant character. It may radiate down to the pubis, to the loin, to the groin or to the testis. In fact, the clinical diagnosis in one of our cases was ureteral colic, which was excluded only after complete investigation of the urinary tract. Tenderness, when present, is usually above and to the left of the umbilicus, and often the patient complains bitterly of

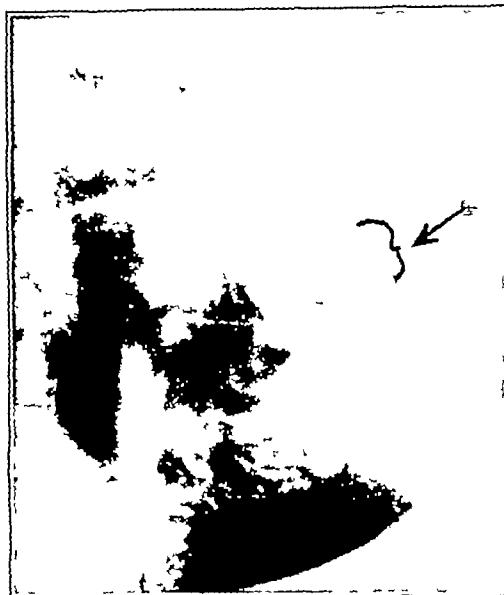


Fig 2 (Mrs G.)—With a pressure bag showing the visualization of the ulcer in the jejunum about three-fourths inch distal to the anastomosis.

pain in the back. The indigestion, while differing from the original disability, is in the early stages characterized by remissions, and the patient experiences relief from food or soda, but after a variable period of discomfort the symptoms become continuous and are relieved by nothing except bed rest. Thus bizarre symptoms of an indigestion in a patient who has had a gastro-enterostomy, which are relieved only by bed rest and which recur when normal activity is assumed, are highly suggestive of the presence of a jejunal ulcer. The symptoms of which these patients complain are so real and definite that the differentiation between an organic lesion and a functional gastric disturbance is not difficult. Thus, when a patient who has had a gastric operation returns with this syndrome, no effort should be spared in attempting to prove the presence or absence of an organic lesion. This is not the usual procedure. The patients are usually granted but a hasty tolerance of their recital of woe and advised to disregard the gastric distress. Unfortunately in many instances, even after the most painstaking and exhaustive investigation, it is impossible to demonstrate positively an organic lesion. This inability to demonstrate the presence of a jejunal ulcer does not exclude its presence. In the diagnosis of jejunal ulcers it is most important to realize that these ulcers may occur, as in one case proved by operation, within a month of the former operation. The longest period of good health that any patient enjoyed following a gastro-enterostomy before a proved jejunal ulcer developed was seven years.

The presence of gross or microscopic blood in the stomach contents has been an almost invariable accompaniment of jejunal ulceration in our experience. The absence of blood in the gastric contents makes the diagnosis doubtful. The presence of free hydrochloric acid in the gastric contents was demonstrated in all our cases. The presence of a tender mass at the site of the stoma, in conjunction with the foregoing symptomatology, may be regarded as pathognomonic of jejunal ulceration. There is little more than the foregoing to

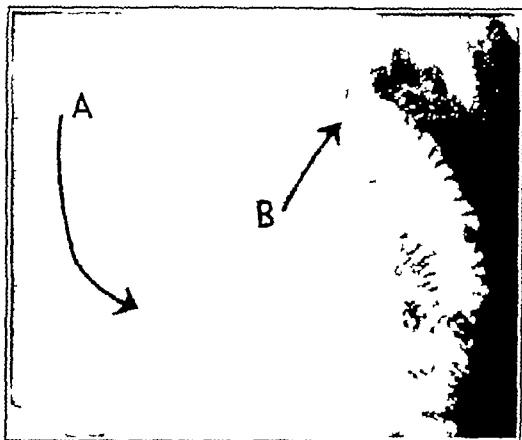


Fig. 3 (Mr. R.)—Gastro-enterostomy twenty years before indigestion for the last nineteen years. Association of a duodenal ileus (A) with a jejunal ulcer (B) the ileus due to obstruction of the afferent jejunal loop due to edema and scar.

aid one in establishing the diagnosis apart from roentgen study.

It cannot be too strongly emphasized that the roentgen examination of patients suspected of harboring a jejunal ulcer should be a combination investigation by the clinician and the radiologist. We have been impressed with the increasing instances of our ability to demonstrate the presence of jejunal ulcers when the fluoroscopic examination of the patient is undertaken by the radiologist and the clinician as a team.

In going over the histories of our early cases of jejunal ulcers proved at operation there was constantly reiterated in the operative note the fact that the distal limb of the jejunum was dilated. In our later combination studies we have found this phenomenon to be almost constantly present in patients suffering from jejunal ulceration and indeed in some instances it has been the only positive roentgen finding. Our positive roentgen observations of jejunal ulcer are based on the presence of this dilated distal limb of the jejunum, plus a crater that can be demonstrated and filled with barium.

We have been impressed with the necessity of manipulation under the fluoroscope, in order to displace the overlying greater curvature of the stomach so as to make possible the visualization of the stoma (figs. 1 and 2). The use of the pressure bag with the patient lying on the abdomen has been of real value in demonstrating these ulcers. Tenderness over the stoma, we believe, is of value but must not be regarded as absolute evidence of ulcer, because we have elicited tenderness on accurate pressure over the stoma in patients who did not have jejunal ulcer. We can confirm the fact that the tender point on the abdomen corresponds accurately to the site of the ulcer, in other words, the change in level of the ulcer between the erect and the prone position is accompanied by a change in the point of maximum

tenderness on the abdominal wall. The presence of a duodenal ileus resulting from stenosis of the proximal limb of the jejunum, due either to scar or edema, is of additional diagnostic value (fig. 3).

Even the most expert and careful radiologic examination fails in some instances to prove the presence of a jejunal ulcer. In one patient operation was undertaken to close an acute perforation of a jejunal ulcer. Later roentgen studies failed to reveal a crater, but subsequent operation within a short time demonstrated the presence of the ulcer. While one may often be left with indecisive evidence after careful roentgen study, we believe that, given a suggestive history of a bizarre type of indigestion, the presence of blood and free hydrochloric acid in the gastric contents, tenderness on accurate pressure over the stoma, a dilated distal limb of the jejunum in a patient who is suffering a crippling disability, we are justified in a diagnosis of jejunal ulcer, even though we cannot demonstrate a niche or crater, and we are warranted in advising a laparotomy.

In the treatment of these patients one is astonished at the improvement in the comfort and general condition of the patient who submits to bed rest. Many of the patients who had a large tender, palpable mass at the site of the stoma will in a few weeks be perfectly comfortable, and no mass can be palpated. In such patients with a palpable mass, or roentgen evidence of penetration of the ulcer, bed rest with dietetic control for some weeks is of the utmost value. However, the disappearance of the symptoms and the improvement in the patient's general condition should not be accepted as evidence of the cure of a jejunal ulcer. In our experience the symptoms recur invariably on return to



Fig. 4 (Miss C.)—Jejunal ulcer. Resection of jejunum and stomach. Anastomosis of stomach to descending duodenum end to side. Displacement of duodenum to the left with development of duodenal ileus, relieved by subsequent Polya reconstruction.

normal, active life, and this very recurrence of the symptoms under such conditions tends to confirm the clinical diagnosis of jejunal ulcer.

Therefore, a patient on whom a definite diagnosis of jejunal ulcer can be made should be not only advised but urged to submit to operative intervention at an early date. The frequency with which the transverse colon has been in intimate relation to the ulcer base has

impressed us. This relationship may in a short time progress to the formation of a gastrojejunal fistula.

What operative procedures are there to offer? First, the restoration of continuity of the tract by the undoing of the gastro-enterostomy and repairing the defect in the jejunum. This will be efficacious and yield brilliant results in the patients who have no demonstrable evidence of a duodenal ulcer. In three instances we have limited our operative intervention to this procedure, in the presence of a definite though apparently quiescent duodenal ulcer. In all three the clinical result has been bad, the patients suffering severely from symptoms of duodenal ulcer.

Second, the undoing of the gastro-enterostomy, the restoring of the continuity of the jejunum and then doing a local attack on the ulcer in the form of a pyloroplasty or a gastroduodenostomy. Of twenty-eight cases with primary pyloroplasty for duodenal ulcer, we have reoperated in three. In none, in subsequent roentgen studies, have we found normal gastric motion. There is a constant hyperperistalsis, and the patients have not had brilliant clinical cures. In nine cases in which

gastroduodenostomy was the primary procedure, we had one fatality and four instances of stomal ulceration. These results lead us to view with some skepticism any local procedure as a means of curing duodenal ulcer.

Third plastic operations on the gastro-enterostomy stoma, combined with an entero-enterostomy without excision of the stomach or jejunum. In early cases this technic has been invariably followed by disappointing results.



Fig 5 (Mr L. M.)—Gastrojejunal fistula which does not show with motor meal.

Fourth, undoing of the stoma, restoration of continuity of the jejunum, partial gastrectomy, and anastomosis of the stomach end-to-side of the descending limb, i. e., the second part of the duodenum. We have done four such cases and have had three instances of stomal ulceration follow and one case of severe duodenal ileus (fig 4).

Fifth, the restoration of continuity of the jejunum, combined with a partial gastrectomy and an anterior Polya anastomosis, to which is added an entero-anastomosis. This was done in one case with the development of an ulcer in the efferent loop of the gastrojejunal stoma.

Sixth, a partial gastrectomy and resection of the jejunum and restoration of continuity of the tract by an end-to-end anastomosis of jejunum to jejunum and an end-to-end anastomosis of stomach to duodenum.

Seventh, resection of stomach and jejunum with end-to-end anastomosis of the jejunum and retrocolic Polya anastomosis of stomach to jejunum.

Either the sixth or the seventh operation corrects the physiologic fault of hypermotility and hypersecre-

tion of the stomach and in our cases has been followed by a very marked and appreciable decrease in the hydrochloric acid content of the stomach, in fact, in most instances by a complete absence. So far we have had no recurrence following either of these procedures, which were proved by operation. One patient has had



Fig 6 (Mr L. M.)—Showing necessity of combining barium enema with motor meal as the stomach is filled during administration of barium enema the result of a gastrojejunal fistula.

two hemorrhages two years and two and a half years after operation. We have not had an opportunity of studying this patient, either clinically or roentgenographically since this occurred, but we are prepared



Fig 7—Section of stomach from region of stomal ulcer showing marked polymorphonuclear cellular infiltration. A picture of a very definite chronic gastritis.

to believe that he may be suffering from a recurrent jejunal ulcer.

We have been impressed by the fact that the jejunal ulcer found at operation in a patient who has been given adequate preoperative treatment may be very insignificant, and for this reason we prefer, rather

than to take down the anastomosis to resect the jejunum and stomach *en bloc* and restore continuity of the jejunum by an end-to-end anastomosis, and restore gastric continuity by a Billroth I or posterior Polya technic. In several of our cases the ulcer which was present at the time of operation was so small that evidence of its presence would have been entirely destroyed had we undone the anastomosis as a preliminary procedure. Such a procedure would destroy the irrefutable evidence of a jejunal ulcer and raise a doubt as to the wisdom of proceeding with the resection of the pyloric end of the stomach. This procedure is, in addition, not only time consuming in a necessarily long operation but adds materially to the risk of infection.

In our experience, if a pyloric resection is not done and evidence of a duodenal ulcer is present, we fail to cure our patient. During the time since we have adopted this policy, resection was done in only three of our cases on the evidence outlined in which a stomal ulcer was not found, but in these the patients' indigestion was cured. In each instance there was microscopic evidence of a well marked gastritis (fig 7). In this series there were four cases of gastric jejunocolic fistulas. The diagnosis of such a lesion can often be made only by the giving of a barium enema. Often the barium motor meal will show no evidence of the connection with the colon (fig 5) but after the administration of the barium enema the stomach is visualized (fig 6). We have had one operative death. This was due to a failure on our part to recognize the fact that there could be a tremendous accumulation of content in the resected stomach, proximal jejunum and duodenum without the patient complaining of nausea or vomiting, and compatible with a normal temperature and pulse rate. In this instance the proximal jejunum and duodenum were dilated until they held more than 3 quarts (liters) of fluid, and the patient died from peritonitis as the result of a giving way of our end-to-end suture of jejunum to jejunum. Since this time we have left a duodenal tube in the stomach as a routine following gastric operations until such a time as the edema about the stoma permitted normal emptying of gastric contents. In the other three instances of gastrojejunal fistula we had two brilliant results, in which we did a massive resection of colon, jejunum and stomach *en bloc*, with an uneventful convalescence. In the final case we contented ourselves with undoing the anastomotic ulcer from the colon and repairing the defect in the colon. This patient recovered, but only after the development of a local peritonitis and a subphrenic abscess. We thus at the moment believe that a massive resection of stomach, jejunum and colon *en bloc* with a triple anastomosis and a cecostomy is the ideal procedure. This, if supported by combination anesthesia and blood transfusion before, during and after the operation, is not too forbidding a procedure.

CONCLUSIONS

1 A careful and exhaustive follow up of patients who have been submitted to a gastro-enterostomy shows a much higher incidence of jejunal ulceration than is usually suspected.

2 A persistent gastro-intestinal disability in a patient who has had a gastrojejunostomy demands a careful and thorough investigation.

3 Roentgen investigation of such patients is more efficient if the clinician and radiologist cooperate as a team.

4 Jejunal ulceration is a surgical lesion, and operation should be urged as soon as the patient's condition permits, provided the diagnosis is thoroughly substantiated.

5 Block resection of the stomach and jejunum, with end-to-end anastomosis of the jejunum, and either a Billroth I or retrocolic Polya reconstruction of gastric continuity is the ideal procedure.

6 A barium enema should be a routine procedure in the investigation of any patient suffering a gastro-intestinal disability after a gastro-enterostomy.

7 The ideal operation for a gastrojejunal fistula is a block resection of stomach, jejunum and colon, with triple anastomoses, together with a cecostomy.

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ABSTRACT OF DISCUSSION

DR. DEAN LEWIS, Baltimore. The authors have done a distinct service by indicating the necessity of cooperation between the roentgenologist, the surgeon and the internist. More information is obtained by direct examination than by questionnaires. There is a great variation in the incidence of gastrojejunal ulcer and jejunal ulcer following gastro-enterostomy. Some surgeons report 1 per cent, some 2 per cent and some 35 per cent. The only constant factor behind these figures is the surgeon. I do not know how to explain this, but experimentally one can reproduce gastrojejunal ulcer by poor suturing and I think that has been done repeatedly at the operating table. In performing a gastro-enterostomy, I always prepare the field for the man who follows me, making it easier for him to do the second gastro-enterostomy. This is most easily done by suturing the mesocolon high up on the stomach wall so that the line of suture is immediately exposed at the second laparotomy. Some sutures are extremely bad in stomach work, and I refer particularly to the continuous mattress suture. When the continuous mattress suture is inserted part of the stomach wall will slough. It must of necessity slough because it is strangulated. This not infrequently is the basis of gastrojejunal ulcer. I believe that the best suture for stomach work is the one devised years ago and forgotten but recently revived. This is the suture that Billroth originally used. It is a three-layer suture and it accurately approximates the mucous membrane. With such a suture there is much less chance of loss of tissue strangulation or subsequent death through peritonitis and less possibility of forming a new ulcer. A year ago Dr. Gasther examined 100 cases in Baltimore which had been accurately observed and questions carefully put and found almost 89 per cent recoveries from gastro-enterostomy. The authors also spoke of jejunal ulcers, which develop distal to the stomach. He is perfectly right when he states that the cases with high acidity and hyperactivity of the stomach have to be carefully considered and the type of operation carefully selected. I am quite certain of one thing. I would not want the greater half of my stomach resected to cure a duodenal ulcer because it might recur in the portion left behind.

DR. ROSCOE R. GRAHAM, Toronto. I should like to stress the point that a very small number of individuals who harbor duodenal ulcers should be candidates for surgical therapy. Secondly, the patient who has had a gastro-enterostomy and complains of symptoms is entitled to a thorough painstaking investigation in which the clinician, the internist and the roentgenologist act as a team.

The Large Intestine—In the large intestine the digestive juices continue to act upon the remnants of the foodstuffs and a further absorption of the products of digestion takes place. The progress of the food material through the large intestine takes a comparatively long time (often eighteen hours or longer) during which there is a marked absorption of water and the residual material gradually becomes more solid.—Sherman, H. C. Food and Health New York, Macmillan Company, 1934.

CALCINOSIS CIRCUMSCRIPTA

REPORT OF CASE

GALE WILSON, M.D.

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According to Barr,¹ "calcinosis" is the term used to describe a deposit of calcium in or under the skin. It has also been applied to more or less scattered deposits in the subcutaneous tissues.

'Calcinosis circumscripta' is a condition in which calcification is limited to the skin. It occurs almost always in the upper extremities, especially in the fingers, and interferes little with the general health of the patient.

Careful history usually reveals that the patients have suffered from cold hands since early childhood and that the calcium deposits have occurred gradually.

This condition was apparently first reported about 1855, and since then there have been many cases reported, all stressing to some degree the relations of the blood serum calcium and phosphorus. By far the most exhaustive study of modern times is that of Barr, whose admirable definition has been given. He lists 172 references to the literature of the past eighty years. In spite of being stressed, in none of the reported cases have the blood calcium and phosphorus values been especially indicative or abnormal and Barr and Thannhauser² are in accord in discarding the idea of a generalized calcium disturbance and in considering the process to be the expression of a locally damaged tissue, especially following the nutritional defects of Raynaud's disease or scleroderma. Hence the process becomes one of dystrophic calcification.

It has been known before³ that in addition to the local nutritional factors there are certain systemic conditions which enhance the local deposition of calcium. Among these factors may be mentioned the pH of the blood, the action of sunlight and the ingestion of vitamin D with the action of parathyroid extract not to be overlooked. The action of sunlight and that of vitamin D are to be especially noted here, because of the peculiar blood chemistry of the case under consideration, i.e., an unusually high blood cholesterol, which may well have been the source of a "poisoning with endogenous irradiated ergosterol".⁴

REPORT OF CASE

History—Mrs J F B aged 63 seen Dec 19, 1932 had always been well and healthy. About ten years before, while living in Seattle she began to notice occasional spells of blanching and numbness of the fingers of both hands, the attack lasting three or four hours from beginning to end. She consulted a physician who told her that she had Raynaud's disease and that nothing could be done about it. About three years later the intermittent claudication disappeared spontaneously and for a period of about two years she had no further trouble with her hands. About five years before I saw her (also about five years after the claudication first began) she noticed a slowly increasing swelling of the tips of the right thumb and forefinger. This swelling had persisted without remission for the past five years getting rather more painful the more she used her hands but unaffected by the ordinary ranges of temperature. During unusually cold weather the finger tips got bluish and somewhat numb but not as much

so as they did ten years before. About six months after the first swelling of the thumb several small, pinhead-like white spots appeared on the flexor surface of the distal joint of the right thumb. These spots were not tender except on deep pressure, slowly enlarged until about 3 mm in diameter, and then came to the surface and were discharged, either spontaneously or after the overlying skin which had thinned out to tissue paper thickness had been pricked. The discharged material was chalky, gritty to the touch, and sometimes thinner and more purulent appearing than at other times. Healing always took place within a few days.

About four years before I saw her the left thumb and forefinger became similarly involved, but the nodules had never been as numerous or expelled so rapidly as on the right hand, where one or more spots would mature and be expelled every two or three weeks. Within the past year and a half the middle fingers of each hand had shown a few similar spots.

The past history was negative for any serious illness. The family history was entirely negative especially for gouty or other metabolic diseases. The patient had been married for forty years and had two grown children.

Examination—At the time of the first visit the patient was a well developed and nourished woman. She looked considerably younger than her given age of 63. She was rather nervous, intelligent and cooperative. The head, neck, eyes, ears, mouth and throat were normal. There were no tophi or abnormal deposits. The chest was rather flattened anteroposteriorly. The breasts were atrophic. The heart was normal in size, rate and rhythm. There were no murmurs. The pulse was 88. The blood pressure was 110 systolic, 80 diastolic. The abdomen was normal. The hips and thighs were unusually wide in proportion to the general build, and there was a very suggestive deposit of fat over the outer surface of the thigh, almost amounting to a true 'breeches'. The ankle and foot were disproportionately small. There were slight hypertrophic changes in the patella. The hands showed clubbing of the tips of the thumbs and forefingers with all the other fingers tapering normally. Both thumbs and both forefingers were about one fourth larger than the other fingers, and each presented from the distal interphalangeal crease to the tip from a half dozen to twenty hard grayish white, pearly bodies varying in size from the head of a small pin to 4 mm, all apparently lying within the skin itself, the smaller ones being the most deeply placed. There was no elevation of the nodules, the skin over the largest ones being reduced to tissue paper thinness. On squeezing the right thumb between one's fingers there was a gritty sensation exactly like that felt on squeezing a tightly filled sand bag.

The laboratory report at the time of the first visit was not remarkable: hemoglobin, 69 per cent, red blood cells, 3,840,000, white blood cells, 10,300 with a differential count of polymorphonuclears 67 per cent, lymphocytes 31 per cent and monocytes 2 per cent. The urine was entirely normal except for a slight trace of albumin. The stool was entirely normal. The basal metabolic rate was 0.

One large nodule was excised, and it was found to extend entirely through the thickness of the skin but not into the subcutaneous tissue. On section a thick, grayish white chalky material was evacuated. A smear of this material showed only a few pus cells among nontypical amorphous crystals.

Progress—Jan 11 1933, a dextrose tolerance test was done and the following unusual values were obtained:

Hour	Sugar Mg	Cal cium Mg	Phos phorus Mg	Choles terol	Lecithin	
Fasting	85.5	9.8	3.4	411.5	0.0	} Urea 13.2 Uric acid 4.0
1 hour	131.6	10.9	3.0	444.5	0.0	
2 hours	117.6	10.0	2.8	444.4	0.0	
3 hours	90.0	9.8	2.6	470.0	0.0	
4 hours	74.1	10.0	2.6	468.0	0.0	

A roentgenogram taken of the right hand at this time showed the peculiar condition shown in figure 1.

Because of the very unusual blood chemistry as regards cholesterol and lecithin in spite of a negative gallbladder history, an oral cholecystogram was done. There was slight filling of the gallbladder with the dye.

¹ Barr D P. Pathological Calcification. *Physiol Rev* 12: 593 (Oct) 1932.

² Thannhauser quoted by Barr.¹

³ Barr D P. Pathological Calcification. Washington University Clinics 27: 1930 No 12.

⁴ Shohl A T, Goldblatt Harry and Brown H B. The Pathological Effects Upon Rats of Excess Irradiated Ergosterol. *J Clin Investigation* 8: 505 (June) 1930.

January 23 the fingers were unchanged. Another spot was breaking through on the right thumb and incision of this spot yielded a chalky, gritty material, which was insoluble in ether, chloroform, acetone or alcohol but which did dissolve on standing over night in dilute nitric acid. Chemical analysis of the dissolved material showed the presence of calcium and phosphorus with a very small amount of organic material. The patient was empirically put on a purine-free low fat diet and



Fig 1—Appearance of fingers Jan 11 1933 most used portions involved

given desiccated thyroid one-half grain (0.03 Gm) three times a day with tablets containing bile salts.

February 3 the patient felt drowsy and listless the fingers were cold to the touch and somewhat blanched. Three days later another spot opened up and discharged, this time evacuating a cheesy material. At this later date the blood cholesterol had fallen to 220 mg per hundred cubic centimeters, and two weeks later (February 24) it had fallen to 188 mg.

March 21 the patient returned from a two weeks' visit into central Idaho where she encountered subzero weather and had several attacks of real claudication. On arrival here she felt better but the fingers tended to remain cold and more spots appeared.

April 10 the blood cholesterol was down to 180 mg and the lecithin, which could not even be detected in January, had risen to 116 mg on February 7 and to 142 mg in April, but the right thumb was definitely more swollen and tender, and several nodules were maturing at once.

The latter part of April the blood uric acid was 4.4 mg per hundred cubic centimeters and the diagnosis once more leaned toward an atypical gouty condition. Under treatment with cinchophen 10 grains (0.65 Gm) three times a day the uric acid was reduced to 3.6 mg within three days, but with no change in the fingers.

May 12 another dextrose tolerance test was done this one showing perfectly normal figures for cholesterol, lecithin, sugar, calcium, phosphorus and uric acid. The basal metabolic rate had been increased to plus 12 per cent by the thyroid.

At the conclusion of this test the patient was given 2 cc. of "Tissue Extract" (S & D) and promptly fainted. She recovered rapidly and returned three days later stating that she had not noticed any vasomotor effect whatever from the injection. She was given 25 cc. more of the tissue extract and fainted again perspired profusely and remained listless and weak for two days, but without appreciable change in blood pressure or any sign of peripheral vasodilation.

May 24 the thyroid was increased to 2 grains (0.13 Gm) a day. June 16 she reported for another blood check up and this time showed a cholesterol of 130 mg, calcium of 12 mg, lecithin 11 mg and uric acid 3.9 mg. At this time parathyroid gland one-tenth grain (0.006 Gm) twice a day, was added to the regimen plus an increased water intake. Also another nodule was incised, again extending down to, but not into, the

subcutaneous tissue. Four days later another spot was removed from the right thumb, and in ten days there was a whitish pin-point spot in the depth of the healing scar. When this spot showed in the healing area, salicylic acid (10 per cent) in collodion was applied, only to have an adjacent, untreated area near the tip of the thumb become tender and peel off, leaving the salicylic acid treated area untouched.

July 28 the calcium had dropped to 11 mg and the phosphorus was at its old level of 3.3 mg per hundred cubic centimeters. August 21 the blood cholesterol was 140 mg per hundred cubic centimeters.

COMMENT

Here was an elderly woman who had chalky deposits in the tips of the fingers she used most. She had an increased density of the costal cartilages on roentgen examination and one or two small pinheads of calcium in the heel, but was otherwise in apparently normal health. At first glance it would seem to be podagra, but the blood uric acid was not sufficiently elevated, and the "pearls" in the fingers were too opaque to x-rays, being practically as dense as the bone itself. Xanthomatosis had to be considered but there was no demonstrable tendon involvement even with the high blood cholesterol and no fatty substances could be detected in the material removed from the nodules themselves. The fatty deposit over the thighs and hips was suggestive of a pituitary disturbance possibly progressive lipodystrophy but that did not account for the blood changes or for the local deposits. The opacity of the deposits showed the presence of calcium salts, and chemically the nodules contained nothing in measurable quantity except calcium and phosphates. With a definite history of intermittent claudication of many years' duration, even with many years' remission before the local deposits were first noticed one must admit some degree



Fig 2—Same hand Jan 11 1934 slight increase in deposits.

of local nutritional change in the fingers, but in this particular case it would seem, in view of present knowledge of the effects of ultraviolet radiation on cholesterol and ergosterol, that the unusually high cholesterol in the blood stream could bring about an endogenous "hypervitaminosis D," which would cause the calcium to deposit in the soft tissues of the abused finger tips.

During the course of treatment the blood cholesterol has been reduced to normal and the lecithin increased from an immeasurably small amount to normal, but there has been no improvement in the fingers other than a possible slight slowing of the rate at which the nodules mature and discharge

Smith and Elvove⁵ experimenting with viosterol poisoning, found that a high serum phosphate with a normal or slightly increased serum calcium resulted in great calcification of the soft tissues, whereas no abnormal deposition of calcium was found when the serum phosphate values were low. The case under consideration showed serum calcium and phosphorus values that were always well within the normal limits.

Rabl⁶ and Kleinmann⁷ experimented with changes in the acid-base equilibrium and found marked changes in the renal excretion of calcium and phosphorus but apparently little change in the much larger quantity lost through the large bowel. In the present case I have repeatedly tried alkalizing the patient over long periods of time and then putting on a high protein acid-forming diet, but without noticeable effect. Kleinmann has also shown that the dystrophic deposition of calcium in the tissues begins about a minute crystal of tertiary calcium phosphate, and once formed they readily extract more calcium phosphate from the blood stream (or even from the spinal fluid) and continue to grow. The real question, however, is what to do to give relief to the patient, or how to remove the deposits without removing the finger tips with them.

SUMMARY

A typical case of calcinosis circumscripta was studied, with extensive blood chemistry and clinical observations over a period of one year. The blood chemistry tends to show that the deposits of calcium phosphate in the fingers may be due to an endogenous hypervitaminosis D caused by an unusually high blood cholesterol (480 mg per hundred cubic centimeters) superimposed on an old remitted Raynaud's disease. All types of eliminatives have been tried as well as changes in the acid-base ratios, high protein low protein, fat free, purine free and other diets, all without doing other than slightly slowing up the rate of maturity of the nodules, even after the blood chemistry had been restored to normal.

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5 Smith M I and Elvove E. The Action of Irradiated Ergosterol in the Rabbit. *Pub Health Rep* 44:1245 (May 24) 1929

6 Rabl C H R. Zum Problem der Verkalkung. *Virchows Arch f path Anat* 248:542 1923

7 Kleinmann H. Ueber die Bedingungen der Kalkablagerung in tierischen Geweben. III. Experimentelle Verkalkung durch Zufuhrung von Kalksalzen. *Biochem Ztschr* 106 161 1928. Untersuchungen über die Bedingungen der Kalkablagerung in tierischen Geweben. *Virchows Arch f path Anat* 268 686 1928

The First Five Weeks of Development—In the first five weeks of human development changes take place very rapidly. In that short time the fertilized ovum passes from the condition of a single cell with a diameter of about $\frac{1}{200}$ of an inch to a fully formed human embryo about $\frac{1}{2}$ of an inch in length (5 mm) and contained within a spherical envelope of embryonal membranes which measures nearly an inch in diameter. By the end of the fifth week the beginnings of all the parts of the adult body are recognizable—the head, the trunk, the limb buds, the primitive segments, the eyes, the nose and mouth. A section across the abdominal cavity of an embryo at this stage reveals the fact that the foundations of the genital glands are already laid and that certain cells have been set aside for the reproduction of another generation.—Keith Sir Arthur. *Human Embryology and Morphology*, Baltimore, William Wood & Co 1933

Clinical Notes, Suggestions and New Instruments

CONGENITAL HEART BLOCK

J MURRAY KINSMAN M D AND HARRY S ANDREWS M D
LOUISVILLE KY

About fifty cases of congenital heart block have been reported in the literature. Several authors have collected and analyzed the reported cases. There is some difference of opinion concerning the correctness of the diagnosis in a few of them, as in some there was no graphic proof that heart block actually existed and in others there was considerable doubt that it was congenital and not acquired. The heart rate of an infant is normally very rapid and in the presence of a partial block or even of a complete block the rate, though relatively slow in comparison with the normal for the age, may still be faster than the normal rate for adults. Hence the presence of an interference with conduction may easily be overlooked. Until recently, when medical men began to become aware of its possibility, it was rare that any abnormality of this nature was discovered within the first few weeks or months of life and sometimes years elapsed before the condition was recognized. When there is no record of the heart rate in early life, one must rely on a history of fainting spells or attacks of blueness or of dyspnea occurring at an early age before any rheumatic or diphtheritic infections have occurred.

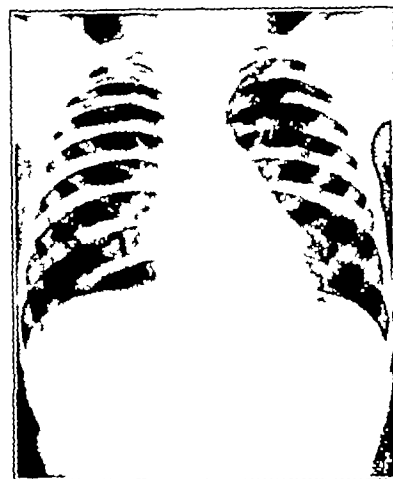


Fig 1—Outline of heart July 6 1934 at a distance of 7 feet with the patient standing showing a prominence in the region of the left auricle or slightly above in the region of the pulmonary region. Measurements are distance to right border 3 cm to left border 7.1 cm total transverse diameter of heart 10.1 cm maximum internal diameter of chest 21.5 cm

The commonest associated anatomic diagnosis is a defect in the interventricular septum. In those cases which have come to autopsy and in which serial sections of the conducting system have been made, it has been found that the auriculoventricular bundle usually ends in a band of fibrous tissue situated about the septal defect.

Yater, Lyon and McNabb¹ in 1933 reviewed the literature up to that time and in 1934 Yater, Leaman and Cornell² analyzed those cases in which serial sections of the conducting system had been made at autopsy.

We present here another case in which the diagnosis of heart block is certain and undoubtedly congenital in origin and which is associated with a structural lesion in the heart probably congenital.

REPORT OF CASE

History—A boy born in 1927, was admitted to the Louisville City Hospital on Oct. 13 1932 being referred by the tuberculosis clinic because the mother stated that the child had had attacks of dyspnea and cyanosis since he was an infant.

He was the third child the previous two being normal but a subsequent baby was found dead in its crib at the age of 2 months. The mother had constant hemorrhages during the last month of pregnancy, but delivery was normal at full term. The baby weighed 8½ pounds (3,855 Gm) at birth. He breathed and cried at once and was not a blue baby. When

From the Departments of Medicine and Pediatrics of the University of Louisville School of Medicine.

1 Yater W M Lyon J A and McNabb P E. *Congenital Heart Block*, J A M A 100 1831 (June 10) 1933

2 Yater W M Leaman W G and Cornell V H. *Congenital Heart Block*, J A M A 102 1660 (May 19) 1934

only a few weeks of age he had a sudden attack of dyspnea and blueness. Since that time he had had similar attacks once or twice a month. During these attacks the mother could not keep him covered because he always climbed up on the pillows to get his breath. At times his mother would find him lying in bed apparently lifeless and would awaken him to make sure he was still alive. He had never played very actively but had been content to sit by and watch the other children play.

About one week before admission to the hospital and again three days later, he had an attack of fainting with loss of consciousness—the only ones in his life.

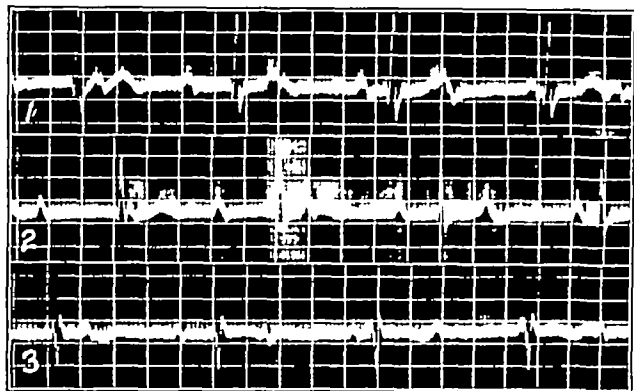


Fig 2—Electrocardiogram taken Oct 14 1932 showing complete auriculoventricular dissociation with auricular rate 109 and ventricular rate 61. Note that T_1 and T_2 are upright and T_3 inverted. There is left axis deviation.

In infancy he had whooping cough. He had colds every winter. His tonsils were removed at $2\frac{1}{2}$ years of age and he had no sore throats thereafter. He had had no other infectious diseases. At the age of 2 he fell and injured his head, being unconscious for several minutes. He was admitted to the Louisville City Hospital, where no fracture of the skull was made out. About ten days later he was circumcised, with a normal convalescence.

No record of the heart rate is available until at the time of the head injury, when it was reported as "rate 45. Normal size and shape (by percussion)." However at the time of the circumcision it was recorded as 96, and this note was made concerning examination of the heart. "Normal size rate and rhythm. There is a harsh systolic murmur heard best over the fourth left interspace just inside the nipple line but it is transmitted to the entire precordium."

Examination—The boy was somewhat small for his age and rather pale, but otherwise he appeared normal. He was not dyspneic at rest, while sitting or on walking. There was no cyanosis. The blood pressure was 118 systolic, 54 diastolic. The liver was 4 cm below the costal margin in the mid-clavicular line. There were no other signs of heart failure. Examination of the heart showed no thrill but rather loud sounds throughout with no especial accentuation and a moderately loud, only slightly harsh systolic murmur heard best just inside the nipple in the fourth interspace, it was heard also along the left border of the sternum, yet it was definitely less loud there than at the apex and it decreased in intensity as the clavicle was approached, though it could be heard over the clavicle and also at the angle of the left scapula in the back. No diastolic murmur was heard.

Roentgen examination (fig 1) showed slight cardiac enlargement and some relative widening of the left auricle.

An electrocardiogram (fig 2), October 14 showed complete auriculoventricular dissociation, the auricular rate being 109 and the ventricular rate 61. There was moderate left axis deviation and inversion of the T wave in lead 3, the P waves were not exaggerated.

The blood Wassermann reaction was negative. The red blood count was 4,040,000 hemoglobin 70 per cent (Sahli) white blood count, 8,100.

During this hospital stay, the pulse varied between 48 and 82, averaging 54 to 66.

Subsequent Course—Since October 1932 the patient has been seen several times, sometimes in the outpatient clinic, sometimes in the ward. He has meanwhile had many recurrences of the fainting spells, with loss of consciousness, dyspnea and cyanosis, the spells seem to have been induced by eating or by exertion. He has never been seen by a physician during one of these spells, but on Aug 25, 1933, Dr. Nicholson saw him during the recovery stage of one. His report was "Well until 8 p. m., while going to bed he became unconscious for five or ten minutes. This attack was repeated half an hour or so later and I saw him shortly after. He was conscious but completely exhausted, the pulse was 40, full and regular. There was no cyanosis, but he was very pale and the skin was clammy and moist." He has had occasional respiratory infections, during which dyspnea and cyanosis are more easily produced. At one time the effect of atropine on the heart block was tried, after 0.5 mg of atropine five times daily for four days, no effect on the block could be demonstrated. During the period of observation his pulse rate has remained between 48 and 70 and further electrocardiograms have shown no change in the block, complete heart block always being present. However, an interesting change in the form of the T waves did occur on one occasion. In a record made on Aug 8, 1933, T_1 , which had previously been normally upright, became quite deeply inverted, T_2 became somewhat flattened and T_3 , which had always been definitely inverted, became upright and tremendously exaggerated (fig 3). A subsequent record made Oct 24, 1933, showed a return of the T waves to their previous levels. No known change in the patient's health occurred at this time, so that the explanation of the change must remain uncertain.

COMMENT

The diagnosis of heart block is, of course, proved. There can be little doubt that it is congenital, in view of the history dating back to a few weeks from birth when he had attacks of blueness and dyspnea without any previous acute infections.

As to the anatomic diagnosis there is some uncertainty. The only murmur ever heard has been systolic in time and has always had an element of harshness in it. But the place of its maximum intensity has seemed to vary from time to time. Different observers have located its maximum intensity in different places, and even the same observers have considered this location to be different at different times, sometimes it appears loudest at the apex, sometimes in the third left inter-

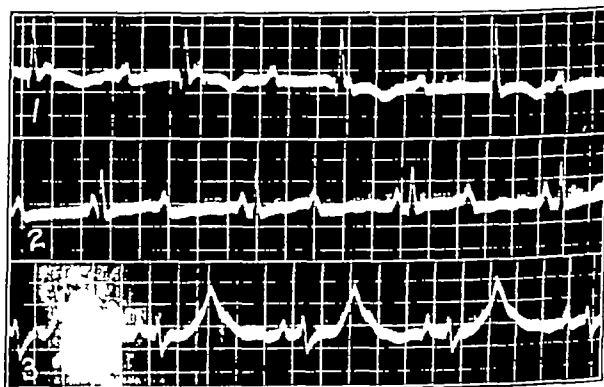


Fig 3—Electrocardiogram taken Aug 8 1933 still showing complete auriculoventricular dissociation with auricular rate 112 and ventricular rate 55. Note that T_1 is inverted, T_2 flattened out and T_3 upright and tremendously exaggerated. No known change in the patient's condition occurred at this time and subsequent records have all been as in figure 2. Note also the tendency toward coupling of the auricular waves, a tendency suggested in figure 2 also and even more marked in subsequent records. Note also the change in shape of the QRS complexes in Lead 3.

space near the sternum, and sometimes in the pulmonary region just above. Most frequently it has been thought to be loudest at the apex, and this has led us to suspect a mitral lesion which, of course, would have to be considered acquired and not congenital. The presence of x-ray evidence of enlargement in the region of the left auricle lends weight to this interpretation. However, the enlargement is situated above the auricular area in the region of the pulmonary vessels, there is no diastolic

murmur, the electrocardiogram shows left rather than right axis deviation, and there is no accentuation of the P waves there is no history of an acute rheumatic infection other than sore throats, and there has been no gradual development of heart failure such as one would suspect in a mitral lesion at this age. Finally in other cases of congenital heart block the associated defect has nearly always been developmental usually a defective intraventricular septum. For these reasons we believe that the signs are to be interpreted as those of a congenital and not an acquired lesion—probably a septal defect.

Heyburn Building

CROCHET HOOK THROUGH BOTH ORBITS

W. L. BENEDICT, M.D., ROCHESTER, MINN.

A married woman, aged 55, a patient at the Rochester State Hospital, had made several attempts at suicide during depressive phases of a manic depressive psychosis. On April 1, 1934, she attempted to commit suicide by thrusting a number 12 crochet needle from the right temporal region through both orbits (fig. 1).



Fig. 1—Position of crochet hook in orbits



Fig. 2—Side view showing deflected point of hook

The sharp point of the hook entered the right temple and was pushed through the left orbit until the point struck the left temporal orbital wall. She could not push the hook farther with her hand. She removed her slipper and, using the heel as a hammer, drove the hook farther into her head until the handle was entirely buried under the skin on the right temporal side. When she was discovered a few minutes later, blood was oozing from her nose and the conjunctiva of both eyes was edematous. Her vision, however, was apparently not impaired.

On examination at the hospital the pupils were active, the eyes could be rotated normally, and examination of the fundi revealed only a few retinal hemorrhages. A roentgenogram of the head disclosed that the point of the hook had been deflected sharply on the handle about half an inch from the end and was turned backward and downward into the orbit. Obviously, it was impossible to remove the hook by withdrawing it from the right side. An incision near the temporal margin of the left orbit was made and a portion of the left temporal bony wall was removed by rongeur. The needle was then grasped with strong forceps and pulled on through in the direction in which it had been started. The bone flap was then replaced, the periosteum sutured over it and the incision in the skin closed without drainage.

The patient made an uneventful recovery without loss of vision or disturbance of ocular motility.

From the Section on Ophthalmology, the Mayo Clinic

TESTICULAR CHORIONEPITHELIOMA WITH GYNECOMASTIA AND COMPLETE PREGNANCY REACTIONS

ROBERT M. ENTWISLE, M.D., AND JOSEPH A. HEPP, M.D., PITTSBURGH

This case is made a matter of record for the reason that it is the second reported case in which the pituitary gland in a male shows the characteristic biologic and histologic changes identical with those found in the pituitary of pregnant women.

W. E., a white man aged 22, a student, was perfectly well until two and one-half months before entering St. Francis Hospital, Pittsburgh, or until four months before his death. The onset was about two months after a large shepherd dog playfully pawed him, causing some pain in the left side of the scrotum. The day following this there was some swelling in the scrotum and he consulted a physician concerning it. Within a week the swelling and pain had entirely disappeared, and from that time on the testicle gave him no concern, nor did he in any way connect this with his illness until it was brought out by questioning. Two months later he began to have pain in the back and abdomen, he noticed that he was losing weight and occasionally he had a little shooting pain in the scrotum and became very nervous. During the succeeding two months he lost strength rapidly and his chief complaints were of marked muscular weakness, shortness of breath and the abdominal and back pains as noted. Three weeks before entering the hospital he noticed for the first time a fairly large abdominal mass.

The patient was emaciated and was barely able to stand without support. He walked in a marked stooped-over position. The loss of weight had been extreme giving his eyes the appearance of exophthalmos from loss of fullness about the eye sockets. Both breasts were enlarged and tender, were slightly red, and a few drops of colostrum could be expressed from each side. There was a fairly smooth, fixed, nontender mass in the left hypochondrium, extending from the rib margin to just below the umbilicus and from slightly to the right of the midline to the flank on the left. There was a very small, hard

nontender nodule in the upper pole of the left testicle, which was about half the size of a lima bean. It was quite difficult to tell whether this was actually in the testicle or whether it was an indurated portion of the epididymis. No other masses could be palpated. There were marked secondary anemia, 1,800,000 red cells and 31 per cent hemoglobin. The Wassermann and Kahn reactions were negative. The Aschheim-Zondek test for pregnancy was positive in four separate mice. There was no cough, but roentgen examination of the lungs revealed a widespread metastatic growth.

The testicle was removed under local anesthesia, and high voltage roentgen therapy was given to the known involved areas none of which changed in appearance or size. He had a second positive Aschheim-Zondek test four weeks after the orchidectomy. He died five weeks after entering the hospital. Complete autopsy was done.¹ The removed testicle showed a very small tumor which contained layers of squamous epithelium with malignant syncytial and Langhans cells, and areas suggesting fastening villi. This multiplicity of cells, we think, establishes the diagnosis of the original tumor as a teratomatous growth. The mass in the abdomen proved to be retroperitoneal glandular tissue which was made up of syncytial and Langhans cells in typical malignant arrangement of chorionepithelioma identical with the pathologic picture found in a like tumor of the uterus. Tumor masses were also

¹ We are indebted to Dr. A. J. Bruecken of Pittsburgh for the pathologic work in this case.

found scattered throughout the lung, liver, spleen, brain, retroperitoneal nodes, kidney and suprarenal, all having exactly the same pathologic picture

The presence of hormone from the pituitary gland was demonstrated both before the removal of the testicle and afterward by the Aschheim-Zondek test. The sections of the pituitary gland showed a large preponderance of chromophobe cells and hyperplasia of basophils and a few eosinophils. These large, clear, swollen chromophobe cells are called "cells of pregnancy." We have been able to find only one other report

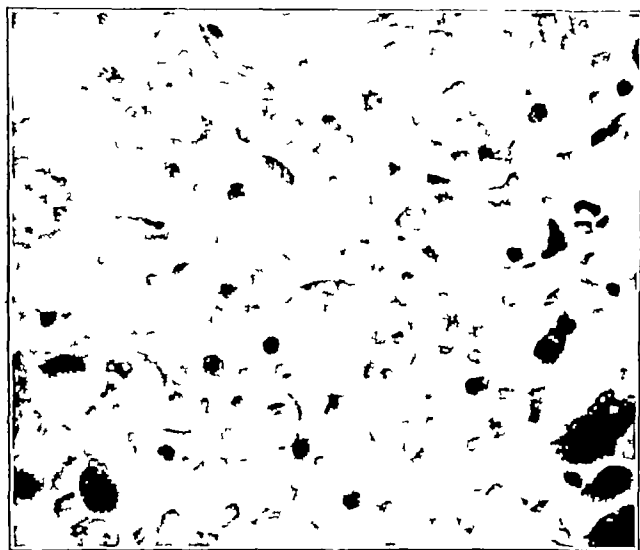


Fig. 1—Clear cells of pregnancy in anterior lobe of hypophysis (Notak)

of such histologic changes in the pituitary gland of a male in chorionepithelioma of the testicle

Up until June 1932 131 cases of chorionepithelioma in the male had been reported, two of these with a positive Aschheim-Zondek test. Schlagenhauer in 1902 was the first to recognize that certain tumors of the testicle were morphologically similar to chorionepithelioma of the uterus. He believed that they all were derived from teratomas. These tumors in the female begin from one or both of the double layer of trophoblast composed of syncytial and Langhans cells covering the chorionic villi and in their invasion naturally implant themselves in the uterine wall. That a teratomatous rest in the testicle



Fig. 2—Basophilic stippling of hypophysis (R. S. Ferguson)

may contain this type of cell which is the forerunner of the placenta is best explained by the theory of Delafield and Prudden. "These neoplasms are described in the older textbooks under the name cystoma or adenoma but are now suspected by many to arise from dissociated blastomeres. A blastomere is one of the cells resulting from the first few divisions of the fertilized ovum. The earliest are totipotent, since any of them can produce all the tissues of the body. Hence they differ from their descendants which become gradually multipotent or able to evolve many tissues though not

all, and finally unipotent, or capable of building but one. Teratomata of the testis are believed to arise at a time when the blastomere is totipotent, and these growths are, therefore, potentially tridermal, i. e. may contain derivatives of all three germinal layers. Now, since derivatives of all three layers are potentially present in a teratoma of the testis, the tumor, like a normal embryo will tend to develop a chorion. Thus is explained the chorionepithelioma of the testis, a malignant and rapidly metastasizing neoplasm similar to that found in the female."

It has further been suggested to the foregoing theory that this early blastomere is a fertilized cell and that subsequently through an unknown stimulus it tends to develop as an embryo with the formation of chorionic villi.

SUMMARY

1 An injury to the testicle occurred two months before the beginning of loss of weight, weakness and general pains

2 A very small, innocent appearing tumor was produced in the testicle, with enormous metastatic growths throughout the body

3 The breasts were lactating

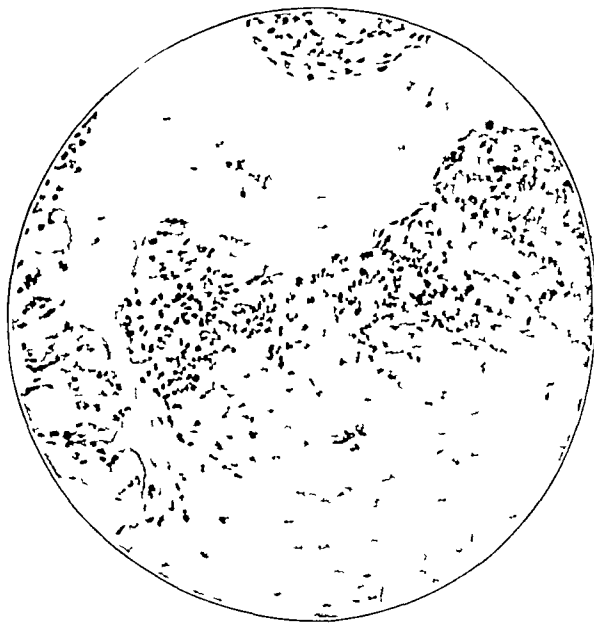


Fig. 3—Section of tumor showing Langhans cells

4 There was evidence of anterior pituitary activity, as proved by a positive Aschheim-Zondek test

5 Histologic changes in the pituitary gland were identical with those in pregnant women

It is interesting to speculate as to the part the injury by the dog had to do in the production of the condition as the history seemed quite clear as to its connection. The mere fact that such a sequence of events is frequently shown in the wildly malignant types of tumor would lead one to believe that it is perhaps more than a coincidence.

121 University Place

Ninety-Nine Per Cent of the Calcium—At least 99 per cent of the calcium and over two thirds of the phosphorus which the body contains are found in chemical combination with each other in true mineral form in the bones and teeth. The small amounts of calcium and the larger amounts of phosphorus which the soft tissues and the body fluids contain are also very important to nutrition and health. As the growing body must increase not only the amounts but also the percentages of calcium and phosphorus which it contains, it needs these two elements—and particularly calcium—in relatively greater abundance in its food than any of the other body building materials which the food supplies.—Sherman H. C. Food and Health, New York, Macmillan Company, 1934

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION
OF THE FOLLOWING REPORTS HOWARD A. CARTER Secretary

NOTICES OF REACCEPTANCE

The Council on Physical Therapy has reaccepted the following products for a period of three years

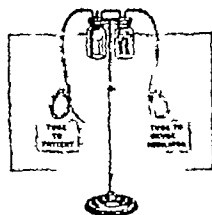
SUNLIT ULTRAVIOLET GLASS Manufacturer Semon Bache & Company, New York City A window glass substitute which permits the transmission of a certain percentage of ultraviolet radiation This product is recommended for use in solarium

MALTESE X RAY LEAD PLATE GLASS Manufacturer Semon Bache & Company, New York City A lead glass designed for roentgen ray protective shields

BURDICK NASAL-CATHETER OXYGEN HUMIDIFIER ACCEPTABLE

The Burdick Nasal-Catheter Oxygen Humidifier is manufactured by the Burdick Corporation, Milton, Wis

The purpose of this instrument is to add moisture to oxygen while the patient is receiving oxygen therapy through a nasal catheter This form of treatment is indicated in cases of pneumonia, pulmonary edema shock following major surgical procedures postoperative pneumonia, angina pectoris, asthma, and other conditions in which anoxemia or cyanosis is present The nasal catheter method of administering oxygen is simple and effective According to the firm, oxygen consumption of from 5 to 8 liters per minute will maintain an oxygen concentration at the glottis of from 50 to 60 per cent



Burdick Nasal-Catheter Oxygen Humidifier

In the nasal catheter method it is extremely important clinically to have the oxygen well humidified for the patient's throat when from 10 to 15 liters per minute is flowing

The Nasal Catheter Unit consists of a rubber hose connecting the oxygen regulating unit with the humidifier, a humidifier consisting of a wash bottle containing water, and the combined humidifier and oxygen liter flow indicator a wash bottle acting as a trap, catching any excess moisture that may be carried over from the first bottle, and a safety valve to relieve excessive pressure on the outfit if catheter or hose connections become kinked or plugged up

This unit was tested in a laboratory and clinic acceptable to the Council and was declared efficient At a flow of 5 liters per minute the Burdick Humidifier put 232 mmg of moisture into each liter of oxygen, at 10 liters 227 mmg, and at 15 liters 216 mmg

The Burdick Nasal-Catheter Oxygen Humidifier, therefore, is included in the Council's list of accepted devices

HEIDBRINK KINET-O-METER ACCEPTABLE

The Heidbrink Kinet-O Meter, a gas oxygen anesthesia apparatus is manufactured by the Heidbrink Company, Minneapolis

The unit (No 410) consists of four entirely separate and removable tank pressure regulators for controlling the contents of two tanks each of oxygen carbon dioxide nitrous oxide and ethylene Each regulator is equipped with a 3000 pound gage to register the pressure in the tanks attached thereto Each regulator has two valves for the accommodation of the tank valves Each valve is equipped with a tank stabilizer The four separate regulators are assembled into a single unit, by means of a supporting bracket that is mounted on two posts of the stand The regulators are connected to the operative head of the machine by means of high pressure rubber tubing

The operative head of the machine consists of four flow meters one each for nitrous oxide oxygen ethylene and carbon dioxide These flow meters are of the kinetic type. They are

actuated only by the flow of the gases They are without internal mechanism Registration is by means of a float and an indicating stem, the top of which indicates the amount of gases being delivered The stem rides on top of the stream of gas Each flow meter is calibrated in both gallons per hour and liters per minute These calibrations differ for the different gases Their range is as follows

Ethylene	1 to 360 gallons per hour	1/10 to 23	liters per minute
Nitrous oxide	1 to 360 gallons per hour	1/10 to 23	liters per minute
Carbon dioxide	1 to 25 gallons per hour	1/10 to 1½	liters per minute
Oxygen	1 to 240 gallons per hour	1/10 to 15	liters per minute

The nitrous oxide, ethylene and oxygen flow meters are equipped with direct pressure valves by means of which large volumes of gases can be delivered instantaneously The gases are conducted separately into each flow meter They are there controlled by a needle valve mounted on top of the flow meter Manifolds connect the flow meters together and act as a channel for conducting the gases into the central chamber There is a separate manifold for the gases under regulated delivery and for the gases controlled by the direct pressure levers

Mounted on the front of the flow meter is a complete carbon dioxide absorber equipment of the closed cycle type The absorber itself is adjustable so that any amount or all of the circulation can be passed through or around the soda lime The bottom of the soda lime can is removable so that it may easily be filled and emptied when a soda lime change is required On the exhaling valve of the absorber is a lever, which operates a cam that closes the exhalation valve, thus permitting emptying the bag without removing the inhaler from the face of the patient It also enables the anesthetist to build up a definite pressure The cam lever does not, however, close the valve tightly It will open under 25 mm of pressure and therefore acts as a safety factor

There is an ether vaporizer mounted on the exhalation side of the absorber can This vaporizer is compact and adjustable It is equipped with a very dense wick to increase the amount of ether vaporization The wick is removable for replacement, cleaning and drying There is a refilling funnel on the top of the device so that ether may be poured in at any time without interrupting the anesthesia

The absorber is also equipped with a 10 quart pure gum rubber bag with a chain harness This bag can—and should—be thoroughly sterilized each time it is used There are two corrugated inhaler tubings The mask has an adjustable exhaling valve and a special shut-off valve, by means of which either air or the gas mixture can be delivered to the patient

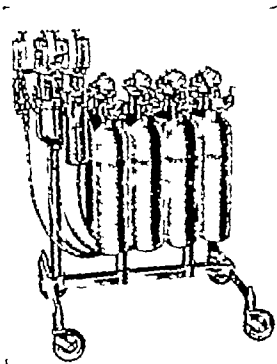
This special valve insures that at no time will the mask ever be shut off so that the patient has nothing to breathe. A retaining strap is provided, and posts for fastening this strap to the mask are mounted on the inhaler casting

The operative head of the equipment is mounted on a telescopic post which permits raising or lowering the head of the equipment to meet variations of the operating table from the horizontal position

The entire equipment is mounted on a very stable base with four large rubber tired, ball-bearing wheels The inhaler tube and the bag are grounded to the apparatus and a special ground wire is provided with the machine, so that the apparatus itself can be grounded to a nearby water pipe

A commendable feature of the Kinet-O-Meter is that the whole machine with the exception of the soda lime tank, can be taken apart and disinfected the tank is claimed to be so caustic that no bacteria can live in it Especially important in this connection, the gas bag and face mask of this machine can be sterilized

This apparatus (No 410) was investigated in a clinic acceptable to the Council and was declared satisfactory The adver-



Heidbrink Kinet O Meter

tising matter for this product was reviewed and found to be in accordance with the Official Rules of the Council

There are other models of the Kinet-O Meter, but they are identical so far as general construction is concerned. They differ in size and capacity only.

The Heidbrink Kinet-O-Meter, therefore, is included in the Council's list of accepted devices

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS
RAYMOND HERTWIG Secretary

ADVERTISING DEALING WITH TREATMENT OF DISEASE OR THE NUTRITION OF THE SICK, OR RECOMMENDING ANY SPECIAL TYPE OF DIET

Advertising giving detailed instruction to the public as to methods of treatment of disease, obesity or other abnormal states is unwise and undesirable. This practice promotes self diagnosis and self treatment for which the layman is not qualified by training or experience, and thereby may endanger health or life. Special purpose diets should not be recommended to the general public. Even reducing without the advice of a physician is unwise and may be dangerous. Advertising dealing with treatment of disease or the nutrition of the sick, or recommending any special type of diet should be directed exclusively to physicians and, when not a part of medical publications, should conspicuously bear the phrase "For physicians only" or its equivalent.

NOT ACCEPTABLE

BUTTER SCOTCH CANDY 1¢ CANDYSTIX

The Curtiss Candy Company, Chicago, submitted to the Committee on Foods candy sticks called "Butter Scotch Candy 1¢ Candystix" prepared from corn syrup, sweetened condensed whole milk, sucrose sweetened condensed skim milk, coconut butter, butter, salt, butter flavor, water, glycerin, gum tragacanth, gelatin, amyl butyrate, ethyl butyrate, vanilla, butyric acid, vanillin, coumarin and caramel color.

Discussion of Name—Butterscotch candy is a recognized confection prepared essentially from sugar, butter and molasses, and flavored with vanilla. No fat other than butter is used. Genuine butterscotch can be expected to contain from 8 to 12 per cent of butter and, of course no coconut butter nor foreign fat nor fortification with artificial butter flavor. The composition and food values of this candy and a genuine butter scotch candy are quite different. This is an imitation butter scotch candy and should be so labeled. The name and label, therefore, are highly misleading and misinformative.

The company was advised of the recommendations of the Committee but for business reasons is not willing to change the name or label. This product therefore will not be listed among the Committee's accepted foods.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION. RAYMOND HERTWIG Secretary

MELLOW PASTEURIZED HOMOGENIZED MILK

Distributor—Superior Dairy Company, Ann Arbor, Mich.
Description—Bottled, pasteurized, homogenized milk.

Preparation—Milk obtained from farms licensed by the city of Ann Arbor Department of Health and under the supervision of the state of Michigan is delivered cold to the creamery, where it is pasteurized by the holding method (61 C. for thirty minutes), homogenized and filled in bottles by the usual procedure (THE JOURNAL, Sept 1, 1934, p 681).

Analysis—Standardized to contain not less than 4 per cent milk fat.

Calories—07 per gram, 20 per ounce.

Claims of Distributor—The cream does not separate. The curd formed in the stomach is softer than that formed from unhomogenized milk.

VICTOR MICRO-SURGICAL DIATHERMY UNIT ACCEPTABLE

Manufacturer The General Electric X-Ray Corporation, Chicago

This small diathermy unit (fig 1) is intended for surgical use only. It is designed primarily for electric coagulation and electric desiccation but can also be used by certain specialists for straight diathermy to some parts of the body, such as the head, sinuses, ears and eyes, whenever such treatment is indicated.

This machine was investigated in a physical laboratory acceptable to the Council, which reported that it was well constructed and that the various parts were found to be firmly clamped together and assembled on an iron frame. The insulation of the wires, spark gaps, containers, and so on appeared to be satisfactory. Since the machine is designed for surgical use and will probably be used intermittently only, no temperature tests were made on the transformer. Two spark gaps have an arbitrary scale, making it possible to reproduce settings of the gap distances. In a test using salt solutions of various concentrations for a load, it was found that when the output current was about 1,500 milliamperes the power input was 142 watts. Figure 2 is a schematic diagram of the circuit.

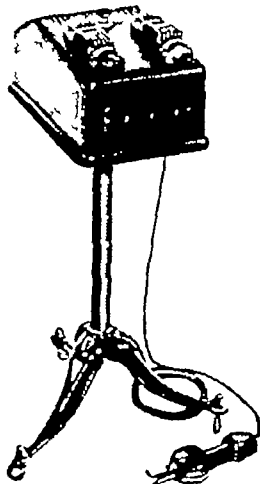
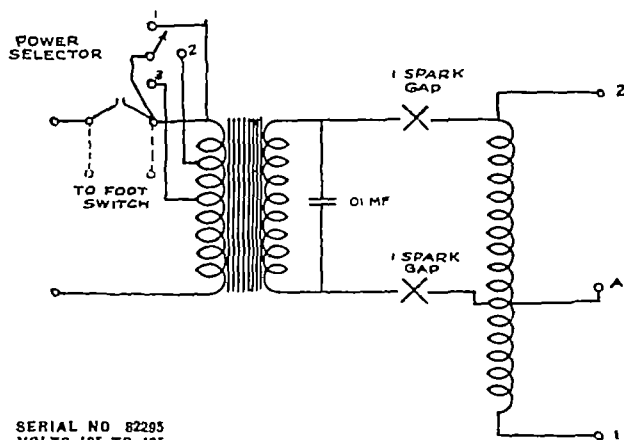


FIG 1—Victor Micro Surgical Diathermy Unit

VICTOR MICRO-SURGICAL DIATHERMY UNIT



SERIAL NO. 82285
VOLTS 105 TO 125
FREQUENCY 50 TO 60 CYCLES
MAXIMUM AMPS 25

FIG 2—Schematic diagram of circuit

This unit was tried out in a clinic acceptable to the Council, and the investigator reported that the machine gave satisfactory and efficient service and that the claims recorded in the advertising matter were justifiable.

The Council on Physical Therapy therefore includes the Micro-Surgical Diathermy Unit in the list of accepted devices for physical therapy.

MELLOW MILK—HOMOGENIZED, PASTEURIZED

Distributor—Affholter Brothers Creamery, Wyandotte, Mich
Description—Bottled, pasteurized, homogenized milk.

Preparation—Milk obtained from farms licensed by the Wyandotte Department of Health and under the supervision of the state of Michigan is delivered cold (16 C) to the creamery, where it is pasteurized (held at 61 C for thirty minutes), homogenized and filled in bottles by the usual procedure (THE JOURNAL, Sept 1, 1934, p 681)

Analysis—Standardized to contain not less than 3.5 per cent milk fat

Calories—0.7 per gram, 20 per ounce

Claims of Distributor—The cream does not separate. The curd formed in the stomach is softer than that from unhomogenized milk.

SUNSWET STRAINED PRUNES FOR PRUNE WHIP**SUNSWET WHIP-PRUNE (STRAINED) FOR PRUNE WHIP**

Manufacturer—California Prune and Apricot Growers Association, San Jose, Calif

Description—Strained, cooked pulp of California prunes

Manufacture—Dried prunes are thoroughly washed with hot water sprays processed for three minutes in water at 100 C surplus moisture is removed and the prunes are cooked for three hours in twice their weight of water in monel metal kettles. The prune pits are removed the flesh is passed through a copper screen, reheated, cooked to the desired consistency, filled in cleaned glass jars while still hot, processed for thirty minutes at 88 C and immediately cooled

<i>Analysis</i> (submitted by manufacturer) —	per cent
Moisture	68.6
Total solids	31.4
Ash	0.7
Fat (ether extract)	0.1
Protein (N X 6.25)	1.0
Reducing sugars as invert sugar	20.3
Sucrose (copper reduction method)	0.0
Crude fiber	0.6
Carbohydrates other than crude fiber (by difference)	29.0

Calories—1.2 per gram 34 per ounce

Claims of Manufacturer—For all table uses, also for special diets for infants and convalescents. Promotes laxation. Only warming is required for serving

UNSWEETENED COOKING CHOCOLATE

- (1) BANCROFT
- (2) KIBBE'S
- (3) MANHATTAN QUALITY
- (4) THAMES VALLEY
- (5) WEIS

Distributors—(1) Community Stores Company, Worcester, Mass (2) E S Kibbe Company, Hartford, Conn (3) Manhattan Products Company, St. Louis (4) The Yantic Grain & Products Company, Norwich Conn (5) Weis Pure Food Stores, Sunbury, Pa.

Packer—Moffat, Inc, Boston

Description—Ground cacao nibs or "chocolate liquor" in cake form. Same as Moffat Cooking Chocolate, Unsweetened (THE JOURNAL, Jan 20 1934 p 213)

Claims of Manufacturer—Conforms to the United States Department of Agriculture definition and standard.

WARRANTY SIEVED SPINACH

Manufacturer—The Nielsen Corporation, Ltd, Oakland Calif

Description—Sieved spinach prepared by efficient methods for retention in high degree of the natural mineral and vitamin values. No added sugar or salt.

Manufacture—Fresh spinach is sorted, trimmed to remove inedible portions and washed. Excess water is drained off. The spinach is inspected, heated in a steam chamber, cut and comminuted in a specially designed mill. The total time of comminuting and heating to 88 C is from ten to twenty seconds. The strained pulp is sealed in enamel lined cans and is

processed in retorts for the length of time and at the temperature specified by the California State Board of Health. The average time elapsing from the raw vegetable to the sealed can is three minutes. To avoid mineral and other nutrient losses the spinach is not blanched. The spinach comes in contact with monel metal, stainless steel or nickel only.

<i>Analysis</i> (submitted by manufacturer) —	per cent
Moisture	93.4
Total solids	6.6
Ash	1.6
Sodium chloride	0.05
Fat (ether extract)	0.4
Protein (N X 6.25)	1.8
Reducing sugars as invert sugar	0.1
Sucrose	0.3
Crude fiber	0.4
Carbohydrates other than crude fiber (by difference)	2.4

Calories—0.2 per gram 6 per ounce

Vitamins—The method of preparation and processing insures the retention in high degree of the natural vitamin values

Claims of Manufacturer—Specially intended for infants children and convalescents, and for special smooth diets. Only warming is required for serving

HAWAIIAN FINEST QUALITY PINEAPPLE

- (1) AUNT NELLIE'S CRUSHED, SLICED AND TIDBITS
- (2) JOYFUL BRAND MATCHED HALVES
- (3) KITCHEN QUEEN SLICED
- (4) RED TURKEY BRAND FANCY QUALITY SLICED (VACUUM PACKED) AND CRUSHED AND FANCY SLICED
- (5) TOM-BOY FANCY CRUSHED AND SLICED

Distributors—(1) and (3) Harrisburg Grocery Company, Harrisburg, Pa (2) and (5) Krekeler Grocer Company, St Louis (4) J B Maltby, Inc., Corning, N Y

Packer—Hawaiian Pineapple Company, Ltd, San Francisco

Description—Canned pineapple packed in concentrated pineapple juice with added sucrose. The same as Dole Hawaiian canned pineapple products (THE JOURNAL, April 8, 1933, p 1106, and April 29, 1933, p 1338)

SUPREME BREAD SLICED

Manufacturer—Top-Notch Bakers, South Norwalk, Conn

Description—A sliced white bread made by the straight dough method (THE JOURNAL, March 12, 1932, p 889) prepared from flour, water, sucrose, skim milk powder, vegetable shortening, salt, yeast and a yeast food containing calcium sulphate, ammonium chloride sodium chloride and potassium bromate

- (1) AUNT SALLY BRAND CRYSTAL WHITE TABLE SYRUP
- (2) AUNT SALLY BRAND GOLDEN TABLE SYRUP

Distributor—Portage Wholesale Co, Portage, Wis

Packer—Union Starch and Refining Co, Granite City, Ill

Description—(1) A table syrup corn syrup sweetened with sucrose, flavored with vanilla. The same as Union Brand Crystal White Syrup (THE JOURNAL, Sept. 3, 1932 p 833)

(2) A table syrup, corn syrup flavored with refiners' syrup. The same as Union Brand Golden Table Syrup (THE JOURNAL, July 23, 1932, p 309)

Claims of Distributor—Recommended for use as an easily digestible and readily assimilable carbohydrate supplement to milk in infant feeding and as a syrup for cooking baking and the table.

SUN-BLEST PURE ORANGE JUICE

Distributor—Jacobson-Shealy Co Inc., San Francisco

Packer—Bireley's Hollywood, Calif

Description—Flash pasteurized California Valencia orange juice retaining in large measure the original vitamin content the same as Golden Bear California Pure Orange Juice (THE JOURNAL, Sept. 15 1934 p 839)

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, FEBRUARY 2, 1935

SPIDER POISONING

The bite of the black widow spider (*Latrodectus mactans*) has long been recognized as poisonous to man. In spite of this recognition and of the wide distribution of the spider in the southern portion of the United States, relatively incomplete knowledge of its life history exists. Blair,¹ however, has recently reported observations based on a two year study of the spider as found in the vicinity of Tuscaloosa, Ala. It has been observed both in its natural environment and as raised in captivity.

In central Alabama the spiders are found in the angles between the roots of trees, beneath rocks around old stumps, in holes in the ground, and around houses and outbuildings. Occasionally they have been found in dark corners such as clothes closets. In general they prefer dry, dimly lighted places. Their web is distinctive, but that spun by the male is always smaller and weaker than the web of the female. The spider is capable of going without food for more than a month with no recognizable harmful effects. The food consists of insects of various sizes, but cannibalistic tastes are also evident. The common nickname "black widow" given to the female arises from her habit of capturing and feeding on the smaller male. The actual process of impregnation has not been observed but apparently occurs in the fall or early in the spring. The life span of the female is approximately one year. If hatched early in the spring the spiderling may, if the food supply is adequate, mature by late summer, live through the winter, lay its eggs the following spring and die during the summer or fall. The life span of the male is usually less than a year.

Not content with the essentially circumstantial evidence of the poisonous nature of the bite of *Latrodectus mactans* to man, Blair² submitted himself to the bite of a mature female. The resulting severe clinical reaction may be divided, he believes, into three stages. The first, that of lymphatic absorption, begins almost imme-

diately after the bite and lasted in his case about half an hour. The second stage, vascular dissemination, was characterized by severe muscular and abdominal pains, slowed, weak and thready pulse and lowered blood pressure. The temperature was at first lowered, then raised. The pulse rate also became rapid after a short time. This stage apparently lasts two or three hours. Finally, in the stage of elimination, there is a gradual return to normal.

The shock existing in the second stage may be severe. Blair believes that at this time measures should be adopted tending to a restoration of capillary tone and blood volume. Cardiac stimulants and large doses of alcohol are contraindicated. Morphine in high doses should for the same reason be used with caution. In his case immersion in a hot bath gave immediate and marked relief from pain. An acute nephritis may develop during the third stage, and attention should therefore be given to rest of the kidneys.

While limited in practical application to those regions where this spider is indigenous, the studies of Blair constitute a further step in the clarification of an interesting clinical entity.

THE EPSTEIN STATE HEALTH INSURANCE BILL

The prevention, mitigation and cure of disease in the individual human being are essentially functions of the medical profession. The people, however, have reciprocal functions, which they must exercise for the best results. These relations, under our democratic system of government, are left largely to adjustment by the doctor and his patient. When the government has intervened, it has done so only by passing laws to regulate the practice of medicine and to protect the public health. How bad a job the government has made even of this intervention is obvious from the variety of cultists and quacks that federal and state governments have licensed to prey on the people. Seldom if ever has any state, even in a single case, made a substantial inquiry into the soundness of the dogmas underlying these cults. Certainly the records of our state governments in regulating medical practice are hardly such as to encourage their entrance into new fields of medical activity.

Recently new groups, particularly social workers, have begun to manifest an active if not revolutionary interest in the nature of medical practice. While physicians have sought to cure the ills of the body and mind of the individual, the social worker has sought to cure the ills of the family and of society as a whole. While the physician has had the background of centuries to guide him, and under the law, must have professional education and training to fit him for his work and must demonstrate his fitness before he enters the medical field, the social worker need not qualify in any such manner. Any one without any education or training

¹ Blair, A. W. Life History of *Latrodectus Mactans*. Arch. Int. Med. 54:1-844 (Dec.) 1934.
² Blair, A. W. Spider Poisoning. Arch. Int. Med. 54: 831 (Dec.) 1934.

whatever can style himself a social worker and engage in public activities. The social worker appears in the fields of health, economics, sociology and government without being profoundly learned in any of them. Few if any social workers are well grounded in all these fields, yet many speak with assumed authority in the whole field of social work. It is not surprising therefore that, among social workers, fads, fancies and ill regulated emotions should often guide their conduct. Yet this group, under a system now promoted by some of its leaders under the misleading appellation "health insurance," proposes to reorganize the whole practice of medicine in the United States and to make it a function of the government.

If the promoters of this system of so-called health insurance have their way, the doctor will be an agent, officer or employee of the government exactly as a teacher in the schools is such an employee. If he will submit to the conditions of employment laid down for him by some government officer or board, he may have his name registered on the list of doctors from which patients choose. Even this will obtain, however, only as long as the supervising officer or board is satisfied with his services. A government officer or board may direct his professional work. A government officer or board will pay him at rates fixed by it and subject to change without notice. The only personal privilege left to him will be the opportunity to defend himself against claims arising out of alleged malpractice, made by disgruntled government patients. What a chance he will have with such a setup! Of course the physician, like the teacher, will not have to enter the government service. He may, if he so elects, engage solely in private practice. His chances of success in such a venture however, are likely to be even less than are the chances of success of the teacher who undertakes to pursue his calling privately. Eventually, like the panel practitioners of Germany, he can choose to starve either in or out of the service. Even though an employee entitled to the supposed benefits of the health insurance scheme employs and personally pays a private doctor, the government, under the proposed scheme, goes right on collecting from him money to pay for the government medical services that he does not want.

The compulsory state health insurance law proposed by Mr Epstein of the American Association for Social Security is really an insurance bill only in name. The total losses in the group covered by the scheme are not to be distributed among those exposed to the losses in proportion to the risks. The bill would impose a special income tax on the wage of every employee within certain general classes, the amount of the tax being based on the amount of the wage and not on the medical and cash benefits proposed or on the risks to which the individual is exposed. An employee who is young, strong, in good health and in a job free from risk is to be taxed, with a few insignificant exceptions, at the same rate as are older, infirm employees in jobs that are

hazardous to health. The tax on the wages of an unmarried employee is to be at the same rate as the tax on the wages of a married employee with an invalid wife and many children, although in the former case the risk is single and in the latter case it is multiple. Moreover, the price of the so-called health insurance—or, in insurance parlance, the premium—is not to be taxed wholly against the beneficiaries of the scheme, much of it is to be collected as a special excise tax from employers, who are entitled to neither cash nor medical benefits. Employers will, of course, pass on to the public the tax they will have to pay. Then the public will be taxed further to support the scheme, for a part of the cost of the insurance premiums is to be paid directly from the public treasury. To style such a system insurance is a misnomer. It approaches more closely a system of doles than a system of insurance, for the larger part of the premium is not paid by the beneficiary. It is to be paid as a gratuity, in part by his employer and in part by the general public.

Mr Epstein's bill assumes the mental and moral incapacity of the American wage earner of today. It is the apotheosis of paternalism. If the American workman, given an adequate wage or adequate cash benefits in time of sickness cannot be trusted to provide himself and his family with adequate medical service, he must be a different American from those who brought our nation to its present high place among civilized peoples. The Epstein bill assumes that the American worker, despite his education and training, cannot be trusted to look after himself and his family and that the government must seize a part of his wages or retain a part of the benefits to which he would otherwise be entitled and with this take care of him.

In this proposal the doctor is to be just a pawn in the hands of circumstances. The opportunities afforded to him under the Epstein bill to help shape proposed policies are negligible. From the point of view of the patient, the doctor and the public health the Epstein bill is inherently vicious, un-American and antisocial. It would inevitably defeat the very purposes it hopes to accomplish.

THE PSYCHOLOGY OF MODERNISM IN LITERATURE

The American visit of Miss Gertrude Stein has caused a new focusing of interest in the peculiar aberrations of the intellect exposed by the modern literati in some of their extraordinary performances. In an editorial entitled "Pahlaha and Gertrude Stein," *THE JOURNAL*¹ pointed out that Miss Stein had probably been giving demonstrations of automatic writing carried on through a dissociation of personality. In a recent address, Prof W Langdon Brown² of the University of Cambridge ventures some additional suggestions as

¹ Pahlaha and Gertrude Stein editorial *J A M A* 103 1711 (Dec 1) 1934
² Brown W L We Have Reason to Think *Brit M J* 1:1 (Jan 5) 1935

to the responsibility for modernism or even "da-da-ism" in the recent output of many modern writers. He conceives, for example, that the writings of D. H. Lawrence begin with an angry reaction against the intellect and end up in literary movements which produce what is called baby talk. He asserts, moreover, that such writing communicates little to any one who does not possess the key. The inspiration wells up from the unconsciousness or at least the subconsciousness. These, however, are not intellectual processes, because the highest level of the brain selects the sensory impressions to which it will pay attention, and reason must arrange and select the messages from the emotional levels. An artist by judicial and intellectual arrangement of his material may be able to convey the thrill of his emotions. These modernists or futurists, however, endeavor to make us absorb the crude material that arises from their accomplishments without any such artistic treatment. As memories arise they create new memories and new associations, which are in most instances quite individual to the person who experiences them. Artists who include all these extraordinary manifestations of their memories do not supply us with the key, so that for many readers they speak a quite foreign language.

As an example of the type of writing which he criticizes, Dr. Brown offers the following from a poem by T. S. Eliot:

If it was to be a prize a surprise
if it was to be a surprise to realise,
if it was to be if it were to be, was it to be
What was it to be. It was to be what it was
And it was. So it was. As it was. As it is.
As it as it is. It is and as it is and as it is
And so and so as it was
Keep it in sight alright

Mr. Eliot has said that in poetry meaning only plays the part of the lump of meat in the turned up end of the dog-stealer's trousers and is merely necessary to focus the reader's attention until the poem grips him. Professor Brown's only comment on this poem is "Milton thou shouldst be living at this hour. England hath need of thee."

The tendency to link words together by sound rather than by meaning is essentially infantile. One expects babies to rhyme in this manner. One expects the insane to utter every thought that comes into their minds without worrying about continuity or sustained interest. Such writing, however, belongs in the textbooks of psychiatry rather than in essentially artistic productions of the type intended by James Joyce in "Ulysses." Man developed reason and intellect in order that he might think and express himself reasonably and intellectually. The great phrases in literature that have lived and survived the passage of time are of this character. Who, one hundred years hence, will quote Eliot or Gertrude Stein as today we quote the writings of Shakespeare, Tennyson and the Bible?

Current Comment

SPECIAL COAST TO COAST BROADCAST

Under Association News in this issue is the announcement of a special broadcast by the American Medical Association, arranged in cooperation with the National Broadcasting Company, over a coast to coast network of stations. A display announcement of the same program appears in the advertising pages in this issue. Physicians are requested to make the information about this broadcast available to their patients, and particularly to apprise them of the fact that copies of the three speeches included in the broadcast will be mailed free of charge on request to the American Medical Association, the National Broadcasting Company, or the station from which the program is heard.

HAY DIETS

In a recent issue of THE JOURNAL, Dr. Martin Rehfuess¹ concluded, after a careful study of the available observations, "There is no evidence either in the literature or in my investigation to lead me to believe that proteins and carbohydrates are incompatible in the stomach. The danger of such teaching based on a lack of scientific evidence is manifest, and while it may be true that many individuals overeat and are presumably better by a reduction of carbohydrates, the unqualified acceptance of such a teaching can lead to the occurrence of serious malnutrition as well as to a lighting of tuberculosis and old infections." It is worth while to emphasize this dictum of the gastroenterologists because many purveyors of food, restaurants, department stores and others are ballyhooing the freak diets recommended by William Howard Hay,² who urges that starches and sugars "should not be eaten with the foods known as proteins and acid fruits." For several generations, Americans have been eating meat and potatoes and drinking milk, and have as a result produced some extraordinarily healthful and powerful human beings. Indeed, nature combines proteins and carbohydrates in practically all natural food substances. As is pointed out in a recent review of some of the books on the Hay diets by Mary P. Huddleson, editor of the *Journal of the American Dietetic Association*, milk, one of nature's most perfect food substances, contains carbohydrates well balanced with protein, all vegetables, fruits and cereals contain both carbohydrates and protein. A separation of proteins and carbohydrates in the diet is actually impossible, outside of a chemical laboratory, unless one chooses to subsist largely on egg white and dextrose. Incidentally, Miss Huddleson points out that a better title for the Hay diets would be "Hay-wire diets." These diet books, in order to make the foods they recommend palatable, would torture carrots into carrot matches, splinters or horns of plenty. Hundreds of the recipes demand egg yolks, without indicating what is to happen to the rest

¹ Rehfuess, M. E. Proteins Versus the Carbohydrates. An Inquiry into Their Gastric Digestion. J. A. M. A. 103: 1600 (Nov. 24) 1934.
² A reprint of an article on Hay prepared by the Bureau of Investigation and published in THE JOURNAL Feb. 25, 1933 will be sent on request.

of the egg Simple mixtures of lettuce and other greens are promoted with such extraordinary titles as "Fountain of Youth Cocktail," "Happy Highball," "Pale Moon Cocktail," "Easter Bunny Salad," "Parcel Post Asparagus" and "Apartment Chicken." It is urged, moreover, that the use of such salads will enable the consumer to escape the evils of neurasthenia, fatigue fears, bodily distress and depressions. The promoters of "patent medicine" did much to add to the gaiety of the nation during their heyday in the public favor, but our present Hay day affords one of the most amusing spectacles ever presented to medical science.

Medical Economics

OMAHA-DOUGLAS COUNTY CENTRAL HEALTH SERVICE

The Omaha-Douglas County Medical Society made an investigation of the standards of eligibility for clinic medical care. This investigation naturally extended into programs for low income groups, and the investigating committee recommended that the county medical society establish a central health service. After a study of numerous similar experiments in other localities, the following tentative plan was recommended:

1 A central directing organization to be known as the Omaha-Douglas County Central Health Service, shall be established for the purpose of assisting low income patients to obtain health service at a cost they are able to pay.

2 The personnel of this organization shall consist of a minimum of one full time executive secretary and one field worker both of recognized standing in the field of medical social service, with necessary clerks and office headquarters.

3 The general policies of this organization shall be determined by a board of directors constituted as follows: three physicians, two dentists, one hospital superintendent, one nurse and one pharmacist, to be appointed by their respective professional societies.

4 Direction of this central health service shall be by an executive committee of three appointed by the board of directors, two of whose members shall be physicians, each member to serve a term of three years.

5 The Omaha-Douglas County Health Council shall act as an advisory board to this central health service.

6 Patients shall be referred to the central health service only by physicians or welfare agencies of recognized standing, with preliminary medical and social survey to indicate the patient's health needs and lack of resources to provide for the total cost at regular prices.

7 The central health service shall confer with the patient so recommended, investigate further if necessary, and recommend a percentage reduction in medical fees and costs for services needed.

8. Members of the interested organizations rendering service will be expected to indicate their willingness to accept the recommendations of the central health service in percentage reduction of rates to be charged. Such charges will be billed at regular minimum rates, with the percentage discount indicated as recommended.

9 Collection of all charges shall be centralized in one office with retention of 10 per cent by the central health service for operating expenses.

10 It shall be the obligation of the central health service to send patients who are unable to pay anything for private medical care to the teaching clinics of the city in rotation or to the county clinic if not desired for teaching purposes. Exceptions are to be made to cases of recent private status when the attending physician makes a request to continue care of the patient without charge.

Bureau of Legal Medicine and Legislation

THE PHYSICIAN'S INCOME TAX—1935

The following instructions have been prepared by the Bureau of Legal Medicine and Legislation of which Dr. William C. Woodward is Director.

The Revenue Act of 1934 under which federal income tax returns must be filed on or before March 15 next, effects numerous changes in the prior income tax law. No such change, however, relates to physicians as a class distinct from the main body of federal income taxpayers.

Every one who is required to make a federal income tax return must do so on or before March 15, unless an extension of time for filing his return has been granted. For cause shown the collector of internal revenue for the district in which the taxpayer files his return may grant such an extension on application filed with him by the taxpayer. This application must state fully the causes for the delay. Failure to make a return may subject the taxpayer to a penalty of 25 per cent of the amount of the tax due.

The normal rate of tax on residents of the United States and on all citizens of the United States regardless of their places of residence, under the Revenue Act of 1934, is 4 per cent on net income in excess of the exemptions and credits.

WHO MUST FILE RETURNS

1 Returns must be filed by every person whose gross income in 1934 was \$5,000 or more, regardless of the amount of his net income and of his marital status. If the aggregate gross income of husband and wife living together, was \$5,000 or more, they must file either a joint return or separate returns, regardless of the amounts of their joint or individual net incomes.

2 If gross income was less than \$5,000, a return must be filed (a) by every unmarried person, and by every married person not living with her husband or his wife, whose net income was \$1,000 or more, and (b) by every married person living with her husband or his wife whose net income was \$2,500 or more. If the aggregate net income of husband and wife, living together, was \$2,500 or more, each may make a return or the two may unite in a joint return.

If the status of a taxpayer so far as it affects the personal exemption or credit for dependents, changed during the year the personal exemption and credit must be apportioned, under rules and regulations prescribed by the Commissioner of Internal Revenue with the approval of the Secretary of the Treasury, in accordance with the number of months before and after such change. For the purpose of such apportionment a fractional part of a month should be disregarded unless it amounts to more than half a month, in which case it is to be considered as a month.

As a matter of courtesy only, blanks for returns are sent to taxpayers by the collectors of internal revenue without request. Failure to receive a blank does not excuse any one from making a return, the taxpayer should obtain the necessary blank from the local collector of internal revenue.

The following discussion covers only matters relating specifically to physicians. Full information concerning questions of general interest may be obtained from the official return blank and from the collectors of internal revenue.

GROSS AND NET INCOMES WHAT THEY ARE

Gross Income—A physician's gross income is the total amount of money received by him during the year for professional services, regardless of the time when the services were rendered for which the money was paid, plus such money as he has received as profits from investments and speculation and as compensation and profits from other sources.

Net Income—Certain professional expenses and the expenses of carrying on any enterprise in which the physician may be engaged for gain may be subtracted as "deductions" from the gross income to determine the net income on which the tax

is to be paid. An "exemption" is allowed, the amount depending on the taxpayer's marital status during the tax year as stated above. These matters are fully covered in the instructions on the tax return blanks.

Earned Income—In computing the normal tax, but not the surtax, there may be subtracted from net income from all sources an amount equal to 10 per cent of the earned net income, except that the amount so subtracted shall in no case exceed 10 per cent of the net income from all sources. Earned income means professional fees, salaries, and wages received as compensation for personal services, as distinguished from receipts from other sources.

The first \$3,000 of a physician's net income from all sources may be regarded under the law as earned net income, whether it was or was not in fact earned within the meaning set forth in the preceding paragraph. Net income in excess of \$3,000 may not be claimed as earned unless it in fact comes within that category. No physician may claim as earned net income any income in excess of \$14,000.

DEDUCTIONS FOR PROFESSIONAL EXPENSES

A physician is entitled to deduct all current expenses necessary in carrying on his practice. The taxpayer should make no claim for the deduction of expenses unless he is prepared to prove the expenditure by competent evidence. So far as practicable, accurate itemized records should be kept of expenses and substantiating evidence should be carefully preserved. The following statement shows what such deductible expenses are and how they are to be computed.

Office Rent—Office rent is deductible. If a physician rents an office for professional purposes alone, the entire rent may be deducted. If he rents a building or apartment for use as a residence as well as for office purposes, he may deduct a part of the rental fairly proportionate to the amount of space used for professional purposes. If the physician occasionally sees a patient in his dwelling house or apartment, he may not, however, deduct any part of the rent of such house or apartment as professional expense to entitle him to such a deduction; he must have an office there with regular office hours. If a physician owns the building in which his office is located, he cannot charge himself with rent and deduct the amount so charged.

Office Maintenance—Expenditures for office maintenance, as for heating, lighting, telephone service and the services of attendants, are deductible.

Supplies—Payments for supplies for professional use are deductible. Supplies may be fairly described as articles consumed in the using, for instance, dressings, clinical thermometers, drugs and chemicals. Professional journals may be classified as supplies and the subscription price deducted. Amounts currently expended for books, furniture and professional instruments and equipment, the useful life of which is short, generally less than one year, may be deducted, but if such articles have a more or less permanent value, their purchase price is a capital expenditure and is not deductible.

Equipment—Equipment comprises property of a more or less permanent nature. It may ultimately wear out, deteriorate or become obsolete, but it is not in the ordinary sense of the word consumed in the using.

The cost of equipment such as is described above, for professional use, cannot be deducted as expense in the year acquired. Examples of this class of property are automobiles, office furniture, medical surgical and laboratory equipment of more or less permanent nature, and instruments and appliances constituting a part of the physician's professional outfit to be used over a considerable period of time, generally over one year. Books of more or less permanent nature are regarded as equipment and the purchase price is therefore not deductible.

Although the cost of such equipment is not deductible in the year acquired, nevertheless it may be recovered through depreciation deductions taken year by year over its useful life as described below.

No hard and fast rule can be laid down as to what part of the cost of equipment is deductible each year as depreciation. The amount depends to some extent on the nature of the property and on the extent and character of its use. The

length of its useful life should be the primary consideration. The most that can be done is to suggest certain average or normal rates of depreciation for each of several classes of articles and to leave to the taxpayer the modification of the suggested rates as the circumstances of his particular case may dictate. As fair, normal or average rates of depreciation, the following have been suggested: automobiles, 25 per cent a year; ordinary medical libraries, x-ray equipment, physical therapy equipment, electrical sterilizers, surgical instruments and diagnostic apparatus, 10 per cent a year; office furniture, 5 per cent a year.

The principal governing the determination of all rates of depreciation is that the total amount claimed by the taxpayer as depreciation during the life of the article, plus the salvage value of the article at the end of its useful life, shall not be greater than its purchase price, or, if purchased before March 1913, either its fair market value as of that date or its original cost, whichever may be greater. The physician must in good faith use his best judgment and claim only such allowance for depreciation as the facts justify. The estimate of useful life, on which the rate of depreciation is based, should be carefully considered in his individual case.

In a Treasury Decision approved Feb. 28, 1934, No. 4422, it is held among other things, that

1. The cost to be recovered shall be charged off over the useful life of the property.

2. The reasonableness of any claim for depreciation shall be determined on the conditions known to exist at the end of the period for which the return was made.

3. Where the cost or other basis of the property has been recovered through depreciation or other allowances, no further deduction for depreciation shall be allowed.

4. The burden of proof will rest on the taxpayer to sustain the deduction claimed.

5. The deduction for depreciation in respect to any depreciable property for any taxable year shall be limited to such ratable amount as may reasonably be considered necessary to recover during the remaining life of the property the unrecovered cost or other basis.

Particular attention is called to the last of the foregoing provisions. If in prior years rates have been claimed which, if continued, will fully depreciate the cost, less salvage, before the end of its useful life based on conditions now known, a reestimate of the remaining useful life should now be made and the portion of the cost that had not been depreciated at the beginning of the year 1934 (for a return for the year 1934) should be spread over this reestimated life.

Medical Dues—Dues paid to societies of a strictly professional character are deductible. Dues paid to social organizations, even though their membership is limited to physicians, are personal expenses and not deductible.

Postgraduate Study—The Commissioner of Internal Revenue holds that the expense of postgraduate study is not deductible.

Traveling Expenses—Traveling expenses, including amounts paid for transportation, meals and lodging, necessarily incurred in professional visits to patients and in attending medical meetings for a professional purpose, are deductible.

Automobiles—Payment for an automobile is a payment for permanent equipment and is not deductible. The cost of operation and repair and loss through depreciation are deductible. The cost of operation and repair includes the cost of gasoline, oil, tires, insurance, repairs, garage rental (when the garage is not owned by the physician), chauffeurs' wages and the like.

Deductible loss through depreciation of an automobile is the actual diminution in value resulting from obsolescence and use and from accidental injury against which the physician is not insured. If depreciation is computed on the basis of the average loss during a series of years, the series must extend over the entire estimated life of the car, not merely over the period in which the car is in the possession of the present taxpayer.

If an automobile is used for professional and also for personal purposes—as when used by the physician partly for recreation or so used by his family—only so much of the expense as arises out of the use for professional purposes may be deducted. A physician doing an exclusive office practice

and using his car merely to go to and from his office cannot deduct depreciation or operating expenses he is regarded as using his car for his personal convenience and not as a means of gaining a livelihood

What has been said with respect to automobiles applies with equal force to horses and vehicles and the equipment incident to their use

MISCELLANEOUS

Laboratory Expenses—The deductibility of the expenses of establishing and maintaining laboratories is determined by the same principles that determine the deductibility of corresponding professional expenses. Laboratory rental and the expenses of laboratory equipment and supplies and of laboratory assistants are deductible when under corresponding circumstances they would be deductible if they related to a physician's office.

Losses by Fire or Other Causes—Loss of and damage to a physician's equipment by fire, theft or other cause, not compensated by insurance or otherwise recoverable, may be computed as a business expense and is deductible provided evidence of such loss or damage can be produced. Such loss or damage is deductible however only to the extent to which it has not been made good by repair and the cost of repair claimed as a deduction.

Insurance Premiums—Premiums paid for insurance against professional losses are deductible. This includes insurance against damages for alleged malpractice against liability for injuries by a physician's automobile while in use for professional purposes, and against loss from theft of professional equipment and damage to or loss of professional equipment by fire or otherwise. Under professional equipment is to be included any automobile belonging to the physician and used for strictly professional purposes.

Expense in Defending Malpractice Suits—Expenses incurred in the defense of a suit for malpractice are deductible as business expense.

Sale of Spectacles—Oculists who furnish spectacles, etc., may charge as income money received from such sales and deduct as an expense the cost of the article sold. Entries on the physician's account books should in such cases show charges for services separate and apart from charges for spectacles, etc.

Association News

SPECIAL MEETING OF HOUSE OF DELEGATES IN CHICAGO, FEBRUARY 15

The Speaker of the House of Delegates of the American Medical Association has issued the following official call for a special session of the House of Delegates to be held in Chicago Feb 15 1935

To the Members of the House of Delegates of the American Medical Association

In compliance with the official request of the Board of Trustees that the House of Delegates be convened in special session I as Speaker under authority of chapter III section 2 of the By-Laws hereby officially call the House of Delegates of the American Medical Association to convene in special session in the city of Chicago state of Illinois at 10 a m Central Standard Time on the fifteenth day of February 1935

The business to be transacted at this special session shall be limited to the consideration of the social and economic policies of the Association as related to pending and proposed legislation to sickness insurance and to other matters which may be submitted by the Board of Trustees

The House shall remain in session recessing from day to day until its deliberations are concluded

Signed and Issued in San Francisco California January 21 1935

FREDERICK C WARNER M D

Speaker House of Delegates American Medical Association

The meetings of the House of Delegates will be held at the Palmer House. Tentative reservations have been made at the Palmer House so that all members of the House of Delegates and all officers of the Association who are required to attend may be assured of hotel accommodations. Each delegate is urgently requested to communicate with the Palmer House, Chicago and make his own final reservation stating the kind of accommodations desired and the time of expected arrival.

By official action of the Board of Trustees, authorization has been given for the payment of necessary travel expense incurred by delegates in attending the called session of the House of Delegates in order that a truly representative meeting may be had and that no undue burden will be imposed on any delegate.

Since matters of the utmost importance to the entire medical profession are to be considered, it is earnestly hoped that every delegate who attended the Cleveland session of the Association will be present at this special session.

Section 2 chapter III, of the By-Laws of the American Medical Association, pertaining to special sessions of the House of Delegates, is as follows:

SEC 2 SPECIAL SESSIONS—Special sessions of the House of Delegates shall be called by the Speaker on written request of twenty five or more delegates representing one third or more of the constituent associations or on request of a majority of the Board of Trustees. When a special session is thus called the Secretary shall mail a notice to the last known address of each member of the last House of Delegates at least twenty days before such special session is to be held in which notice shall be specified the time and place of meeting and the items of business to be considered. No other business shall be transacted at the special session than that specified in the call.

Each delegate who served in the House of Delegates at the Cleveland session has been notified of the called meeting to be held in Chicago on February 15 in accordance with the provisions of the By-Laws, and a copy of the official call issued by the Speaker has been mailed to all delegates, as required by the By-Laws of the American Medical Association.

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4 30 to 4 45, central standard time. The next three broadcasts will be delivered by Dr W W Bauer. The titles will be as follows:

February 7	Heart Diseases
February 14	Heart Valves
February 21	Heart Muscles

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4 15, central standard time. The next three broadcasts will be as follows:

February 5	Pipes and a Pump	W W Bauer M D
February 12	Rheumatism and Gout	Morris Fishbein M D
February 19	Health Lessons from George Washington	W W Bauer M D

Special Coast to Coast Broadcast

The American Medical Association will broadcast on a special program arranged through the courtesy of the National Broadcasting Company over a network of stations, beginning at 6 p m, eastern standard time, Monday, February 18. The program will include music and three speakers from among physicians in attendance at the Annual Congress on Medical Education and Medical Licensure, meeting in Chicago on that day. The speakers will be introduced by Dr Morris Fishbein. The speakers and their topics are as follows:

Advancement of Medical Education,	Walter L Biering M D
The Prolongation of Life	Ray Lyman Wilbur M D
The Battle Against Tuberculosis	Rendall Emerson M D

The Only Proved Poisonous Spider—In man the bite of *Latrodectus mactans* is followed, with dramatic suddenness by a characteristic and alarmingly severe systemic reaction. The full grown female, particularly when distended with eggs appears from experiments with animals to be the most poisonous. The male, though also poisonous may, on account of its size, greater timidity and scarcity, be ignored as an etiologic factor of any importance in arachnidism. *Latrodectus mactans* is the only proved poisonous spider found in the United States—Blair, A W. Life History of *Latrodectus mactans*. *Arch Int Med* 54 844 (Dec.) 1934.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Bill Introduced—H 87 proposes to authorize the sexual sterilization of certain socially inadequate inmates of state institutions.

ARIZONA

Bill Introduced—H 19 proposes to enact a new pharmacy practice act. Apparently this bill proposes to prohibit physicians from dispensing drugs and medicines but permits them to administer personally 'drugs and medicines carried or kept for emergencies' in order to supply the immediate needs of their own patients.

ARKANSAS

Bill Introduced—S 32 proposes to authorize the sexual sterilization of insane, idiot, imbecile, feeble-minded or epileptic inmates of state institutions.

Bill Passed—S 35 proposing a new optometry practice act has passed the senate. The bill proposes to permit a licensed optometrist to employ any method or means other than the use of drugs, medicines or surgery for the analysis of any optical defect, deficiency or deformity, visual or muscular anomalies of the visual system to prescribe or adopt or duplicate lenses, prisms or ocular exercises for the correction, relief or need of the visual functions, or to use scientific instruments to train the visual system.

DELAWARE

Bills Introduced—H 10 proposes that the property of any corporation organized for the purpose of free medical or dental aid or education shall be exempt from state, county and municipal taxes to the extent that such property is actually so used. H 23 proposes to require that before any child shall be admitted to a public school he shall present a certificate that he has been vaccinated successfully against smallpox or a physician's certificate that vaccination is inadvisable by reason of some physical disability.

DISTRICT OF COLUMBIA

Personal—John Barton Payne, chairman of the American Red Cross since 1921, died January 24 of pneumonia. Judge Payne, who would have been 80 years of age on January 26, was the son of a physician, Dr. Amos Payne.

Medical Bills in Congress—S 1016, introduced by Senator Capper, Kansas, proposes to empower the health officer of the District of Columbia to authorize the disinterment and reinterment of bodies in cases in which death has been caused by certain contagious diseases. S 1401, introduced by Senator Davis, Pennsylvania, and H. R. 4510, introduced by Representative Ellenbogen, Pennsylvania, propose to provide for needy blind persons of the District of Columbia.

GEORGIA

County Society Creates Lectureship—The Fulton County Medical Society announces the establishment of the E. Bates Block Memorial Lectureship in Medicine. The lectureship was created in memory of Dr. Block by his family and will bring each year to Atlanta a prominent specialist in medicine. Dr. Foster Kennedy, New York, director of the neurologic service, Bellevue Hospital, and professor of clinical neurology at Cornell University Medical College, gave the first lecture, January 24. He discussed the relationship of neurology to medicine and the present status of psychiatry. Dr. Block, at the time of his death in October 1932, was professor of neurology and psychiatry, Emory University School of Medicine.

ILLINOIS

Bill Introduced—H 47 proposes to require operators of motor vehicles to pass examinations including tests of eyesight.

INDIANA

Bill Introduced—H. 66 proposes to create a board of chiropractic examiners and to regulate the practice of chiropractic. The only educational requirements to be exacted of

an applicant for a license is a high school education or its equivalent and graduation from a chiropractic college or school after completing a course of training of at least three years of eight months each. Chiropractic is defined as "the science of locating and correcting any interference with nerve transmission and expression," but licentiates are not to be permitted to practice surgery, prescribe drugs or administer anesthetics. Licentiates are also to be permitted to use the title "Dr.," provided "such designation is used in such manner as to indicate that the licensee is a chiropractor."

IOWA

Personal—Dr. Leonard A. West, flight surgeon in the medical reserve corps, has been appointed medical examiner for the bureau of air commerce in Des Moines.—Dr. Anton R. Schier has been named superintendent of the Hospital for Epileptics and School for Feeble-minded, Woodward, succeeding the late Dr. Mathew N. Voldeng. Dr. Schier was formerly assistant superintendent of the Institution for Feeble-minded Children at Glenwood.

Gavel Presented to Society—A hand carved gavel from the island of Cavaat was presented to the Linn County Medical Society recently by Dr. Arthur W. Erskine, Cedar Rapids. On the head of the gavel there is a likeness of the staff of Aesculapius with a snake wound around it. Dr. Erskine had the gavel made from native ashwood obtained from the island, which is said to be the birthplace of Aesculapius and which in ancient times was known as Epidaurus.

MASSACHUSETTS

Bills Introduced—H 1105 proposes to prohibit an insurance company, if it has actual notice that an injured insured person is indebted for hospitalization made necessary as a result of personal injuries from settling a claim for damages for such personal injuries before such indebtedness is paid. H 1276 proposes to make it unlawful for any physician or hospital in any way to influence any person, injured by accident, in the selection or retention of any attorney to prosecute or handle his claim for damages. H 1109 proposes to give to physicians, nurses and hospitals, treating persons injured through the negligence of others, liens on any judgment or settlements accruing to the injured persons on account of their injuries. H 1113, apparently to supplement the workmen's compensation act, proposes that any injury or illness accruing to a workman who has been employed twenty or more years continuously by a corporation shall be deemed to be a compensable injury or illness. S 74 proposes to authorize a divorce if either spouse has been confined in a hospital for the insane for at least five years. S 308 proposes to authorize the establishment and maintenance, in the western part of the commonwealth, of a hospital for the treatment of cancer. S 312, to enact a new chiroprody practice act, proposes to define chiroprody or podiatry as the examination, diagnosis and treatment externally by medical, mechanical or surgical means or manipulation, or by the various modalities of physical therapy, of the structures and diseases of the human foot and leg, without the use of other than local anesthetics and not including the amputation of toes or of a foot. H 1458 proposes to create a board of magnetic healer examiners and registration and to regulate the practice of magnetic healing, which the bill defines as "the science of reviving and producing life and circulation in the nerve system and cells, so as to heal all nerve affections." Apparently, no educational requirements whatever are to be exacted of applicants for licenses to practice magnetic healing. Such applicants are to be required to submit to an examination as to his or her qualifications for the practice of magnetic healing, which examination shall include the subject of nerves. H 1285, to amend the workmen's compensation act, proposes that whenever an employee claims compensation for an occupational disease his claim shall be submitted by the industrial accident board to three referees, selected by the board from a list of licensed physicians skilled in the diagnosis and treatment of occupational diseases, which list is to be prepared by the board of registration in medicine. After investigation, the referees are to report their findings of medical fact to the industrial accident board. S 268 proposes to amend the law which authorizes the department of labor and industries to require a physician, treating a patient whom he believes to be suffering from any ailment or disease contracted from any employment, to report that fact to the department, by making it mandatory for the department to pay a reporting physician 50 cents for each such report submitted and by providing that such report shall not be subject to summons nor shall its contents be made public. H 1284 to amend the workmen's com-

pensation act, proposes in effect, to make all occupational diseases compensable. H 1615 proposes to accord to physicians and hospitals liens on the proceeds of any health, accident and liability insurance policy that may be due to any patient treated by the physician or hospital.

MINNESOTA

Bill Introduced—S 112, to amend the workmen's compensation act, proposes, in effect, to make compensable all diseases and infections naturally resulting from any employment covered by the act.

Minnesota Free of Tuberculosis in Cattle—The *Journal-Lancet* announces that Minnesota has been designated a "cattle tuberculosis free" state, attributing this achievement to the intensive campaign that has been carried on for the past fifteen years. The designation means that the disease is confined to less than 0.5 per cent of cattle in the state.

MISSOURI

Pathologic Society Organized—The Kansas City Pathologic Society was organized at a meeting Dec. 12, 1934, with Dr. William K. Trimble as president and Dr. Arthur H. Wells, secretary. The society will cooperate with the Jackson County Medical Society by having its meetings the hour preceding the weekly meetings of the county organization, except for one night a month when it will take over the regular period of the medical society meeting. The programs will be along clinical pathologic lines in an effort to attract physicians in all branches of medicine.

Bills Introduced—H 73 proposes to forbid the sale or other distribution of acetylsalicylic acid, carbolic acid or iodine except on the prescription of a licensed physician, dentist or veterinarian. H 87, to supplement the workmen's compensation act, proposes to make "occupational diseases compensable, provided the workman has been exposed to the producing cause for at least five years, two years of which has been in Missouri. The bill proposes to define an occupational disease as any physical change or impairment in health of an employee, arising independently of any wilful negligence on his part, tending to impair, restrict or totally disable him from performing his duties and arising from the particular product manufactured, or the means and methods of manufacture. H 133 proposes to require that all drugs and chemicals in whole or in part of coal tar origin, intended for human medication shall except when prescribed by a licensed physician be plainly labeled with their true English names and as being of coal tar origin. Labels must include statements of the dangerous effects and give the names of at least two antidotes. H 148 proposes to prohibit the sale or other distribution of marijuana.

MONTANA

Bill Introduced—H 9 proposes to amend the law relative to hospitals. The law now prohibits hospitals not held for private or corporate profit and hospitals that are institutions of purely public charity and that are exempted from any state county or municipal tax, by reason thereof from discriminating between the patients of regularly licensed physicians. The present law requires such hospitals to admit and care for the patients of any regularly licensed physician. This bill proposes to require such hospitals to admit and care for the patients of any reputable regularly licensed physician and practitioner of the healing art. It defines "practitioner of the healing art" as any person licensed by the state of Montana to practice osteopathy, chiropractic or any science recognized by the laws of the state of Montana. The present law imposes a fine of from \$500 to \$1,000 on any person, corporation or association who violates it "with intent to injure any patient or to injure the practice of any physician or surgeon." The proposed amendment would impose this fine regardless of intent.

NEW MEXICO

Bill Passed—H 16 has passed the house proposing to authorize all cities, towns and villages operating under special acts of the legislature to maintain hospitals, sanatoriums and other institutions for the care and maintenance of sick or indigent persons.

NEW YORK

Health Unit Disapproved—The Fulton County Medical Society at its annual meeting in Gloversville, Dec. 20, 1934, adopted a resolution registering its disapproval of a bi-county health unit for Fulton and Montgomery counties. It was said that the unit had no definite plan, was admitted to be an experimental procedure and was considered to be an additional step toward state medicine.

Society News—Mr. Frank Van Dyk, executive secretary, Associated Hospitals, Newark, N. J., addressed a joint meeting of the Syracuse Academy of Medicine and the Onondaga County Medical Society, January 17, on group hospitalization. Dr. William V. P. Garretson, New York, addressed the Medical Society of Westchester County, January 15 on "Allergy—A Neuro-Endocrine Interpretation." Drs. Chevalier Jackson, Philadelphia, and Arthur Q. Penta, Schenectady, addressed the Schenectady County Medical Society, January 8, on "Indications for Bronchoscopy" and "Oral Spirochetes and Associated Anaerobes in Pyorrhea and Lung Abscess, respectively."

New York City

Hospital News—Dr. Charles L. Scudder, Boston, delivered an address at a meeting of the clinical society of the New York Polyclinic Medical School and Hospital, Dec. 3, 1934, on "Trends in the Treatment of Fractures." Dr. Elliott C. Cutler, Boston, spoke January 7, on "Treatment of Heart Disease by Total Thyroidectomy." Dr. Russell L. Cecil will give a lecture February 6, on "Foreign Protein Therapy." Dr. Pol N. Coryllos lectured January 12, on "Surgical Treatment of Tuberculosis."

Friday Afternoon Lectures—The spring series of Friday afternoon lectures offered by the Medical Society of the County of Kings will be as follows:

February 15 Dr. Charles A. Weymuller, Pediatric Advances of the Last Few Years.
March 1 Dr. Morris Ant. Diet as a Prescription in Treating Diseases.
March 7, Dr. Anthony W. Martin, Marino Office Management of Diseases of the Anus and Rectum.
March 15 Dr. Frederick Schroeder, Prescription Writing.
March 22, Dr. Meyer A. Rabinowitz, Role of the Stomach in the Production of Diseases.
March 29 Dr. Alfred C. Beck, Fibromyoma of the Uterus Complicating Pregnancy, Labor and the Puerperium.
April 5 Dr. Charles S. Cochrane, Practical Methods of Diagnosing Surgical Kidneys by the General Practitioner.
April 12 Dr. William H. Field, Management of Common Injuries.
April 26, Dr. John Hamilton Crawford, Mechanism and Treatment of Cardiac Edema.
May 3 Dr. Francis W. Currin, Roentgen Diagnosis of Primary Tumor of the Lung.

Society News—Drs. John L. Rice, health commissioner, and Sigismund S. Goldwater, hospital commissioner, addressed the Medical Society of the County of Kings, January 15, on "Relation of the Practicing Physician to the Health Department and The Department of Hospitals and the People of the City of New York," respectively. A symposium on cancer was presented at the meeting of the International Spanish Speaking Association of Physicians, Dentists and Pharmacists, January 18, by Drs. Eleanor S. Percival, Montreal, John F. Erdmann, New York, Charles F. Geschickter, Baltimore and Frank H. Lahey, Boston. Dr. Jacob M. Gershberg, president for 1935, delivered an address on "The Late King Albert, President Poincare, Professor Cajal and Madame Curie." The committee on cardiac clinics of the New York Heart Association held a scientific meeting January 22, at the New York Academy of Medicine, with Dr. Joseph Earle Moore, Baltimore, and Detlev W. Bronk, Ph.D., Philadelphia as speakers, on "Treatment of Cardiovascular Syphilis" and "Nervous Regulation of the Heart," respectively. Dr. Ralph Pemberton, Philadelphia, addressed the American Hungarian Medical Association, January 8, on "The Problem of Arthritis." Dr. John J. Westermann Jr. presented a paper on "Surgical Aspects of Bleeding Gastrointestinal Ulcer" at a meeting of the New York Surgical Society, January 9.

NORTH CAROLINA

Bills Introduced—S 19 and H 32, the budget revenue bills, among other things, propose to levy an annual occupational tax of \$25 on practicing physicians, osteopaths, chiropractors and optometrists. Only one half of this tax, however, is to be levied on practitioners whose gross receipts from practice for the preceding year did not exceed \$1,000. Failure of a practitioner to pay this tax may result in the revocation of his license to practice. Counties, cities or towns are to be forbidden to levy an additional occupational tax.

PENNSYLVANIA

Society News—Dr. Charles F. Geschickter, Baltimore, addressed the Washington County Medical Society, January 9, on "Tumors and Hormones." Dr. Joseph H. Barach, Pittsburgh, addressed the Blair County Medical Society, Altoona, Dec. 18, 1934, on "Present-Day Conceptions of Arterial Hypertension."

Bills Introduced—H 102, to amend the workmen's compensation act, proposes to make compensable anthracosis, asthma or bursitis acquired or resulting from employment in any process involving mining. H 91, to amend the workmen's compensation act, proposes to make compensable certain occupational diseases, including poisoning by lead, mercury, phosphorus, arsenic, methanol, carbon bisulphide, naphtha, manganese dioxide, brass, zinc, benzol and nitro- and amido- derivatives of benzol also compressed air illness, radium or x-ray burns, chrome ulceration, cancers and ulcers resulting from tar, pitch, bitumen, mineral oil or paraffin, and infection or inflammation of the skin resulting from contact with oils, cutting compounds, lubricants, dusts, liquids, fumes, gases or vapors, also anthrax, silicosis and chronic miners asthma. H 44, to amend the workmen's compensation act, proposes to extend from thirty days to sixty days the period during which an employer must furnish an injured workman medical and surgical services, medicines and supplies and to raise the amount of an employer's liability for such services from \$100 to \$150. The bill proposes also to increase from thirty days to sixty days the period during which an employer must furnish necessary hospital treatment and limits the cost of such treatment to the prevailing charges for like services to other individuals.

SOUTH DAKOTA

Bills Introduced—H 16, to amend the chiropractic practice act, proposes (1) to require an applicant for a license to have a high school education or its equivalent and to be a graduate of a chartered chiropractic school requiring actual attendance for four (instead of three as the law now provides) school years of not less than eight months each, (2) to define chiropractic as the science of locating and removing any nerve interference and its effects" and as including "physical, hygienic and sanitary measures incident thereto," and (3) to remove the provision expressly prohibiting chiropractors from practicing obstetrics or treating contagious or infectious diseases. H 25, to amend the law prohibiting the possession or sale or other distribution of peyote (pellote) and "agva Americana," commonly known as mescal button, proposes that nothing in the law shall prohibit a duly ordained priest or minister from possessing and using peyote for sacramental purposes if he first obtains a permit from the attorney general.

TEXAS

Bill Introduced—H 133 proposes to forbid the sale or other distribution except by registered pharmacists or licensed physicians, of any article, drug or medicinal preparation intended for use as, or which may be used as, a contraceptive or prophylactic.

WASHINGTON

Bills Introduced—S 5 proposes to authorize the sexual sterilization of persons who may be potential parents of socially inadequate offspring. This bill seems to be one of the broadest and most radical sterilization bills ever considered by an American legislature. It defines a socially inadequate person as "one who by his or her own effort, regardless of etiology or prognosis, fails chronically, in comparison with normal persons, to maintain himself or herself as a useful member of the organized social life of the state" exempting therefrom persons whose social ineffectiveness is due to the normal exigencies of youth, old age, curable injuries and/or temporary physical or mental illnesses. A potential parent of socially inadequate offspring is defined as a person "who, regardless of his or her own physical, physiological or psychological personality, and of the nature of the germ plasm of such person's co-parent, is a potential parent at least one fourth of whose possible offspring, because of a certain inheritance from said parent of one or more inferior or degenerate physical, physiological or psychological qualities, would, on the average according to the demonstrated laws of heredity, most probably function as socially inadequate persons, or at least one half of whose possible offspring would receive from said parent and would carry in the germ plasm, but would not necessarily show in the personality, the genes or genes-complex for one or more inferior or degenerate physical, physiological or psychological qualities the appearance of which quality or qualities in the personality would cause the possessor thereof to function as a socially inadequate person under the normal environment of the state." H 5 to amend the chiropody practice act proposes to permit a licensed chiropodist to examine, diagnose or treat medically, mechanically or surgically, or by electrical and manipulative means or by bandaging and strapping, the ailments of the human foot. Chiropodists, however, are not to be permitted to amputate the toes or to perform any operation requiring the use of anesthetics other than local.

WISCONSIN

Bill Introduced—A 10 proposes to make it the duty of a physician knowing that a person visited by him has a communicable disease or has died from a communicable disease to report the fact to the local health officer, commissioner or board immediately, to quarantine the infected place and the family, if necessary, if the disease has been designated by the state board to be quarantinable, and to obtain the necessary placards and to report such quarantine to the local health officer, commissioner or board.

WYOMING

Bill Introduced—H 28 proposes to authorize the state department of health to conduct, in cooperation with local authorities or medical societies, clinics for physically handicapped and crippled children. The cost of the operation of such clinics is to be financed in part by a tax of 2 per cent on the sale of cigarets and chewing gum.

Bill Passed—H 34 has passed the house, proposing to create a board of chiropodist examiners and to regulate the practice of chiropody. Licensed chiropodists are to be permitted to examine, diagnose or treat medically, mechanically, surgically or by electrical and manipulative means, or by bandaging and strapping, the ailments of the human foot but are not to be permitted to amputate the foot or toe or remove any bone of the foot, or use any anesthetic other than local.

GENERAL

Society News—Dr Edwin G. Zabriskie, New York, was elected president of the Association for Research in Nervous and Mental Diseases at its annual meeting in New York, Dec. 27-28, 1934, and Dr Angus M. Frantz, New York, secretary.—The Southern Neuropsychiatric Association will hold its annual meeting at Memphis February 5-6, at the Hotel Peabody. Dr Giles W. Day, Galveston, Texas, is president and Dr Newdigate M. Owensby, Atlanta, secretary of the association.—A conference on slum clearance and rehousing was held in Washington, D. C., January 18-20, under the chairmanship of Mary Kingsbury Simkhovitch, New York, president of the National Public Housing Conference.—Dr Raymond W. Bradshaw, physician to Oberlin College, Oberlin, Ohio, was reelected president of the American Student Health Association at the annual session in New York, Dec. 27-28, 1934. Dr Wade MacMillan, Miami University, Oxford, Ohio, was elected vice president, and Dr Harold S. Diehl, University of Minnesota Medical School, Minneapolis, secretary.—A National Nonpartisan Committee for Ratification of the Federal Child Labor Amendment has been formed, with Charles C. Burlingham, former president of the Association of the Bar of the City of New York, as chairman. Mr Burlingham was president of the Welfare Council of New York in 1931.—The American Association for Thoracic Surgery will hold its annual session in New York, June 3-5.

The Woman's Auxiliary—The January News Letter of the Woman's Auxiliary to the American Medical Association gives accounts of its activities. The Woman's Auxiliary to the Nebraska State Medical Association has organized a bureau which arranges for physicians to address lay organizations. In Florida, the Dade County auxiliary (Miami) established a fund to aid widows and children of physicians and sponsored the sale of Christmas seals. The Michigan state auxiliary has made a special effort to be informed on legislation affecting the medical profession and to be prepared to discuss it before other organizations. The Georgia auxiliary participated in welfare projects, such as preparation and dissemination of information on maternal welfare, cancer and tuberculosis, the state president Mrs. John E. Penland, Waycross, is a member of the executive council of a new Child Welfare Council of Georgia. The Illinois auxiliary urges attention to medical legislation as part of its program for the year. Presiding officers of nearly 100 clubs attended a "public relations day" held by the auxiliary to the St. Louis Medical Society. Dr Joseph F. Bredeck, city health commissioner, made an address on "Public Health Nursing Needs." The auxiliary at Walla Walla, Wash., continued sponsorship of a series of health broadcasts begun last year which proved a popular radio feature. In the District of Columbia the activities were chiefly devoted to social service projects, assisting the Red Cross the Associated Charities and Emergency Hospital. Members in Racine County, Wisconsin have been visiting county and city institutions with a view to interesting members in them. In Oregon the woman's auxiliary of the state medical society is credited with a large share in the November defeat of the healing arts amendment to the state constitution which would have nullified the basic science law. In a campaign that

reached schools and women's organizations, the objective was dissemination of educational material concerning the issues involved

Medical Bills in Congress—Changes in Status H. J. Res. 117, the 'Emergency Relief Appropriation Act of 1935,' introduced by Representative Buchanan, Texas, has passed the House, authorizing an appropriation of \$4,000,000,000 for relief purposes. The United States Employees' Compensation Act is made applicable to employees, receiving compensation under the pending bill, who are disabled or who die from an injury sustained while in performance of duty, subject to certain conditions and limitations. H. R. 4442, the Treasury Department and Post Office Department Appropriation Bill for the fiscal year ending June 30, 1936, has been reported to the House authorizing, among other things, an appropriation of \$25,000 for special studies of and demonstration work in rural sanitation. **Bills Introduced** S. 600, introduced by Senator Hastings, Delaware, proposes to authorize the dissemination of information relating to the prevention of conception, and articles, instruments, substances, drugs and medicines designed, adapted or intended for the prevention of conception, (1) by any physician legally licensed to practice medicine, or by his direction or prescription, (2) by any druggist in filling any prescription of a licensed physician, (3) by any medical college legally chartered, or (4) by any licensed hospital or clinic, except in any state in which such use is prohibited by the law thereof. S. 1226, introduced by Senator Hayden, Arizona, proposes to prohibit the sending of unsolicited merchandise through the mails. H. R. 3645, introduced by Representative Fenerty, Pennsylvania, proposes to authorize the President to accept radium, in an amount not exceeding \$10,000,000 worth, from the Belgian government in payment of the debt owed by that country to the United States. The radium so accepted it is proposed, will be distributed to hospitals, medical clinics and medical research organizations in the United States. H. R. 3802, introduced by Representative Hobbs, Alabama, proposes to repeal the Emergency Officers Retirement Act of May 24, 1928. H. R. 4012, introduced (by request) by Representative McSwain, South Carolina, proposes to bring within the purview of the United States Employees' Compensation Act officers and enlisted men of the National Guard and the Organized Reserves who are physically injured in line of duty. H. R. 4030, introduced by Representative Beam, Illinois, proposes to amend "An Act to recognize the high public service rendered by Major Walter Reed and those associated with him in the discovery of the cause and means of transmission of yellow fever," by including therein the name of Gustaf E. Lambert. H. R. 4242, introduced by Representative Woodrum, Virginia, proposes to authorize the Reconstruction Finance Corporation to make loans to private colleges, universities and institutions of higher learning. H. R. 4315, introduced by Representative Reilly, Wisconsin, proposes to regulate the importation of milk and cream, and milk and cream products, into the United States. H. R. 4440, introduced by Representative Gambrill, Maryland, proposes to provide medical services after retirement on annuity to former employees of the United States disabled by injuries sustained in the performance of their duties. H. R. 4539 introduced by Representative Mead, New York, proposes to alleviate the hazards of old age, unemployment, illness and dependence, to establish a social insurance board in the Department of Labor, and to raise revenue.

Government Services

Annual Report of the Public Health Service

For the calendar year 1933 the general death rate in the United States was 10.5 per thousand of population as estimated on statistics received from twenty-seven states, the annual report of the U. S. Public Health Service reveals. This is the lowest death rate on record for the United States. Preliminary reports for the first six months of 1934 show a somewhat higher rate in many places. During the year under report, the public health service conducted several studies in places where the economic depression has been most severe, and the results showed higher sickness rates in families most acutely affected by economic conditions. The birth rate again declined, there were 16.4 births per thousand of population in 1933 as compared with 17.4 in 1932. The infant death rate was 58.2 per thousand live births. Three diseases reached the lowest death rates ever recorded: tuberculosis 59 per hundred thousand; typhoid 3.5 and diphtheria 3.9. Although there were no widespread epidemics, three unusual local epidemics of major importance are discussed in the report: amebic dysentery in Chicago,

affecting approximately 690 persons, epidemic encephalitis in St. Louis, which caused 1,100 cases with more than 200 deaths, and poliomyelitis in California, which started in May 1934 and extended beyond the end of the fiscal year. Nearly 400,000 cases of measles occurred in the calendar year 1933, and 656,000 cases were reported to the Public Health Service during the first half of 1934. Less than 7,000 cases of smallpox were reported for 1933, with less than forty deaths. Medical officers of the service by inspection of incoming vessels and airplanes at both foreign and domestic ports prevented the introduction of any quarantinable disease into the United States. Altogether 15,007 vessels and 3,668 airplanes and their passengers were inspected. The International Sanitary Convention for Aerial Navigation was signed on behalf of the United States, April 6, 1934. Vessels operating within the country are also inspected; the report notes that for the first time since inspection was inaugurated there was not a case of typhoid on boats plying the Great Lakes. Among the varied activities of the service during the year was its participation in the emergency civil works program. Three projects were carried out: assistance to fourteen states in malaria control under which more than 6,000 miles of drainage ditches was dug, construction of more than 225,000 sanitary outdoor toilets in twenty-two states and sealing of 7,000 openings in abandoned mines to remove acid wastes from water supplies in Alabama, Pennsylvania and West Virginia. In the research division, in addition to study of epidemics, the program included investigations of cancer, rheumatic heart disease, the use of atabrine in treatment of malaria, pellagra and dietary factors in the production of cataracts. Examination of children of leprosy parents over several years has demonstrated that it is possible to detect changes in the nerves and the capillary system well in advance of clinical manifestations of leprosy. Other investigations were made to determine the mode of entrance of the leprosy bacillus. During the year 212 liters of vaccine for Rocky Mountain spotted fever was manufactured at the laboratory at Hamilton, Mont. for general use and 40 liters more for the Civilian Conservation Corps. A new laboratory building at Hamilton is almost completed. A total of 385,953 cases of syphilis, gonorrhea and chancroid was reported, a slight decrease from the preceding year. The clinic maintained by the service at Hot Springs National Park, Ark., cared for 6,682 patients, a greater number than ever before, owing largely to the great number of homeless transients who poured into the city during the year the report said. The first United States Narcotic Farm, which will be under the control of the division of mental hygiene, will be completed and ready to receive patients in April. Funds have been made available through the public works program for beginning construction of the second farm at San Antonio, Texas. The twenty-five marine hospitals operated by the service together with relief stations in ports not served by these hospitals, cared for 305,155 patients, 42,611 having received treatment in hospitals and the remainder office treatment. In May 1933 a new administration building was opened in Washington, D. C. In closing his report the surgeon general made a number of recommendations for improving the public health. As part of the national defense against disease, the federal health service should cooperate with states on a more substantial basis than in the past, the surgeon general declared. He urged that quarantine regulations in the Panama Canal Zone be made uniform with those in force at other United States ports and that the Convention for Sanitary Control of Aerial Navigation, already signed by this country, be ratified as soon as practicable. Restoration of adequate appropriations for efficient operation of the marine hospitals and for control of venereal diseases was also pointed out as a necessity. Finally, the report asserts that the service is understaffed. Important matters in the regular work as well as the emergency activities of the government have made it necessary to detach experienced officers from their duties leaving the latter to be performed by untrained personnel. The financial statement shows that of an appropriation of \$10,630,587 there was expended a total of \$8,721,451. The entire personnel at the end of the fiscal year included 10,727 persons. Of this number, however, 4,674 are collaborating epidemiologists, mainly officers of state and local health organizations who receive only nominal compensation for furnishing vital statistics or similar services. The statement also includes all part time employees and those on a fee basis.

CORRECTION

We Have Tried Diets—Under Society Proceedings in THE JOURNAL, January 19, page 251, the sentence in the discussion by Dr. Kaare K. Nyaard that reads "We have tried diets" should read "We have tried diets."

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan 5, 1935

Too Much Specialization in the Training of Nurses

At an inquiry into the training of nurses in Scotland, evidence was given by the department of health summarizing the history of nurses' training over the last fifty years. The status of nurses has improved greatly in the last twenty to thirty years, but still greater improvement is looked for, which will bring the profession nearer the standard of other professions. At present training is too sectionalized. This applies even to general hospitals, which fifty years ago were in fact "general," as they were the only hospitals. Now as the result of the development of special hospitals, general hospitals deal with a much narrower field of disease. Under existing circumstances a nurse wishing to obtain an all round training, embracing all sections of nursing, must spend a much longer time than in other professions. The question has arisen whether by cooperation between the various hospitals it would be possible for the nurse to pass rapidly from hospital to hospital and obtain an all round training in a reasonable time. If training of this kind could be taken in, say, five years, the nurse would be free thereafter to specialize in any branch to which she felt drawn. Evidence was given by witnesses from the Board of Control (the board which controls lunacy administration) that it would be an advantage if nurses in mental institutions were given general training. If they had this, the period of further training in a mental disease hospital could be substantially reduced.

The British Medical Association and the Registration of Osteopaths

The latest attempt of the osteopaths to obtain registration and the getting of a majority in favor of their bill in the house of lords were reported in a previous letter. The bill has been referred to a select committee. Four bills have been introduced by them since 1931. Alive to the danger of the situation, the British Medical Association appointed a special committee to draw up a memorandum on osteopathy for submission to the council. The memorandum describes the foundation of osteopathy in 1874 by Still of Kansas City, its development, theory, technic and practice, and makes the following criticisms. Osteopathy claims to have discovered a hitherto unrecognized and highly important cause of disease—"the osteopathic lesion"—which is defined as "a structural derangement, no matter how small or where found in the body, which interferes with the normal functioning of human mechanism." Such lesions are usually regarded as spinal and are said to be palpable and curable by manipulation. They are held to be responsible for most of the diseases of the human body. Thus the basis of modern medicine and surgery—physiology and pathology—as evolved by scientific research and taught in the medical schools is considered to be false, and bacteria as causal of disease and biochemical changes are of little significance. But what is the evidence for the osteopathic theory? Osteopathic literature is almost devoid of any pretense at scientific investigation. There is not a vestige of evidence to support the claim that the osteopathic spinal lesion is the principal cause of disease.

But there are indications that many osteopaths are retreating from these disturbing implications and are emphasizing the value of manipulative methods rather than its theoretical basis. A desire to incorporate all the medical curriculum, except drug therapy is also evident. And there are signs that even this exception is being abandoned. The osteopath actually claims to cover the whole field of general medicine, thus admitting that medical science is necessary to him in his practice if not

in his theory, and wishes to be regarded as a healer equipped with a full medical training. There is therefore no reason why he should not follow the same procedure as the medical student and satisfy the General Medical Council as to his knowledge. He can thus qualify and thereafter practice any system he likes. The granting of registration for less than the full medical curriculum would be against the public interest. The position of the medical profession is that a necessary preliminary to osteopathic or any other form of treatment is diagnosis. That the minimum training for competence in diagnosis is the full medical curriculum, that any one who has passed this is free to practice osteopathy. The proposed registration of osteopaths would cause confusion in the public mind by creating registers of different standards. Modern medicine and osteopathy cannot both be right.

To these carefully reasoned criticisms the osteopaths have made no answer, except to allege motives. They say that the British Medical Association, from the narrow standpoint of professional interests, desires to prevent the public from enjoying the benefits of osteopathy. That the association has never asked that osteopaths should be prevented from practicing and has only presented arguments on public grounds against persons with an inferior standard of medical education being allowed to represent themselves as competent for the treatment of all diseases, like properly qualified physicians, is calmly overlooked.

An Industrial Museum Devoted to Safety

There is in London a unique museum, a permanent collection of methods, arrangements and devices for promoting the safety and health of the factory worker. All power driven machinery is a source of danger. In factory accidents last year 523 persons were killed and 104,119 injured. If accidents in building operations and at docks are added, the number of killed is brought up to 688 and of injured to 112,572. The sum paid in compensation is more than \$10,000,000 a year, and when medical and legal expenses and loss due to derangement of work are added the total cost is estimated at between \$40,000,000 and \$45,000,000 a year.

A workman cannot be relied on always to ensure his own safety. A momentary lapse of attention may be disastrous. He may disregard and even deliberately set aside a protective appliance if he thinks that it hinders his work. Hence the greater need of mechanical protection.

In the health section of the museum are divisions devoted to the principal industrial disease, lighting, heat and ventilation, and welfare work. The museum is open to the general public, but it is mainly useful to employers and workers. It is useful also to designers of factories and to physicians. The claim is made that the appliances shown would prevent four out of every five factory accidents.

Poison Gas Warfare

At the Institute of Chemistry, Dr. Hervert Levinstein, one of the poison gas experts during the war, in a lecture said that the widespread notion that science had made war so dangerous that it was less likely to happen was based on a fallacy. The application of chemical science to war had not made war more dangerous either to soldiers or to civilians but it had given fresh possibilities for effecting a strategic surprise that might decide a campaign. It was this and not greater brutality that was the distinguishing feature of chemical warfare. Far more destruction of property, greater mortality and suffering were caused by dropping high explosive or incendiary bombs from aircraft than by using gas-filled shells. But gas might be more effective in causing a panic among untrained and unprotected civilians. The wars that devastated Europe in the seventeenth and eighteenth centuries were proportionately more wasteful of life than the great war, in which casualties were caused chiefly by the lack of invention—by reliance on mere

numbers of men and projectiles. The casualties caused by gas to the American troops, who arrived at the front when the use of gas had reached its maximum, numbered 75,000, of which only 15 per cent were fatal. But of their total casualties (275,000), 30 per cent proved fatal. This was an instance of what had been proved to be generally true—that toxic substances, such as mustard gas and phosgene, caused far less mortality than high explosive shells but were more effective in military results. Thus science had not made war more dangerous to life.

Nutrition Clinics for London School Children

The Labor majority of the London County Council has introduced a number of new arrangements for the medical and dental treatment of school children. These include additional treatment centers, dental inspection and nutriment for children under treatment, the establishment of nutrition clinics and new methods for the early treatment of ear, nose and throat diseases. Five nutrition centers are to be established in London. Cases will be referred to these by school physicians, teachers and the care committees. Each child will be given a thorough examination to ascertain whether its physical condition may be due to dietetic deficiency. If so, advice will be given to the parents and, when possible, nutritives and tonics, such as cod liver oil, malt and iron, will be provided. It is proposed to arrange for the extension of dental inspection and treatment facilities, so that all children in the schools shall be inspected by the dental surgeons once a year and the consequent treatment given.

PARIS

(From Our Regular Correspondent)

Dec 20, 1934

The Lack of Control of Pharmaceutic Products

The necessity of a stricter supervision of the innumerable pharmaceutic products is being felt both in France and in Belgium. In France the practitioner has his choice of more than 5,000 preparations. The Council on Pharmacy and Chemistry of the American Medical Association was held up as a model which other countries could well afford to adopt in an article by two Belgian professors, Dautrebande and Zunz, in the Dec 1 1934, issue of the *Paris medical*. At present any one without any special training or diploma can manufacture and sell to the public any remedy he pleases. Nothing prevents the sale of these preparations, no matter how little basis there exists for the extravagant claims made to cure every known ailment. Sometimes a specialty for the publicity of which large sums are spent is composed of harmless ingredients without any therapeutic value. In other cases the analysis shows that the preparation does not correspond at all to the advertisement and the patients instead of being benefited grow worse with subsequent unnecessary prolongation of the disease. The physician himself is led astray by the glowing descriptions and the generous number of samples sent by the manufacturer. Uncontrolled publicity has done far more harm than one would imagine hence many European countries have appointed committees to study the question, but generally the recommendations of such bodies have not had much real effect.

The authors of this article quote the organizations of control in Belgium, the Netherlands and Switzerland. In Belgium a sample is subjected to analysis, which has the sole object of verifying that the specialty actually contains the ingredients claimed for it by the manufacturer. In reality, as the authors state the chief object of the analysis is to assure the druggist who is to sell the product. No responsibility is assumed as to the therapeutic value of the specialty, because the control organizations have no funds at their disposal to verify the biologic action of the preparations and also have no authority over the publicity claims of the manufacturer. The control of

the specialties is better organized in the Netherlands, but even there the funds at the disposal of the council on pharmacy are inadequate, only about \$5,000 a year, and hence the analyses are done in the various university laboratories. The Institute, as the control body is termed, issues, at intervals of six months, monographs containing critical analysis of our knowledge of new remedies, which are sent to all physicians and pharmacists. The control of pharmaceutic specialties in Switzerland was not organized until 1932, when a central laboratory for analyses was established at Berne. The chief object is to verify that the preparation contains the ingredients claimed for it by the manufacturer. More attention is paid to the drugs included in the Swiss pharmacopeia than to the analyses or control of nonofficial remedies.

The remainder of the article is devoted to a detailed description of the Council on Pharmacy and Chemistry of the American Medical Association, and a plea is made for the use of this body as a model for all countries that wish to control the rapid increase in pharmaceutic specialties of good bad or indifferent composition. Some such control is certainly needed in the near future in France.

Decline in French Birth Rate

France has been termed a "country of bachelors and one child families." Paul Ballard in a recent article stated that the fall in the birth rate is assuming the proportions of a national peril. During the last sixty years the population of Germany has increased 24 million and that of Great Britain 19 million, while that of France increased only 2 million. Italy, Great Britain and Japan combined are as large in area as France, yet these three nations combined have a larger number of children than France. In 1830 there was an average of four births to a family. In 1890 it had decreased to three, and today it is two. During the first nine months of 1933 there were 30,000 less births than in the corresponding period of 1932.

Attention has been called to the decline in birth rate of the white race all over the world.

History teaches that whenever a country has attained a high degree of civilization, the birth rate begins to decline and then follows invasion or colonization by more fertile races on its soil. The present condition of France is not unlike that of Rome, which was obliged in its later period to depend on paid foreigners to defend it to see wheat from other countries supplant its own agriculture to find that the rural population flocked to the cities and the citizen neglected his responsibility and avoided paternity. Soon after these events, Rome was invaded by barbarians and its ruin soon followed. Even in the country districts of France there is a tendency to have smaller families to avoid added expense and division of property, acquired through years of thrift such as only the French peasant knows.

Only by direct aid in the way of reduced taxes, rewards for large families, heavy taxation of bachelors, reduction in the number of women engaged in commercial pursuits, and severe laws against abortion, will the birth rate rise. Such encouragement has been given in the form of legislation and other measures in Italy and Germany during recent years. In Italy more births were reported during the first six months of 1934 than in the previous two years.

Scarcity of Physicians in Rural Districts

The department of public health has issued a circular again calling attention to the excessive number of physicians, dentists and pharmacists in cities and the small number who are willing to settle in rural communities. An office has been opened in the department of public health to gather facts and give information regarding the inducements offered by small communities for the physician, dentist and pharmacist. These inducements

consist in salaries or guaranties and all heads of the eighty-six departments into which France is divided have been notified to cooperate in furnishing medical care to country districts. In the *Concours medical* Dec 9, 1934, Noir states that the great difficulty in finding recent graduates who would be willing to practice in these rural communities is that the latter are so small that one could not earn a living. Quite often the inducements offered prove to be illusory, owing to the fact that some enthusiastic official overestimates the possibilities of developing a paying practice, or for political purposes some official wishes to set up an opposition to a practitioner in an adjacent community. This writer warns young physicians and dentists to consider well the verbal promises of a fixed revenue, by the local officials, and to insist on a written contract.

It is suggested that before announcing an opening, the Bureau of Information should be certain that the offer is genuine, and if a district is too poor to be able to assure a sufficient income it would be wise for the central government in the cities or county seats under whose jurisdiction the district is placed to grant a subsidy. This already exists in the mountainous country of southeastern France. The great danger of course, lies in the fact that the medical man becomes one of the already large army of public officials.

French Tuberculosis Congress of 1935

The 1935 session of the French National Tuberculosis Congress will take place in April at Marseilles. The subjects to be discussed are the role of the tuberculous ultravirus in human and experimental pathology, the indications and results of thoracoplasty in the treatment of tuberculosis, the fight against tuberculosis in North Africa and the prophylaxis of tuberculosis in the navy.

BERLIN

(From Our Regular Correspondent)

Nov. 26, 1934

Castration and Problems of Heredity

Dr. Schlegel, director of the state hospital attached to the examination prison at Moabit, Berlin, recently published the first report on castrations performed. The largest number of castrations in compliance with the latest law in Germany are performed in this institution. The application of the law of Nov. 24, 1933 to habitual criminals is according to Dr. Schlegel, in many cases entirely vague. Besides punishment by imprisonment, the court may also interpret castration not as a punishment but as a "regulatory means of protection and improvement" for habitual criminals and as a protective measure for the people who may fall victims to sexual criminals. In this state hospital there have been 111 castrations performed since the law became effective. Twenty more prisoners in being prepared for castration were subjected to the strictest examinations. A photographic picture definitely retains the identity of every one. The blood, the blood pressure and the sedimentation rate were analyzed. The voice and its tonal color were fixed on phonographic records. A thorough opinion was formed about the mind and intelligence of every one. The operation for amputation of both testicles was performed under local anesthesia within about eight minutes. Thus far no deaths have occurred. The patients were between the ages of 20 and 60. A central national card index of patients presenting hereditary diseases will be established, as stated by a communication of the medical department of the national health bureau, and in this way a systematic survey of the hereditarily diseased patients will be produced. This will serve as a basis of evaluation for the new racial and eugenic law. It must begin with the indexing of patients having mental diseases in order to make use of the large material accumulated in the archives of institutions for mental patients. The national health bureau has prepared

an index form containing eighty questions pertaining to personal data, precise psychiatric diagnostic data and hereditary disease data. Preliminary work for carrying out the law has been done at the hygienic institute of the University of Münster (Westphalia). Dr. Mehring has tested the fecundity of the parents of mentally deficient individuals and of pupils not able to meet the requirements of a grade school. The results showed that in Münster the fecundity of the hereditarily inferior families is one and a half times greater than the fecundity of hereditarily healthy families.

The question is raised as to whether biology and the science of heredity, especially, are in a position to establish a support for the legislator. Some lectures given in Bremen under the title "Prevention of Useless Lives" are of interest. From the first of the lectures given by the late Professor Baur, director of the Kaiser Wilhelm Institute for Research on Breeding, it would appear that the originator of the law did not go far enough. He refers to natural selection. The theory in bare outline is that man as a species may stay healthy only if the natural selection, which is eliminated in a cultural status, is reestablished by conscious efforts directed toward the prevention of hereditarily inferior types. There is, however, no natural selection but only natural elimination, and the sociologist W. E. Muhlmann of Berlin has so stated in the second lecture, entitled "The Selection Process in Human Society." In the third lecture, Dr. F. K. Walter, professor of psychiatry and director of the Institute for Mentally Diseased Patients at Bremen, objected to the manner in which the legislator applied the mendelian law of heredity to the human race, whereby he entirely overlooked the difficulties of its application. Walter emphasizes that the mendelian law is fulfilled, primarily, in case of large numbers, so that a dominant character, for example, a good or a bad quality of the parents, will reappear in 50 per cent of the children. One must therefore figure on 1,000 children in order to expect the dominant character in 500 children. The smaller the number, the more uncertain the expected percentage becomes. In Germany the average number of progeny being three, the prediction becomes naturally less safe than in animal and plant research, in which the number of progeny is high. Secondly, the human progenitors possess, by reason of cross breeding, not merely hundreds but thousands of individual hereditary factors, and this point introduces a new factor of unsafety into the prediction. Walter gave some striking examples. He discussed a family with acute hereditary mental disease, which was under his observation for a long time. Members of the family had a remarkable proclivity for mathematics, and at least three mathematicians of world fame and a line of scientifically recognized naturalists were born into the family. For these reasons Walter is against unconditional sterilization in cases of the following hereditary diseases, included in the German sterilization law: congenital, hereditary deaf-mutism, certain forms of hereditary weakness of mind, certain forms of epilepsy and schizophrenia. He cautions, furthermore, against an overestimation of sterilization prospects, even in cases in which sterilization is in order, because the inheritance mechanism in the majority of hereditary diseases is unknown. The view of negative eugenics was stressed in the fourth lecture by E. H. Rosenberg-Münster, jurist. If, for instance, all epileptic patients of a generation could be sterilized, this disease would not disappear, the old sources would break out again (recessive hereditary process), and new sources would develop (mutations). The retrogression would be slight.

The First Professorship for Public Health

The first professorship in public health has been established in the University of Munich. Professor Dr. Schultze, the new state commissioner for public health in Bavaria, has been appointed lecturer. In his inaugural lecture he pointed out first

the negative side of his professorship, namely, combating the errors in medicine due to specialization. The problems of the new discipline in science are, as he stated, racial supervision, dwelling and colonization problems, social insurance, and determination of the useful in folk remedies, the single great objective being that public health is political power.

ROME

(From Our Regular Correspondent)

Dec 15, 1934

Congress of Internal Medicine

The Società Italiana di Medicina Interna held recently its fortieth national congress, in Rome. The first official topic concerned vaccines and nonspecific treatment in infectious diseases. Dr. Introzzi spoke on the therapeutic value of vaccines in undulant fever. Specific vaccine given by vein is the most efficacious treatment of brucella infection in man, as has been proved by the results of its use since 1926 by many physicians. The best effects are obtained when the vaccine causes a general, intense reaction. Vaccination should be regarded as a desensitization of the organism in a condition of allergy rather than as a stimulation of the natural powers of defense of the organism. Then the useful reactions would be due to a given dose of the vaccine, which would be determined in each case by the administration of injections of tentative doses. Intravenous injections are not dangerous and have no limitations related to the stage and clinical form of the disease, if given with the proper technic. In the clinic at Pavia the vaccines are prepared by Pfeiffer and Kolles method. The emulsions are prepared in phenolated physiologic solution with the cultures of bacteria killed by heat in a water bath.

The second official topic was on pleural diseases in the army. Dr. R. D'Alessandro of the Scuola di Sanità Militare said that the statistics from 1921 to 1930 prove that pleurisy is one of the most frequent and grave diseases among soldiers in active service and that it is related to the climate and the weather of the territories occupied by the soldiers as well as to the military service to which the soldiers belong. The highest rate of mortality is observed during May, June and July, that is, shortly after the recruits enter service. In tuberculous pleurisy, which is the most frequent form, the inflammation of the pleura may follow the formation of an early tuberculous infiltration, it may be caused as an allergic reaction to the reactivation of tuberculous foci (in the secondary stage of tuberculosis) or it may appear at the final period of tuberculosis. In cases of traumatic pleurisy, one should estimate the preexisting bacterial and the recent traumatic factors and also determine the nature of the trauma and when it occurred. Age is important among recruits. Most of them are about 21, an age at which the reactivation of latent tuberculosis is frequent. He observed in a group of 600 tuberculous patients attending the Centro di accertamento diagnostico dell'Ospedale Militare of Florence 300 who had had a preexisting pleurisy. The incidence of tuberculosis was higher in patients of this subgroup than in those who had not previously suffered from pleurisy, and form of tuberculosis was more serious in patients of the first than in those in the second subgroup—that is, 35 per hundred to 22 per hundred. It is advisable to make periodic examinations for the early diagnosis of tuberculosis among soldiers who enter the army after having had pleurisy.

The last official topic was meteoropathies. Dr. Nicola Pende, a senator and physician in Genoa, discussed the pathogenesis and treatment of meteoropathies, which he defined generally as local autonomic and protopathic morbid reactions causally and chronologically related to sudden meteorological changes. The speaker classified the condition, from a clinical point of view, into three groups: (1) syndromes caused by special winds (2)

reactions caused by the passage of cyclones and (3) accidents appearing coexistently with the passage of large solar spots. The speaker pointed out two important facts. The weather, not by itself but in association with all factors of the meteorological environment are the meteoropathic agents, and the patients are in a condition of neuro-endocrine unbalance with excitability of the sympathetic nervous system.

Dr. Bufano of Genoa spoke on the experimental physiopathology of meteoropathic reactions. The speaker called attention to the importance of the atmospheric conditions of electricity, temperature and humidity in the etiopathogenesis of meteoropathies morbid conditions improperly nominated "cyclonosis." Meteoropathies are essentially neurosis of the sympathetic nervous system, the central and peripheral reactions of which take place under the action of the atmospheric elements through the skin and the mucous and alveolar surfaces of the respiratory tract.

The Congress of the Italian Surgical Society

The forty-first congress of the Società Italiana di Chirurgia was recently held in the headquarters of the surgical clinic of the University of Rome under the chairmanship of Dr. Roberto Alessandri. The first official topic was surgery of the colon, presented by Dr. Dominici of the University of Perugia. The speaker discussed the clinical importance of congenital and acquired malformations of the colon, with special reference to megacolon. True megacolon, the speaker believes, originates in an unbalance of the sympathetic-parasympathetic functions, the cause of which is unknown. The theory of a sympathetic hypertonia as the cause seems to be confirmed by the satisfactory results of lumbar sympathectomy in the treatment of the condition. An abnormally long colon does not imply surgical intervention unless it causes obstruction or painful crises. Chronic intestinal stasis presents many unsolved problems. The tendency is to consider it as a syndrome that may appear in several diseases rather than as a disease by itself. In discussing trauma of the colon he said that wounds only of the colon have a benign evolution while a high mortality rate follows the wounds of the colon that coexist with wounds in some other viscera. In cases of associated colonic and visceral wounds, immediate surgical intervention is indicated. One may say, schematically, that surgical intervention is indicated only as an exception in acute peritonitis without complications, while its indications are more frequent in chronic peritonitis. A simple laparotomy is indicated in ulcerous tuberculous colitis, and there are other operations indicated in the different forms of tuberculosis of the colon.

Alessandri spoke also on diverticula of the colon, obstruction, volvulus, intussusception and polyposis. Several other articles on the same topic were read and a general discussion followed.

The second official topic, bronchiectasis, was presented in connection with the Società di Medicina Interna. Dr. Omodei Zorini of Rome covered the medical aspect of the topic. Bronchiectasis may be congenital or acquired. The acquired form originates in infections of the respiratory tract. At the onset only the mucosa is involved then the structure of the bronchial walls, then a mechanism of pulsation and traction, due to the stagnation of the secretions, is established, and lastly pleural and peribronchial sclerosis develops. In bronchiectasis with poor bronchial drainage, it is advisable to resort to bronchoscopy with aspiration of secretions, pneumothorax or intratracheal instillations of antiseptic drugs.

Dr. Vallebona of Genoa spoke on the importance of bronchography in bronchiectasis either by itself or with the refinement of stratigraphy, a method by which superposition of shadows is avoided and only a given stratum of the object is reproduced. The roentgen picture of large congenital pulmonary cysts may closely resemble that of pneumothorax. The roentgen examina-

tion is of paramount importance, because with it one can determine whether or not the given condition is in an evolutionary or a stationary stage.

Dr. Alessandri was the official speaker on the subject of surgery in bronchiectasis. The preoperative preparation of the patient, especially by means of postural drainage is important. Phrenico-exeresis, thoracoplasty and plugging are the methods indicated to induce collapse therapy, the results of which may be good although not permanent. In suppurative complications, pneumotomy and frequently partial pneumectomy is the necessary operation. The speaker is still undecided whether lobectomy should be performed in one operation or in two or more. His statistics show four deaths in forty-five operations by the first method and six deaths in fifty-seven operations by the second. His own experience includes seventy-two cases of bronchiectasis with twenty-seven operations.

Dr. Lasagna of Parma spoke on bronchoscopic diagnosis in bronchiectasis. In peroral endoscopy, to prevent incidents during the introduction of the instrument, it is necessary to have a thorough knowledge of the anatomic details and of the frequent abnormal disposition of the main and secondary bronchial branches. It is necessary to have in mind the functions of the ciliated epithelium, the mucus, the musculature and the current of air during either inspiration or expiration. The speaker described the various types of bronchoscopes now in use. Block anesthesia of the laryngeal nerve suffices in most cases, in a few cases, general anesthesia is necessary. There are some contradictions related to the anesthesia, to the pulmonary diseases present, and to general diseases. In the general discussion that followed, Dr. Micheli of Turin said that bronchiectasis is most frequently of congenital origin and that, generally speaking, the medical treatment gives satisfactory results.

BUDAPEST

(From Our Regular Correspondent)

Dec. 14, 1934

Method of Preparing Cancer Statistics Should Be Revised

According to Dr. K. Wolff the method of preparing cancer statistics should be revised. The only reliable statistics are those founded on diagnoses established *in vivo* by postmortem protocols, on histologic sections and on the data afforded by compulsory death certificates. Unsupported clinical diagnoses of cancer, according to calculations, are erroneous in from 15 to 30 per cent of cases, and exact statistics cannot be expected without histologic controls. The verdicts of coroners, some of whom are not medically qualified, are unreliable. Thus, statistics that appear to prove the increase of cancer mortality may indicate only the development of the science of diagnosis, whereas cancer mortality rises in such statistics, the number of cases labeled senile marasmus, cause unknown, and other indefinite diagnoses decreases. Well trained physicians know that nobody dies solely from senile debility, if the patient had no other disease he would be certain to have had myocardial degeneration or a bronchopneumonia. Postmortem statistics are also unreliable, because they do not reflect the conditions of the whole population but of the hospital class. This objection holds true still more with regard to statistics based on histologic material alone. The fewer the cases utilized in the compilation of cancer statistics, the less reliable are the results. In one hospital the leading surgeon may have a predilection for cancer cases hence the cancer turnover is high. Another hospital hardly admits cancer patients because its surgeons work on other lines the number of cancer cases here will be low. Such sources of error can be eliminated by the collation of the material of many hospitals when those which have large children's departments will serve to balance others deal-

ing exclusively with cancer cases. Thus a fairly accurate picture of the conditions of population could be obtained, but only of the hospital class.

The statistics heretofore published do not prove in Dr. Wolff's opinion, the assumption that the rate of mortality from cancer shows a rising tendency. A relative rise is the obvious corollary of the fact that the number of deaths from other curable and preventable diseases is diminished. But this means no more than that the human race at present is unable to defend itself against cancer because neither the cause the therapy nor the prophylaxis of cancer is known. The average duration of life is increasing all over the world. Cancer is the disease of elderly persons. If the average duration of man's life is increasing, there are more elderly persons, that is to say, more people reach the age at which cancer is apt to occur. In Dr. Wolff's view the apparent increase in the incidence of cancer has been too much emphasized. The mortality rate of every disease displays some oscillations if a comparative scrutiny is made of the statistical material available over several years.

The statistics collected at Budapest show no progressive increase of cancer, its occurrence being fairly constant. Between 1919 and 1923 among the necropsies in the Budapest University clinics on patients over 20 years of age the cancer rate amounted to 12.42 per cent, while between 1924 and 1928 it amounted to 12.52 per cent. Since in quite recent years a larger proportion of different sections of the population seek relief in hospitals and are subjected to routine postmortem examinations, it can be believed that the data provided by postmortem statistics today are nearer to reality, and more nearly representative of the truth, than the other statistics.

The Teeth of School Children

The school medical inspectors of the municipal schools, in their recent report speak strongly as to the amount of dental cases, and as to the absolute indifference shown by the parents when their attention is drawn to it. Most of them think it is hereditary—they themselves had bad teeth, and their children also must suffer. Of 1,500 girls examined only 432 had satisfactory teeth, and the same proportion was found also in boys. The lack of interest taken as to cleanliness and preservation of teeth is the more regrettable when it is stated that half of the children leaving school and suffering from dental caries were yet in such a condition that their teeth could be saved at but little expense. Conservative dentistry, however, is unknown among the children.

Marriages

FRANCIS WILLIAM HOBART, Lake City, Iowa, to Miss Blanche States of Coon Rapids, in Rockwell City, Dec. 6, 1934.

WILLIAM ORRIN McDOWELL, Grundy Center, Iowa to Miss Faye Hanway of Des Moines, Nov. 23, 1934.

IRVING MAXWELL CASEBEER, Clinton, Ind., to Miss Mary Eaton Short at Rockville, Oct. 20, 1934.

ROBERT C. CRUMPTON, Webster City, Iowa, to Miss Esther Isvik of Jewell, Nov. 29, 1934.

JOHN HEINZ VENABLE to Miss Louise Felker Ware both of Atlanta, Ga., Dec. 18, 1934.

ESTHER MARGARET KIRK to Mr. Roy A. Foster, both of Oklahoma City, January 7.

HARLEY BENN LEHNERT to Miss Gladys Knerim, both of Toledo, Ohio, Dec. 1, 1934.

HENRY LEWIS COOPER, Denver, to Miss Helen Lucile Ratner of Chicago, Nov. 18, 1934.

CHARLES A. TERHUNE, Rupert, Idaho to Miss Ruth Story of Burley, Nov. 30, 1934.

THEODORE L. BORDSEN to Miss Vi L. Cleverley, both of Seattle, Dec. 8, 1934.

NORRIS E. HAROLD to Miss Cora Schoen both of Indianapolis, Dec. 23, 1934.

Deaths

Walter Lincoln Burrage * Brookline, Mass., Harvard University Medical School, Boston, 1888, since 1909 secretary of the Massachusetts Medical Society, clinical instructor in gynecology at his alma mater, 1893-1895 house physician to the Boston City Hospital, 1886-1888, and the Woman's Hospital, New York, 1888-1890 visiting gynecologist to the Carney and St. Elizabeth's hospitals, Boston, 1890-1903 surgeon to outpatients, Free Hospital for Women 1890-1901, secretary of the Boston Medical Library, 1911-1926 in 1912 collaborated with Dr. Howard A. Kelly on two volumes of *American Medical Biography*, rewrote Dr. Kelly's book on "Appendicitis" in 1910 assisted him with a book called *Medical Gynecology*, in 1920 *American Medical Biographies* and in 1928 *Dictionary of American Medical Biography* author in 1910 of "Gynecological Diagnosis" in 1923 *A History of the Massachusetts Medical Society, 1781-1922* and in 1931 *Catalogue of Honorary, Past and Present Fellows Massachusetts Medical Society, 1781-1931*, in 1930 contributed in the fifth volume of the *Commonwealth History of Massachusetts* a chapter on "Medicine in Massachusetts" aged 74 died, January 26

E. Otis Smith * Cincinnati Medical College of Ohio, Cincinnati, 1896 Member of the House of Delegates, 1910-1911 1913, 1918 and 1921 American Medical Association and secretary of the Section on Genito Urinary Diseases 1918-1919, and Secretary of the Section on Urology 1919-1920 past president of the Ohio State Medical Association member of the American Urological Association, fellow of the American College of Surgeons professor of urology University of Cincinnati College of Medicine 1908-1933 director of the urological service Cincinnati General Hospital aged 63 died Dec. 26, 1934, in the Good Samaritan Hospital, of pulmonary edema

Robert Uriel Drinkard * Wheeling, W. Va. Johns Hopkins University School of Medicine Baltimore, 1908, Member of the House of Delegates of the American Medical Association in 1931 councilor of the first district of the West Virginia State Medical Association past president of the Ohio County Medical Society, fellow of the American College of Surgeons served during the World War on the staffs of the Ohio Valley General Hospital and the Wheeling Hospital, aged 55 died suddenly, January 3, in Bunnell Fla. of myocarditis

Frank Harrison McGregor * Mangum Okla. University of Louisville (Ky.) School of Medicine 1913 formerly secretary of the Greer County Medical Society councilor of the second district of the Oklahoma State Medical Association at one time member of the state board of medical examiners served during the World War part owner of the Border-McGregor Hospital and Clinic aged 47 died January 5, near Bowie Texas, when he was struck by a truck

Charles Benjamin Younger * Chicago Northwestern University Medical School, Chicago 1902 assistant professor of otolaryngology at his alma mater, fellow of the American College of Surgeons, past president of the Chicago Laryngological Society aged 59 on the staff of the Wesley Memorial Hospital where he died January 11 of coronary thrombosis

Edwin William Stork * Somerville, Texas, University of Texas School of Medicine Galveston 1920 served during the World War for many years member and president of the board of education and health officer of Somerville on the staff of the Sarah B. Milroy Hospital Brenham, aged 42 died Nov. 19 1934 as the result of septicemia

William Ainslie Goodall, New York Victoria University Medical Department Coburg Ont. Canada 1884 member of the Medical Society of the State of New York for many years on the staff of the Morrisania City Hospital aged 72 died January 6 in the Wickersham Hospital of influenza and gastric hemorrhage

Marshall Blair Morgan, Huntingdon Pa., Jefferson Medical College of Philadelphia 1915 member of the Medical Society of the State of Pennsylvania past president of the Huntingdon County Medical Society on the staff of the J. C. Blair Memorial Hospital aged 41 died Nov. 24 1934 of infectious hepatitis

Kenneth Simms Caldwell * A Surg. Lieut. U. S. Navy, retired St. Paul University of Minnesota Medical School Minneapolis 1918 entered the navy in 1919 and was retired in 1921 for incapacity resulting from an incident of service aged 42 died Oct. 2 1934 of a gunshot wound in the left side of the chest

John Fox Connors * New York, University of the City of New York Medical Department, 1895, served during the World War, member of the American Surgical Association, fellow of the American College of Surgeons for many years on the staff of the Harlem Hospital, aged 61 died, January 5, of embolism

Lee Hugo Koehler, Alliance, Ohio Harvard University Medical School, Boston 1932 third assistant resident medical officer to the Sanatorium Division of the Boston City Hospital aged 28, died Dec. 26 1934 in a garage at Berlin Center of carbon monoxide poisoning, while making repairs on his automobile

Charles E. Fairman, Lyndonville, N. Y. St. Louis Medical College 1877 member of the Medical Society of the State of New York for many years health officer of Yates, Orleans County, on the staff of the Medina (N. Y.) Memorial Hospital aged 77 died, Dec. 27 1934 of angina pectoris and arteriosclerosis

Ray McKelvey Alexander, Bolivar, Pa., Western Pennsylvania Medical College, 1905 member of the Medical Society of the State of Pennsylvania, served during the World War, for many years member of the school board aged 55, died Dec. 25, 1934, in St. Francis Hospital Pittsburgh, of heart disease

Joseph Adam Weitz * Montpelier, Ohio, University of Michigan Medical School Ann Arbor, 1886, past president and secretary of the Williams County Medical Society, formerly county health officer and member of the school board, aged 85, died January 11 of coronary thrombosis

John C. Knight, Jonesboro Ind. Kentucky School of Medicine Louisville, 1881 member of the Indiana State Medical Association for many years member of the school board formerly member of the state legislature aged 78, died, Dec. 27, 1934 of acute nephritis and myocarditis

Sheldon Eli Cook, Lincoln, Neb. McGill University Faculty of Medicine Montreal, Que., Canada 1884, member of the Nebraska State Medical Association past president of the Lancaster County Medical Society, aged 77, died, Dec. 31, 1934 of carcinoma of the pancreas

Lawrence Wells Whitmer, Chicago College of Physicians and Surgeons of Chicago, 1892 aged 75 formerly on the staff of the Illinois Masonic Hospital where he died January 2, of chronic myocarditis and hypostatic pneumonia following an operation for gallstones

William E. Buxton, West Salem Ill. Central College of Physicians and Surgeons Indianapolis, 1881 member of the Illinois State Medical Society president and formerly secretary of the Edwards County Medical Society aged 76, died, January 2, of pneumonia

Melvin A. Wardwell * Penobscot Maine Bellevue Hospital Medical College New York, 1898 past president of the Hancock County Medical Society on the staff of the Community Hospital, Castine aged 61 died, Dec. 29, 1934, of angina pectoris

Thornton Easley Moore * Trenton Mo., University of Missouri School of Medicine Columbia 1903 past president of the Grundy County Medical Society on the staff of the Wright Hospital, aged 56 died recently of angina pectoris

Warren Laws Snider, Hot Springs National Park, Ark. Medico Chirurgical College of Philadelphia 1902 member of the Arkansas Medical Society served during the World War, aged 56, died suddenly in December 1934 of heart disease

Arthur William Loeber, Milwaukee, Marquette University School of Medicine Milwaukee, 1931 aged 30 was found dead Dec. 29, 1934, of asphyxiation when a gas stove flame was extinguished by a kettle of water boiling over

Byron Monroe Sell * Altoona, Pa. Jefferson Medical College of Philadelphia, 1924 also a minister connected with the Altoona Clinic aged 37 on the staff of the Mercy Hospital where he died, Dec. 9 1934 of heart disease

Augustus E. Venn, Chicago University of Pennsylvania School of Medicine Philadelphia, 1893, aged 69 died, January 7 in the Alexian Brothers' Hospital of chronic myocarditis following operation for intestinal obstruction

Cyrus John Strong Miami Fla. College of Physicians and Surgeons Medical Department of Columbia College, New York 1891 member of the Florida Medical Association, aged 72 died Dec. 19 1934, of intestinal obstruction

Edgar Carroll, Dayton N. J. Jefferson Medical College of Philadelphia 1880 member of the Medical Society of New Jersey formerly on the staff of St. Peter's General Hospital, New Brunswick aged 81 died Nov. 18 1934

Frank E. Smith, Portland, Ore., Willamette University Medical Department, Salem, 1898, past president of the Board of Medical Examiners of the State of Oregon, aged 61, was killed, Dec. 30, 1934, in an automobile accident.

Jonas Rhodes Longley ♂ Fond du Lac, Wis., Rush Medical College, Chicago, 1906, served during the World War on the staff of St. Agnes Hospital, aged 55, died, January 2, in New Orleans, of acute gastritis and nephritis.

Lina D. Schwatt, Philadelphia Woman's Medical College of Pennsylvania, Philadelphia, 1912 for many years resident physician to the Philadelphia Hospital for Mental Diseases, aged 68, died, Dec. 22, 1934, of pneumonia.

Hugh Boggs Hawthorne ♂ West Mineral Kan., Kansas Medical College, Medical Department of Washburn College, Topeka, 1913 served during the World War aged 46, was found dead Dec. 24, 1934, of heart disease.

Archibald Nail Dawson ♂ Lakewood Ohio Western Reserve University Medical Department, 1908 on the staff of the Lakewood City Hospital, aged 52, died, Dec. 20, 1934, of glioma of the left cerebral hemisphere.

Arthur Fichell Sampson, San Francisco University of Virginia Department of Medicine Charlottesville 1878 member of the California Medical Association aged 79, died, Nov. 27, 1934, of cerebral hemorrhage.

Clifford Charles Legler ♂ Portsmouth Ohio University of Louisville (Ky.) School of Medicine 1908 on the staff of the Portsmouth General Hospital aged 50, died, Nov. 25, 1934 of perforated gastric ulcer.

William Montgomery Burnett, Greenville S. C., University of Louisville (Ky.) School of Medicine 1905 member of the South Carolina Medical Association aged 58, died January 7, of heart disease.

Robert Gallaher Reynolds Jr., Palo Alto Calif. University of California Medical Department San Francisco 1903 aged 63, died Dec. 10, 1934 in the Stanford Hospital, San Francisco of heart disease.

William Rankin Goley, Graham N. C. College of Physicians and Surgeons Baltimore 1885 member of the Medical Society of the State of North Carolina, aged 81, died, Nov. 26, 1934, of lobar pneumonia.

Harry Edward Bacon, San Francisco Denver and Gross College of Medicine Denver 1908 aged 53, died Dec. 16, 1934, in the Mount Zion Hospital of cirrhosis of the liver and chronic cholecystitis.

Thomas Stephen Augustine O'Connor ♂ Troy, N. Y., Albany (N. Y.) Medical College 1903 on the staffs of St. Joseph's Maternity, Troy and Samaritan hospitals aged 55, died, Nov. 18, 1934.

Paul W. Woods, Atlanta Ga. Meharry Medical College, Nashville, Tenn. 1900 aged 52, died Dec. 27, 1934 in the Grady Hospital, of burns received when the oil stove in his office exploded.

Charles Edward Britto, Stockton Springs Me. Hahnemann Medical College and Hospital of Philadelphia 1899 aged 65, died, Oct. 24, 1934 of coronary occlusion and chronic endocarditis.

Walter C. Hamilton, Kearney Mo. College of Physicians and Surgeons of Kansas City, 1879, member of the Missouri State Medical Association aged 80, died Dec. 25, 1934, of pneumonia.

William Alfred Strauss, Baltimore Johns Hopkins University School of Medicine, Baltimore, 1924 aged 38, died Nov. 22, 1934, in the Laurel (Md.) Sanitarium, of lobar pneumonia.

Alice Hatheway Purvis Robie, Watertown, Mass., Woman's Medical College of Pennsylvania, Philadelphia, 1898, aged 62, died, Oct. 20, 1934 in Alameda, Calif. of arteriosclerosis.

Joseph Anthony Herb, New York College of Physicians and Surgeons, Medical Department of Columbia College, New York 1885 aged 75, died Dec. 27, 1934, of carcinoma of the stomach.

Samuel H. Murphy, Yates Center, Kan., Eclectic Medical Institute, Cincinnati 1896 member of the Kansas Medical Society aged 72, died, Dec. 26, 1934, of carcinoma of the stomach.

Ward Beecher Saltsman, Buffalo, Albany Medical College 1891 member of the Medical Society of the State of New York aged 66, died, January 10, of chronic myocarditis.

Sophie Solotareff Self, Gary, Ind. Universität Zurich Medizinischen Fakultät Zurich 1911 aged 50, died Dec. 13, 1934 in the Michael Reese Hospital Chicago of heart disease.

John Bruffe Kenagy, Rupert, Idaho, Colorado School of Medicine, Boulder, 1906 member of the Idaho State Medical Association, aged 71, died, Nov. 17, 1934, of heart disease.

William Henry Heidorn, Bridgeton, Mo. St. Louis College of Physicians and Surgeons, 1886, aged 74, died, Dec. 26, 1934, in the Barnes Hospital, St. Louis, of pneumonia.

George S. Hays, Greeneville, Tenn., University of Tennessee Medical Department, Nashville, 1892 aged 72, died, Dec. 25, 1934, in a local hospital, of cerebral hemorrhage.

Albrecht Otto Eckardt, Rodeo, Calif., Medizinische Fakultät der Universität Leipzig, Saxony, Germany, 1889, aged 69, died, Dec. 10, 1934, of a tumor of the kidney.

Ida Elizabeth McCormick, Cincinnati, Pulte Medical College Cincinnati, 1900, aged 68, died, Dec. 30, 1934 in the Bethesda Hospital, of a hip fracture received in a fall.

Henry Paul George ♂ Claremont N. H. Baltimore Medical College, 1912 formerly on the staff of the Claremont General Hospital, aged 50, died, January 1, of carcinoma.

Lovell Hampton Harrell, Plant City, Fla., Tulane University of Louisiana Medical Department, New Orleans 1910, aged 57, died, Dec. 26, 1934, of chronic nephritis.

Samuel B. McGuire, Dover, Ohio, Baltimore Medical College 1893, formerly on the staff of the Union Hospital, aged 67, died, Dec. 6, 1934, of pernicious anemia.

David Watt Sheldon, Carmel Maine, University of Vermont College of Medicine, Burlington, 1898, aged 62, died Oct. 19, 1934, of thrombosis and arteriosclerosis.

William R. Spooner, Fostoria, Ohio, Baltimore University School of Medicine 1899 Toledo Medical College, 1903, aged 65, died Dec. 3, 1934 of bronchopneumonia.

Frederick Wrede, Chicago, Miami Medical College, Cincinnati 1880 also a druggist, aged 84, died, Dec. 30, 1934 of chronic myocarditis and arteriosclerosis.

John W. Merritt, Center Point, Texas, Tulane University of Louisiana Medical Department, New Orleans 1899, aged 75, died Dec. 21, 1934 of arteriosclerosis.

Joseph Price Watson, Hazlehurst Miss., Vanderbilt University School of Medicine Nashville, Tenn., 1903, aged 54, died Dec. 29, 1934 of heart disease.

John Roger Haynes, Albuquerque, N. M., University Medical College of Kansas City, Mo., 1893 aged 62, died, Dec. 27, 1934, of diabetic gangrene.

Martin Luther Gettinger, Palestine, Ill., American Medical College St. Louis, 1880, aged 76, died, Dec. 20, 1934 in Santa Fe N. M., of pneumonia.

Harris Weinstein ♂ New York, University of the City of New York Medical Department, 1891, aged 65, died, January 8, of cerebral hemorrhage.

Thomas E. Brents, Ada, Okla., Reform Medical College, Macon, Ga., 1873, Civil War veteran, aged 88, died, Dec. 29, 1934, of bronchopneumonia.

Addison James Beebe, Sutherland, Neb., Drake University Medical Department Des Moines, 1889, aged 86, died, Oct. 30, 1934 of senility.

Clinton Perley Hubbard, South Paris, Maine, Medical School of Maine, Portland, 1884, aged 85, died, Nov. 19, 1934, of arteriosclerosis.

George S. Roberts, Thompsonville, Ill., Northwestern University Medical School, Chicago, 1892, aged 66, died, Dec. 17, 1934, of pneumonia.

John McCulloch Gourley, Sheet Harbor N. S. Canada, Halifax Medical College, Halifax, N. S., Canada, 1884, aged 75, died, Dec. 11, 1934.

John H. Wylie, Winnsboro, Texas (licensed in Texas, under the Act of 1907), aged 64, died, Nov. 24, 1934, of bronchopneumonia.

Thomas Gilmore Waller, Lowell, Mass., Dartmouth Medical School, Boston, 1886, aged 76, died, Dec. 9, 1934 of arteriosclerosis.

Leon Ackerman, New York New York University Medical College, 1896 aged 65, died, Dec. 22, 1934 of coronary thrombosis.

William James Hagan, Athens Ala., Jefferson Medical College of Philadelphia 1884, aged 72, died, January 1 of pneumonia.

William Lewis Worthington, Camden Ark. (licensed in Arkansas in 1903), aged 72, died, Dec. 23, 1934, of heart disease.

James T. Mills, Gilmore, Ohio Columbus Medical College 1881, aged 81, died January 2, of heart disease.

Correspondence

TREATMENT OF GONORRHEA IN WOMEN

To the Editor —Dr Emily Dunning Barringer in a paper "The Treatment of Gonorrhea in the Female" (THE JOURNAL, Dec. 15, 1934, p 1825) makes the following statement

The greater degree of heat, 130 F as given by the Elliott machine seems unwise during the acute stage because of the softening and relaxation of the cervix, thereby opening up one of the natural barriers to the spread of infection

It is common knowledge that when the gonococci reach the mucous membrane of the cervix or urethra an inflammation is set up. The micro-organisms and their decomposition products stimulate serum exudation, diapedesis, leukocytic infiltration and decomposition of fibrin. The interaction between the organism and the micro-organism is the same as for, say, the streptococcus, the purpose of the reaction being localization of the infection, destruction of the micro organisms and restoration of the injured tissues to normal. Failure of the organisms to localize the infection results in spread and complications. In heat there exists the best means of increasing hyperemia, exudation and leukocytosis, and the Elliott machine is an excellent instrument to produce a constant high temperature in the vaginal cavity, an area fortunately tolerant to great heat.

Why should a constant high temperature be beneficial in inflammation elsewhere and contraindicated in acute gonorrheal endocervicitis? Dr Barringer's reason is that the cervix is softened and the natural barriers are opened to the spread of the infection. It seems incredible to us that the cervix should behave contrary to all other tissues, in response to heat. Heat is universally applied with benefit to localize infection, to seal tissue spaces and to prevent spread of infection. Her statement is contrary to our knowledge of inflammation and the value of heat as a therapeutic agent. It is true that the cervix is softened by the application of strong heat, but the softness is due to increased exudation and increased mucus secretions of the cervical glands.

Dr Barringer suggests gentle washing of the cervix and topical applications in acute gonorrheal endocervicitis. The cervix, being a glandular structure, harbors the gonococci deep in the glands, and the tissue reaction to this organism is ordinarily very weak. Surface applications are of but little value.

Intense heat is our only means to stimulate and augment the body's own defensive reaction to localize the infection and eradicate the gonococcus. We also wish to add that up to the present we have treated hundreds of cases of acute gonorrhea in the female entirely by the Elliott machine at a temperature of about 130 F without a single complication.

LEO MICHEL, M.D.,
NORMAN TAUBE, M.D.
New York

PINEAL GLAND

To the Editor —I have read with great interest the editorial on the pineal body (THE JOURNAL, Nov. 24, 1934, p 1626). My investigations (Zentralbl f Gynak 57:634 [March 18] 1933) have shown that my extract of the pineal body has an antiestrogenic effect, disturbs the estrous cycle, inhibits the development of weight in infantile mice, and has a therapeutic effect in certain genital bleedings, particularly cases of juvenile bleedings.

CHARLES BURGER, M.D. Budapest

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

ANALGESIA IN OBSTETRICS

To the Editor —What is the entire technic of producing analgesia in obstetric cases at the hospitals in and about Chicago? This includes I believe, the use of pentobarbital, scopolamine and in some cases apomorphine. Details would be appreciated.

ARTHUR CLAYTON MCCARTY, M.D. Louisville, Ky

ANSWER —There are a variety of methods and drugs in use in the hospitals in Chicago for the production of analgesia in labor. Opiates have stood the test of time and are probably the most useful drugs. They can be combined with other drugs, such as scopolamine or magnesium sulphate. The only real objection to the use of an opiate is the likelihood of narcosis of the infant, resulting in asphyxia. This danger is not very great, and asphyxia is not a common occurrence, especially if the drug is used with care at the right time in labor. An accepted technic is as follows:

In primiparas, after the pains have been well established—coming regularly every two or three minutes and lasting from thirty to sixty seconds—and when the cervix is partially effaced and the cervical os dilated to 3 or 4 cm in diameter morphine sulphate from 11 to 16 mg, or $\frac{1}{8}$ to $\frac{1}{4}$ grain, depending on the size of the woman (the smaller dose being used in small women), and scopolamine 0.4 mg, or $\frac{1}{150}$ grain, are given to the patient. The scopolamine may be repeated at the end of one hour 0.3 mg, or $\frac{1}{200}$ grain, if the patient has not had much relief. As a rule, following the initial hypodermic injection, the patient begins to doze between labor pains or will sleep for three or four hours. Progress is usually well maintained throughout this period of semiconsciousness, with labor well advanced when the patient is completely aroused from the effects of the analgesia.

A new opiate has been introduced recently in the form of dilauid (dihydromorphine hydrochloride). This drug has been used by several obstetricians and has been tried out in a large clinic with excellent results. In fact, in many respects this opiate gives more complete analgesia than morphine sulphate without apparent interference with the normal physiology of labor. One may use dilauid 2 mg, or $\frac{1}{32}$ grain, with scopolamine 0.3 mg, or $\frac{1}{200}$ grain, given about the same time as in the case just described. Dosages as high as 3 mg, or $\frac{1}{20}$ grain, have been recommended, but the smaller dose has been entirely satisfactory. In multiparas, either opiate may be given earlier in labor than in primiparas.

When dilatation is complete, analgesia may be provided by inhalation of nitrous oxide and oxygen or ethylene and oxygen during the pains. The mask is placed on the patient's face when the pain begins, and she inhales several deep breaths until the height of the pain is reached, and then as the pain subsides the mask is removed. Either gas may be given for as long as two hours without any danger to the patient. Drop ether likewise, may be used for analgesia during the second stage of labor. This is used with an open mask over the face during the pain and removed after it subsides.

Pentobarbital sodium has become popular recently for the production of analgesia in labor. It is given according to the following method: When labor is well established and the cervical os is dilated to 3 or 4 cm in diameter, 0.5 Gm, or $7\frac{1}{2}$ grains, in capsules may be given by mouth to the patient of average weight. In another twenty minutes the patient is given scopolamine 0.4 mg, or $\frac{1}{150}$ grain, hypodermically. The patient may sleep or only doze between pains, but the uterine contractions continue satisfactorily. Although she may not doze continuously during the analgesia, often she does not remember what has happened when labor has been completed, almost complete amnesia may be produced.

A host of other drugs have been recommended from time to time for analgesia in labor. Many of them are not satisfactory from the standpoint of interfering with the uterine activity, causing prolonged labor and resulting in operative intervention. Other drugs do not provide the degree of relief demanded by patients in labor. To be an ideal analgesic, the drug must not interfere with uterine motility. It must be safe for the mother and likewise for the baby.

Asphyxia of the baby resulting from morphine is best treated by inhalation of carbon dioxide and oxygen. Carbon dioxide may reach a concentration of 30 per cent in oxygen if it is

used for only a few seconds. The initial efforts at resuscitation are usually sufficient and this concentration of the gas may be followed by 5 per cent carbon dioxide in 95 per cent oxygen.

Apomorphine 2 mg., or $\frac{1}{80}$ grain, has been advised as a mild sedative. It is not satisfactory as an analgesic in labor.

Further details on narcosis and methods of resuscitation are given by Shute Evan and Davis, M. E. *Effect on the Infant of Morphine Administered in Labor, Surg., Gynec. & Obst.* 57:727 (Dec) 1933.

TIN OR LEAD POISONING IN INDUSTRY

To the Editor—A man aged 32 in excellent physical condition had had no serious illnesses and no gastro-intestinal complaints whatever until three years ago. At that time (his occupation being that of a mechanic) he was called on to do a soldering job which took nearly four days of continuous work and was done in a poorly ventilated room. The day on which the work was completed he suddenly became distended with gas, had severe abdominal cramps, suffered from constipation and vomited several times. He consulted a physician who treated him for several weeks during which time he became only moderately better and was finally referred to a specialist. Here he was given a complete gastro-intestinal series of roentgenograms including gallbladder visualization and a gastric analysis. All of these were negative. He was placed on a milk diet for over a month with no relief. Since that time he has had modified versions of the original attack with distention, abdominal distress and constipation about every three months, lasting from a month to two months. In the intervals he is comparatively well. Physically he is of robust build and entirely negative to physical examination with only a moderate general tenderness to palpation throughout the abdomen. The Wassermann reaction, the blood both on count and smear and the urine are negative. The stool is negative to two examinations. Is there any possibility that lead or tin poisoning might have been contracted during his prolonged soldering job? Would not the milk diet have given him some relief had that been the case? Are there any suggestions as to diagnosis or further diagnostic procedure in this case? Please omit name and address.

M D California

ANSWER—Tin poisoning is always doubtful as an occupational disease entity. On the other hand, the possibility of lead poisoning is greater, but neither the circumstance of exposure nor the disease manifestations as described warrant any belief that lead poisoning took place. The development of a full blown lead poisoning on the fourth day of exposure to lead is not well precedented. If recent previous exposures to lead antedated this exposure period of four days, lead poisoning becomes more of a possibility. Careful blood examination, including basophilic aggregation tests, may be of some value. Single examinations of the urine or feces for lead are without distinct value since some lead normally may be present. The finding of stipple cells, low hemoglobin and low total red count would have some positive value but, of course, are not conclusive. The development of lead poisoning from the fumes of molten lead is relatively much rarer than the causation of this disease by lead dust or lead paste. Cases of the character described are not infrequent among metal workers. Ordinarily they represent nonindustrial diseases that have been precipitated by exposure to mixed vapors and gases from heating units, from fluxes or from the metal itself, no one of which is capable of producing a characteristic disturbance in such operations as soldering or welding. Future diagnostic search should be directed to the ruling out of lead poisoning, decision as to which should not rest on any one or two tests but on complete examination of the blood, musculature, gum discoloration and so on.

HYPERTHYROIDISM

To the Editor—A white man aged 40 was diagnosed roentgenologically tuberculous around an old scar in the right apex. There is no cough or sputum. The afternoon temperature ranges from 99 to 99.2 F. Following two weeks in bed symptoms of muscular weakness and exhaustion, tremors, twitching, restlessness and insomnia are much worse. He has a very large normal appetite and during this time has lost about 5 pounds (2.3 kg.). His mind is clear and active but he is very depressed. The basal metabolic rate is +35. The thyroid is not tender or enlarged nor is there any exophthalmos. 1 With a questionable diagnosis of active tuberculosis, is iodine contraindicated? 2 With a positive diagnosis of a mild tuberculosis is iodine contraindicated? 3 Is high voltage roentgen therapy of more benefit than iodine? 4 If the patient should become a good operable risk would you advise vessel ligation or partial or total thyroidectomy?

JAMES S. MILLIKEN, M.D. Southern Pines, N. C.

ANSWER—On the facts stated, the illness of this patient is in all probability hyperthyroidism. The scar at the right apex disclosed by roentgen examination may be due to an old pulmonary or pleural infection long since healed and of no clinical significance in the present illness. It is of course remotely possible that hyperthyroidism and tuberculosis exist together, but in this event it is certain that such tuberculosis as is present is playing but a minor part in the production of symp-

oms. Loss of weight in the presence of a good appetite, while highly suggestive of hyperthyroidism, should also suggest the examination of the urine to exclude diabetes mellitus.

1 The use of small doses of iodine is indicated. The probable favorable effects on the hyperthyroidism far outweigh the remotely possible ill effects on the minimal and probably inactive scar at the right apex.

2 With a positive diagnosis of mild tuberculosis (in which case more evidences of active tuberculosis would be required than are here given) the use of iodine would raise serious questions. It is believed by many clinicians that iodine favors the absorption of scar tissue, especially in granulomas, and that tuberculosis which heals by scarring and encapsulation of tuberculous lesions is unfavorably affected by iodine.

3 Roentgen therapy has been used extensively in hyperthyroidism, with many favorable results. In most cases iodine, followed by appropriate surgical treatment, is at present preferred to roentgen treatment. In a number of mild cases of hyperthyroidism, iodine therapy is sufficient.

4 After adequate treatment with rest, a full diet and iodine, surgical measures may also be necessary. The choice of operative procedures will depend on the condition of the patient. In marked cases of hyperthyroidism, subtotal thyroidectomy is usually recommended. Ligation of vessels alone is sometimes done, usually in severe cases in which a more extensive operation cannot safely be done or as a preparation for later resection of the gland.

DIAGNOSIS OF ALLERGY

To the Editor—A well nourished and well developed girl aged 15 years who comes from a definitely allergic family developed facial impetigo contagiosum about ten weeks ago. A standard prescription of dilute aluminum subacetate soaks was ordered, to be followed by inoculations of 10 per cent ointment of ammoniated mercury. In a few days the child's face became uniformly swollen and the vesicular and pustular impetiginous lesions became bullous. The mercury ointment was stopped and boric acid soaks substituted for the solution of aluminum subacetate and calcium lactate and ephedrine by mouth were instituted. The bullous lesions gradually subsided and the edema slowly disappeared but there followed a series of angioneurotic explosions which have persisted to date. On one occasion both buttocks became symmetrically indurated and swollen with a picturesque gyrate border extending down both thighs and legs. Then giant hives appeared and disappeared. Succeeding crops of hives were smaller in individual size and of shorter duration. When it appears as if the explosion is dying out the next event is swelling of the extremities or one side of the face. An intercurrent otitis media developed following a mild nasopharyngitis which required paracentesis. About half an hour following the administration of ethyl chloride by inhalation the lips and face became markedly swollen. This attack lasted about ten hours. The physical examination is otherwise negative. The blood picture, Kahn reaction, phenolsulphonphthalein test and urinalysis are normal. A competent dentist has ruled out dental infection. The tonsils are out clean. I did a series of scratch tests without any positives. Incidentally the scratch marks produced only a slight amount of residual dermatographism. What additional procedures would you advise in an effort to get at the bottom of this case? Please omit name.

M D Michigan.

ANSWER—Apparently there are two separate stages in this case. The first event was a dermatitis, possibly due to sensitivity by contact. The second stage consists of a series of superficial and deep forms of urticaria. This phase is more likely due to an internal source of sensitization. It is difficult to account for the sequence of these two stages. It is possible that the inflammation of the skin has allowed the entrance of products, particularly bacterial or fungous, into the body so that subsequent exposure to organisms (respiratory, intestinal) may cause an allergic flare-up. Contact causes foods and bacterial sensitization must therefore be considered.

To determine the factors responsible for the dermatitis, ordinary scratch tests are usually of no value. One must do a series of patch tests. A small piece of the material is placed on a separate piece of gauze about an inch square. If the material is dry it may be moistened with liquid petrolatum. This "patch" is applied with the testing material next to the surface of the skin. The gauze is then covered with a square of oiled silk and fastened to the skin with adhesive tape. Several patches may be applied to the back at one time and examined after from twenty-four to forty-eight hours. A positive reaction will consist of itching and redness, if more severe going on to edema and vesiculation. In the case cited one would have to test in this manner the chemicals that had been used, the ointment base, wool, cotton and silk.

In addition to the foregoing the cause of the urticaria will probably require further search. The scratch tests should be as complete as possible and if all are negative they should be tried further by the intradermal method. In the event that the latter are negative one may still assume that a food may

be the cause of the urticaria. Experimental diets such as elimination diets described elsewhere are in order (Feinberg, S M Allergy in General Practice, Philadelphia, Lea & Febiger, 1934 Rowe, A Food Allergy, Lea & Febiger, 1931) If foods are not found to be at fault, a more thorough search for infection must be made—intestinal, gallbladder and so on. At times the basal metabolic rate is found to be lowered.

SCROTAL TONGUE

To the Editor—In my clinical experience over many years I have often seen furrowed or scrotal tongues of varying degree in apparently normal persons. They have caused me to wonder what causes such a tongue. My first chronic case was a cretin whose tongue was deeply furrowed and scrotal in appearance. He responded well to thyroid treatment but his tongue never changed. His father had a medium scrotal tongue but was not a cretin. I have seen many such tongues in apparently normal persons but have never seen any opinion expressed as to the probable cause. In more recent years, since studying endocrinology and its relation to subacute and chronic arthritis I have found that the scrotal tongue is quite common in women and a few men, who are generally suffering from hypothyroidism. I have noticed these patients improve on liberal doses of thyroid. I have been looking on these scrotal tongues as cases of hereditary hypothyroidism. I saw one woman aged 30 who has suffered for years from chronic rheumatoid arthritis in her hands, knees and feet. She went through a normal pregnancy and confinement and gave birth to a normal child that does not show a scrotal tongue. She was on thyroid, 1 grain (0.065 Gm) twice daily, during her pregnancy. Her mother shows a medium scrotal tongue and has a mild case of rheumatoid arthritis. I should like your opinion as to the cause of scrotal tongue.

F A Booth MD Seattle

ANSWER—Scrotal tongue (lingua plicata) is usually congenital and often familial. The tongue is nearly always larger than normal, the enlargement may be very marked. Milder forms of furrowed tongue are fairly common. The condition is permanent and of no special significance except when food particles collect in the crevices and cause irritation, which, if recurrent, may predispose to epithelioma. There is no evidence that hypothyroidism is an etiologic factor. An acquired form of grooved tongue may follow various forms of glossitis or be due to other disease, notably syphilis. Oversize of the tongue may predispose to the formation of sulci or may aggravate the condition. In marked thyroid deficiency (myxedema and cretinism) the tongue is large and thick but it rarely shows the fluted appearance characteristic of the scrotal tongue. If treatment of the hypothyroidism is neglected or ineffectual, the chronic enlargement may predispose to the appearance of grooves. Otherwise there is no recognized connection between hypothyroidism and the scrotal tongue.

DOUBTFUL DIAGNOSIS OF SYPHILIS

To the Editor—A white man, aged 34, married has been under my care. In 1918 complicating a severe attack of influenza the patient developed bronchiectasis. At present he expectorates from one-half to 1½ ounces of purulent sputum each twenty-four hours. An injection of iodized poppy seed oil in 1926 revealed a bilateral bronchiectasis. Laboratory examination of the sputum revealed spirochetes and neocars phenamine was given 0.3, 0.45 and 0.45 Gm at weekly intervals. The third dose of 0.45 Gm caused a slight reaction and the drug was discontinued. In 1924 the blood Wassermann and Kahn reactions were negative. The patient was married in 1930. In February a year later one morning following coitus he noticed a small reddened macular area the size of a pea on the corona. Three weeks later a blood Wassermann reaction was Kolmer 3 plus Kline negative. Neocarphenamine was begun and 0.3 0.45 0.6 0.45 0.45 and 0.45 Gm were given at weekly intervals. Between the sixth and seventh injections Kolmer and Kline reactions were negative. There was a slight reaction to the 0.6 Gm. dose, so that is why the 0.45 Gm. doses were continued. The reports on Kolmer and Kline tests were negative for a month afterward then the Kolmer became 2 plus again with a negative Kline. At the same time a sample of the same blood was sent to another laboratory and the report was a negative blood Wassermann reaction and negative Kahn. The blood reports have been negative with no treatment until two weeks ago when a report of a blood Wassermann reaction was + and Kahn negative. The Kline and Kahn reactions have always been negative with a marked variation in the Kolmer and Wassermann, at two different laboratories. There is no history of outside exposure and repeated blood tests on the wife have been negative. There has never been any clinical evidence of syphilis except the atypical lesion mentioned. Recently there has been noticed a scaly appearance over the site of the old lesion but it does not look like a syphilitic condition. Please tell me whether or not this is syphilis if it is outline the course of the treatment. Would you advise spinal puncture? Please omit name.

M D South Carolina.

ANSWER.—This is an excellent illustration of the danger of treating a patient for syphilis without having an absolutely definite diagnosis. The basis for the original diagnosis on which treatment was instituted was hardly adequate for a diagnosis. No examination for spirochetes having been made, one cannot say whether or not the lesion described was of syphilitic origin. With only one Kolmer type of Wassermann reaction

positive, and a negative Kahn, one cannot eliminate the possibilities of error and, following the treatment that he received, might conceivably have been sufficient to change the reaction in the case of syphilis, although this is not too likely. The subsequent results are confusing but by no means definitely indicative of syphilis. The fact that the wife shows no signs of syphilis makes it extremely doubtful that the original lesion was of syphilitic nature. One can only have a conjecture about the case, which is that the man probably has not had syphilis.

The procedure that would seem wise would be to have about a dozen tests made in succession in a reliable laboratory. This would give one a pretty good indication of the present condition. If the tests are uniformly negative with a sensitive test such as the Kline test well carried out, and if this is backed up by negative Kahn and Wassermann tests, one would have justification for feeling that no further treatment is indicated although rechecking at intervals of six months to a year would be a reasonable procedure.

If for any reason one is not thoroughly satisfied that the results of the tests show the absence of syphilis, treatment should be vigorously given for a period of a year.

DERMATITIS IN ENGRAVING INDUSTRY

To the Editor—I recently saw a white man aged 50 a printer who has been working in the engraving department during the past two months using a fine aluminum dusting powder which at the end of the day's work covers his face and hands and is inhaled into his mouth and nostrils. Recently there have developed about his face scalp chest, back and arms isolated bright red protruding petechial lesions varying from a pinhead to a lentil in size and about a dozen in all. There are no other symptoms and the lesions themselves are symptomless. When one ruptures there is protracted bleeding one having bled an hour and a half according to the patient's statement. A crust then formed but the lesion does not vanish but may later bleed again. There is slight induration about some of the lesions that have previously ruptured. The first lesion was on the eyelid and was cauterized by a physician. The patient feels generally well. Never better in my life he states. No other hemorrhagic manifestations have been noted and the past history is negative. Examination is essentially negative except for the lesions which are confined to the areas described and are not found elsewhere. The patient had a slight fever 99.4 F when the first time in my office. The pulse was 76 respirations 18 and the blood pressure 130 systolic, 90 diastolic. His height is 5 feet 6 inches (167.6 cm.) his weight 153 pounds (69 Kg). He has several carious teeth but the gums do not appear abnormal. There is no lead line or hemorrhagic area. Stereoscopic views of the lungs were negative. Laboratory study of the urine gave negative results. A stool specimen was strongly positive for occult blood. The Wassermann reaction was negative. The bleeding time was one minute. The coagulation time was three minutes. Blood examination revealed red blood cells 5,460,000 hemoglobin 105 per cent white blood cells 13,150 of which 30 per cent were small lymphocytes 4 per cent large lymphocytes and 63 per cent polymorphonuclears. Platelets numbered 121,000. A recheck on the blood study after two days made by a second laboratory differed slightly from the first and was as follows: red blood cells 5,120,000 hemoglobin 90 per cent, white blood cells 6,400, polymorphonuclears 69 per cent lymphocytes 26.5 per cent monocytes 2.5 per cent eosinophils 2 per cent. The platelet count was reported to be normal. In your opinion might this condition have been related to the patient's occupation either as an engraver using the aluminum powder or in his occupation as a printer in contact with various printers' inks or lead? His employer informs me that the powder which the patient has been using during the past two months and in which time these lesions have appeared is a fine aluminum powder and contains no other metal. Please omit name.

M D California.

ANSWER.—The aluminum powder described in this query has proved to be almost innocuous in the causation of any occupational disorder, although a number of spurious claims have been made alleging various forms of damage. Occasionally enough lead is present as an impurity in the aluminum to result in a diagnosis of lead poisoning as the result of exposure. The dyes used for the making of colored metallic dusting powders have been regarded with suspicion as a source of dermatitis. Local mechanical action has occasionally led to lesions about the face. The dermatosis described may not readily be attributed to the action of this aluminum powder. If of occupational origin at all, greater significance perhaps is to be attributed to other substances used in the engraving and print shop such as various inks, glues for binding aluminum bronzes, and distillates employed in the cleaning of presses and type. However it is not known that this type of lesion may be ascribed to any of the substances contemplated. Some benzene may be used for cleaning purposes and in glues used in printing establishments but the results of the blood examinations seem to rule out the likelihood that this hemorrhagic nodulation may be attributed to benzene or related substances. It is quite within reason to believe that disturbance of nonoccupational origin might be aggravated by dusty and liquid substances found about a printing plant, but no warrant is known to exist to lay the blame on work as the primary cause.

Without attempting any diagnosis, the suggestion is made that this disorder may be of the character of an erythema nodosum or at least one of those entities similar to erythema nodosum. Also there exists the possibility that the lesions may represent the invasion by fungi or other vegetable parasites, cases of which are appearing with a fair frequency at this time.

CARCINOMA OF THE APPENDIX

To the Editor—Recently my wife aged 22 developed acute appendicitis and appendectomy was done. Gross examination of the appendix at the time of removal showed acute inflammation with congested serosa of the distal third. A specimen was sent to the laboratory for further study. Laboratory diagnosis was that of carcinoid appendix with invasion into the muscle and extending to the serosa with small invasion into the meso-appendix. The carcinoid had blocked the lumen of the appendix in the proximal third and also there was present an acute inflammation. What are the possibilities of malignancy and what treatment if any would you suggest be instituted? Please omit name. M D Ohio

ANSWER—Carcinoid tumors of the appendix are differentiated microscopically from carcinomas of the appendix in that the former contain (1) strands or cords of argentaffine cells, (2) few mitotic figures, and (3) an alveolar but never glandular arrangement of cells. Carcinoid occurs usually before the third decade in contrast to carcinoma, which is most common after the third decade. More than 92 per cent of carcinoids occur in the distal half of the appendix, while carcinoma of the appendix is usually found in the proximal portion and is primarily from the cecum. These facts are consistent with the diagnosis of carcinoid in the case in question.

The reported evidence on this subject indicates that, in appendices removed for appendicitis per se 0.46 per cent are found to contain carcinoid tumors, and that from 2 to 6 per cent of these cases may show evidence of malignancy, such as extension metastasis or surrounding glands or recurrence.

Surgery usually suffices to cure this condition. Being of neurogenic origin, these tumors are probably resistant to radiation although a preliminary review of the literature fails to reveal any data on the radiotherapy of this condition. If careful gross and microscopic study of the removed specimen indicates that the excision extends outside the area of disease, a cure has in all likelihood been effected. The age of the patient and the probable radioresistant nature of the lesion contraindicate any form of radiotherapy in this case. On account of the chances of malignancy being so small, a second surgical procedure is contraindicated.

EFFECTS OF PHENOL ON TYMPANUM

To the Editor—Several months ago I heard a story about an intern who once injected subcutaneously pure phenol in place of procaine which he had really intended using. I little realized that I could be guilty of such absent mindedness. Intending to instill several drops of a 5 per cent phenol glycerin solution into an external auditory canal which I had just cleaned of impacted cerumen I squirted instead several drops of pure phenol into the ear. The patient of course immediately complained of a severe burning sensation in the canal but it was not until about one and one-half or two minutes later that I realized the stupidity of my error. I quickly syringed out the canal first with warm water followed by an abundance of 70 per cent alcohol. This gave the patient some relief and a few minutes later I instilled several drops of the 5 per cent phenol-glycerin solution in the patient's ear. I then gave him a prescription for this solution and advised him to use several drops in his ear three times daily. Before the phenol was inserted I had noticed that the drum was intact. After washing out as much of the phenol as I could I inspected the drum which fortunately was still intact but the outer lining of the drum was of a dull white color and there was no glistening appearance. I have not seen the patient again as yet. Will you tell me whether the drum will become necrotic? Will the hearing in this ear become affected? What subsequent treatment would you advise? Please omit name. M D New Jersey

ANSWER.—The application of a concentrated phenol solution to the drum membrane causes the epithelium to become white just as it does if applied to the epidermis, elsewhere. The use of alcohol immediately after the accidental use of the pure phenol probably stopped its caustic action. It is quite likely, therefore that there was complete recovery, and no destruction of the drum membrane itself and no perforation.

It is certain that if only the surface of the drum membrane was involved no impairment of hearing took place. There was no subsequent treatment that could have been applied. If there was only a superficial involvement of the drum membrane, even if the patient had been seen directly after, no special treatment would have been necessary. If there had been prolonged action of the phenol with any necrosis of the drum membrane nothing could have been done except the use of alcohol or oil at the time.

Medical Examinations and Licensure

COMING EXAMINATIONS

ALASKA Juneau, March 5 Sec Dr W W Council Juneau
AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *Written (Group B candidates)* The examination will be held in various cities throughout the country April 29 *Oral (Group A and Group B candidates)* New York June 10 Sec Dr C. Guy Lane, 416 Marlborough St Boston
AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written (Group B candidates)* The examination will be held in various cities of the United States and Canada March 23 *Final oral and clinical examination (Group A and Group B candidates)* Atlantic City N J June 10 11 Group B application lists close Feb 23 and Group A application lists close May 10 Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh
AMERICAN BOARD OF OPHTHALMOLOGY Philadelphia, June 8 and New York, June 10 *Application must be filed at least sixty days prior to date of examination* Sec Dr William H Wilder 122 S Michigan Blvd Chicago
AMERICAN BOARD OF OTOLARYNGOLOGY New York June 8 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha
AMERICAN BOARD OF PEDIATRICS Atlantic City N J June 10 and St Louis Nov 19 Sec Dr C A Aldrich 723 Elm St Winnetka, Ill.
ARIZONA *Basic Science* Tucson March 19 Sec Dr Robert L. Nugent Science Hall University of Arizona Tucson
CALIFORNIA *Regular* Los Angeles Feb 4-7 *Reciprocity* Los Angeles March 13 Sec Dr Charles B Pinkham 420 State Office Building Sacramento
CONNECTICUT *Basic Science* New Haven Feb 9 *Prerequisite to license examination* Address State Board of Healing Arts 1895 Yale Station New Haven *Regular* Hartford March 12 13 *Endorsement* Hartford March 26 Sec Dr Thomas P Murdock, 147 W Main St Meriden *Homeopathic* March 12 Sec Dr J H Evans 1488 Chapel St New Haven
MAINE Portland March 12 13 Sec. Board of Registration of Medicine Dr Adam P Leighton Jr 192 State St Portland
MASSACHUSETTS Boston March 12 14 Sec Board of Registration in Medicine Dr Stephen Rushmore 144 State House Boston
NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* The examinations will be held in medical centers where there are five or more candidates, Feb 13 15 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia
NEVADA *Reciprocity* Feb 4 Sec Dr Edward E. Hamer Carson City
NEW HAMPSHIRE Concord March 14-15 Sec Board of Registration in Medicine Dr Charles Duncan State House Concord
OKLAHOMA Oklahoma City March 12 13 Sec Dr J M Byrum Mammoth Bldg Shawnee
PUERTO RICO San Juan March 5 Act Sec Dr Ramón M. Suarez Box 536 San Juan
VERMONT BURLINGTON, Feb 13 15 Sec Board of Medical Registration Dr W Scott Nay Underhill
WEST VIRGINIA Charleston March 18 State Health Commissioner Dr Arthur E McClue Charleston
WISCONSIN *Basic Science* Madison March 16 Sec., Prof Robert A Bauer 3414 W Wisconsin Ave. Milwaukee
WYOMING Cheyenne Feb 4 Sec Dr W H Hassel Capitol Bldg Cheyenne

Iowa Reciprocity and Endorsement Report

Mr H W Grefe, director, Division of Licensure and Registration, reports 8 physicians licensed by reciprocity and 1 physician licensed by endorsement from Sept 15 to Oct. 25, 1934. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Stanford University School of Medicine		(1928)	Colorado
Northwestern University Medical School (1931) Kansas		(1929)	S Dakota
Rush Medical College		(1923)	Illinois
University of Louisville School of Medicine		(1933)	Kentucky
University of Nebraska College of Medicine		(1929)	Nebraska
University of Pennsylvania School of Medicine		(1933)	N Carolina
Vanderbilt University School of Medicine		(1922)	Tennessee
School	LICENSED BY ENDORSEMENT	Year Endorsement Grad	of
Northwestern University Medical School		(1934)	N B M Ex.

Georgia Reciprocity and Endorsement Report

Mr R C. Coleman, joint secretary, State Examining Boards reports 5 physicians licensed by reciprocity and 2 physicians licensed by endorsement from June 18 to Oct. 11, 1934. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Loyola University School of Medicine		(1934)	Maine
Northwestern University Medical School		(1934)	Texas
University of Kansas School of Medicine		(1933)	Kansas
Johns Hopkins University School of Medicine		(1928)	Maryland
Meharry Medical College		(1933)	Tennessee
School	LICENSED BY ENDORSEMENT	Year Endorsement Grad	of
Washington University School of Medicine		(1925)	(1928) N B M Ex.

Michigan June Examination at Ann Arbor

Dr J Earl McIntyre, secretary, Michigan State Board of Registration in Medicine, reports the written examination held at Ann Arbor, June 6-7, 1934. The examination covered 14 subjects and included 100 questions. An average of 75 per cent was required to pass. One hundred candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Yale University School of Medicine	(1932)	84.7	
Northwestern University Medical School	(1933) 86.4,	(1934)	82.5*
Rush Medical College	(1934)	85.4†	
University of Illinois College of Medicine	(1934)	82.6	
Indiana University School of Medicine	(1933)	83	
Johns Hopkins University School of Medicine	(1932)	87.7†	
Harvard University Medical School	(1933) 85.8†	(1934)	83†
University of Michigan Medical School	(1931)	84.2	
(1934)† 79.9 80.2 80.4 80.7 80.8 80.8 80.9 80.9			
80.9 81.3 81.4 81.5 81.5 81.6 81.6 81.8 81.9 82.2			
82.3 82.4 82.4 82.5 82.5 82.6 82.6 82.6 82.7 82.8,			
82.8 82.8 82.9 83 83 83.1 83.2 83.2 83.2, 83.2			
83.3 83.3 83.4 83.4 83.4 83.5 83.5 83.5 83.5 83.6			
83.6 83.9 83.9 84 84.1 84.1 84.2 84.2 84.2 84.3			
84.4 84.6 84.6 84.7 84.7 84.8 84.8 84.8 84.9			
85 85.1 85.1 85.3 85.4 85.7 85.9 85.9 85.9 86			
86 86.2 86.3 86.4 87.7			
University of Minnesota Medical School	(1929)	84.2	
Marquette University School of Medicine	(1934)	81.7	
85 85.2 85.7* 85.9*			

* This applicant has completed his medical course and will receive his M.D. degree on completion of internship. License has not been issued.
† License has not been issued.
‡ Licenses have not been issued.

Michigan June Examination at Detroit

Dr J Earl McIntyre, secretary, Michigan State Board of Registration in Medicine, reports the written examination held at Detroit, June 13-14, 1934. The examination covered 14 subjects and included 100 questions. An average of 75 per cent was required to pass. One hundred and eleven candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
George Washington University School of Medicine	(1934)	81.9*	
Loyola University School of Medicine	(1934)	82.2	
Northwestern University Medical School	(1934)	81.2	
83.6* 85.9			
Rush Medical College	(1933) 83.9*	(1934)	84.5
University of Illinois College of Medicine	(1934)	82.7	83.5*
Tulane University of Louisiana School of Medicine	(1933)	85	
University of Michigan Medical School	(1933)	84.5	
Wayne University College of Medicine	(1933)	78.6	
(1934) 78.1 78.5† 79.1 79.1 79.3† 80.3† 80.5 80.9			
81.2† 81.3 81.4† 81.6† 81.7 81.7† 82.1 82.1 82.1			
82.2† 82.2† 82.6† 82.8 82.8† 82.9† 82.9† 83†			
83.1† 83.2† 83.2† 83.4* 83.5† 83.6† 83.6† 83.6†			
83.6† 83.7* 83.7† 83.7† 83.7† 83.7† 83.8† 83.9			
83.9† 84† 84.1 84.2† 84.2† 84.3† 84.3† 84.3†			
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University of Minnesota Medical School	(1932)	83.8	
(1933) 85.4 (1934) 84*			
St. Louis University School of Medicine	(1933)	83.6	
New York University University and Bellevue Hospital Medical College	(1933)	83.3	
Woman's Medical College of Pennsylvania	(1933)	79.3	
University of Toronto Faculty of Medicine	(1930)	85.6	
University of Western Ontario Medical School	(1932)	83	
(1934) 84.6*			
McGill University Faculty of Medicine	(1924)	84.9	

* License has not been issued.
† This applicant has received his M.B. degree and will receive his M.D. degree on completion of internship. License has not been issued.

Nevada November Examination

Dr Edward E. Hamer, secretary Nevada State Board of Medical Examiners, reports the written examination held in Carson City Nov 5, 1934. The examination covered 11 subjects and included 110 questions. An average of 75 per cent was required to pass. Three candidates were examined, all of whom passed. Two physicians were licensed by reciprocity after an oral examination. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Maryland Medical College	(1906)	82.1	
St. Louis University School of Medicine	(1925)	76.7	
Jefferson Medical College of Philadelphia	(1918)	82.6	

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Illinois College of Medicine	(1930)	Illinois	
Baltimore Medical College	(1909)	New York	

Book Notices

An Introduction to Gynecology. By C Jeff Miller M.D. Professor of Gynecology Tulane University School of Medicine. Second edition. Cloth Price \$6. Pp 354 with 121 illustrations. St. Louis C V Mosby Company 1934.

No teacher of gynecology can be expected to be completely satisfied with any single gynecologic textbook unless perchance he has written it himself. Over a period of years the author carefully sifted out from a number of sources the data best suited to his own methods of teaching. He has collected and organized these data. In the review of the first edition in THE JOURNAL it was regretted that Miller has so frequently borrowed in preference to drawing from his own broad sources. There is room here for a difference of opinion. Miller has done well to use for his teaching needs the instrument best adapted regardless of source. Never with any thought of self aggrandizement, his tone is consistently simple, unassuming, modestly and helpfully instructive. The text is completely shorn of non-essentials. Elimination of personalities, fads and fancies gives it an enviable consistency and an even distribution of subject matter. There is no topheaviness and unevenness begotten of personal hobbies and axes to grind. The book is far from striking in its immediate effect. It presents, for the most part, fundamental run-of-the-mill teaching gynecologic material. It may well be said that its chief virtue lies rather in its manner of presentation than in any conspicuous virtue or originality in its intrinsic makeup. Objection has also been raised to the lack of originality in the author's selection of illustrations. This objection should be flatly overruled in view of the consistent selection of good illustrations. Cuts of time proved value, some even of hackneyed old favorites, offer clear proof of the unostentatious devotion to the art of gynecologic teaching. Much is to be said for those who have sufficient insight to realize that the teaching of gynecology may best be approached from a number of different angles. Some reviewers have lamented the absence of simple fundamental gynecologic concepts in more advanced textbooks and reference works, others signalize the failure of such fundamental works as Miller's to present advanced research phases, surgery and the clinical technique of treatment. The trend toward separation of the various phases of this broad subject is an excellent one. There can be no question that the segregation of this material for teaching purposes is rational. Certainly by comparison Miller's book seems rather brief, perhaps elementary, yet if a student will assimilate a reasonable proportion of its sound teaching he will have obtained an adequate grounding for later research and the building of clinical knowledge—and without the grinding ordeal of sorting out for himself what is essential to this fundamental grounding. Miller offers a simple but nourishing diet for the student's mental digestion, a digestion not trained to discretion in the selection of a sufficiently simple fare for its own consumption.

Schistosomiasis (Bilharziasis). By Dr Rameses Girges. With a foreword by Professor Ernest Carroll Faust. Cloth Price 25s. Pp 529 with 185 illustrations. London John Bale Sons & Danielsson Ltd 1934.

This volume represents the most complete single account of schistosomiasis now available. There are ten parts each with from one to six chapters. Part I is an introductory historical account of the development of the present knowledge of schistosomiasis. Part II deals with the parasitology of the family Schistosomidae. Part III gives a summary of the present geographic distribution and the factors in the epidemiology of the human types of the disease. Part IV is a useful compendium of practical methods for the study of the parasites, including a description of the molluscan intermediate hosts. Of particular interest from the medical standpoint are parts V, VI, VII and VIII which deal with schistosomiasis haematobium, schistosomiasis Mansoni of the intestinal type, schistosomiasis Mansoni of the visceral type and schistosomiasis japonicum, respectively. Under each infection a careful outline is given of the pathology, clinical aspects, prognosis and treatment, both medical and surgical. The division of schistosomiasis Mansoni into intestinal and visceral types is of particular interest. The intestinal type is the orthodox, clinical picture ascribed to

Manson's schistosomiasis The visceral type is the syndrome of hepatic cirrhosis, splenomegaly and ascites, which is generally termed Egyptian splenomegaly and is usually considered of unknown etiology. The author has collected a tremendous series of clinical, pathologic and parasitologic data indicating that this disease is due to unisexual infections with the male *Schistosoma mansoni*. The male cercariae reach the liver and grow to maturity but, finding no females or an insufficient number, do not migrate to the mesenteric region, where oviposition usually occurs. In the meantime their presence in the liver incites an immunity which prevents the development of female cercariae even if these are later acquired by the patient. The fact that this condition is a schistosomiasis has been missed largely because there are no eggs found in the feces or urine. Part IX is a general survey of specific treatment and emphasizes the great advances made since the introduction of the antimonial preparations. Part X gives a short discussion of prophylaxis. The author has had an amazing contact with clinical cases of the Manson and haematobium types of the disease, and the book is the result of this experience plus a very thorough biologic grounding. The book is well written and illustrated and will be indispensable to all clinicians, sanitarians and parasitologists interested in this group of trematodes. It is to be regretted that the author compiled no extensive bibliography, although frequent references are cited throughout the text.

Diseases of Women By Ten Teachers Under the Direction of Comyns Berkeley M.A. M.D. M.C. Obstetric and Gynecological Surgeon to the Middlesex Hospital. Edited by Comyns Berkeley J. S. Fairbairn and Clifford White. Fifth edition. Cloth. Price \$6. Pp. 508 with 193 illustrations. Baltimore: William Wood & Company 1934.

Peculiarly enough this book though written by ten different men, possesses remarkable consistency. It is thoroughly reliable, well grounded in authority, and consistently solid (almost stolid). It is thoroughly British in its devotion to unenlightened detail—a virtue, no doubt in an academic teaching textbook. Blunt British parlance brings forth apt expressions such as "slop diet for 'soft diet,' 'plugging' the uterus for 'packing,'" and "enquiry" instead of "inquiry," with a liberal smattering of diphthongs. No method is superior for teaching purposes to that used in this work. The orderly presentation of etiology, pathology, symptoms, diagnosis, treatment and prognosis is exemplary. Granting the value of such orderly sequence, one is surprised to note a lack of balance in the total consideration allotted to various general subjects. Ectopic pregnancy for example and uterine fibroids are treated in great detail (except for micropathology). An exhaustive reference work could hardly be expected to contain a more adequate presentation of either subject. In sharp contrast are the sections on gross anatomy and physical examination, which are meager. A similar unevenness of distribution is obvious in the use of illustrations which are in general good. The color cuts are well chosen but a bit florid. Consistently excellent throughout this work is the consideration of differential diagnosis. Specialist, clinician and student will profit by careful study of such sections. Revision and additions to the section on menstruation and endocrine influence call for favorable comment. The section on retroversion, particularly in relation to treatment, is sound and helpful. The section on the pathology of prolapse is excellent. A subject ordinarily difficult is here presented in lucid sequence. Conservative treatment is given almost more than its fair share of consideration. The rationale of operative care is well presented. Unfortunately, the procedure described for the control of prolapse does not seem to meet the broad indications laid down in the section on underlying pathology. Micropathology is skimmed, purposely, no doubt. The discussion of acute salpingitis leaves the reader with the definite impression that the author favors early operation. An obvious effort is made to straddle the issue yet the conviction remains that the author agrees with the authorities who hold that the best treatment of salpingitis is to operate in the early stage of the attack, as in appendicitis. In the present status of our actual knowledge this wavering position seems totally indefensible. Out of charity one must suppose that this section has been overlooked in the revision of material for this edition. In spite of minor flaws this must be regarded as an excellent textbook of more value in academic teaching than in clinical practice of considerably more value in fact in this teaching field than many of its sur-

facely more brilliant contemporaries. In general a thoroughly sound and reliable work, it can be highly recommended for the teaching of basic gynecology to undergraduates.

Einfache quantitative, klinische chemische Harn- und Blutuntersuchungsmethoden. Eine Anleitung zur Ausführung diagnostisch wichtiger quantitativer Methoden ohne besondere Laboratoriumseinrichtung zum Gebrauch für die ärztliche Praxis. Von Prof. Dr. med. et phil. Erwin Becher, Oberarzt der Medizinischen Universitätsklinik Frankfurt a. Main. Mit einem Vorwort von Prof. Dr. F. Volhard, Direktor der Medizinischen Universitätsklinik Frankfurt a. M. Paper. Price 7.50 marks. Pp. 16, with 7 illustrations. Jena: Gustav Fischer 1934.

This is a compilation of the clinical and chemical methods for the investigation of diseases of the kidney, gallbladder and liver. For the most part the book deals with renal disease, and only a small but adequate section is devoted to the gallbladder and liver. The author has been closely associated with Volhard through practically all his work on renal disease and is well equipped both from experience and from training to present an authoritative treatise on this subject. While the work is essentially in manual form, the thoroughness with which the data are handled compares favorably with more exhaustive books on the subject. The reader further has the advantage of the author's extensive experience in not having to decide as to the value of any of the methods given. Only such procedures as have been definitely proved helpful clinically are discussed. An English edition of this book should be well received by the profession, as it is only by the application of such procedures that the subject of nephritis will become clarified. The manual should prove to be of great value to those who are interested in diseases of the kidney and liver and to those who would like to extend their information to the laboratory phases of the subject. The laboratory worker will also find this work an authoritative and explicit laboratory manual. The book is highly recommended to both.

Studies in Asphyxia. I Neuropathology Resulting from Comparatively Rapid Carbon Monoxide Asphyxia. II Neuropathology Resulting from Comparatively Slow Carbon Monoxide Asphyxia. III Neuropathology Resulting from Comparatively Slow Carbon Monoxide Asphyxia Reaction During 16 to 165 Days After Exposure. IV Neuropathology Resulting from Comparatively Rapid Asphyxia by Atmospheres Deficient in Oxygen. V Blood Chemistry Changes Resulting from Comparatively Rapid Asphyxia by Atmospheres Deficient in Oxygen. VI Blood Chemistry of Dogs After Comparatively Rapid Carbon Monoxide Asphyxia. By W. P. Tansy, John Chornyak, H. H. Schrenk, F. A. Patty and R. R. Savers. Prepared by the Direction of the Surgeon General, U. S. Treasury Department, Public Health Service. Public Health Bulletin No. 211. Paper. Price 15 cents. Pp. 61 with 86 illustrations. Washington, D. C.: Supt. of Doc. Government Printing Office 1934.

This bulletin of the Public Health Service presents in brief form a thorough study of the neuropathology resulting from (a) rapid, (b) slow and (c) long continued carbon monoxide asphyxia (d) the comparable neuropathology of rapid asphyxia by atmospheres deficient in oxygen but containing no carbon monoxide and the blood chemistry changes resulting from (e) rapid asphyxia by simple anoxia and (f) those induced by rapid carbon monoxide asphyxia. Photomicrographs of sections of the brains of asphyxiated dogs and rats are reproduced. Two types of degenerative changes were observed in nerve cells, some becoming shrunken and staining diffusely others showing varying degrees of chromatolysis. In dogs these changes occurred chiefly in the cells of the cerebral cortex in the corpus striatum and other basal ganglia. In rats the cortex was much less injured. In both species of animals, vascular changes were marked: dilatation of small blood vessels, stasis and perivascular hemorrhages. Edema occurred throughout the brains with infiltration of leukocytes particularly in the meninges. The principal changes in the chemistry of the blood were decreased oxygen content, decrease both of the content of carbon dioxide and of the carbon dioxide capacity, and a lowering of pH . The effects of asphyxia by simple oxygen deprivation and by 0.6 per cent carbon monoxide in otherwise normal air were essentially similar. None of the changes in the blood were such as would not be readily corrected when the anoxemia was relieved by treatment with oxygen or a mixture of from 5 to 7 per cent of carbon dioxide in oxygen. It is therefore apparent that the neuropathologic changes in the blood are not primarily responsible for the failure of moribund cases of carbon monoxide poisoning to respond to such treatment; the neuropathologic alterations initiated by profound and prolonged asphyxia are not reversible.

For the literature of the subject the reader is referred to a previous publication (Public Health Bulletin 195, 1930). Further observations on asphyxia are to be reported in a later publication, which would benefit from a closer correlation between the appearance and behavior of the subjects of the experiments and the structural and chemical changes than has been attempted in the present, otherwise excellent, article.

Étude sur le vibrion cholérique Vibrio cholerae typus épidémique et Vibrio cholerae typus endémique Par le Dr W. Doorenbos M.D. directeur du Laboratoire de Chatby du Conseil Sanitaire Maritime et Quarantenaire d'Égypte à Alexandrie. Paper Pp 120 Alexandria Société de Publications Egyptiennes 1934

The epidemiology of cholera, as relating particularly to pilgrimages of the local region, is considered in the light of observations on the serologic and cultural characters of *Vibrio cholerae*, bacteriophage, bacterial variation and host factors. From carriers, the author isolated strains of *vibrio* having characters unlike typical epidemic strains but similar to variants obtained in the laboratory by bacteriophage action. He advances the proposition, therefore, that bacteriophage in the intestine induces the appearance of *vibrios* capable of maintaining the endemic type of cholera. This is the role of the chronic carrier, who should be controlled because avirulent strains may be converted under certain conditions to virulent epidemic forms.

Practical Obstetrics for Students and Practitioners By P. Brooke Bland M.D. Professor of Obstetrics Jefferson Medical College Philadelphia and Thaddeus L. Montgomery M.D. Associate in Obstetrics Jefferson Medical College Philadelphia. Second edition. Cloth. Price \$8. Pp 730 with 516 illustrations. Philadelphia F. A. Davis Company 1934

In this handy volume a great deal of practical obstetric knowledge is condensed. In this edition the work has been brought down to date, preventive obstetrics being particularly emphasized. The book presents mainly the principles and practice of obstetrics of the Jefferson Medical College of Philadelphia. Naturally there is much in it with which one will not agree, but the personality of the book needs no defense. After a clear cut description of the anatomy and physiology of the reproductive organs the physiology, pathology and treatment of pregnancy are fully presented, then the physiology, pathology and treatment of labor, and then the complete story of the puerperium followed by operative obstetrics. Would it not present to the student, for whom this book is mainly intended, a clearer conception of the whole subject if at first he was given a complete rounded picture of a normal pregnancy, labor and puerperium? Then the aberrations of pathologic pregnancies, labors and puerperia would be more readily recognized and absorbed in the mind. For example, the treatment of abruptio placentae is given before the student knows how a normal placenta is expelled and the use of a bag in placenta praevia is shown before he is told how a cervix dilates during labor. The mechanism of labor is not as well described as its importance deserves. No mention is made of the work of Sellheim. The diagnosis and treatment of the pathologic presentations are good, the one adequate the other conservative and practical. More value is attached to prenatal pelvic mensuration than recent experience would justify. Caldwell's and Molloy's classification of the pelvic forms deserves mention in the next edition. Indeed, this may be said of several deficiencies and errors in giving credit for various procedures. A careful search through the literature for original sources is the only safeguard against such oversights. The puerperal hemorrhages are given brief and clear exposition and the chapter on puerperal infections is concise and adequate. The therapeutic nihilism expressed is disappointing but concordant with fact, and the conservative attitude toward local intervention is commendable. A short chapter on anesthesia and one on repair of injuries precede the presentation of operative obstetrics. The classic cesarean section is given undue prominence in view of the fact that its mortality in Philadelphia is five times that of the low cervical operation. A chapter on obstetric jurisprudence closes the book. The references are grouped in an appendix under the title "Referred Reading." The illustrations, twenty-one in color, are good. Many are diagrammatic and a considerable number are original. The publishers have not spared expense in producing a handy, good looking and readable volume.

Entomological Studies Studies on Insects of Medical Importance in South Africa By Botha De Jellon D.Sc. F.R.E.S. from the Malaria Research Station of the South African Institute for Medical Research at Transvaal. Publications of the South African Institute for Medical Research No XXXIII (Vol VI) Paper Pp 249 308 with 14 illustrations. Johannesburg: South African Institute for Medical Research 1934

This contribution to medical entomology consists of detailed and highly technical reports on the first part of a series of notes on South African Simuliidae and descriptions of a new flea from the Transvaal belonging to the genus *Xenopsylla*, a new variety of *Anopheles natalensis*, the eggs of some South African anophelines, and the pupae of some heretofore undescribed South African anophelines.

The Human Body Its Structure and Activities and the Conditions of Its Healthy Working By H. Newell Martin. Twelfth edition revised by Ernest G. Martin Professor of Physiology in Leland Stanford Junior University. Cloth. Price \$4. Pp 701 with 167 illustrations. New York: Henry Holt & Company 1934

This has been a standard textbook in American colleges for fifty years and has been for many students the avenue of introduction to anatomy and physiology. The present edition like the three preceding it, has been revised and edited by Ernest Gale Martin. The revision has dealt especially with subjects on which scientific growth has been rapid in recent years. The section on histology has been revised, the chapters on cerebral function and nervous conduction have been rewritten, the chapter on hormones is new. The work as revised maintains the standard set for earlier editions by Prof. H. Newell Martin. Since the publication, Dr. Ernest G. Martin has died. This edition constitutes a monument to these two great teachers of physiology.

Vegetable Drugs of India By Deraprasad Sanyal L.M. & S. Lecturer on Medical Jurisprudence and Rasbehari Ghose M.B. D.T.M. & H. Lecturer on Pathology and Bacteriology. Second edition. Cloth. Price, Rs 4/8. Pp 590. Calcutta: S. Chatterji. The Medical Publishers 1934

This book on the East Indian *materia medica* discusses the more modern views on the vegetable drugs alongside the uses the ancient Hindoo physicians made of them. The drugs are classified according to the system of the human body on which they chiefly exert their therapeutic action. One looks in vain for such drugs as digitalis, opium, cinchona or *nuxvomica*; the book being avowedly devoted to the native drugs of India among which one meets many to us well known with still more of them with which we are not familiar. One naturally wonders in view of this specialization to the vegetable drugs of India to what reading circle this book is addressed. If it is to be used as the principal book on *materia medica* in the teaching of medical students or if it is to serve as the guide in the selection of his remedy by the practicing physician, this exclusion of many of the most important remedies known to man is certainly objectionable. If this is the case, one must interpret this book as a manifestation of a nationalism so intense as to sacrifice the interests of the sick to the dictates of chauvinism; but this omission does not make the work any less interesting or useful as a reference work to the native drugs of India with which it deals.

Ergebnisse der experimentellen Krebsforschung und Krebstherapie Von Dr. Ferdinand Blumenthal Professor an der Universität Belgard. Paper. Price 4.25 H. florin. Pp 183. Leiden: A. W. Sijthoff's Uitgeverijmaatschappij N.V. 1934

The author is the former director of the cancer institute of the University of Berlin and for sixteen years he was the general secretary of a central committee (now dissolved) for the investigation and control of cancer in Germany. Being an active investigator he is well qualified by training and experience to review the advances in our understanding of cancer and its treatment and control since the beginning of the experimental era in the investigation of cancer at the dawn of this century. The book is divided into twenty sections. There are no illustrations. At the end are 497 references which are cited by numbers in the text. Unfortunately there is no subject index, but in its place is a detailed table of contents. Among the topics may be mentioned the definition and genesis of cancer, the relation of parasites, tar, the roentgen ray, irritation, trauma and heredity to cancer, precancerous conditions, the problems of the Rous sarcoma and the principles of the treatment of cancer.

by operation and by radiation. The final section is devoted to a review of organized efforts to control cancer through education of the public and of physicians and the setting up of fully equipped cancer centers. The book gives a concise but thorough and competent review of the progress of investigations of fundamental cancer problems, of the principles of modern treatment, and of the trends of the efforts to control cancer. It contains in condensed form a vast amount of information of value to the study of cancer.

The Principles of Therapeutics By Francis Richard Fraser M.A. M.D. F.R.C.P. Professor of Medicine in the University of London. The Abraham Flexner Lectures Series Number 3. Published for Vanderbilt University. Cloth. Price \$2. Pp 135. Baltimore: Williams & Wilkins Company 1934.

It is difficult to write on the principles of therapeutics, and it may be impossible to write brilliantly on them or to avoid being platitudinous if one confines oneself to what is universally accepted. Dr. Fraser's book might serve as a gift to a medical student but it would not be of much profit to a mature physician.

Medicolegal

Pharmacy Practice Acts—Hydrogen Peroxide a "Drug or Medicine"—Arthur, a manager of a pharmacy, was charged with violating section 13 of the California pharmacy practice act in that he permitted named persons, who were not registered pharmacists or assistant pharmacists, to sell peroxide of hydrogen. He was found guilty in the trial court and appealed to the appellate department, superior court, Los Angeles County, California.

Section 13 of the pharmacy practice act makes it unlawful for any *proprietor* of a pharmacy to permit the sale of drugs, medicines or poisons by any one except a registered pharmacist or assistant pharmacist. The defendant contended that since he was not a *proprietor* but a "manager," his conviction was unwarranted. The superior court held, however, that a mere statement in the charge that the facts alleged constituted a violation of one section of the pharmacy practice act did not prevent the court from upholding the conviction if the acts charged were prohibited by any other section. Section 12 of the pharmacy practice act, observed the court, declares it to be unlawful for *any person* to permit the sale of drugs and medicines "in his or her store or pharmacy," except by a registered pharmacist or registered assistant pharmacist. The words "his or her" do not necessarily denote ownership. They may signify simple possession. The purpose of the pharmacy act is to prevent the sale of drugs and medicines by any person not a registered pharmacist or assistant pharmacist. To carry out this purpose a penalty is imposed both on the unregistered person who sells and on the person in authority who permits him to do so. To limit the latter provision to proprietors only would tend to defeat this purpose, for many stores are owned by corporations which are not subject to the imprisonment provided as a part of the penalty. Furthermore, any proprietor residing out of the state, whether individual or corporate, would be entirely beyond the reach of the statute. Such a defeat of the purpose of the act may be avoided by giving to the words "his or her store or pharmacy" a meaning signifying any store or pharmacy over which the person charged has such control and authority as to enable him or her to prevent violations of the act by other persons.

The defendant next argued that peroxide of hydrogen is not a drug or medicine within the meaning of the pharmacy practice act. We are satisfied, said the court, that "drug or medicine" are broad enough to include peroxide of hydrogen. It is a well known chemical substance, listed in the United States Pharmacopeia and described in all encyclopedias. Its character and common uses are well within the scope of judicial notice. The defendant apparently cited *State v. Hanchette*, 88 Kan. 864, 129 P. 1184 where it was held that peroxide of hydrogen is not a medicine and hence its sale by unregistered persons was not prohibited by the Kansas pharmacy practice act. But, said the superior court, we are not disposed to follow this case in its apparent holding that the word "medicine" is limited to

substances which are generally and popularly known as such, to the exclusion of those so regarded only by the medical profession. This is altogether too narrow a meaning for the word. There may be some difficulty in applying the pharmacy practice act to substances which have both a medical and a nonmedical use, but in the case of peroxide of hydrogen we are aided by the provisions of section 16 of the act, which provides, by way of exception to the general provisions of the act, that permits may be issued for the sale by unregistered persons in the rural districts of "simple household remedies and drugs," among which is listed peroxide of hydrogen. Such an exception gives rise to a strong implication that what is excepted would otherwise have been within the purview of the act.

For the reasons stated above the judgment of conviction was affirmed—*People v. Arthur* (Calif.), 32 P. (2d) 1002.

Liability of County for Emergency Medical Aid Rendered to a Poor Person—A Nebraska statute imposes a duty on a county to furnish medical aid to certain classes of resident poor. Madison County, through its proper officials appointed a physician to furnish such aid. The appointment of this physician did not seem to have been generally known among the medical profession in the county. A certain person, entitled to medical relief from the county, became ill from a diseased appendix. Her attending physician called the appropriate county commissioner, who authorized the patient's removal to a hospital but refused to authorize the surgeon's bill. The commissioner, however, did not ask that the patient be attended by the county physician or even refer to him. At the instance of the attending physician the plaintiff-physician, Sayre, performed an appendectomy and the patient recovered. The case apparently was one of great emergency and a delay in operating might have been fatal. The county paid the hospital bill but refused to pay the operating physician. He brought suit and the trial court gave judgment for the county. Sayre died but the action was revived in the name of his executrix, his widow, and she appealed to the Supreme Court of Nebraska.

The question presented by this case, said the Supreme Court, is whether a physician, not employed by the county, may recover from the county for services rendered a poor person in an emergency when the county has duly appointed a physician to care for the poor who was able, willing and ready to serve, but was not consulted. It was the duty of the county to furnish medical aid in this case, continued the court, but not necessarily to furnish the poor person's choice of medical aid. Statutes of the kind under consideration should be given a very liberal construction, and county officials should be generous in supplying the aid which the legislators intended for destitute persons. When, however, a county in Nebraska provides a physician to supply medical care to indigents, said the court, who is able and competent to give satisfactory service, and when that physician is ready and willing to render such service on call, then the duty of the county is fulfilled. Under such conditions, it is not permissible for the sick person to choose who shall render the service to him. The Supreme Court concluded, with one justice filing a dissenting opinion, that under the circumstances here involved the county was under no liability to pay for the services rendered by Sayre. If the county physician had refused or had been unable to attend or had been incompetent to take care of the case a different question might have been presented, observed the court.

The judgment of the trial court in favor of the county was affirmed—*Sayre v. Madison County* (Neb.), 254 N. W. 874.

Society Proceedings

COMING MEETINGS

American Orthopsychiatric Association, New York, Feb. 21-23, Miss Mary A. Clarke, 50 West 50th Street, New York, Secretary.
Annual Congress on Medical Education and Licensure, Chicago, Feb. 18-19, Dr. William D. Cutter, 535 North Dearborn Street, Chicago, Secretary.
Pacific Coast Surgical Association, Santa Barbara, Calif., Feb. 21-23, Dr. Edgar L. Gilcrest, 384 Post Street, San Francisco, Secretary.
Southeastern Surgical Congress, Jacksonville, Fla., March 11-13, Dr. Benjamin T. Beasley, 478 Peachtree Street, N.E., Atlanta, Ga., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

188 745 884 (Dec.) 1934

- *Chronic Congestive Splenomegaly and Its Relationship to Banti's Disease. R C Larrabee Boston —p 745
- *Distinction Between Splenic Anemia and Subleukemic Splenic Reticulo-Endotheliosis. H Z Giffin and C H Watkins Rochester Minn —p 761
- Comparative Values of Several Antidotes in Cyanide Poisoning. A K Chen C L Rose and G H A Clowes Indianapolis —p 767
- Inheritance of Diabetes Mellitus III. Blood Sugar Values of Relatives of Diabetics. G Pincus and Priscilla White Boston —p 782
- Carbohydrate Metabolism in Human Hypothyroidism Induced by Total Thyroidectomy. I Glucose Tolerance Curve and Fasting Serum Sugar Concentration. D R Gilligan M I Abrams and Beatrice Stern Boston —p 790
- Id II. Blood Sugar Response to Insulin. M I Abrams and D R Gilligan Boston —p 796
- Multiple Parathyroid Tumors with Massive Mediastinal and Subcutaneous Hemorrhage. Case Report. R B Capps Boston —p 800
- Causes of Coma in Patients Entering a General Hospital. P Solomon and C D Aring Boston —p 805
- Spontaneous Hemophilia. Report of Six Cases in Brothers. R Boggs Boston —p 811
- *Familial Hemorrhagic Condition Simulating Hemophilia and Purpura Haemorrhagica. J E Farber Buffalo —p 815
- Elongation of Red Blood Cells in Jewish Family. L H Pollock and W Dameshek Boston —p 822
- Experimental Interference with Conduction in the Heart. Jane Sands Robb Mary Easby and J G F Hiss Syracuse N Y —p 835
- Clinical Significance of the M or W Shaped QRS Complex in Lead II of Electrocardiogram. J Edeiken and C C Wolfarth Philadelphia —p 842

Chronic Congestive Splenomegaly and Banti's Disease

—On the basis of a study of forty-seven cases, Larrabee expresses the view that in the majority of patients presenting the clinical picture of Banti's disease (splenomegaly with fibrosis microcytic anemia with leukopenia and a late stage with hemorrhages and ascites) the condition is dependent on various intra-abdominal lesions obstructing the venous outflow of the spleen. By far the commonest of these is liver cirrhosis of various types. As Banti has limited the definition of the disease that bears his name in such a manner as to exclude these cases it is thought best to segregate them under a distinctive name. However, splenectomy is indicated just as in Banti's disease, regardless of the nature of the underlying lesion. The physician or surgeon confronted with an actual case need not trouble himself with theoretical questions as to the nature of Banti's disease. If he has a patient showing the Banti pre-operative picture if he has watched the patient long enough and studied him carefully enough to exclude leukemia, hemolytic jaundice polycythemia and certain other conditions, and if ordinary surgical considerations favor splenectomy, he need not hesitate to operate because he believes that the patient has alcoholic cirrhosis or some other equally definite cause of portal obstruction.

Distinction Between Splenic Anemia and Subleukemic Splenic Reticulo-Endotheliosis—Giffin and Watkins report two cases originally diagnosed as splenic anemia and subsequently classified as subleukemic splenic reticulo-endotheliosis. The first of these was seen in an early stage of the disease, the second was more advanced at the time of the first examination. The clinical and morphologic features that should have suggested an earlier diagnosis of splenic reticulosis are as follows: history of preceding episodes of infection, a short history of the development of splenomegaly slight purpuric manifestations with abnormalities of coagulation, leukopenia or normal leukocyte count with relative lymphocytosis and, in prolonged study of blood smears the presence of reticulo-

endothelial cells and the reticular type of monocyte. As the cases became more definitely leukemic, a higher percentage, between 20 and 30, of reticular cells could be found, even though leukocytosis was not present. The advanced stages in both cases were characterized by severe macrocytic anemia which did not respond to treatment. The infectious hyperplastic type of reticulo-endotheliosis, in which reticular cells may be found in the blood smears, may be distinguished from leukemic reticulo-endotheliosis by the presence of an increased percentage of polymorphonuclears, the absence of immature reticular monocytes and clinical manifestations of a predominating infectious process. Cases of subleukemic monocytic myelosis reveal the presence of stem cells of the myeloid series and the absence of typical reticular cells. In splenic anemia, there is usually no definite history of episodes of infection, a history of fever is uncommon and splenomegaly usually has been present for years. Purpuric features are occasionally present in cases of splenic anemia, but apparently they are not nearly so common as with reticulo-endotheliosis. In splenic anemia the test of liver function almost always gives evidence of at least a moderate, and sometimes an extreme, grade of retention of dye and gross gastro intestinal hemorrhage is more common. Leukopenia with lymphocytosis is not uncommon in splenic anemia but examination of blood smears, in addition to the absence of reticular cells usually reveals more poikilocytosis and less macrocytosis. Prolonged study of blood smears is essential to the demonstration of the presence or absence of reticular cells particularly in the early stages of splenic reticulosis.

Familial Hemorrhagic Condition Simulating Hemophilia and Hemorrhagic Purpura—Farber presents a study of a family of 113 members during five generations, of which twenty-five members suffer atypical pathologic hemorrhage, fourteen of whom are males. The family tree in regard to the males has a striking similarity to that of hemophilia, but the affliction is essentially purpuric in nature. The males have been more markedly involved four of their number having died directly from hemorrhage. The hemorrhagic incidents are variable but consist chiefly of prolonged frank bleeding from a cut or wound ecchymoses and epistaxis in the males and menorrhagia and ecchymoses in the females. The coagulation time of the blood is normal, bleeding time is intermittently prolonged, platelets are numerically adequate, and the clot retracts normally. Blood chemistry is normal. There seems to be no definite relation of the bleeding to season, diet, infection or occupation. Telangiectasia and splenomegaly are uniformly absent. Hypertension runs in the family, brain hemorrhages are frequent.

American Review of Tuberculosis, New York

30: 599 778 (Dec.) 1934

- *The Bronchiectatic Septic Tank. Its Prophylaxis and Treatment. C Jackson and C L Jackson Philadelphia —p 599
- Relations of Allergy and Immunity in a Clinical Case of Pulmonary Tuberculosis. H Sewall and K D A Allen Denver —p 607
- Futurity Handicap of Tuberculosis Contact. Consideration of Data Relative to Preassessment and Prevention of Clinical Disease. A H W Caulfield and G C Anglin Toronto —p 619
- *Carbon Dioxide Inhalation in Pulmonary Tuberculosis. A L Banyai Wauwatosa Wis —p 642
- *Artificial Pneumothorax in the Teens. B L Brock and A B Mullen Waverly Hills Ky —p 653
- Artificial Pneumothorax Technic. K P Jones Olive View Calif —p 670
- Oleoathorax. Report of Cases. C K McCarthy Rutland Mass —p 677
- Pathogenicity of Mycobacterium Tuberculosis (Avium) for Dogs by Intracerebral Injection. P E Steiner Chicago —p 683
- Cultivation of Tubercle Bacillus from Blood Stream by Loewenstein's Method. E Maier New York —p 695

"The Bronchiectatic Septic Tank"—Bronchoscopic studies of the Jacksons indicate that the chief two primary causes of bronchiectasis are excessive viscosity of the primary pathologic bronchial secretions and the septic tank conditions they engender. The term 'bronchiectatic septic tank' means not only a receptacle for septic material but a container in which the material is changed in physical character and bacterial content by bacterial processes, chiefly saprophytic, in a way parallel to the changes that the sanitary engineer uses to change the physical character and bacterial content of household sewage. The difference is that the concrete walls of the sewage septic tank are not acted on by the changed character of the contents.

whereas the living walls of the bronchi are damaged by the inflammatory changes set up by the irritating character of the by-products of the septic tank processes. Putrefaction will ultimately thin the viscid secretions, so that they can be expelled by coughing but during the delay the septic tank processes have ruined the structural integrity of the walls. The chief means of preventing bronchiectasis is by forestalling the septic tank processes by bronchoscopic aspiration of the viscid pathologic bronchial secretions before they have time to rot. The primary pus in bronchiectasis is not coughed up, hence, when sputum is used bacterial studies are misleading and autogenous vaccines are inefficient. The important organisms are found only in the residual pus removed bronchoscopically from primary foci after the bronchiectatic septic tank has been emptied by bronchoscopic aspiration.

Carbon Dioxide Inhalation in Tuberculosis—Banyai found the administration of a mixture of 10 per cent carbon dioxide and 90 per cent oxygen by means of repeated inhalations to be a safe procedure in pulmonary tuberculosis. The most consistent benefits derived from this treatment were effortless expectoration, diminution of coughing and relief from dyspnea. Concomitant beneficial results were sustained rest for the diseased lungs during the absence of coughing, better and more relaxed sleep, improvement in the general well being, better appetite, and in some cases relief from laryngeal pain. The inhalation of carbon dioxide not only alleviates a distressing cough but also enables one to reduce the consumption of narcotics and expectorants in such cases. The treatment should be used only in selected cases, indicated in cases of strenuous exhaustive coughing without effective expectoration (1) if there is evidence of inflammatory exudation in the lungs, (2) when the cough is insufficient to evacuate sticky, thick sputum and thereby causes gagging, vomiting and incontinence, and (3) when sleep and rest of the patient are disturbed by coughing during the night. It is contraindicated in cases showing (1) hemorrhagic tendencies, because of a possible risk of inducing hemorrhage by increased respiratory expansion, (2) superficial, thin-walled cavities, because of the possibility of rupture and causing a pneumothorax, (3) marked emphysema, (4) widespread pulmonary fibrosis without atelectasis and without mucopurulent retention in the air passages, (5) acute plastic pleurisy and pleural effusion, (6) hypertension, (7) when the cause of dyspnea or coughing is outside the lungs, and (8) in extreme general debility.

Artificial Pneumothorax in Young Patients—Brock and Mullen studied a group of 267 white tuberculous patients and 100 Negro patients between the ages of 12 and 21 years hospitalized in the sanatorium during the five-year period beginning September 1928 and ending September 1933. A comparison is made of results obtained in the three methods of treatment: artificial pneumothorax, phrenicectomy and routine sanatorium care. The study was also made to determine what effect the following factors might have on ultimate results in the different treatment groups: (1) sex, (2) age of patient, (3) amount of disease at the time of admission, (4) unilateral or bilateral disease at the time of admission and (5) positive or negative sputum following the period of hospitalization. The results show that young women in their teens obtain just as good results when hospitalized and properly treated as do young men of the same age. The results of treatment in this age group are just as favorable as those in older patients. The amount of disease with which a patient is admitted to the sanatorium plays a much greater part in determining end results than it is generally supposed and this is particularly modified according to whether the disease is unilateral or bilateral at the time of admission. When the sputum remains positive following hospitalization, the end results are uniformly poor. A negative sputum following hospitalization and treatment points to success of the treatment and favorable end results in the great majority of cases. In comparing the white and Negro races as to end results, the principal differences, regardless of the method of treatment employed, are the relatively low number of arrested cases and the high number of deaths in the Negro. Artificial pneumothorax therapy in this age group is far superior to other methods. If the diagnosis is made early enough and particularly before the disease becomes bilateral the chances for favorable end results are good following immediate and successful collapse

of the lung by means of artificial pneumothorax. The authors feel that this also holds true but to a lesser degree for the Negro. His disease is more frequently exudative with involvement of the lymph nodes in the hilus, and when this is present they feel that the chances for spread to the contralateral lung by way of the lymph canals, even in the face of a good collapse, is a possibility not to be overlooked.

Anatomical Record, Philadelphia

GO 377 516 (Nov. 25) 1934

- Physiologic Marrow Ossification in Female Pigeons. P. Kyes and T. S. Potter. Chicago—p. 377.
- The Adrenotropic Substance of Hypophysis as Influenced by Age. Castration Sex and Thyroparathyroidectomy. F. E. Emery and C. A. Winter. Buffalo—p. 381.
- Polyovular Follicles in the Cat. Pauline H. Dederer. New Haven Conn.—p. 391.
- The Response of Gonads of Immature Pigeons to Various Gonadotropic Hormones. H. M. Evans and Miriam E. Simpson. Berkeley Calif.—p. 405.
- Reduction of the Thymus by Gonadotropic Hormone. H. M. Evans and Miriam E. Simpson. Berkeley Calif.—p. 423.
- Motor Effects of Sensory Nerves Experimentally Connected with Muscles. P. Weiss. Chicago—p. 437.
- Studies on Cell Structure by the Freezing Drying Method. VI. Preparation and Properties of Mitochondria. R. R. Bensley and N. L. Hoerr. Chicago—p. 449.
- Effect of Theelin on Mammary Rudiments of Male Mice Differing in Susceptibility to Tumor Development. W. U. Gardner. A. W. Diddle. E. Allen and L. C. Strong. New Haven Conn.—p. 457.
- Intercalated Disks of the Heart Muscle of the Guinea Pig. Counts of Number of Disks Present at Eight Ages of Normal Animals and in Two Experimental Groups. Elizabeth Selma Zschiesche and E. Frances Stilwell. Northampton Mass.—p. 477.
- The Transparent Chamber Adapted for Cell Culture and Permitting Access to the Contained Living Tissue. R. G. Williams. Philadelphia—p. 487.
- Adaptation of Transparent Chamber Technic to Skin of Body. R. G. Williams. Philadelphia—p. 493.
- Additional Evidence of the Failure of Epiphyseal Union in the Skeleton of the Rat. Studies on Wild and Captive Gray Norway Rats. A. B. Dawson. Boston—p. 501.

Archives of Neurology and Psychiatry, Chicago

32 1125 1374 (Dec.) 1934

- Electrical Activity of Nervous System. E. D. Adrian. Cambridge England—p. 1125.
- Relation of Conditioned Reflex to Psychoanalytic Technic. L. S. Kubie. New York—p. 1137.
- *Colloidal Thorium Dioxide. Its Use in Intracranial Diagnosis and Its Fate on Direct Injection into the Brain and Ventricles. L. Alexander, Boston. T. S. Jung and R. S. Lyman. Peiping China—p. 1143.
- Experimental Poliomyelitis. Cytologic Studies of Cerebrospinal Fluid and Respiratory Metabolism of Excised Spinal Cord and Brain. M. Brodie and S. B. Wortis. New York—p. 1159.
- Psychogenic Motor Disturbances. Analysis of Their Etiology and Manner of Development. W. Malamud. Iowa City—p. 1173.
- *Myelotomy of the Commissure. New Method of Treatment for Pain in Upper Extremities. T. J. Putnam. Boston—p. 1189.
- *Graduated Jugular Compression in Lumbar Manometric Test for Spinal Subarachnoid Block. W. T. Grant and W. V. Cone. Montreal—p. 1194.
- Cerebral Circulation. XXXIII. Effect of Nerve Stimulation and Various Drugs on Vessels of the Dura Mater. J. L. Pool. Gladys I. Nason and H. S. Forbes. Boston—p. 1202.
- Spongiosclerosis Polare of the Pons. Clinicopathologic Study of Eleven Cases. C. Pilcher. Nashville Tenn.—p. 1210.
- Intraductillary Tumors of the Brain Stem. C. C. Hare and A. Wolf. New York—p. 1230.
- Rubrospinal Tracts in the Monkey. Effects of Experimental Section. A. D. Keller and W. K. Hare. University Ala.—p. 1253.
- Colloidal Thorium Dioxide**—Alexander and his associates state that the injection of colloidal thorium dioxide into the carotid artery allows visualization of the cerebral arteries. It has been shown by Kwan that the procedure described by Moniz and modified by Löhr and Jacoby is feasible. From the literature suboccipital or lumbar injection of colloidal thorium dioxide appears to have important possibilities in encephalography. Its ultimate effect on the body has not yet been determined. Injection of colloidal thorium dioxide into the brains of dogs shows that it acts there as a foreign substance. No definite evidence of a special physicochemical destructive action on axis cylinders or on myelin sheaths could be demonstrated histologically in examinations covering a period of two months following the injection. The colloidal thorium dioxide is transported from the parenchyma of the brain to adjacent blood vessels at a rather quick rate and is thus carried away. Microscopic examination after injection into the brain shows that 1. The extension of the lesion produced in the brain is largely dependent

on mechanical factors attending the injection 2 Free granules of colloidal thorium dioxide are present in the brain only on the first day The first granular cells that carry off the granules of colloidal thorium dioxide appear on the first day in the brain tissue, on the second day following the injection, the substance appears in the adventitia and endothelium of the adjacent blood vessels 3 Leukocytic emigration is present on the first day and disappears on the second Following injection into the ventricle the granules of colloidal thorium dioxide are taken off by proliferating ependymal cells which become rounded free, mobile granular cells (ependymogenous granular cells)

Myelotomy of the Commissure—Putnam believes that in cases of intractable pain in the arm or shoulder the suggestion has doubtless been made that artificial destruction of the pain fibers as they cross in the decussation about the central canal would be a rational procedure The author has carried out this procedure in three instances The first patient was a woman with carcinomatous metastases in both axillae, with extreme pain The cord was exposed from the fourth cervical to the third dorsal segment, and a needle was inserted between the posterior columns at intervals of a few millimeters up and down the exposed area and maneuvered in such a way as to pass through the commissure It was found possible to carry this procedure to a segment or two beyond the limits of the laminectomy The patient was not upset by the operation and was completely relieved from pain until death two months later The second patient was a man with pain from carcinomatous metastases, apparently from the lung which affected both sides of the neck as well as the axillae The pain was so severe that doses of one-fourth grain (0.016 Gm.) of morphine did not wholly relieve it A procedure similar to that used in the first case was carried out, except that a special instrument was used which appeared to give better results than the needle In this case the section of the commissure was carried up to the first cervical segment The patient was not completely relieved of pain in the upper cervical segments The pain was however, dull and burning instead of sharp and codeine instead of morphine produced sufficient relief In the third case the operation ended fatally, and it doubtless represents an error in judgment as well as an error in technic The patient was a cachectic old woman almost moribund from carcinomatous metastases to the shoulders and neck She died following an operation in which the commissure was divided through the entire cervical region and the first two dorsal segments

Graduated Jugular Compression in Lumbar Manometric Test for Spinal Subarachnoid Block—Grant and Cone suggest that the graduated measured jugular compression which can be obtained by applying a blood pressure cuff with its attached sphygmomanometer to the neck provides a method for determining spinal subarachnoid block that has many advantages It gives a measured, graduated jugular compression, which can be duplicated exactly in the same patient It makes possible a standard that can be used from patient to patient The results obtained by different operators are in much closer agreement and are therefore more dependable

Minnesota Medicine, St. Paul

17 683 748 (Dec.) 1934

- Treatment of Carcinoma of Breast Combined Surgical and Irradiation Treatment A. Schwyzer St Paul—p 683
Ovarian Tumors Arising from Embryonic Rests Selma C Mueller, Duluth—p 692
Federal Emergency Relief J G Crownhart Madison Wis—p 695
Choice of Anesthetic Agents and Methods and Suggestion to Facilitate Blood Transfusion J S Lundy Rochester—p 699
Injection or Nonoperative Treatment of Hernia L M Larson Minneapolis—p 703
Transfusion Comparison of Results Obtained by Blood Grouping and Direct Matching B T Horton and C H Watkins Rochester—p 711
Contagiousness of Types I and II Pneumococcus Pneumonia H A Reimann Minneapolis—p 714

Surgical and Radiation Treatment of Carcinoma of Breast—Schwyzer believes that surgery, even in well localized mammary carcinoma, should be radical obeying Halsted's teaching Only exceptionally and for serious reasons may one deviate somewhat from this principle The radio knife is of great advantage in sealing the wound rendering it less ready for implantation The danger of implanting liberated carcinoma

cells during the operation is to be kept in mind constantly In far advanced conditions the excision of foul smelling ulcers by cautery or otherwise, followed or not by Thiersch transplantation, may become desirable When unbearable pain persists in recurrence after operation and the arm is greatly swollen and useless the author has seen great relief in one case from an interscapular exarticulation of the arm, as advised by Carl Beck Preoperative irradiation confined to three days appears of great benefit As this involves no loss of valuable time, it should be more readily consented to by many surgeons who would object to a delay of eight weeks, as some modern radiologists demand for preoperative treatment Such loss of time and the mental strain on the patient with the operation constantly before him is not to be underrated When radium is used, 50 mg or more over a wooden block 3 cm thick is applied to different fields, to the amount of from 1,200 to 2,000 mg hours as the case may require This, with a day or two of rest before the operation does not disturb the patient Postoperative irradiation, moderate in dosage but continued over a long period in many cases if possible even over a very long period, seems to be of greatest value The dose of a single postoperative treatment should range between 60 and 80 roentgens after from two to four stronger initial doses of about 130 roentgens The first three doses are usually given at intervals of one week, then the next two or three doses at intervals of two weeks After this the patients receive one treatment a month for two years, then for the next two years, if there is no particular reason to give more, one every second month, and if the patients live and one can make them see the value of perseverance, they get three or four treatments during the fifth and sixth years After this, in cases in which a poor prognosis was made originally the author likes to give a treatment twice a year for several years more Castration, as advised by some earlier authors, has apparently no marked effect on the course of the disease Though he operates in practically every case that is not too unreasonably far advanced, he feels that irradiation will gradually come more into its rights and is at present a most important help to surgery, preoperatively and postoperatively

Blood Transfusion—Lundy prefers the indirect method of blood transfusion To the already established method he adds sodium citrate as an anticoagulant and administers the blood to the recipient slowly in order to avoid chills and other untoward results The rate of administration is about 15 cc per minute He calls attention to two measures that in his experience have facilitated blood transfusion The first is the grading of the donor's veins as poor, fair, good or excellent, so that in an emergency one may call for a donor with good or excellent veins The second is that, in any case in which it is expected that blood transfusion or intravenous infusion may be necessary any time in the near future the skin overlying the good veins in the ankles, arms and backs of the hands of the recipient is marked with a dye so that if the intravascular pressure becomes markedly reduced, and ordinarily the veins would be difficult to find, one may insert the needle through the mark on the skin and more easily accomplish whatever intravenous injection is necessary

Northwest Medicine, Seattle

33 379-422 (Nov.) 1934

- Surgical Procedures Involving Common Bile Duct in Biliary Tract Disease V C Hunt Los Angeles—p 379
Claims of Pathologic Anatomy H E Robertson Rochester, Minn—p 383
Sacro-Iliac Conditions T E P Gocher San Francisco—p 387
Cancer of Rectum Critique of Operations in Vogue M S Woolf San Francisco—p 391
Fibromyxoma of Left Atricle C R Jensen Seattle—p 394

33: 423-460 (Dec.) 1934

- Acute Pulmonary Edema G W Millett Portland Ore—p 423
Use of Stock Vaccines in Chronic Arthritis K A Sherwood, Kirkland Wash—p 426
Roentgen Therapy in Menorrhagia F J Moffatt Medford Ore—p 430
Rotating Extension Splint in Fractures of Lower Leg J E Bittner Jr Yakima, Wash—p 433
Calcium or Sugar Imbalance L D Inskeep Medford Ore—p 435

Use of Stock Vaccines in Chronic Arthritis—Sherwood analyzes 674 cases of arthritis treated with stock vaccine, of which 68 per cent were found to be improved markedly or

free from symptoms and an additional 22 per cent showed some improvement. The location of the arthritis, the age and sex of the patient, the severity of the symptoms and the type of disease do not influence the results statistically. Cases having symptoms less than three months respond more favorably than those of longer duration. After a duration of three months the length of time the symptoms have been present does not greatly influence the results. The presence of complications distinctly lessens the chances for satisfactory results. Four vaccines have been used the best results being obtained with a dilute modified respiratory vaccine.

Ohio State Medical Journal, Columbus

30 705 792 (Nov. 1) 1934

- Scientific Medicine in the Changing Social Order C L Cummer
Cleveland—p 725
Basic Principles in Medical Service J A Caldwell Cincinnati—
p 731
Torsion of Great Omentum Associated with Subacute Appendicitis
R B Poling Youngstown—p 735
Probable Traumatic Thrombophlebitis of Axillary and Brachial Veins
Case M H Grossberg and S O Freedlander Cleveland—p 736

30 793 856 (Dec. 1) 1934

- Acute Empyema Comparison of Results in Children and Adults C R
Steinke Akron—p 813
Care of Umbilical Cord in the New Born R O Brigham Toledo—
p 815
Tuberculosis Among Rural Children in Lorain County H R O'Brien
Oberlin—p 816
Arthritis T E Newell Dayton—p 820
Abdominal Pregnancy Report of Case Two Weeks Past Term W
Bronaugh Belpre—p 823

South Carolina Medical Assn Journal, Greenville

30 217 234 (Nov.) 1934

- Immunization Against Diphtheria Hilla Sheriff Spartanburg—p 219
Use and Abuse of Drugs in Treatment of Children J P Price
Florence—p 221
Typhoid Fever Alkaline Treatment W T Lauder Williamston—
p 225

Wisconsin Medical Journal, Madison

33 869 984 (Dec.) 1934

- *Age of Onset of Pulmonary Tuberculosis J E. Habbe Milwaukee—
p 879
Direct Signs of Duodenal Ulcers M E Gabor Milwaukee—p 882
The Moloch of the Tropics M Fernan Nunez Milwaukee—p 889
Congenital Esophageal Atresia J Docter Racine—p 892
Palliative Treatment of Inoperable Carcinoma of the Stomach by Means
of Jejunostomy C O Diamond and E H Mensing Milwaukee—
p 893
Perinephric Abscess with Reno-Inguinal Fistula Report of Case J A
Schindler Monroe—p 895

Age of Onset of Pulmonary Tuberculosis—During a period of eight years, Habbe examined about 5,000 adults, the males predominating over the females in the proportion of about four to one. The average age of the entire group was 35 years. There were sixty-four cases diagnosed as active pulmonary tuberculosis, of which there were seventeen cases of minimal involvement, twenty-six cases of moderately advanced disease and twenty-one cases of far advanced disease. Two of the entire series of patients (both men) had roentgenologically normal lungs at the age of 29 and 30 years, respectively, and became roentgenologically and clinically positive at the age of 32 and 31. The man whose lungs were negative at the age of 30 and positive (far advanced) at 31 in all probability contracted the disease from his active wife or child. From the best evidence available, the man who at the age of 29 was roentgen negative and moderately advanced at 32 was living in a family in which there was no active tuberculosis. So far as the author has studied the material, he has obtained no evidence to disprove the opinion of Brown and Sampson as to the relative rarity of chronic pulmonary tuberculosis developing in persons who have roentgenologically normal lungs at the age of 25 years or older. He states that the fact of regular pathologic onset of chronic pulmonary tuberculosis in early adult life once proved, would be an important one for clinicians and roentgenologists alike. It would serve to intensify the search among young adults for clinically latent lesions, it would aid in a more prompt differential roentgen diagnosis in many cases when previously taken normal roentgenograms were available for comparison and in complicated lesions, such as mixed silicosis and tuberculosis it would give a better understanding of the time of onset and development of the several lesions.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

57 211 354 (Oct.) 1934

- Observations on Referred Pain C Bolton—p 211
Tuberous Sclerosis with Epilepsy (Epiloia) in Identical Twins. H
Fabing—p 227
Study of Muscle Chemistry in Myasthenia Gravis Pseudohypertrophic
Muscular Dystrophy and Myotonia S Nevin—p 239
The Venous System of Velum Interpositum of the Rhesus Monkey and
Effect of Experimental Occlusion of the Great Vein of Galen. T H
B Bedford—p 255
Autonomic Control of the Urinary Bladder O R Langworthy D L
Reeves and E S Tauber—p 266
*Generalized and Vertebral Forms of Myeloma Their Cerebral and
Spinal Complications P G Denker and S Brock—p 291
Effects of Experimental Lesions of Posterior Columns in Macacus
Rhesus Monkeys A Ferraro and S E Barrera—p 307
*Inorganic Constituents of Cerebrospinal Fluid Versus Ventricular and
Loculated Fluid R A McCance and Elsie Watchorn—p 333
*Relationship Between Sugar and Urea Contents of Blood and Cerebro-
spinal Fluid J N Cumings and E A Carmichael—p 338

Generalized and Vertebral Forms of Myeloma.—Denker and Brock present four instances of myeloma with neurologic complications. The first is an example of the generalized form of the disease. The other three illustrate the vertebral type in which the myeloma is circumscribed to vertebral and extradural tissues at the time of the rapid development of signs of spinal cord compression. The upper thoracic cord is usually the part involved. The patient is generally in the fifth or sixth decade of life. Roentgenograms may show destruction of the diseased vertebra. Laminectomy reveals a reddish gray extradural growth, removal of which is followed by great, if temporary, improvement. High voltage roentgen therapy and the wearing of a back brace are advised after laminectomy. Myeloma may be regarded as a malignant tumor of the bone marrow arising either from a single cell type, the plasma cell or perhaps from a number of different bone marrow elements. Depending on the type of cell plasmacytomas erythroblastomas, myelocytomas and lymphocytomas have been differentiated in the myeloma group (Ewing). There is still a great deal of difference of opinion concerning the pathogenesis of these growths. Most pathologists regard either the plasma cells or the myeloblasts of the bone marrow as the original cells of the growth. The disease is rare. The flat, short bones the rib sternum, scapula, skull and vertebra are especially involved. Soft gray or reddish gray masses start in the marrow, grow outward and replace the cortex of the bones. Secondary growths may appear in the liver spleen, kidney, lung and sex glands. Myeloma occurs in the later period of life. Pathologic fracture of a rib or vertebra is a frequent late occurrence, in no other type of bone tumor does pathologic fracture occur so frequently (62 per cent of all cases). No definitely curative form of treatment for generalized myeloma is known. Craver and MacComb report favorable results in five of a series of six cases by the use of Heublein's method of total body roentgen irradiation. The prognosis is grave. The average duration of life is two years, the longest duration of any proved case being five and one-half years. Once the tumor has appeared in many bones, the diagnosis is easily made. The age group (fifth and sixth decades), multiple involvement of the short flat bones of the trunk, pathologic fracture of a rib, Bence-Jones bodies in the urine, progressive anemia, nephrosis and cachexia make a highly characteristic clinical picture.

Inorganic Constituents of Cerebrospinal Fluid Versus Ventricular and Loculated Fluid—McCance and Watchorn state that ultrafiltration will not explain the amounts of potassium and magnesium found in ventricular fluids. Such fluids in fact appear to contain slightly more magnesium and less potassium than lumbar fluid. As regards these two ions, therefore, ventricular fluid is even less like a serum ultrafiltrate or a pathologic transudate than is the spinal fluid. Judged by their magnesium and potassium contents, loculated fluids taken from below spinal tumors resemble ventricular fluids or spinal fluids and not serum ultrafiltrates. Such loculated fluids appear to contain more calcium than fluids from the ven

trices, normal cerebrospinal fluid or serum ultrafiltrates, and this may be connected with their large protein contents

Relation Between Sugar and Urea Contents of Blood and Cerebrospinal Fluid—In an attempt to determine the relationship between the sugar and urea contents of the blood and cerebrospinal fluid, Cummings and Carmichael observed that the levels of sugar and urea in the lumbar fluid do not rise in association with a normal rise in the contents of these substances in the blood. Estimations of ventricular fluid sugar demonstrate that only in abnormal conditions is there any rise in the fluid sugar in association with a rise in the blood sugar. The observations are in favor of the choroid plexus taking an active part in the control of the level of sugar and urea in the cerebrospinal fluid.

Journal of State Medicine, London

42: 559 620 (Oct.) 1934

- Value of Culture in Solution of Problems of Tuberculosis Evelyn M Holmes—p 559
Huntington's Chorea and East Anglia M Crutchley—p 575
Herrings as Food A MacLennan—p 588
Aims of Torry Research Station and Brief Account of Its Work A Lumley—p 599
Place of Refrigeration in Preservation of Herring as Food G A Reay—p 602
Vitamins from Marine Sources J A Lovern—p 607
Factors Affecting Hygienic Quality of Milk on Delivery to Consumer A T R Mattuck—p 614

42: 621 682 (Nov.) 1934

- The Difficult Child G A Auden—p 621
Prevention of Constipation in Children Hazel H Chodak Gregory—p 632
Diet of School Children G E Friend—p 639
Abnormal Childbirth in Rural Home M W Bulman—p 648
Recruiting Training and Postcertificate Supervision of the Rural Midwife G B Carter—p 656
Destruction of Living Cells (Protozoa) by Invisible Ultraviolet Rays Below Four Thousand Angstrom Units (All Quartz Optical System Employed) S M Copeman—p 665
Public Gardens and Open Spaces and Their Influence on Public Health B Holmes—p 669

Lancet, London

2 1089 1144 (Nov 17) 1934

Flat Feet P Wiles—p 1089

- *Some Observations on Hypochromic Anemia and Its Relation to Pregnancy D T Davies and Ursula Shelley—p 1094
Crural Monoplegia of Cortical Origin W R Russell—p 1099
Sclerosing Solutions for Varicose Veins J W Riddoch—p 1101

Hypochromic Anemia and Pregnancy—Davies and Shelley give an account of observations conducted on fifty-one apparently normal women who were followed carefully through their pregnancy and of twenty who were frankly anemic after their last confinement. The anemia was hypochromic in character and the response to iron therapy good. Of the fifty-one patients who were followed through their pregnancy and puerperium, six developed some degree of anemia. All were apparently healthy when they were first seen and the majority were young women bearing their first child. Of the forty-five women who passed through pregnancy without exhibiting any anemia a normal gastric secretion was found in all. As Castle and Strauss showed, there is quite a definite although temporary reduction in acidity, especially in the third trimester but this is replaced by a return to normal in the puerperium. While the patients demonstrated this change, none showed any permanent reduction. The reduction in acidity might be enough to result in a temporary state of achlorhydria, as in two of the cases but this appears to be uncommon. The patients examined and found to be anemic showed a high incidence of anacidity. This abnormality was present in twenty-three of the twenty-six anemic patients—achlorhydria in fifteen and hypochlorhydria in eight. The analyses from which these figures are calculated were done some months after pregnancy in twenty and in the puerperium in six when the gastric juice would be normally at its highest. Achlorhydria or hypochlorhydria in these cases must therefore indicate a permanent change in the gastric secretion. The authors believe that the anemia in these patients is due mainly to the long standing gastric deficiency. The gastric anacidity results in a poor absorption of iron and, when pregnancy calls for an extra amount of available iron the mother's hemoglobin manufacture fails and anemia develops. Second in importance to the gastric secretion is the diet. While the need of the pregnant woman for an abundance of essential

substances is fully recognized, it is possible that the increasing importance given to the treatment of the toxemias of pregnancy and their early recognition has resulted in too great a readiness to advise restrictions in diet. The liberal use of iron will prevent the development of this anemia. It would not be impossible to forestall its appearance. A course of iron during pregnancy would ensure a good supply for the fetus without depleting the maternal stores. The testing of gastric function in pregnancy when anemia is present is of more than academic interest, and the presence of a permanent achlorhydria would be a sufficient explanation for the anemia, as well as being an assurance of the benefit of iron therapy.

Paris Médical

2 321 332 (Oct 27) 1934

- Lung Abscess in Severe Diabetes Recovery G Etienne and P Loujot—p 321
Aseptic Puriform Meningitis in Infancy R Turquet—p 325
*Blood Manganese in Some Nervous Disorders C I Urechia G Pamfil and Mme Retezeanu—p 330

Blood Manganese in Nervous Disorders—Urechia and his collaborators used the colorimetric method in measuring the amount of manganese in the blood. It consists in the transformation of the manganese compound into the manganate ion. The total blood, erythrocytes or serums are weighed accurately, and 10 cc of nitric acid and 5 cc of hydrogen dioxide are added to destroy the organic substances. The mixture is evaporated in a water bath in a Jena glass to from 60 to 100 cc. during two or three hours. The reaction is ready when the mixture becomes perfectly clear and shows a yellowish coloration. The clear liquid thus obtained is evaporated to dryness in a porcelain crucible. The residue is heated over a low flame and finally over a stronger flame to destroy the organic substances and carbon. The dry residue is then mixed in a porcelain crucible with 0.5 Gm of potassium nitrate or potassium chlorate and 100 Gm of anhydride sodium carbonate. This is heated to complete fusion, so that a homogeneous mass is obtained. The oxidizing mixture transforms the manganese compound into manganate ion, which takes a green color. Similar steps are taken with titrated solutions of manganese salts containing 0.0001, 0.00005 and 0.00001 Gm of manganese per cubic centimeter. The color of the final products should be compared with the unknown for titration. In this manner the authors measured the blood serum manganese of thirty-nine patients affected by different nervous disorders. The values obtained varied between 0.00001 and 0.00003 per cent. Similar comparative tests were made on the erythrocytes of fourteen of these patients, in whom in general lower values were obtained. In general, therefore there is a smaller quantity of manganese in the cells than in the serum and it seems advisable to examine the serum or the whole blood. Their results did not allow conclusions to be drawn regarding the different nervous disorders.

Schweizerische medizinische Wochenschrift, Basel

64 1081 1100 (Dec 1) 1934

- Pathology and Therapy of Gastric Ulcer A Schupbach—p 1081
*Newer Investigations on Pathogenesis of Thrombosis A Fomio and A Vannotti—p 1086
*Immunization by Inhalation W Silberschmidt—p 1089
Synthesis of Paired Menthylglycuronic Acid in Various Disturbances of Liver B A Nasarjanz—p 1090
Congenital Torticollis C Martin-du Pan—p 1091

Pathogenesis of Thrombosis—Fomio and Vannotti believe that an impairment of the venous endothelium is the primary factor in the pathogenesis of thrombosis. Such an impairment may be produced by endogenous and exogenous factors. The first group includes all factors that cause a disturbance in the metabolism between blood and endothelium particularly changes in the blood such as postoperative increase in the viscosity of the blood acceleration of the sedimentation speed of the erythrocytes changes in the protein colloids of the blood, disturbances in the acid-base equilibrium hypoxia and increased instability of the plasma. Toxins and infectious processes likewise may cause impairment of portions of the endothelium. The exogenous factors are those which damaging the vascular wall, finally impair also the endothelium. In this connection the authors mention infectious processes of the vascular wall or its sur-

roundings, which finally penetrate to the intima and produce an impairment of the endothelium (phlebotic processes caused by infection, syphilis, tuberculosis and so on), also traumas, burns, freezing and electrical influences. They describe experiments in which they induced exogenous impairment of the endothelium by electrical coagulation with a microcautery. Following this they studied the vessel under the capillaroscope and observed the gradual formation of a thrombus. They show diagrams of the process. Compression of the vessel leading to retardation of the blood stream was found to accelerate thrombus formation, but this was the case only in the presence of endothelial impairment.

Immunization by Inhalation—Silberschmidt has shown that the repeated inhalation of diphtheria toxin or of tetanus toxin produces temporary immunity in susceptible animals. He describes experiments concerning anaphylaxis following inhalation. He found that guinea-pigs which had inhaled serum developed typical anaphylactic manifestations following the intravenous injection of the same serum. In another series of experiments the action of inhaled toxins was studied. It was found that guinea-pigs die quickly following the inhalation of pure diphtheria toxin while diluted toxin causes death less rapidly. Mice and rats tolerated the toxin. Inhalation of tetanus toxin proved fatal to the three types of animals but mice and rats survived longest. Inhalation of toxin proved harmless in animals that had received a prophylactic injection of the specific antitoxin. The author studied what effect the inhalation of a 2 per cent solution of antimony and potassium tartrate would have on rats and mice that had been infected with pathogenic trypanosomes. The animals reacted differently. In some the inhalation caused the complete disappearance of the trypanosomes, while in others the parasites caused death. Some animals that became free from parasites died with the signs of antimony poisoning. Nevertheless the experiments demonstrate that trypanosomiasis may be therapeutically influenced by way of the respiratory tract.

Archivo Italiano di Chirurgia, Bologna

38 367 526 (Nov.) 1934 Partial Index

*Pathologic Significance and Experimental Production of Dynamic Hydronephrosis E. Ragnotti—p. 367

Experimental Lesions of Tendons and Their Correction by Tenotomy V. Bossi—p. 433

Ether Anesthesia During Serum Treatment in Experimental Tetanus G. M. Giuliani—p. 479

Experimental Production of Dynamic Hydronephrosis

—Ragnotti performed the denervation of the ureters in dogs, by chemical and mechanical means, for the purpose of investigating whether the so called dynamic hydronephrosis may be originated in the denervation of the ureters by itself or whether anatomic alterations of the structure also play a part and, if this is the case, to what extent they are responsible in producing the condition. The author determined the relationship of the structural changes of the ureter after denervation and its functions (studied in vitro by a method used to stimulate peristaltic activity) on the one hand and the alteration of the kidney on the other. He concludes that chemical denervation sympathectomy provoked by the application of isophenol (a cresol-phenol derivative) to the internal coats of the ureter causes transient alterations of the peristaltic movements of the ureter without interfering with the pendular movements of the ureter as well as ureteral and renal structural lesions which follow a regressive evolution as the nervous system of the ureter regenerates and do not end in the production of a hydronephrotic ureter. The mechanical denervation produced by decortication of the ureter results in the formation of connective tissue in the internal ureteral coats which interferes with the motor functions of the ureter and with the elasticity and distensibility of the ureteral walls. The condition progresses to the development of more or less grave hydronephrotic functional disturbances and anatomic alterations, both of which become more serious as the ureteral lesions grow worse and a vicious circle becomes established. Disturbances of the ureteral innervation cannot by themselves produce hydronephrosis. Therefore the pathogenesis of experimental dynamic hydronephrosis is mechanocodynamic.

Archiv für klinische Chirurgie, Berlin

181 193 382 (Nov. 12) 1934 Partial Index

Organization of Blood Donors in Soviet Union E. Burceva—p. 193

*Experimental Studies of Hemolytic Shock in Blood Transfusion I. Pathogenesis of Cardiac and Vascular Alterations J. Petroff A. Filatov, L. Bogomolova and N. Strokova—p. 209

*Id. II. Role of Central Nervous System in Pathogenesis of Vascular Disturbances in Hemolytic Shock P. Wesselkin J. Lindenbaum and N. Kartasevskiy—p. 227

*Id. III. Experimental Observation on Renal Activity on Introduction of Heterogenous and Autohemolyzed Blood W. Iljin—p. 240

Id. IV. Potassium and Calcium Blood Content in Hemolytic Shock A. Mineev—p. 250

Cardiac and Vascular Alterations in Blood Transfusion—From experimental studies, Petroff and his co-workers conclude that intravenous introduction in animals of the animal's own hemolyzed blood or of heterogenous blood produces alterations which are analogous to a hemolytic shock with a predominance of alterations on the part of the heart and the vascular system. The pathogenesis of these alterations is not explained. The authors have undertaken experiments to elucidate the problem. They have demonstrated by registering the heart volume and determining the arterial and the venous blood pressures that the fall in cardiac activity in hemolytic shock is a secondary phenomenon resulting from a diminished venous return to the heart. Experiments with determinations of blood pressure in the pulmonary arteries and veins have demonstrated likewise that cardiac failure in hemolytic shock is a secondary phenomenon and that the lumen of finer vessels of the pulmonary circulation becomes narrowed. These alterations do not play an important part in the hemodynamic disturbances. Experiments with volume determinations of kidneys, spleen, hind legs and brain indicate that the introduction of hemolyzed or foreign blood causes a marked narrowing in the lumen of the renal and splenic blood vessels. The circulation in the brain and in the hind legs was only slightly affected. In a fourth series of experiments, circulatory disturbances were studied in the vessels of the intestine and of the hind legs as well as the alterations in the capillary system in the presence of an intact nervous system. These experiments demonstrated that the main alterations in the circulatory system in hemolytic shock proceed from the alterations in the walls of the arteries and the veins. These changes consist of dilatation and even of paralysis of the capillaries and narrowing of the lumen of the arteries and the veins of the systemic circulation. The alterations in the functional activity of the heart and circulation are secondary to the alterations in the peripheral circulation. The disturbances were more marked when hemolyzed erythrocytes were introduced than after the introduction of blood plasma.

Pathogenesis of Vascular Changes in Hemolytic Shock—Wesselkin and his co-workers state that typical hemolytic shock may be induced in the dog by transfusing it with its own hemolyzed blood with whole blood or with hemolyzed human erythrocytes. The symptoms are particularly acute when human erythrocytes are used. The authors have been able to substantiate the basic experiments of Hesse and Filatov as to the spasm of the renal arteries constituting a characteristic symptom of the acute stage of shock. The diminution of the volume of the kidney develops at the same time independently of the fall in blood pressure but becomes more pronounced with a simultaneous fall in the latter. The duration of the renal spasm varied in their experiments from twenty seconds to thirty minutes. Repeated transfusions of the dog's own hemolyzed blood, of heterogenous whole blood or of erythrocytes had a tendency to diminish the severity of shock or to abolish it altogether. The kidney responded no longer with a spasm but, to the contrary, with dilatation. Decerebration, sectioning of the spinal cord immediately below the medulla oblongata, sectioning of the two splanchnic nerves below the diaphragm removal of the celiac ganglion and of the two sympathetic trunks in the abdominal cavity, as well as total denervation of the kidneys failed to prevent the renal spasm in hemolytic shock. The partly denervated kidney reacted weakly with a spasm to hemolytic shock. When the renal vessels were directly transfused with hemolyzed blood, a rapid and pronounced contraction took place in them with a diminution of the renal volume as demonstrated by an oncograph. The authors conclude that the renal spasm in hemolytic shock

is of peripheral origin and that the nervous system plays an unimportant secondary part in its development. The acute picture of hemolytic shock resembles closely that of histamine shock. It is possible that histamine-like substances play an important part in the pathogenesis of the acute hemolytic shock.

Renal Activity on Introduction of Autohemolyzed Blood—Iljin experimented with transfusions of human blood in dogs. The fatal single dose varied in amount between 15 and 20 cc. of blood per kilogram of the animal's weight. The introduction of the same amount and of larger amounts of dog's own hemolyzed blood failed to kill the animal. A single transfusion with human blood resulted in a marked diminution of the urinary output and a rise of the residual nitrogen in the blood, which reached its peak in from twenty-four to forty-eight hours. The rise in nitrogen content of the blood is caused by the disturbance of the renal function, but the latter is not the only factor in accumulation of nitrogenous products of albuminous decomposition in the blood. Repeated transfusions of human blood in amounts of 7 cc. per kilogram weight of the animal caused a greater rise of residual nitrogen than a single larger dose. Renal activity in that instance was less disturbed. Disturbance of the renal activity cannot alone be held responsible for the vascular phenomena of shock following the introduction of heterogenous blood. The introduction of the dog's own hemolyzed blood results in milder disturbance of renal activity than the introduction of heterogenous blood.

Deutsche medizinische Wochenschrift, Leipzig

60 1823 1866 (Nov. 30) 1934 Partial Index

Bread. Different Types. Evaluation of Breads Prepared from Bolted and from Unbolted Flours and Comparison of Rye and Wheat Breads. W. Heupke—p. 1823

Wakening and Sleeping. J. H. Schultz—p. 1827

*Erroneous Diagnosis in Fatigued and Diseased Back. F. G. van Schrick—p. 1833

*Chemical Pregnancy Reaction of Visscher and Bowman. J. G. Menken—p. 1837

Primary Treatment of Wounds. W. Dracklé—p. 1838

Graphic Recording of Red Blood Picture. E. Wiechmann—p. 1838

Diagnosis of Backache in Young People—In evaluating the causes of backaches in young persons, van Schrick calls attention to a postural defect, which he ascribes to a disturbance in the equilibrium between gravity and muscular action, a condition usually accompanied by prolapse of the shoulders, protruding abdomen concave back and fallen arches. The usual complaints are that the child gets easily tired and is absent-minded and weak. The physician commits a grave error if he diagnoses such cases simply as manifestations of growth for the postural defect may exert a detrimental influence on the general condition. A reform of the school routine would be helpful in counteracting and preventing this disorder. The author shows how the contracted postural defect may be differentiated from the kyphosis of adolescents. In the latter condition a flattening of the sides of the thorax becomes manifest, so that the oval shape of the thorax disappears and it assumes the shape of a trapezium. Roentgenoscopy reveals disturbances of the marginal bands of the vertebral bodies. The author considers the disturbances in the calcium-phosphorus quotient which were observed in these cases an indication that the kyphosis of adolescents is really a late form of rickets and he found that antirachitic treatment exerted a favorable influence on this condition. He considers a three months rest cure in a plaster-of-paris cast with gradually increasing muscular exercise the most essential measure in this disorder. He advises against creeping exercises. Dull drawing pains in the back of children with a rather lax posture may be caused by a disturbance in the growth of the cartilages. However, this disorder is rather rare. Percussion pains are manifold and can be elicited in various conditions. The percussion pain that is limited to a small area is generally indicative of a tuberculous process. It is wrong to assume that the formation of a gibbus is necessary before tuberculous spondylitis can be diagnosed. He maintains that one or even several vertebrae may be involved in a tuberculous process without the presence of a gibbus. When the origin of a restricted percussion pain is doubtful a specialist should be consulted, because the treatment may require years if the development of a gibbus is awaited. In some instances

the percussion pain may be caused by osteomyelitis. He stresses the value of roentgenoscopy particularly for the detection of vertebral fractures. If backaches appear during the third decade of life, a spondylitis deformans may be the cause. This disorder often becomes manifest by an increasing rigidity of the muscles which results in limitation of thoracic breathing. A wearing down in the vertebral articulations is another cause of backaches. Loosening of the sacro-iliac connections leads to backaches that are extremely refractory to treatment. He discusses sacralization and evaluates changes in the musculature that cause backaches. Sites of predilection of these disorders are between the scapulae, in the lumbar region and at the point of insertion of the gluteal muscles. He calls attention to abnormalities of the pelvis and emphasizes the necessity of a thorough examination of patients with backaches.

Chemical Methods for Diagnosis of Pregnancy—

Menken states that Visscher and Bowman perfected two chemical methods for the diagnosis of pregnancy. The first one is done in the following manner: To 1 cc. of urine is added one drop of a 0.5 per cent solution of hydrogen dioxide. Then five drops of a 1 per cent aqueous solution of phenylhydrazine hydrochloride is added and five drops of a 5 per cent aqueous solution of methyl cyanide, and finally five drops of concentrated hydrochloric acid. This mixture is placed for twenty-five minutes in a boiling water bath. The reaction is positive if a russet color and a flocculent precipitate appear. A straw color and a powdery precipitate or the complete absence of a precipitate indicate a negative reaction. The second method is supposedly more sensitive but also more complicated. To 1 cc. of urine one drop of a 0.5 per cent solution of hydrogen dioxide is added and this is allowed to stand for three minutes. After that five drops of 1 per cent solution of phenylhydrazine hydrochloride is added and then five drops of a 5 per cent aqueous solution of potassium ferricyanide. This mixture is allowed to stand for ten minutes at room temperature and then put into a boiling water bath for fifteen minutes. After that one drop of concentrated hydrochloric acid is added and this is followed by an excess of sodium hydroxide. Then titration is done with diluted hydrochloric acid until the color changes from orange to green and finally to blue. It was found that to produce the final color required much less diluted hydrochloric acid in pregnancy urine than in urine from women who were not pregnant. The author reviews the results obtained by Visscher and Bowman, who obtained 93 per cent correct results, and then describes his own experiences with the first method. He emphasizes that the reagents must be fresh. Contrary to the experience of Visscher and Bowman, his positive reactions generally showed a dustlike and occasionally a somewhat more disperse precipitate. Only once did he obtain a clearly flocculent precipitate. He says that the color was generally dark in positive reactions and light in negative reactions. He thinks that this simple chemical test will be welcomed by the practitioner because it is rapid and dispenses with the use of animals.

Wiener klinische Wochenschrift, Vienna

47 1409 1440 (Nov. 23) 1934 Partial Index

*Pathology and Therapy of Varicose Syndrome of Rectum. K. Blond—p. 1409

Influence of Curvature of Spine on Width and Course of Trachea. J. Schnierer—p. 1412

Anuria Following Cholecystectomy (Calculary Occlusion) and Mechanical Icterus Without Operation. A. Hofmann—p. 1415

*Juxta Articular Nodules. M. Wolf—p. 1420

Behavior of Leukocytes and of Other Blood Cells in Case of Mikulicz Disease Following Short Wave Treatment. L. H. Stiebeck—p. 1422

Varicose Syndrome of Rectum.—Blond shows that the customary terms of nodules of the anus, fissures of the anus, periproctitis, erythema of the anus or pruritus of the anus are only morphologic terms for a disease entity, the varicose syndrome of the rectum. In case of stasis in the region of the portal vein, conditions of stasis develop at its origin and it is surely not accidental that in women the first hepatic colic develops following their first pregnancy or that varicose veins or hemorrhoids develop at this time, for the hemorrhoidal plexus belongs to the region of origin of the portal vein. Suppurations in the region of the source of the portal vein, which include periproctitic abscesses, fistulas and fissures, are the port of entry for bacteria into the liver. French authors have called

attention to the high incidence of hepatitis in the anamnesis of diseases of the biliary passages and the author decided to examine cholecystectomized patients from this point of view. Studies in 100 cases revealed the high incidence of existent or of a history of fistulas and fissures in patients who had undergone cholecystectomy. Pruritus ani is often complicated by pruritus of the vulva or of the scrotum and the author points out that this may be explained on the basis of the anatomic connection between the hemorrhoidal plexus and the pudendal plexus. Stasis in the hemorrhoidal plexus and reflux from the system of the portal vein into the region of origin of the inferior vena cava by way of the pudendal, vaginal and uterine plexus may lead to a number of disturbances in the small pelvis the genesis of which is not entirely clear as yet. It is possible that certain diseases of the female pelvis and of the male genitalia are causally connected and there is a connection between high hemorrhoids and chronic constipation.

Juxta-Articular Nodules—Wolf reports the history of a man aged 34 who developed juxta articular nodules first on the right hand then on the left and later on both elbow joints. The predominating localization on the hands is rather unusual but can be explained by the patient's occupation. The disorder is more frequent in tropical regions than in the temperate zone and the majority of investigators are of the opinion that it is caused by frambesia. In many cases observed in the temperate zone a connection with syphilis has been assumed. Spirochetes have been demonstrated repeatedly in the nodules of patients in the tropics but it could not be determined whether they were of the pallida or the pertenuis type. In the cases occurring in the temperate zone the demonstration of spirochetes has not succeeded as yet. One investigator assumed the existence of a fibrotropic strain of spirochetes. In many instances the past history of the patients reveals syphilis in which the anti-syphilitic treatment has been inadequate or entirely neglected. The author's patient likewise had had syphilis but had also lived in a tropical region where frambesia is endemic without developing signs of that disease. The fact that the nodules disappeared following treatment with bismuth compounds and arsenamine seems to be a further indication of their syphilitic origin and the histologic structure of the nodules seems to point in the same direction.

Zeitschrift für urologische Chirurgie, Berlin

40 163 210 (Nov. 16) 1934

Scientific Theory and Clinical Problems of Renal Calculi. O. Schwarz —p. 163

*Treatment of Schistosomiasis Haematobium. M. Loewenack. —p. 202

Treatment of Schistosomiasis Haematobium—Loewenack states that patients with schistosomiasis haematobium complain of cystitis that proves refractory to treatment with teas and with urinary antiseptics. Microscopic examination of the urinary sediment clarifies the diagnosis. The author emphasizes that at this point it is inadvisable to force a cystoscopic examination, because it causes hemorrhage and exacerbates the symptoms. Irrigations and instillations are likewise useless and annoying at this period, but the painful vesical tenesmus usually disappears after several injections of an isotonic solution of an antimony compound. This preparation is injected in increasing doses on several successive days, and on about the sixth day it is possible to resort to cystoscopy. If polyp-like granulomas are found, it is generally possible to remove these soft masses and the sandlike deposits mucus and pus by suction with the Morgenstern instrument. If a hemorrhage should result, it may be arrested by a diathermic sound introduced through the irrigation canal. The injections of the antimony compound are continued. The mixed infection is counteracted by irrigation, and in approximately three weeks the patient is free from symptoms. In a patient observed by the author, a control examination after four weeks revealed that eosinophilia had persisted and that ova were still present in the material withdrawn by suction although the patient was free from subjective symptoms. A new series of injections with the antimony compound was instituted and the eosinophilia gradually disappeared. The antimony compound was well tolerated. The author emphasizes that the disappearance of the eosinophilia is the only reliable sign of cure.

Bibliotek for Læger, Copenhagen

126 481 522 (Nov.) 1934

Causes of Blindness on Faroe Islands. R. K. Rasmussen. —p. 481

*Investigations on Mechanism of Albuminuria. II (Albumin-Globulin Quotient). J. Bing. —p. 497

*Albuminuria and Histogenesis of Nephrosis. J. Bing. —p. 508

*Studies on Significance of Macrophages in Malignant Tumors. W. Münch. —p. 514

Mechanism of Albuminuria—Bing's observations support the modern conception that the mechanism of albuminuria depends on a filtration of plasma proteins through degenerated glomeruli. Accordingly he considers the histogenesis of nephrosis best explained by invasion and storage, during the work of concentration in the tubuli, of plasma proteins (and plasma lipoids) which are filtrated through degenerated glomeruli in the glomerulus filtrate.

Macrophages in Malignant Tumors—Following his experimentation, Münch presents the following working hypothesis. In the growth of malignant tumors there is caused in the surrounding tissue a mobilization of mesenchymal cells originating partly from the tissue itself, partly from the blood, which appear in large numbers as large mononuclear ameboid cells. These macrophages are functionally connected with the reticulo-endothelial system and with regard to the tumor tissue exercise a function which consists partly in taking up various substances, including degeneration products from the tumor cells and partly in contributing to the formation or further production of the substance that is important for the growth of the tumor cells. In epithelial malignant tumors the function of the macrophages is of secondary importance and the nature of the tumor is primarily dependent on the epithelial elements. In mesodermal malignant tumors the macrophages seem to constitute a functionally important link between the tumor cells and the normal cells and are the main place of formation of the substances on which the malignity of the tumors depends.

Hospitaltidende, Copenhagen

77: 1349 1408 (Nov. 27) 1934

*Contribution to Clinic of Intestinal Disorders. II. Significance of Catalase (and Triboulet) Reaction in Diagnosis and Prognosis. S. Kemp and T. T. Andersen. —p. 1349

Significance of Catalase in Intestinal Disorders—Following investigations on the catalase relations in the feces in 1716 cases of intestinal disorders, Kemp and Andersen conclude that practically only the catalase values which show a marked increase are of diagnostic and prognostic significance. The main diagnostic importance of the catalase reaction in intestinal disorders is in directing attention to the possible presence of a deep-seated organic disturbance especially when the reaction is pronounced and confirmed on repeated examinations. Continued normal catalase values testify against but do not exclude a grave intestinal disorder, particularly when there is a possibility of 'latent tuberculosis'. The quantitative catalase determination supplements the results of rectoscopy, examination for occult blood and roentgen examination, and in many intestinal disturbances, including grave disorders without ulcerations, neoformations or stenosis it is the best objective criterion of the more or less grave nature of the disturbance and of the results of treatment. In ulcerous intestinal disorders the catalase reaction gives a more reliable impression of the entire course than the more accidental occult hemorrhage when positive and negative results vary. The marked catalase reaction, which except in grave manifest hemorrhage is probably never due to gastric ulcer is also useful in distinguishing between gastric and duodenal ulcer. The catalase reaction is preeminently indicated in (1) all chronic diarrheas, (2) obstinate colitis with constipation, especially when there is proctitis, (3) suspected cancer or tuberculosis of the intestine and (4) acute specific intestinal infections, particularly in convalescence, for control of the results of treatment, and (5) as a supplementary examination in chronic and acute amebic dysentery. The Triboulet reaction in its marked positive form is almost synonymous with grave, usually purulent intestinal disorders, but its infrequent occurrence (except possibly in intestinal tuberculosis) considerably lessens its value in practice. The qualitative catalase reaction is of doubtful value.

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EARLY CUTANEOUS CARCINOMA

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In practice, one sees not infrequently circumscribed epithelial new growths that in theory are difficult to classify. Some of them develop into carcinoma. I have interested myself in an attempt to determine which lesions have this potentiality, for it should be possible to identify carcinoma in its exceedingly early phases.

It is plain that a new growth which has appeared where previously there was no growth must, while now obvious, have been at one time borderline, before that invisible, and before that nonexistent. The argument bears no controversy that a lesion having arisen *de novo* must have had a beginning and must have progressively evolved.

The problem arises, At what point is a carcinoma not a carcinoma? At what point does a process appearing *de novo* attain the status of cancerousness?

I am of the decided opinion that, at least in many instances, it is correct to think that cancer is cancer from the start. The concept of carcinoma developing from a 'degenerated verruca,' or from a 'precancerous keratosis,' is to my mind vague, indecisive, unclear and not representative of the truth.

It is common experience that abnormal aggregates of cells do *de novo* become clinically apparent, do progress over periods of weeks, months or years, do increase volumetrically, in two dimensions of surface and one of thickness, and do ulcerate and enlarge and cause by their presence and activity of growth deleterious effects in their host.

A man, aged 60, had a raised rounded, crusted lesion 1 cm. in diameter and from 3 to 4 mm thick on the skin of the left preauricular region. One year previously there was no lesion of any kind to the best of his knowledge. A small 'freckle' appeared, scaled off and seemed to be gone later recurred and attracted his attention six months before. It had enlarged rapidly in the past month crusting and bleeding when the crust was removed. Excised with the actual cautery this tumor was composed of a mass of irregular, multinuclear and polymorphous epithelial cells that underwent atypical keratinization, and it was diagnosed squamous cell carcinoma.

I quote this one instance in substantiation of the thesis that cancerous lesions come into existence on sites previously normal—a fact of common experience.

The next problem is to establish cases of indubitable carcinoma to examine new growths of a less advanced

stage, and to show that they are of the same nature but simply less advanced and that they differ not qualitatively but quantitatively. I agree with Broders¹ that "the entity called carcinoma, regardless of etiology, is a primary disease of epithelial cells, and all other phases and sequelae, though of great importance, are in reality of secondary nature." The clinical entity called carcinoma, I consider fundamentally a colony or culture of abnormal epithelial cells growing parasitically on a host. I therefore make the assumption that a carcinoma is a carcinoma independently of its size. This is a reasonable biologic assumption, analogously, a solitary fertilized ovum is as truly an individual living entity as is the adult into which it grows.

The difficulty in studying what might be called embryo specimens of carcinoma lies in the fact that one never excises a portion of a lesion, allows a part to incubate on the host, and removes additional bits from time to time until a full blown, uncontrollable cancer has evolved from the remainder. Such an experiment is easily conceived, and it would yield specimens showing indubitable steps in progress. But, if it should be done, while it might indicate the steps of continuous evolution of a carcinoma, yet objection would be based on the effect of traumatism and inflammation on a lesion that might otherwise not have taken such a course.

The material from which one is forced to derive one's concepts, therefore, is not so fortunately consecutive as is ordinary embryologic material. Lesions that one arranges as consecutive stages come from different individuals at different times, and a series composed of them suffers from the objection that it is not an unbroken series. This is unfortunate, but there is no other way. If one can show that cases of circumscribed epithelial tumors, arising in different individuals, nevertheless possess characteristics that vary only in quantity and hence presumably only in duration, rate of progression or stage of progress, one will have satisfied oneself that they represent the same thing.

It is my custom, in treating a patient with what I believe to be an early carcinomatous lesion, to remove the entirety of it as a cylindric disk of dermis and epidermis, with a margin of normal tissue as narrow as I believe to be safe, by means of the actual cautery. The tissue removed is sectioned and the prepared slide examined to determine that the excision has gone beyond the margin of the atypical growth laterally as well as in depth. In no single case in my experience wherein the microscopic evidence has been clear that the tumor has been removed in toto has there been a recurrence.

Read before the Section on Dermatology and Syphilology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

1 Broders, A. C. Carcinoma in Situ Contrasted with Benign Penetrating Epithelium. J. A. M. A. 99: 1670 (Nov. 12) 1932.

The material for this study has been furnished by specimens removed as described. On examining them microscopically, I have seen many intergradations between definite, advanced carcinoma and very early processes that appear to me to be simply less advanced lesions of identical basic nature.

It is to be kept in mind that in every case I describe, I am limited by the human impossibility of knowing what the lesion would have developed into had it been left alone. As Heimann says "No one on earth is clairvoyant enough to select a given pigmented macule and point with certainty to its epitheliomatous future."

While the concept of a disease process should include its progression in time the microscopic examination of a particular lesion is temporarily stationary.

Histologic pictures depict only a state, they show only coexistent features, not a chronologic sequence." I am endeavoring histologically to show that the structure of certain early and small lesions is such that it is reasonable to presume that if they were merely allowed to

The appearance in vertical section was as of tubules cut longitudinally. About 2 mm from the surface all the cylinders were solid, and they became convoluted with lateral buds, so that vertical sections did not follow the axis but cut some buds tangentially so that they appeared as horny pearls, and others so that they appeared as circular and oval islands. Many such islands contained concentric laminae of keratinized and desquamated cells. Some contained loosened cells that were almost homogeneous and eosinophilic. The external layer of cells of both the cylinders and the islands were more than normally variable in size; their outline was less sharply distinct, their nuclei varied in size, shape and uniformity of staining, and in keratinization they tended to retain their nuclei and cell outline, which varied in size and was frequently huge as compared with the normally keratinized epithelial cell of the nearby corneum. Around some of the cylinders and outbuddings that appeared like islands the peripheral layer was seen to proliferate into the loose cellular stroma in strands of thickness of only one or two cells.

The downward extent of the tumor mass into the loose, soft tissue of the lip was fairly sharply demarcated from the muscle fibers against which it had pushed. The border zone was narrow. While there was no capsule, the round cell infiltration dense about the epithelial buds left off sharply and was limited to the region only of epithelial growth.

The sections showed that normal tissue surrounded the tumor laterally and beneath.

This case is plainly carcinoma. Had the growth not been interrupted the downgrowths would have continued. The abnormal mass would have enlarged, ulceration and sloughing would have occurred and further increment in tumor quantity with attendant necrosis, infection and absorption would have led to the patient's death.

CASE 2 (figs 2 and 3).—A man, aged 59, was first aware of a 'fever blister,' which appeared on the lower lip about six months previously. This did not heal, and he continued to smoke with the pipe stem against the sore. The lesion had steadily and rather rapidly increased in diameter and thickness. It had been a crusting lesion from the start, but now the crust was more extensive, the lesion bled when the crust was forcibly removed and it was tender and painful on pressure. The new growth was somewhat raised fairly sharply circumscribed, firm to the touch, and set in the superficial portion of the lip like a whitish, lenticular disk with a granular, oozing surface. It was 11 mm across and practically circular, it felt about 3 mm thick in the central part, the edges being thin and continuous with the mucosa. It had received no treatment but had been injured slightly several times by the pipe stem. No regional lymphatics were palpable.

The tumor was excised with a margin of normal tissue by means of the pointed cautery and sectioned vertically through the middle. Microscopically, an epithelial proliferation was found embedded in the lip tissue to a depth of 2.8 mm, in a stroma of densely infiltrated round cells. The downgrowths were in such narrow cylinders and strands that the central portions of them had not keratinized, and only in some deeper aggregates had degeneration of centrally located epithelial cells occurred. There was I presume, sufficient surface for nutrient exchange so that within only the largest epithelial aggregates had keratinization occurred. Outbudding was so pronounced that a large proportion of the section showed epithelium in apparent islands. The surface from which the cylinders took their departure was covered by layers of epithelium of only one or two cells and the stroma was not only densely infiltrated with round cells but contained many dilated capillaries engorged with blood, and many red blood cells were seen outside capillary walls. Many of the infiltrating leukocytes were polymorphonuclear and the crust, composed of irregular and parakeratotic epithelial debris, was also purulent. In the larger epithelial aggregates within the tumor the cells were larger than normal, stained paler and were not regularly arranged. The peripheral layer was composed of lavender-staining cells that were variable in size, shape, chromatin content, and uniformity of staining. Round cells were seen interspersed between



Fig. 1 (case 1).—Branched and budding tubular masses of neoplastic epithelium invade the lip to a depth of 4 mm. The stroma is composed of densely infiltrated round cells. The epithelial cells are large, keratinize abnormally, and possess irregular nuclei. This is plainly carcinoma.

continue proliferating they would attain the structure, dimensions and characteristics of what is generally considered carcinoma.

CASE 1 (fig 1).—A man, aged 77, had a scaly spot on the lower lip to the left of the midline for perhaps eight years, though he had stopped smoking a pipe twelve years before. The patch had slowly and continuously thickened, especially in the past year, and its rate of growth seemed progressively increasing. It was now a rough, crusted plaque set in the lip tissue raised only slightly about 1.5 cm across, oozing and bleeding when the crust was removed. It was sharply circumscribed and felt hard and firm; it seemed about 0.5 cm thick. It was asymptomatic except for tenderness on pressure. It had received no treatment or traumatism. The regional lymphatics were not palpably enlarged.

The tumor was excised with a pointed cautery, and the whole lump was sectioned vertically through its middle. Sections stained with hematoxylin and eosin showed an epithelial tumor embedded in the lip tissue to a depth of 4 mm, in a stroma of densely infiltrated round cells. The tumor epithelium took its origin from the surface layer and grew down in cylindric masses. Near the surface some of the cylinders had a lumen that was partly filled with keratinized and desquamated cells.

the epithelial ones, and in the central portions of the largest aggregates irregularly cornified, eosinophilic degeneration products were found, constituting horny pearls and peculiar in being in many instances hollow and filled with leukocytes, and so constituting minute abscesses. The zone of epithelial growth limited the round cell infiltration, which, beneath the tumor, as in the preceding cases, was sharply demarcated from the

aggregates of epithelium the cells were paler and larger than normal and tended in the larger aggregates to keratinize and form whorls. Such whorls in some places had become clear and distinct horny pearls, only 0.5 mm from the surface. The zone of adjunction of tumor and deeper tissue was densely infiltrated with round cells, which were limited to the region of epithelial growth and demarcated it sharply from the sub-jacent tissue.

If this new growth had not been interrupted, it is reasonable to presume that the downgrowths would have extended. As their constituent cells multiplied in numbers, more outbuddings would have been produced, more horny pearls would have developed, and deeper invasion would have ensued. As the mass increased and the depth of invasion progressed, a picture resembling that of case 2 might reasonably be imagined to have evolved. Therefore while this is an early and small lesion, it is my conviction that it is cancer.

CASE 4 (fig 6)—A woman, aged 70 had a small, scaling dome-shaped flattened, circular reddish yellow papule 6 mm in diameter located on the left cheek. It had been present not more than six months. It scaled slightly and itched a little at times. It was increasing in size steadily she said. It felt about 1 mm thick. It was removed with the pointed cautery and sectioned.

Microscopically, it was seen that the epithelium of 6 mm. of the surface was much thicker than normal in actual measurement it reached a depth of 1 mm. Rounded papillary epithelial downgrowths extended into a stroma composed of densely infiltrated round cells and many capillaries. This infiltration was sharply limited to the zone of epithelial abnormality and it sharply demarcated this from the deeper connective tissue. The whole process was limited to the superficial half of the dermis, and sebaceous and sudoriferous gland structures were found beneath the new growth at a depth of 1.6 mm from the surface. The downgrowing processes were somewhat looser in structure than those of case 3 and took more the form of strands than fat cylinders. The epithelial cells were separated a little more from one another but the peripheral layer was equally irregular the cells were also larger than those of the normal,



Fig 2 (case 2)—The epithelial downgrowths reach a depth of 2.8 mm. in this circumscribed crusted lesion of the lip. The zone of demarcation from deeper tissues is well defined. The stroma is like that of case 1 and case 3.

deeper lip tissue. At the margins of the tumor the downgrowths were shallow, at the central region they reached a depth of almost 3 mm, so that the lesion in the gross was lenticular.

The sections showed that the line of excision was well beyond tumor growth laterally and in depth.

I do not hesitate to call this carcinoma. It is clearly an infiltrative epithelial proliferation with microscopic and clinical evidence of active and atypical growth. In its probable further progression, had it not been interrupted it is rationally presumed that it would have infiltrated deeper and more widely, ulcerated and sloughed and produced a clinical picture completely reconcilable in all its attributes with the concept of carcinoma.

CASE 3 (figs 4 and 5)—A man of about 65 had had a circumscribed thin, asymptomatic scaly patch on the right side of the lower lip for about two years which appeared insidiously and without attracting attention. It had slowly thickened and was now a firm, whitish sharply margined, scaling and crusting plaque oval, about 5 by 6 mm in surface and it felt about 1 mm thick. The central part was slightly thicker than the edge. It was not painful and had received no treatment. It was removed with the pointed cautery with a margin of normal tissue and sectioned.

The sections showed epithelial tumor embedded in lip tissue to a depth of 1.1 mm. The epithelial downgrowths were roughly cylindric or ovoid bulging with rounded ends. They were not all aimed perpendicular to the surface so that some were cut axially and others at an angle. They filled the large proportion of the tumor area of the section. What stroma was present was composed of densely infiltrated round cells and capillaries engorged with blood. The epithelial downgrowths tended to branch and bulge. Their peripheral layer was not so regular as was the normal basal layer and in proliferation formed little buds about the blunt ends of the downgrowths. In places these tended to loosen and extended out into the stroma. Within the



Fig 3 (case 2)—The neoplastic cylinders are narrower and more branching. Their central keratinization in whorls produces horny pearls and outbuddings are so pronounced that much of the epithelium appears as islands.

and the interior cells of the aggregates had likewise the tendency to undergo keratinization and to group themselves in whorls.

It is reasonable to believe that if this process had not been interrupted the downgrowths would have proliferated and extended deeper. As the aggregates increased in size, their central tendency to keratinize

and to form whorls would have manifested itself in the production of full-blown horny pearls. The branching outgrowths from the cylindric processes would have become more complex in configuration, so that sections would show apparent islands. The massive structure thus evolved would satisfy every criterion of true carcinoma.

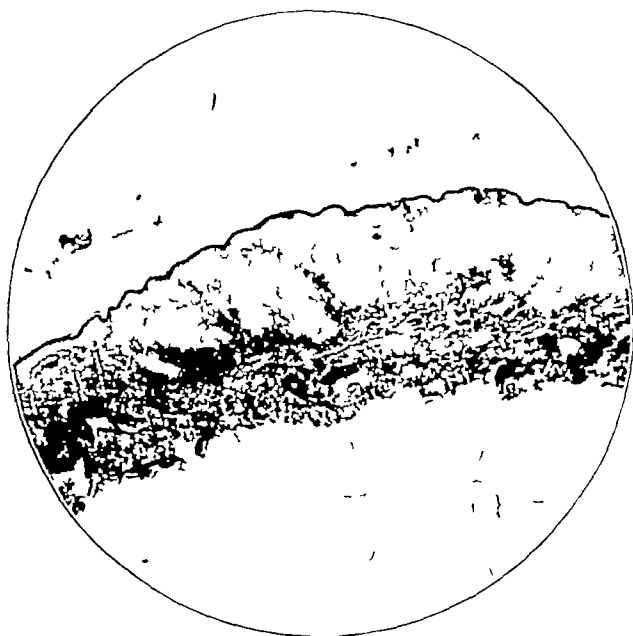


Fig. 4 (case 3)—Sections of this scaly plaque show broad downgrowths that branch a little. The depth of extent is quite sharply delineated and the total thickness of tumor tissue is 1.1 mm.

This lesion might be called a senile keratosis. As Hookey⁴ states, "the microscopic picture of keratoma senilis suggests the possibility of further evolutionary changes of malignant character." Eller and Ryan⁵ observe that "when a senile keratosis becomes verrucous, it is a carcinoma." It is my opinion that case 4 is already carcinoma.

Malignancy, I believe, is a property of the tumor cell. The tumor mass, or clinical carcinoma, has no properties excepting those of its constituent elements. As Fraser⁶ writes, "From the pathologic point of view, the cells in Bowen's lesion have already undergone the changes of malignant neoplasia, and for this reason the lesion should be classified as intra-epidermal carcinoma, not as precancerous." I believe that the cells of the lesions I have described are also already neoplastic.

A capacity for unrestrained growth and invasion can only be interpreted from, not observed in, any histologic preparation. It cannot by any human means be predicated as more than a presumption about any lesion that one sees, not imagines.

The lesions that I have presented have originated in the squamous layer of the epidermis. They are structures which, one may reasonably believe, would have evolved into gross carcinoma if not interrupted.

One must consider the present interpretation of precancerous lesions. The idea of a "precancerosis," a term first used by Dubreuilh in his thesis at the third

International Dermatologic Congress at London in 1896, according to Bloch,⁷ is commonly used to imply among other lesions some such lesions as I have described, particularly in cases 3 and 4. I believe that the differences between these cases are basically insignificant and I have described them in accordance with this belief.

Definitions of "precanceroses" such as I am dealing with are vague. Cramer⁷ says "Precancerous is used in strictest sense as designating a condition which will develop into a malignant condition with a high degree of certainty." Sulzberger and Satenstein⁸ define it thus: "The term precancerosis is a term which must be kept to designate conditions which, while not yet cancer, will, if untreated, practically invariably become cancer." Bloch's³ careful review gives this definition: "We call precancerous those pathologic changes in tissue which, without being cancer, show the tendency sooner or later to develop into actual cancer." He calls this a "clinical-statistical" definition and bases it on two points: (1) the determination with mathematical certainty of the probability that a lesion will become cancer, and (2) the reaching of agreement on the percentage probability at which one is satisfied that a certain type of lesion is precancerous. That is, if 50 per cent of such lesions do become cancer, all such lesions may rightfully be considered precancerous. The concept remains unclear. Heimann² says "The term 'precancerous dermatosis' has that alluring quality which captivates the imagination and courts acceptance until analysis reveals that it is inappropriate. At what point does precancerous lose its prefix? Is the problem one of medicine or etymology?"

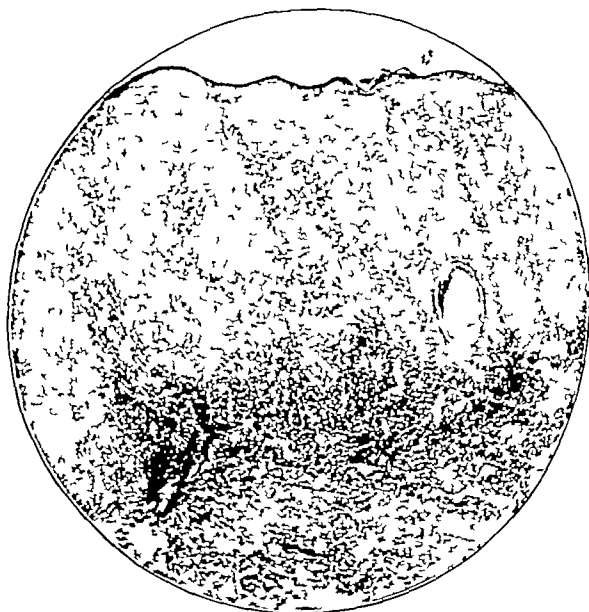


Fig. 5 (case 3)—Higher magnification shows the irregularity of the neoplastic cells, the tendency to keratinize in whorls, a horny pearl so formed and a stroma quantitatively scant but qualitatively the same as in the preceding cases.

I have asked these questions, too. Bloch's definition is untenable. It makes a basic error in attempting to apply mathematics where mathematics is inapplicable. It is humanly impossible to determine the probability

⁴ Hookey, J. A. Keratoma Senilis and Verruca Senilis. Arch. Dermat. & Syph. 23: 946 (May) 1931.

⁵ Eller, J. J. and Ryan, V. J. Senile Keratoses and Seborrheic Keratoses. Arch. Dermat. & Syph. 22: 1043 (Dec.) 1930.

⁶ Fraser, J. F. Bowen's and Paget's Disease of the Nipple. Arch. Dermat. & Syph. 18: 809 (Dec.) 1928.

⁷ Cramer, W. Brit. J. Dermat. 41: 177 1929.

⁸ Sulzberger, M. B. and Satenstein, D. L. Erythroplasia of Tueyrat. Arch. Dermat. & Syph. 28: 798 (Dec.) 1933.

of a lesion becoming cancer, for five reasons
 1 Either a lesion does become cancer, or it does not, so that a lesion is not statistically eligible
 2 If one examines the structure of a lesion, it is bottled in formaldehyde and has no biologic future
 3 If one has not determined the structure of the lesion and it becomes cancer, it is impossible to know what its structure was
 4 Before any lesion has become cancer predictions about it are based on subjective, not objective, data, being based on presumption and not on perception
 5 After a lesion has become cancer, it is impossible to say when it was not cancer
 If a lesion is interrupted, it has a structure either compatible with the possibility of being early cancer or not compatible in which case it must be thought of as being either probably early cancer or probably not early cancer

Bloch continues "Of certain precanceroses, such as keratosis senilis, precancerous stage of xeroderma pigmentosa, of Bowen's and Paget, it may be said that in principle they always turn into cancer. Actually however, the changes may occur so slowly that often the patient does not live the required number of years" Of this, I argue that, if the host is interrupted (e.g., by old age and death) and if the observer has the temerity to state that the lesion would have become cancer had the host lasted longer, the lesion must fall into the category of those which do become cancer and hence are cancer

It is hopeless to attempt to decide at what percentage probability of becoming cancer a lesion may be called precancerous, because it is impossible to arrive at knowledge of this probability. Bloch admits that "reliable figures do not exist." I believe that such figures cannot exist. One must distinguish the connotations of "lesion" in the generic sense such as senile keratoses in general, and "lesion" in the specific sense of this particular tumor on this particular patient. In the error of indiscrimination between these two meanings, the one collective and the other particular, lies the confusion of all statistical effort. Specific lesions not yet examined histologically are not yet diagnosed. Hence lesions collectively are not susceptible of a statistical assay with respect to their individual futures.

The concept that precancer is that which is not cancer but does become cancer is a concept not susceptible of scientific demonstration and outside the possibility of human proof.

One might define precanceroses as those lesions which may or may not be early cancer and cannot be decided on. Then one would be using the term "precancerosis" to designate a state of doubt as to whether the lesion is or is not early cancer. This is not a desirable usage. Bloch states that the concept of precancerosis is of practical importance because "the knowledge of precancerosis gives us the only means of practicing effective prophylaxis of cancer." This statement is erroneous, for, plainly, the effective prophylaxis of cancer depends on recognition of early and curable actual cancerous lesions, and on the knowledge of what may be early cancer. Nothing is gained by calling early cancer any other name, and any doubtful lesion ought as appropriately to be destroyed as a lesion regarding which there is no doubt.

One might define precanceroses as those lesions which are becoming cancer. But in such a definition the dividing line between precancer and cancer is implicitly admitted to be impossible. And precancer automatically becomes early carcinoma.

With the last possible meaning of "precancerosis" as, etymologically, rightly "that which precedes the earliest cancerous lesion," the precancer must be invisible. Should still earlier lesions come to light precancer must still precede them.

Hence I am led to conclude that precancerosis has not been defined and cannot be defined, it is an idea.

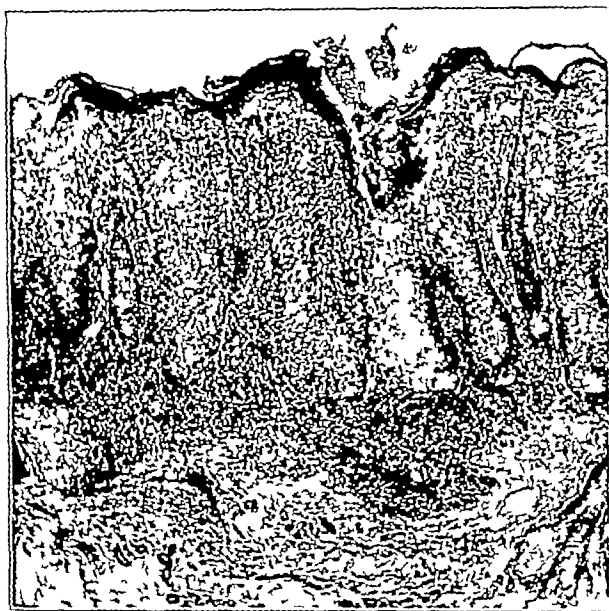


Fig 6 (case 4).—This dome-shaped dyskeratotic papule shows on section primary abnormality in the epithelium. The tendency to grow downward is evident. The cells tend to group and keratinize in whorls. The sizes of the cells and their nuclei are irregular. The cellular infiltrate is the same as that in the preceding cases. The total thickness of this very early carcinoma is 1 mm.

not an observable reality, and as a concept deserves recognition only as a confusing makeshift.

This removes the difficulty from the field of theory into that of practice. It may be hard to decide whether a lesion is or is not cancer. While the diagnosis may be, the lesion is not, on the fence.

The criteria of early carcinoma are difficult to arrive at. Broders¹ diagnoses his "carcinoma in situ" by the "altered cellular characteristics, in contradistinction to the cellular situation." Bloch states "We know of no single macroscopical-clinical, or microscopical-histological change which is generally typical or pathognomonic." He lists

- (a) Proliferation and hypertrophy of epidermis of irregular type.
- (b) Unrest and irregularity of the whole epidermal structure.
- (c) Increase of mitoses, irregular and pathologic mitotic figures.
- (d) Polymorphism of cells particularly of nuclei (giant, double and multiple, micronuclei, clumping of nuclei etc).
- (e) Dyskeratotic manifestations.

These features may be summarized as evidences of cellular malignancy or neoplastic alteration. Hanse- mann's⁹ concept of "anaplasia," used to explain the origin of cancer cells, is not sufficiently specific in meaning. I am in agreement with the hypothesis of Whitman¹⁰ that, in view of the atypical mitoses, multipolar divisions, hyperchromatic and hypochromatic

⁹ Hanse- mann David. Virchows Arch f path Anat 119: 229 (Feb 4) 1890.

¹⁰ Whitman, R. C. Somatic Mutations as a Factor in the Production of Cancer. J Cancer Research 4: 181 (April) 1919.

nuclei, asymmetric mitoses and changes in the number of chromosomes, the cancer cell is 'a new kind of cell, strictly and literally a mutated cell' The earliest clinical cancerous lesion is then the smallest visible colony of progeny of a mutant somatic cell The earliest theoretical cancerous lesion is the first mutant cell which, altered by mutation retains its visibility, reproductive capacity and potentiality of being the ancestor of a parasitic colony, and loses its responsiveness to the host's control of its growth One can imagine that a mutant may not be viable and so never produce a clinical lesion, the mutant may be partially controlled and so produce benign lesions, or there may occur many mutations within one atypical cell colony, resulting in a tumor with several kinds of cells in it, such as basosquamous lesions With this hypothesis a precancerosis might be understood to be a lesion in which neoplastic mutation is likely to occur In the lesions I have described however it is my belief that the mutation has already occurred and that the status of cancerousness has already been attained

CHARACTERISTICS OF EARLIEST RECOGNIZABLE SKIN CARCINOMA

On the basis of the foregoing considerations, I describe earliest recognizable skin carcinoma from three standpoints the clinical the microscopic and the theoretical Clinically they are circumscribed epithelial lesions that have arisen *de novo* generally brownish, rough scaly or verrucous in character asymptomatic or slightly pruriginous occurring by predilection on surfaces exposed to sunlight or irradiation, especially in persons with sun-sensitive skins Microscopically, they manifest epithelial irregularity acanthosis and dyskeratosis with changes in cell type of the order of abnormal mitoses and atypical morphology and with evidence of the probability of proliferative extension into a dermis that is characteristically infiltrated to a greater or less degree with round cells in the immediate region of epithelial abnormality Theoretically, they are interpreted as colonies of progeny of mutant epidermal cells with retained capacity for proliferation and lost responsiveness to growth control on the part of the host

Such a description is independent of the size of the lesion in accordance with the theory that one cell can constitute a cancer It is independent of rate of growth of the lesion for the progression may be so slow as never to interfere with the well being of the host It stresses the concept that carcinoma in the gross is purely a manifestation *en masse* of epithelium growing abnormally It conceives relative malignancy as dependent on balance between proliferative capacity of tumor cells and resistance of the host It explains multiplicity of cell type in one tumor on the basis of mutation following on mutation It enlarges the concept of skin carcinoma and it offers a reasonable and unified conceptual design for the interpretation of neoplastic processes It is eminently practical, for it encourages suspicion of minute lesions which might grow into gross carcinomas

The therapeutic correlate is that if a lesion may cause serious trouble later now is the time for its destruction

CONCLUSIONS

- 1 (a) Many skin cancers begin as *de novo* lesions
- (b) The earliest visible lesion in these cases is a circumscribed, scaly epithelial new growth

- 2 (a) The structure of many minute, scaly, epithelial new growths is such that it is reasonable to presume that if not interrupted, they would become obvious carcinomas

- (b) It is reasonable to believe that such lesions are in fact early carcinomas

- (c) If a lesion has a structure not compatible with a likelihood of its being early carcinoma, it might be called precancerous But it would be impossible to predict that such a lesion might develop a structure if uninterrupted, such that it would be properly called carcinoma

- 3 (a) It is impossible to determine at what point in its natural history a cancerous lesion was not cancerous

- (b) It is reasonable to believe that cancer is cancer from the start

- 4 The concept of precancerosis is indecisive and undefinable It groups unrelated conditions which may or may not be early cancer Its acceptance entails an insoluble problem of a dividing line between cancer and not-cancer, as well as an insoluble problem of statistical assay of lesions that are strictly individual

- 5 (a) A lesion may be cancerous independently of its size and rate of growth

- (b) Cancer is primarily an epithelial disease.

- (c) A cancer consists of mutated somatic cells

- (d) The earliest visible manifestations are circumscribed, dyskeratotic lesions which microscopically are composed of polymorphous epithelial cells that proliferate, keratinize and undergo mitosis in an abnormal manner

- (e) Malignancy depends on a balance between the proliferative capacities of its cells and the control or resistance of the host

- (f) One tumor may contain several kinds of cells as a result of mutation following on mutation

- 6 Early cancerous lesions are readily destroyed and cured In suspecting all early lesions and destroying them, one would prevent the development of all late lesions such as might become incurable

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ABSTRACT OF DISCUSSION

DR E W NETHERTON Cleveland To obtain the best results the correct diagnosis must be established at the earliest possible stage Early diagnosis followed by complete surgical removal is still one of the best methods of treating squamous cell carcinoma This type of management makes possible a thorough histologic study of each lesion which is essential if the benign and doubtful lesions are to be separated from those of early carcinoma A statistical study of a large series of early cases which had been treated in this fashion with observation of the patients over a period of years would be of considerable value What is especially needed is some criterion by which the benign and early malignant epithelial new growths can be differentiated by their gross morphologic characteristics In many instances the microscopic examination does not give conclusive results The greatest difficulty is encountered in the borderline cases and it is not unusual for equally clever pathologists to differ in their interpretation of the clinical and microscopic observations The term precancerous has been used for years to designate the malignant potentiality of lesions such as leukoplakia senile keratosis and xeroderma pigmentosum Dr Sutton has given many good reasons why the concept of precancerosis is indecisive and undefinable It is impossible to determine the future of any benign epithelial growth nevertheless the conditions that have been designated as precancerous will in a high proportion of instances become malignant but since nothing is known concerning the specific etiology of can

cers there is no way of telling which apparently benign lesions will become malignant. It is difficult for me to agree that a senile keratosis, a leukoplakia, or a melanotic mole that has been present for years and has become malignant, was in reality cancerous from the start. Paget's disease of the breast and Bowen's keratosis by pathologic evidence have been shown to begin as cancerous lesions, but this is not the case with other types of so-called precancerous dermatoses. Precancerous is a poor term, but usage has established it firmly in medical nomenclature. If in its strictest meaning 'precancerous' denotes that the lesion will invariably become malignant if its course is uninterrupted, it should be discarded, for, as Dr Sutton has stated, such a statement concerning any particular lesion cannot be verified. However, if precancerous means that a certain lesion is potentially malignant and that it is probable that it will become malignant I can see no objection to its use. It would be better to designate such lesions as potentially malignant. What is most important is that all early and potentially malignant lesions be recognized and removed or destroyed.

DR. HAROLD N. COLE, Cleveland. I have had the opportunity of looking over Dr. Sutton's histologic material. I know that he has painstakingly made serial sections on dozens of new growths attempting to come to some conclusion on the argument advanced by Broders of a carcinoma *de novo* of its being a carcinoma from the beginning. It is only by such studies that some conclusion can really be reached as to when a malignant condition starts or whether it does actually start from the beginning or whether some of the lesions are going to remain precancerous and continue the same.

DR. JEFFREY MICHAEL, Houston, Texas. I have tried to study as many biopsies as possible of these early lesions. It all comes down to a question of a pathologic concept and a definition. If a cancer is defined as a tumor that must have invasive qualities, one cannot call these early lesions malignant. But if Broders' contention is accepted that there is such a condition as an epithelioma *in situ* which can be differentiated by certain cytologic changes in the cells, one should accept these changes as cancer from the beginning. I think that the old pathologic concept of invasive qualities being absolutely essential to a diagnosis of malignancy is being broken down in two directions in the first in the conception of Jadassohn and Borset that there is an intra epidermal epithelioma and in the second place in the conception of Broders that there is such a thing as epithelioma *in situ*.

DR. RICHARD L. SUTTON JR., Kansas City, Mo. The arguments that I wished to present are not nearly complete. The idea that cancer in order to be called such must be an invasive lesion is to my mind not essential. A cancer is a structure composed of a number of cells of originally epithelial origin which represent a true mutation from an originally presumably normal somatic cell. That is the idea of Whitman, whom I have quoted. Cancer cells in general have been shown to vary in their cytology, in their number of chromosomes, and so the alterations that take place within them are those of true mutation in the biologic sense. They have fewer or more chromosomes than normal and their progeny have atypical divisions. In my opinion, one cell that retained its capacity to proliferate but lost its capacity for being controlled by the host on which it was proliferating would constitute a cancer. Certainly one melanocarcinoma cell in a capillary in the liver would constitute a cancer in the sense that such a metastasis produces a separate colony of living cells capable of proliferating there and doing further damage. One sees these peculiar cells *in situ*. All one has to do is to examine lesions in order to find them. Broders has pointed them out in numerous instances, and in looking over many sections I have seen them too. I imagine that they represent somatic mutations and so colonies of mutant cells that have the capacity for invasion. The word malignancy has so many different meanings that it is hard to know just how to apply it to this concept of cancer. One can't tell whether the cells of a lesion are proliferating or whether they are invading; one can't see them acting because as soon as one looks at them microscopically one has killed them; they are in formaldehyde. So it is a mixture of clinical and microscopic evidence from which one must derive one's concepts.

BORDERLINE BREAST TUMORS

BIOPSY AND POSTBIOPSY TREATMENT

JOSEPH COLT BLOODGOOD, M.D.

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There is still a good deal of difference of opinion among those best informed as to the type and method of biopsy and as to prebiopsy and postbiopsy irradiation in breast tumors.

I have been observing the results in all breast tumors in which the tumor has been explored first. The object of this exploration was to determine its pathologic nature. Up to 1915 in the Halsted Clinic at Johns Hopkins, the naked-eye diagnosis had been depended on. In my own experience since 1915 I have used naked-eye diagnosis in every case, but, in addition, an immediate frozen section for microscopic study was resorted to in the operating room, and the operation or treatment that followed rested largely on the diagnosis made on this immediate frozen section.

Great changes have been observed and recorded by me since the first exploration that I witnessed on a borderline breast tumor more than forty-two years ago.

These changes have been forced on the operator and his surgical pathologist by the decreasing preoperative incidence of malignant tumors in the clinic and the increasing occurrence of benign and borderline tumors. In the last five years, borderline tumors in which it is difficult to determine whether they are malignant or benign have greatly increased in numbers.

In the first fifteen or twenty years of the Halsted Clinic more than 98 per cent of the women complaining of breast lesions had definite lumps in the breast and were subjected to immediate operation. In fully 80 per cent of these cases the tumor proved to be malignant. In my own clinic today only 15 per cent instead of 98 per cent, are subjected to operation, and the incidence of cancer in the total number is less than 10 per cent, and the incidence of malignant tumors in those subjected to operation is less than one half. The pathologic type of the distinctly palpable breast tumor subjected to exploration which has shown the greatest increase in the past three years is the borderline breast tumor, which I¹ described in detail in a paper published in 1932. There are fifty-eight illustrations in that paper, and since the date of its publication two and one-half years ago, the number of new cases has been equivalent to what I had previously observed in twenty years.

METHOD OF BIOPSY IN DOUBTFUL CASES

The method of biopsy is employed when the palpable mass is small enough to be excised with a good margin of uninvolved breast tissue and the wound closed without producing loss of symmetry in the breast. In these cases the gross and microscopic appearance of the tumor is not seen until the tumor is bisected when held in the hollow of the left hand of the operator, studied with the naked eye and an immediate frozen section made and examined. If the operator and his pathologist are confident that the tumor is distinctly benign the wound in the breast is closed and no post-operative irradiation is employed. When the operator and his pathologist are confident, from the gross

Read before the Section on Surgery, General and Abdominal at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

¹ Bloodgood, J. C. *Am J Cancer* 16: 103 (Jan.) 1932.

appearance and the frozen section, that the tumor is distinctly malignant, an alcohol sponge or a gauze sponge saturated with a 50 per cent solution of zinc chloride (and squeezed dry) is placed in the wound, the skin sutured over it and the complete operation for cancer performed at once.

These two procedures for tumors of the breast, when there is no doubt about their pathologic nature, have



Fig 1—Appearance of patient about one year after the excision of a clinically benign but microscopically doubtful or borderline breast tumor removed during the early months of pregnancy. The circle in ink on the forearm represents the palpable subcutaneous tumor that was removed June 13 1932 under procaine hydrochloride and proved to be a benign nerve sheath tumor. This patient was free from a recurrence of either tumor in July 1934 two years and some months after the operation on the breast.

been accepted by the majority of operators, pathologists and radiotherapists. I am beginning to accumulate evidence which clearly indicates that there is no danger in closing the wound, without either the alcohol or the zinc chloride sponge after the removal of the malignant tumor, and in subjecting the patients to postbiopsy irradiation. I am beginning to accumulate evidence that, when the malignant tumor is smaller than a twenty-five cent piece (24 mm) and has been present one month or less, its local excision and postoperative irradiation may offer as many chances of a permanent cure as the radical operation. In a number of such cases of which I have records, operation has been done in this way (in other clinics and in a few in my own clinic) when the patients refused the complete operation.

The third type of breast tumor is that in which the operator and his pathologist are in doubt as to a malignant condition. This is the true borderline tumor. From my study of borderline tumors since 1892 I have found, with the rarest exceptions, that they are benign. If the complete operation is performed immediately or later, the axillary glands show no metastasis. Practically all patients with such borderline tumors have been followed from five to forty-two years. In not a single case up to the time of death, or at the present time if the patient is living, has there been any sign of malig-

nancy in the scar or of internal metastasis. The percentage of malignant involvement of the other breast has been identical with that in an equal number of benign adenomas of the breast at the same age and followed through the same periods of time.

There seems to be largely an agreement among the greatest authorities as to this method of biopsy when exploration must be done to determine the pathologic type of the tumor and when the tumor is sufficiently small to allow its excision through uninvolved breast tissue and the closure of the defect in the breast without producing loss of symmetry.

To repeat, the majority of expert authorities urgently advise the immediate complete operation should the operator and his pathologist decide that the lesion is distinctly malignant. Of course, they all agree to the restricted removal of the tumor of the breast only when it is agreed that it is benign.

There is a great difference of opinion as to the method of procedure in the borderline tumor. I am advising the treatment of the borderline tumor on the operating table as one treats the benign tumor, but after the operation I advise irradiation of the breast and axilla while sections are being submitted to two or more widely experienced surgical pathologists.

In many instances this biopsy can be done under local anesthesia. If the operator plans to perform the complete operation, should the tumor prove to be malignant, he should work in the operating room of a hospital with full preparation for the complete operation. When the operator who has had experiences similar to mine and feels justified in closing the wound no matter what the nature of the tumor may be, and give irradiation first even if the complete operation is to be done later, it is not essential that the patient be prepared for the complete operation.

There is no question that the education of women has increased the number coming to the clinic with benign conditions of the breast for which operation is not indicated. Also there is no doubt that transillumination in a dark room, as first advocated by Dr. Max Cutler of Chicago, has done more than any other

new procedure for the distinct recognition of a benign blue-domed cyst larger than a twenty-five cent piece. In my clinic we no longer subject to operation distinctly palpable tumors larger than a twenty-five cent piece unless they transilluminate dark.

There is a fourth group of tumors that are increasing in numbers with the exploration and complete excision of clinically benign tumors of the breast. These



Fig 2—Appearance of a bisected tumor from the breast of the patient shown in figure 1.

tumors are solid and have the distinct gross and microscopic appearance not only of a malignant growth but of a grade IV acute carcinoma, that is, the type of tumor which, if neglected by the host, develops ultimately into cancer *en cuirasse*. My entire experience teaches me that in every stage of its development this grade IV acute carcinoma is best not subjected to operation. So far they have never been cured but the

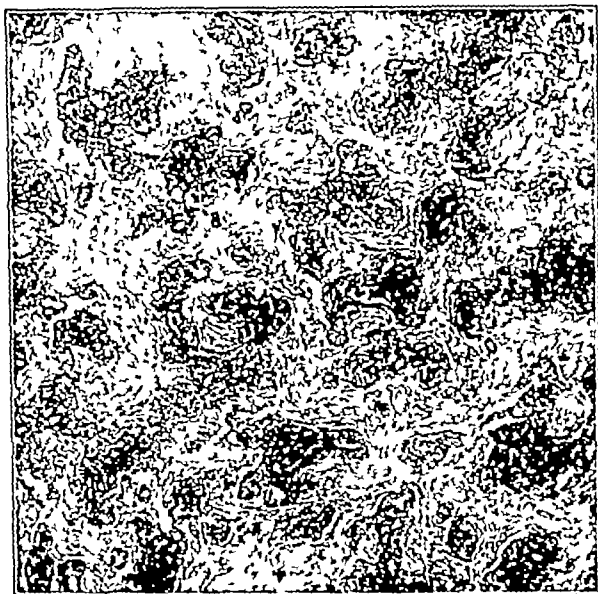


Fig 3—Section showing nonencapsulated tumor removed during early months of pregnancy from patient shown in figure 1. This section was taken from the center of the tumor showing stroma of the old adenoma and definite gravidity hypertrophy of the parenchyma.

duration of life is often prolonged and the patient made distinctly more comfortable by proper irradiation without the complete operation, even when the tumor is observed in an inoperable stage or is recognized with the microscope in a frozen section at the exploratory biopsy for an apparently benign tumor of the breast.

One has to bear in mind that the actual change in the relative number of malignant breast tumors which are still clinically benign and must be explored is toward an increase. I am convinced of this because it has been shown in excised breast lumps sent to me for examination. The women of this country are showing the results of the educational efforts of the American Society for the Control of Cancer, the medical societies, and individuals in the medical profession. When 80 per cent of distinct breast lumps are cancer and more than 95 per cent of these are evidently so clinically exploration for a malignant tumor is the exception rather than the rule. In many hospitals today there is an increasing number of breast tumors explored in the operating room, an increasing number submitted to frozen section in the operating room, and an increasing number in which the pathologist is in doubt as to the diagnosis. The pathologist must be able to advise this group what to do in case of doubt. In fact, in the most experienced clinics in the world today the number of borderline tumors found at exploratory biopsy is on the increase. Every surgeon and his pathologist know what to do when the breast tumor is distinctly benign and they still know what to do if they wish to follow the major opinion when the breast lump is distinctly malignant. Very quickly the educated community will

force on the operating surgeon and his pathologist an increasing number of borderline tumors.

In my opinion, the proper procedure is the complete excision of the palpable lump, by cutting through uninvolved breast tissue, by closing the wound and by giving postoperative irradiation to the breast and axilla.

There is a difference of opinion among radiotherapists as to the time that should elapse before the closed wound in the breast is irradiated. There is no doubt that if begun at once the wound may break down, and if this wound becomes infected, it interferes with the value of irradiation. I am advising the irradiation at once when the frozen section favors an ultimate diagnosis of malignancy and have advised delay when the section favors a benign condition. By great care of the wound, should it break down, infection can be avoided. In view of the fact that there is such a difference in ability among even well trained surgical pathologists to recognize the malignant tumors of the breast in their earliest stages, I am inclined to the view that it may be safer to give irradiation over the axilla at once, protecting the breast wound and giving irradiation over the breast and its wound within a week or ten days. In three cases subjected to immediate irradiation the wound broke down but did not become

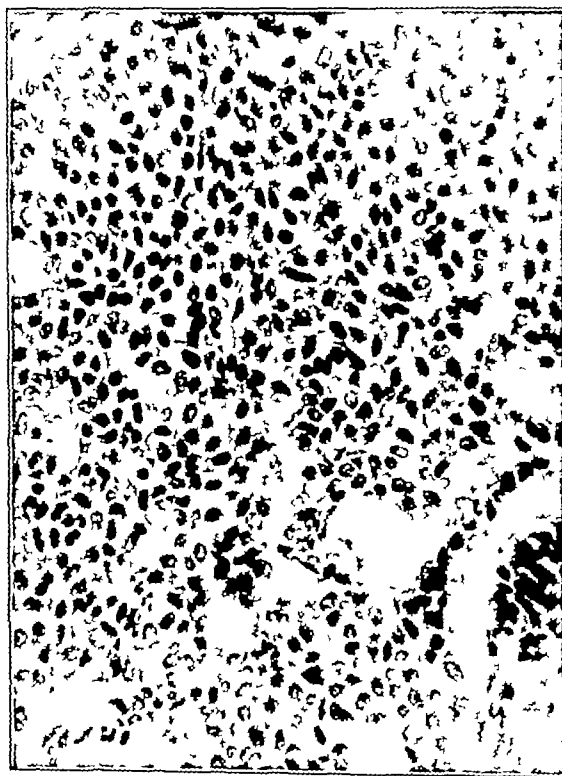


Fig 4—Periphery of tumor shown in figure 3. A typical hypertrophy of the parenchyma.

infected and healed perfectly by granulation. In many instances the wound did not break down. So far I have observed no bad results from irradiation.

SECOND TYPE OF EXPLORATORY BIOPSY OF BREAST TUMORS

Halsted, beginning in 1889, in his clinic at Johns Hopkins when he explored a breast tumor cut directly down into it with the knife, and if its naked-eye appearance suggested to him a malignant growth, he

cauterized the cut tissue with phenol (carbolic acid) followed by alcohol, closed the wound, changed instruments and towels and performed the complete operation for cancer. Such explorations were of rare occurrence and the patients were most carefully followed. We could never find evidence that this explora-



Fig 5—Areas of tumor shown in figure 3 which many pathologists diagnosed malignant many benign

tion followed at once by the complete operation decreased the chances of a permanent cure. When the glands were not involved 70 per cent of the patients were living at the end of five years whether there had been an exploration or not. In the majority of breast tumors explored, the glands were not involved. When the glands were involved, the five-year cures did not seem to be affected by an exploratory incision followed at once by the complete operation.

Halsted was so confident of his naked-eye diagnosis that he was very late in adopting frozen sections. I have only one positive case in which Halsted failed to recognize a malignant condition by the naked-eye appearance of a breast tumor and restricted his operation to the removal of the tumor only. The tumor was a smooth-walled and thick-walled cyst containing blood. There was no papilloma. Cancer was not recognized in the wall until permanent sections were studied within one week. The complete operation was then performed and the removed glands in the axilla and above the clavicle showed metastasis. The patient died of internal metastasis. In a letter to Dr. Welch, written some two years before Dr. Halsted died, he expressed great satisfaction over his ability to recognize with the naked eye the correct pathologic condition of tissue exposed at operation.

Another evidence of this extraordinary ability of Dr. Halsted is the borderline tumors he explored up to 1915. In not a single instance did he look on this non-encapsulated tumor as malignant. After cutting into it he excised it as he would an encapsulated benign tumor or a blue-domed cyst. He closed the wound without performing the complete operation. The tumors were then sent to the laboratory. In the early years they were diagnosed adenocarcinoma by Dr. Welch. After

1892 they were diagnosed by myself, usually in consultation with Dr. Welch. Dr. Halsted accepted the microscopic report of malignancy and performed the complete operation. As I have already said, the axillary glands were never involved and these patients lived for years and before or at death showed no signs of cancer. In 1915 I submitted the section from these borderline tumors to a large number of the best trained surgical pathologists in New York, Philadelphia and Detroit. The written diagnosis of the majority was malignancy or suspicion of malignancy. There was never a unanimous vote in favor of malignancy. There was always a minority in favor of a benign condition. Many of these cases have already been reported.¹ These identical sections have been again referred to a group of pathologists and surgical pathologists who attended the microscopic diagnostic demonstrations in the Surgical Pathological Laboratory of the Johns Hopkins Hospital in the last four years. In every instance there is still a difference of opinion, but the larger number vote benign while in 1915 the majority voted malignant. Sections from malignant tumors of the breast submitted to these groups are always diagnosed without exception malignant. Therefore, when two or more pathologists of average training and ability differ as to the malignancy of a breast tumor, the chances are that it is benign and will be cured without a more extensive measure than the removal of the tumor only.

These borderline tumors are on the increase. The present paper is designed to call attention to the fact that when the tumors are small enough the method first followed by Halsted should be changed to the complete removal by cutting through uninvolved breast tissue. But when they are too large for this method they may

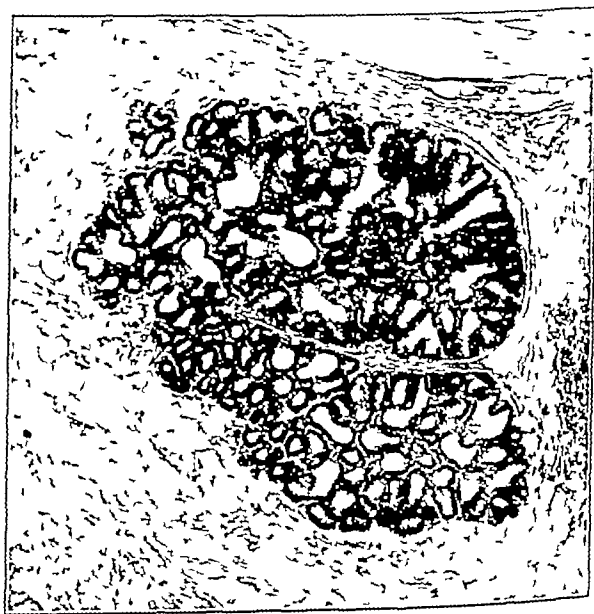


Fig 6—Section of the normal breast in pregnancy removed with the tumor shown in figure 2

be cut into. The encapsulated solid tumor must be differentiated by frozen section, because often in young and in older women the larger tumor may be a fibroadenoma or a sarcoma. In the benign tumor the breast can be saved. In the malignant tumor the breast and the major pectoral muscle must be completely removed. The direct incision into breast tumors is necessary now

in far fewer cases, more often is the gross pathologic appearance of a blue-domed cyst or a distinctly encapsulated tumor so obvious that a frozen section is only confirmatory of the naked-eye appearance

I will reproduce here the illustrations of two cases that represent two distinct clinical types. One was clinically benign, a case in which the tumor was excised by cutting through normal breast, the seat of pregnancy hypertrophy. There was a difference of opinion on the frozen section at the time of the operation, and for this reason the patient was given immediate irradiation over the axilla without irradiation of the wound. There has been a difference of opinion on the interpretation of the sections among my own associates and at every meeting for the microscopic demonstrations held at the Surgical Pathological Laboratory of the Johns Hopkins Hospital since. This patient has been well now more than two years and has had a second pregnancy and normal delivery. During the second pregnancy four or five nodules appeared above the scar in the breast. These were not skin metastases but little breast tumors from 2 to 5 mm in diameter. They disappeared temporarily after the birth of the child. The child was weaned and then when the menses appeared, the tumors returned for a few weeks and disappeared again.

This patient (fig 1) has no sign of any disease in either breast or other part of the body today, in spite of which there is a minority in my own laboratory who still interpret the microscopic sections as malignant, and the majority of those who restudied these sections during the microscopic demonstrations held three times a year still cling to the diagnosis of malignancy. One of the special workers in the laboratory has reviewed most thoroughly all the tumors of the breast removed during pregnancy and during lactation and compared them with this case. He is still of the opinion that this case must be interpreted as malignant in spite of the fact that the patient is well more than two years after the removal of the tumor only and irradiation of the axilla only.

In spite of their larger experience with these borderline tumors, the best pathologists still disagree, but when they do so the patients live. Therefore, if good pathologists disagree it is fair to the patients to restrict the operation to the removal of the tumor. There is no objection to irradiating the axilla and protecting the wound of the breast while the decision of the pathologists is being awaited, and there is no objection—if there is disagreement—to finish the course of irradiation over the breast. I myself was so convinced that this case was pregnancy hypertrophy that I gave no more irradiation. I stopped her nursing after both pregnancies in order not to excite further growth in other areas of benign adenoma of the breast.

Figure 1 was taken about one year after the birth of the child when all examinations were negative, except a small tumor, outlined in ink on the forearm, which was removed in June 1932 and proved to be a benign nerve sheath tumor. Later, with the second pregnancy as already reported nodules appeared in the periphery of the breast above the scar.

Figure 2 shows the good margin of uninvolved breast tissue in pregnancy hypertrophy removed with a central zone of nonencapsulated tumor tissue. The tumor tissue is smooth while the breast is faintly lobulated and projects above.

I felt this tumor in the patient's breast two years before her marriage. It was freely movable and about

the size of a five cent piece (21 mm). I advised its removal because of the danger of its giving her trouble if she became pregnant and warned her of the danger of losing her breast should she have this tumor removed during pregnancy or lactation, because many pathologists would diagnose it cancer. She had a second, smaller, tumor in the left breast, which disappeared before she was married.

Figure 3 is a microscopic section from the center of the tumor removed. It shows the increased fibrous stroma of the old fibro-adenoma and tremendous cell proliferation of the lobule of the old fibro-adenoma.

Figure 4 shows a section from the junction of the old fibro-adenoma and the breast, the seat of pregnancy hypertrophy.

Figure 5 is an area in the fibro-adenoma which influences many pathologists to the diagnosis of malig-



Fig 7 (case 2)—Breast suggestive of malignancy; retraction of nipple shown is intermittent favoring benignity

nancy, especially when they compare it with figure 6, which is a section of the normal hypertrophy of pregnancy.

I have been familiar with these typical microscopic pictures in distinctly encapsulated tumors removed from the breast during pregnancy or lactation. In not a single instance have I been able to find pictures in these lactating adenomas that resembled the microscopic picture of cancer in the breast during pregnancy or lactation. In practically all malignant tumors during pregnancy or lactation the axillary glands have been involved, and in more than 75 per cent in which the glands were involved the patients died of cancer. Billroth has called attention to the fact that adenomas of the breast are subject to the same changes as is the breast during pregnancy and lactation. But there is no complete study yet published with proper illustrations on the microscopic pictures of breast tumors during pregnancy and lactation and of their differentiation from malignant tumors.

I have no evidence that malignant tumors in the breast during pregnancy or lactation arise in preexisting adenomas of any type

The second case to be reproduced here (figs 7 and 8) was a diffuse tumor of the upper hemisphere of the right breast too large for complete excision. It was partially removed; numerous frozen sections were made and the operator, my associate Dr L. Clarence Cohn, decided that it was benign and saved the breast. There was no postoperative irradiation. There was a difference of opinion during the operation and has been since. It has now been more than three and one-half years, the patient is well and the breast palpates and transilluminates normally. During this period I have been making in the laboratory a complete restudy of a type of breast tumor that I have called comedo-adenocarcinoma.



Fig. 8.—Section of tumor in breast shown in figure 7 interpreted as benign comedo-adenoma by the operator. Incomplete removal. No recurrence in the remaining breast three and one-half years later. No irradiation before or after operation. In the upper half are typical comedones; the lower half of the picture shows intraductal papillary adenoma. No evidence of cancer.

and now call comedo-adenoma. When this tumor is of a pure microscopic type there has never been metastasis to the axilla, never death from cancer. But this comedo-adenoma may be associated with fully developed cancer, and then it acts like fully developed cancer with the same prognosis. The case shown in figures 7 and 8 is, under the microscope, the benign type of comedo-adenoma. I shall show only one microscopic picture here (fig. 8), because I expect to report fully on this case later in the *American Journal of Cancer*, as I delivered a paper on this subject before the American Society for Cancer Research in Toronto in May.

Figure 7 pictures clinically Dr Cohn's case. The patient was a woman at the cancer age, and there were certain things in the clinical picture that made Dr Cohn suspicious of a malignant growth, and for this

reason he explored. The retraction of the nipple shown in the photograph was intermittent. The mass occupying the upper hemisphere of the breast varied in size. The patient was certain of this. When Dr Cohn explored the tumor it was solid, diffuse and without cysts, but there were numerous comedones of granular debris which could be expressed from the surface of the tumor everywhere. There was no gross evidence of cancer—only comedo-adenoma. Nor, in the section (fig. 8) was there evidence of anything but comedo-adenoma or what is known in the literature as duct cancer.

I urge every one who reads this article to read also a paper by Campbell² on chronic cystic mastitis. Campbell gives the best discussion of all the literature on the subject. There is also a splendid review of the early literature on chronic cystic mastitis by my associate Dr Charles F. Geschickter.³ The difficulty in presenting borderline tumors is, first, space for illustrations and secondly, one must wait at least two or three years to ascertain the result.

The only way for surgical pathologists to become familiar with this group so difficult to diagnose is to study the microscopic sections repeatedly as the patient is followed.

My experience to date seems to justify my making the statement that when a surgeon operates on a clinically benign tumor that is small enough he should excise the tumor by cutting through healthy tissue and then, after its removal, bisect it in his hand and make frozen sections. If in doubt as to a malignant condition the wound should be closed. If high voltage roentgen therapy is available, radiation over the axilla should be done. If the pathologic reports from a number of pathologists come in uniformly that the tumor is benign or by the majority that it is benign nothing further should be done. If the pathologists agree as to malignancy, or only the majority of them, there are two courses—either finish a thorough preoperative course of irradiation and then wait the proper time and perform the complete operation for cancer or stop irradiation, wait a proper interval and then perform the complete operation for cancer. At the present time the majority of the best trained and experienced surgeons, pathologists and radiotherapists are of the opinion that complete operation for cancer should be performed on the doubtful breast tumor as soon as the pathologic report of the consulting group is received agreeing with, or with a majority opinion in favor of, malignancy.

My own opinion at the present moment, I appreciate is a minority opinion. But I am gathering evidence in its favor and I propose to put this evidence before my colleagues as quickly as possible. I have sufficient evidence, however, to justify this conservative advice about borderline tumors, especially those of the type that can be excised completely as illustrated in the case in figures 1 and 2. In cases of the type of the second case illustrated in figures 7 and 8, the conservative operation should be reserved for those special clinics which have had large experience in the treatment of borderline tumors of the breast; otherwise, the complete operation for cancer of the breast should be performed at one sitting.

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² Campbell, O. J. Relationship Between Cystic Disease of the Breast and Carcinoma. *Arch. Surg.* 28:1001 (June) 1934.
³ Geschickter, C. F. *Bull. Inst. Hist. Med.* 2:249 1934 in *Bull. Johns Hopkins Hosp.* June 1934.

ABSTRACT OF DISCUSSION

DR. IRVIN ABELL, Louisville, Ky More tumors requiring biopsy are being seen than ever before I have used biopsy with immediate examination of the frozen tissue sections since 1917, feeling that the interpretation of the pathologist with the microscope would be superior to one's own naked eye interpretation regardless of how much one correlates the experience of the two When the biopsy proves the tumor malignant, my routine practice has been to close the wound and immediately proceed with a radical mastectomy I am aware that in some quarters there is a disposition to vary from this treatment, namely that when the tumor is small and is removed by biopsy and proved to be malignant, it may be treated safely with radium or x-rays I have had no experience with this treatment but I have had come into my service five patients who have been so treated elsewhere a small tumor was removed and radium was implanted in the wound with subsequent irradiation after the healing of the wound All five had recurrences in the breast and three had axillary metastasis The result of complete mastectomy in the presence of a malignant condition has been so excellent as to compensate for the loss of the breast The retention of the breast in the presence of a known malignant condition, to be treated subsequently with radiation, is fraught with danger, particularly if the practice becomes general The wide variation in equipment in technic, in dosage of irradiation is such that it is a difficult matter for one to draw correct conclusions as to the evaluation of the method. If every one had the machine to which Dr Bloodgood referred, with a 200 kilowatt power, and if there was a standardized dosage and technic, it might possibly be safe to attempt treatment along this line, but it is evident that the treatment that may be safe in the hands of well equipped, well trained personnel conceivably is not a safe thing to be adopted by the general profession In my earlier experience I endeavored to preserve the breasts of these patients with so-called borderline tumors One of them came back within eight months with recurrent growth in the breast, and two others came back still later with recurrences in the breast and axillary node metastasis After that I came to the conclusion that a tumor is either benign or malignant and if the pathologist could not assure me of the malignancy of a given growth and wasn't positive as to its nonmalignant nature the patient would be safer with a simple or a conservative mastectomy in order to prevent local extension and recurrence

DR. MAX CUTLER Chicago Dr Bloodgood raised several important questions on radiation therapy of mammary cancer Difference of opinion exists on this subject which because of inadequate data is at present a subject of controversy even among those who have had the greatest experience with this problem I should like to make the following observation Three major difficulties are encountered in the radiation treatment of mammary cancer 1 The extensive surface area that must be regarded as potentially involved, regardless of how early the lesion appears to be on clinical examination 2 The relative radioresistance of most malignant tumors of the breast 3 The difficulty and uncertainty of effective irradiation of the axillary lymphatic glands According to the latest conceptions of dosage and technic, the amount of radiation that is necessary to sterilize the more radioresistant forms of mammary cancer is such as to preclude the subsequent radical surgical removal of the breast with safety Thus the present development of radiation leads to a more effective treatment of mammary cancer when radiation alone is used rather than when radiation is combined with surgery The use of preoperative radiation in moderate doses can be defended on the basis that there exists a small group of carcinomas of the breast that is moderately radiosensitive Clinical and pathologic evidence is available to demonstrate that this small group can be sterilized by a dose of radiation that can be followed safely by the radical surgical operation. I utilize preoperative radiation under two circumstances 1 In lesions of clinical borderline operability 2 In lesions in which the clinical setting and microscopic evidence when available indicate the presence of a highly malignant anaplastic carcinoma particularly in younger women Most

statistical evidence attempting to prove the value, or lack of value, of prophylactic postoperative irradiation is contradictory, subject to numerous fallacies, and insusceptible of withstanding critical analysis When the complete radical operation is performed on an early localized carcinoma of the breast and the axillary lymphatic glands are not invaded, it is difficult to defend the routine use of prophylactic postoperative irradiation, although this procedure has been generally adopted by most clinics Since postoperative irradiation can be administered with complete safety and its use entails no risks or delays most radiologists advise this procedure as a precaution When microscopic examination of the tumor indicates a highly anaplastic carcinoma or when the axillary lymphatic glands have been invaded there is considerable evidence to indicate prophylactic postoperative irradiation and I utilize it under these circumstances Because of the fact that when irradiation precedes surgery the dose of radiation must be reduced, it is entirely inadequate to control the more radioresistant forms of mammary cancer Because of this fact the restriction of the extent of the surgical procedure is entirely unsound and dangerous Under no circumstances should the extent of the radical operation for mammary cancer be reduced either because the lesion is small or because irradiation is combined with the surgical procedure

DR. J. C. BLOODGOOD Baltimore I thank Dr Abell and Dr Cutler I am sorry they didn't read to you the letter I wrote them in which I said that if they could possibly differ with me I wished they would I was trying to bring the borderline tumors before the profession At least I have no evidence that, if there is a little delay between the removal of this clinically benign tumor and the radical operation, if it is proved to be malignant delay is dangerous I cannot give the evidence in the time allotted here, but I have evidence to prove the statements I have made Therefore the pathologists throughout this country must be given an opportunity to prepare themselves to recognize the borderline tumors that are malignant Not every hospital can be furnished with such a trained pathologist Therefore the operators when their own pathologists are unable to diagnose the breast tumor, must send it to two or more of these diagnostic clinics for their view and when two or more such diagnostic clinics differ the operator may conclude that the tumor is benign During this period when sections of the borderline breast tumor are submitted to other pathologists the axilla of the patient can be treated with high voltage roentgen therapy and if there is further delay after ten days the breast can be irradiated If the positive diagnosis of malignancy comes in then radiation treatment can be stopped and after an interval of one week or ten days the complete operation for cancer performed

The Fertile Period in Monkeys—The female monkey which is the only animal to show a true and regular menstrual bleeding has a menstrual cycle lasting on the average from twenty-seven to thirty days (Corner, E. Allen, Hartman, Joachimovits, Spiegel and Zuckerman) In contrast with other animals which have a distinct heat and as a rule only copulate during this time, the female monkey allows access to the male at all parts of the menstrual cycle but she does not become pregnant after every coitus This animal, therefore, also manifests a periodic alternation of fertility and sterility Hartman, who carried out a lengthy series of experiments on a large and well supervised colony of monkeys to determine the boundary between the fertile and the sterile periods found that out of 420 acts of intercourse which took place on all days of the menstrual cycle, only 52 led to pregnancy and that out of these 52 conceptions 49 took place between the eleventh and sixteenth days inclusive Hartman found a fertility rate of 25 per cent on the eleventh day, 11 per cent on the twelfth and thirteenth days and 25 per cent on the fourteenth day There is in fact, such a sharp line between the sterile and fertile days of the monkey that Hartman is perfectly justified in saying that these animals have a 'safe period'—Knaus Hermann Periodic Fertility and Sterility in Woman Vienna, Wilhelm Maudrich 1934

THERAPEUTICS OF THE INTRAVENOUS DRIP

FURTHER OBSERVATIONS

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AND

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In a previous report¹ dealing with the influence of velocity on the response to intravenous injection, the physiologic advantages of the slow intravenous drip were stated. Later, a convenient apparatus for the clinical use of the drip was described together with details for preparing sets and solutions.² In analyzing 100 consecutive requests for these sets, the therapeutic indications³ included the treatment of (a) hemorrhage (b) shock, (c) the infectious medical and surgical diseases (d) the prevention of complications in extensive or shock-producing surgical procedures, (e) the prophylaxis and treatment of thyrotoxic crises (f) the

(h) the treatment of exogenous poisoning. In the thirty months since January 1932, 9,471 sets have been employed in the hospital—an average of ten sets daily. The frequency with which the sets have been used is sufficient proof of the widespread adoption of this method and its great utility.

The present communication deals further with the therapeutics of the intravenous drip as illustrated by a series of 1,000 consecutive experiences.

AS A PROPHYLACTIC AND SUPPORTIVE IN VARIOUS SURGICAL CONDITIONS

There has been an increasing tendency on the part of surgeons to use the drip as a supportive during the critical period of the operative manipulation, or as a prophylactic against complications. Drips for these purposes were started before the patient came to the operating room, during the course of the operation, or immediately after the patient was returned to the ward.

A *In Appendicitis with Peritoneal Complications*—Sixty-six patients who were admitted to the hospital with acute appendicitis complicated by peritonitis or local abscess formation were given prophylactic intravenous drips. The clinical course was often complicated further by intestinal obstruction, multiple intraperitoneal abscesses, subphrenic collections of pus or sepsis. Many of these patients were admitted with moderate or marked temperature elevation and occasionally with chills. Despite this, Dr. Harold Neuhof, a pioneer in intravenous therapy,⁶ had no hesitancy in employing the drip. In instances in which postoperative chills or elevation of temperature occurred a search for complications was carefully instituted before the culpability of the drip was considered. With the onset of complications or spread of infection, the patient's welfare necessitated the continuance of the drip as a therapeutic endeavor. This was often rewarded by recovery in the presence of grave prognostic signs.

B *In Surgery of the Gastro-Intestinal Tract*—The prophylactic intravenous drip has also been extensively used by Dr. A. A. Berg⁷ in formidable procedures on the gastro-intestinal tract. Two hundred and eighteen patients were included in this group. One hundred and thirty-six were subjected to resection of the stomach, duodenum or jejunum. Thirty-four patients had cancer of the stomach, and forty-three had peptic ulcers. In sixteen, perforation or penetration of the bowel had occurred and eight had secondary resections for gastro-jejunal ulcers. Four of the group had had massive hemorrhages, there were eight with pyloric obstruction and two with pancreatic abscess, as the result of penetration or perforation of peptic ulcers. One patient had a complicating cirrhosis of the liver, another a mitral stenosis, and a third diabetes mellitus. In the majority of instances Dr. Berg was able to accomplish resection of the bowel and anastomosis.

Eighty-two patients had lesions involving the lower part of the bowel and of these seventy had carcinoma of the colon, sigmoid, cecum or rectum. Seven patients had intestinal obstruction from various causes and the rest had miscellaneous conditions such as stab wounds, regional ileitis, diverticulitis, ulcerative colitis, intussusception, perforation by foreign bodies or volvulus.

In the majority of the patients with carcinoma of the large bowel, Dr. Berg successfully performed resection.



Fig. 1—Complete assemblage of intravenous drip showing the set in use with the arm of the patient strapped to a fracture board.

alleviation of postoperative complications such as ileus, gastric dilatation, vomiting and anuria (g) the treatment of various metabolic and toxic conditions such as the alimentary toxicosis of infancy,⁵ dehydration resulting from uncontrollable vomiting or intractable diarrhea, urinary suppression and diabetic ketosis, and

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⁵ Karelitz, Samuel and Schick, Béla. The Treatment of Alimentary Toxicosis. J. A. M. A. 99: 366 (July 30) 1932.

⁶ Neuhof, Harold and Hirschfeld, Samuel. Administration of Sodium Citrate to Control Bleeding. *Ann. Surg.* 76: 1 (July) 1922.

⁷ Berg, A. A. Mortality and Late Results of Subtotal Gastrectomy for Radical Cure of Gastric and Duodenal Ulcer. *Ann. Surg.* 92: 340 (Sept.) 1930.

and anastomosis. The drip was employed by him in several ways. In the less complicated cases it was started during or just after the operative procedure to tide the patient over the first few postoperative hours or days and to maintain nutrition, so that oral feeding might be minimized. In patients who were malnourished or anemic, the drip was used preoperatively to build up the general resistance and to correct the anemia.

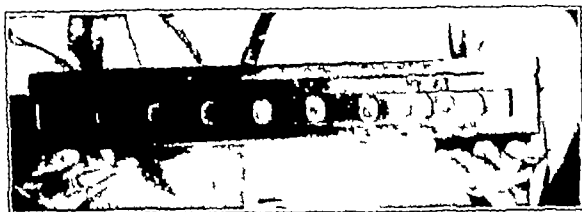


Fig 2—The metal case container devised by Dr. Joseph Turner and provided with slots to permit the entrance of steam during autoclaving.

by the introduction of citrated or whole blood. This type of preparation enabled Dr. Berg to execute major procedures in many patients who, on admission, seemed impossible surgical risks and helped to support others beyond the critical period.

C In the Surgery of the Chest and Nervous System—In similar fashion, Drs. Harold Neuhof and Ira Cohen, respectively, in charge of surgery of the chest and the nervous system, employed the intravenous prophylactic drip as a routine in all serious exigencies that arose in these special fields. In the thoracic service it was almost an invariable custom to start the drip in the operating room in thoracoplasty, pneumotomy, lobectomy, or extensive rib resection in adults, and with simpler suppurative lesions of the pleurae and lungs in infants and young children.

In the surgery of the brain and spinal cord, hypertonic dextrose solutions were of added value in decreasing intracranial tension.⁸

D In Surgery of the Biliary Passages—There seemed to be an increasing tendency to employ the drip in procedures involving the liver and biliary passages. The coexistent disturbances in carbohydrate metabolism, the tendency to bleed, especially in the presence of jaundice, and the metabolic hyperpyrexia that is not uncommonly seen following surgical manipulation in this field furnished ideal indications for the use of a prophylactic drip. In secondary procedures on the biliary passages, the drip was employed prophylactically in virtually every instance.

E In Genito-Urinary Surgery—In genito-urinary surgery, Dr. Beer and his colleagues used the drip prophylactically most commonly in an attempt to maintain adequate urinary secretion. Reflex oliguria and anuria with resultant azotemia are frequent and serious complications following manipulation of the genito-urinary passages. These were experienced particularly in elderly patients whose kidneys had been damaged by prolonged urinary retention or infection. Intravenous dextrose exerted a beneficial diuretic action.

F In Thyroid Surgery—In surgery of the thyroid gland, Dr. Lewisohn used the prophylactic drip in the severe or complicated cases of exophthalmic goiter. It has been our practice⁹ however, to use the drip as

a routine in all operations on the thyroid gland, because of the uncertainty of predicting the occurrence of thyrotoxic storms.

G In the Surgery of Diabetes—In surgery on diabetic patients, the management of the metabolic condition was greatly facilitated by the use of the prophylactic drip. The risk in operating on these patients was usually out of all proportion to the actual extent of the surgical procedure. Simple postoperative complications, particularly vomiting, may readily produce a ketosis. A valuable method of preventing unfortunate sequelae was the liberal supply of fluid, dextrose, saline solution and insulin by the prophylactic intravenous drip.

H In Surgery of Hemorrhagic Diseases—Patients who had hemorrhagic diatheses, from whatever cause and who were subjected to surgical procedures were given the advantage of the drip. The introduction of citrated or unmodified blood not only replaced the lost blood but also aided in increasing coagulability. Dr. Nathan Rosenthal, who is in charge of the hematologic cases, constantly made use of the drip for these purposes.

USE OF THE INTRAVENOUS DRIP FOR COMPLICATIONS THAT OCCUR FOLLOWING SURGICAL PROCEDURES

In a previous paper⁴ the therapeutics of the drip in the actual treatment of surgical complications was amply described and needs little elaboration. In the management of hemorrhage, shock, postoperative vomiting, gastric dilatation, ileus, anuria, oliguria and sepsis, indications were clearly defined and the drip was of incalculable value.

When these symptoms arose, the drip was also employed advantageously for the introduction of drugs and biologicals. In shock or collapse, the value of the drip was enhanced by epinephrine or epinephrine. In postoperative ileus, the introduction of ampoules of pitressin into the rubber tubing above the needle was effectively carried out. Acidosis following vomiting, in diabetic and nondiabetic patients, was treated by the introduction of alkali or dextrose together with adequate amounts of insulin. In sepsis, whole blood was used nonspecifically and, if a specific antibody was available, the serum was dripped in constantly so that enormous dosages were introduced with little risk or reaction. In the thyrotoxic storms of exophthalmic

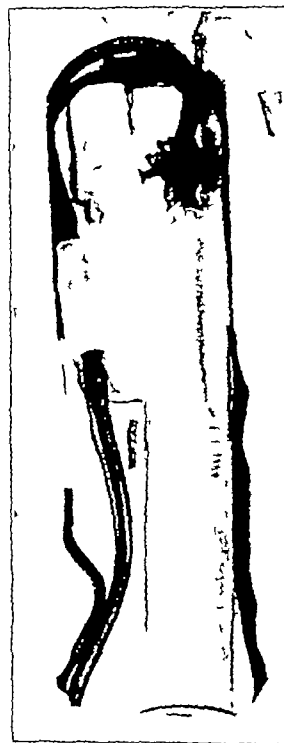


Fig 3—The contents of the metal container showing the gravity flask, the short piece of rubber tubing with the glass drip and a clamp, a long piece of rubber tubing with the stopcock and the long glass connection and a short piece of rubber tubing with the adapter for the needle.

⁸ Kennedy, Foster and Wotris, S. B. Modern Treatment of Increased Intracranial Pressure. J. A. M. A. 98:1284 (April 18) 1931.
⁹ Hyman, H. T. and Kessel, Leo. Studies of Exophthalmic Goiter and the Involuntary Nervous System. Treatment of Patients with Disturbances of the Thyroid Gland. J. A. M. A. 98:2014 (June 13) 1931.

goiter iodides were added directly. In two instances of acidosis resulting from the use of massive doses of ammonium chloride or sodium phosphate, sodium

bicarbonate administered intravenously promptly corrected the metabolic disorder

In traumatotherapy the drip found a great sphere of usefulness in combating both shock and hemorrhage. In skull injuries, the intravenous introduction of hypertonic solutions accompanied by repeated lumbar taps aided in the adjustment of pressure relationship within the cranial cavity.⁸



Fig. 4—A close view of the method of maintaining the needle in the vein by means of sterile adhesive tape

In extensive burns, drips of dextrose with saline and blood were of the greatest value in correcting dehydration and in combating anuria.

THE USE OF THE INTRAVENOUS DRIP IN INTERNAL MEDICINE

Many of the uses of the drip in internal medicine have already been indicated in the discussion of the surgical procedures. In the management of ketosis in diabetes, in the treatment of azotemia in nephritis, in the dehydration that occurs with toxic vomiting or intractable diarrhea in infants⁶ or adults in hemorrhage and in the hemorrhagic diatheses the indications and procedures were self evident. In poisonings with carbon monoxide, barbiturates, morphine, mushrooms, arsenic, colocynth, corrosive mercuric chloride and the cholemia that resulted from cinchophen poisoning the drip was often of great value. In one instance of bromism with cerebral symptoms, the chloride in the drip was utilized to replace the bromide ion.

There is great promise in the extension of the use of the drip in the introduction of massive doses of specific serums and drugs. With specific serums for example, it was a comparatively simple matter to introduce daily from 200 000 to 300 000 units of pneumococcus tetanus or diphtheria antibody in the course of a continuous drip. Serum reactions were greatly minimized by the slow introduction of diluted agents.

With Chargin and Leifer,⁹ we have conducted experiments in massive chemotherapy. Twenty-five male patients with primary seropositive or secondary syphilis received an average of 4 Gm of neoarsphenamine in a period averaging five days. No serious or permanent early or late parenchymal changes occurred in these patients, though febrile reactions were common and at times alarming. Wassermann negativity was obtained in 95 per cent of the nineteen cases followed beyond the critical period of three months, though neither bismuth nor mercury compounds were employed. This work is still in the experimental stage. It is extremely suggestive and may prove of great value.

⁹ Chargin L., Leifer, W. and Hyman H. T. The Application of the Intravenous Drip Method of Chemotherapy as Illustrated by Massive Doses of Neoarsphenamine in the Treatment of Early Syphilis to be published.

UNTOWARD REACTIONS OF THE DRIP

Drips were frequently maintained for several days and in one instance a drip ran for three weeks. Many patients had intermittent drips, so that the total number of sets used far exceeded the number of patients. Despite this, difficulties arose on only thirty-eight occasions, usually because of chills or febrile reactions.

A Chills During Transfusion—Chills followed transfusion eleven times, eight by the citrate and three by the direct method. Citrate transfusions were used proportionately more frequently than direct transfusions. Once a chill occurred with citrate transfusion and then the direct method was employed without chill. Contrariwise in one instance in which the direct method was followed by a chill, the citrate method was used without reaction. The citrate method, introduced by Dr. Richard Lewisohn¹⁰ at our hospital in 1915, is so simple that we find no valid reason for recommending the more complicated direct method. The citrate transfusion was often performed without the patient's knowledge and did not require the complicated set up or the technical skill necessary with the direct methods. To our knowledge, the direct method possessed no positive advantages, and reactions were no less frequent.

B Chills Resulting from the Underlying Pathologic Process—In fifteen instances, chills occurred during the course of a drip but seemed the result of the underlying pathologic condition. In six cases each of extensive genito-urinary infection, or peritoneal involvement, rigors occurred. Often the drip had run for many hours before or after the chill. In one instance each the hyperpyrexia probably was caused by thyrotoxicosis in exophthalmic goiter,¹¹ the terminal febrile elevation of diabetic coma¹² or the onset of pneumonia.

C Chills Resulting from Technical Errors in the Preparation or Administration of the Drip—There remained twelve instances of chills resulting from the drip. In eight of the twelve, the chill occurred at the onset of the drip, probably owing to contamination of



Fig. 5—The same as in figure 4 with most of the adhesive tape removed

the solution by some pyrogenic substance.¹³ In four other instances the chill occurred during the course of the drip. These reactions ceased when analytic reagent sodium chloride, packed in individual stoppered bottles, was substituted for chemically pure sodium chloride, distributed in small barrels, and when a carboy

¹⁰ Lewisohn, Richard. New and Greatly Simplified Method of Blood Transfusion, *M. Rec.* 87:127 (Jan. 23) 1915.

¹¹ Kessel, Leo and Hyman, H. T. Exophthalmic Goiter (Graves Syndrome) and the Involuntary Nervous System. *XI Causes of Death* *J. A. M. A.* 84:1720 (June 6) 1925.

¹² Lande, Herman. The Uncontrollable Causes of Death in Diabetic Coma. *J. A. M. A.* 101:9 (July 1) 1933.

¹³ Banks, H. M. Hyperpyrexia Reaction Following Intravenous Therapy. *Am. J. Clin. Path.* 4:260 (May) 1934.

used as a reservoir for the triple distilled water was thoroughly cleansed. In each instance it was thought that pyrogens had been introduced by these apparently trivial lapses in vigilance. We are in complete agreement with our colleagues Drs. Lewisohn and Rosenthal³ who state in speaking of the reactions following citrate transfusion, that these occurrences are preventable and invariably due to some technical error. Safety is obtained only by eternal vigilance and in our institution we are particularly indebted to Miss Anna Koch, who is in charge of the central room for the preparation of intravenous sets, and to Dr. Nathan Rosenthal, who supervises this department. Even with technically perfect sets, however, reactions will occur unless the clinician is equally careful in performing his end of the set-up of the drip and the current craze for speed will be penalized by reactions particularly when the vehicle contains pyrogenic substances.

DEATHS ASSOCIATED WITH DRIP THERAPY

More important than the febrile reactions and chills, which in themselves did not seriously or permanently jeopardize the patient's chances for recovery, were two instances in which death occurred.

CASE 1—A woman with exophthalmic goiter, who was admitted during a severe thyroid storm received the drip on two successive days, following which she was given 125 cc of citrated blood. The drip had been administered with impunity but following the citrated blood she had a chill lasting forty minutes, her temperature rose to 108 F, and she died within twenty-four hours.

CASE 2—A man with a cancer of the rectum who had had a resection of the bowel and a permanent colostomy, was given a postoperative prophylactic drip for four days, he did well for two weeks, and then a severe diarrhea developed and the patient became dehydrated. The drip was resumed and was followed by a severe chill and a rise in temperature to 108 F. Death occurred four hours later. Autopsy showed no cause of death.

The history in each of these instances strongly indicates that the drip might have contributed to the fatal termination. While terminal hyperpyrexia occurs as part of the clinical syndrome in thyroid "storms" ¹¹ no such explanation can be afforded in the carcinoma fatality.

MISCELLANEOUS NOTES

Though many of our patients were desperately sick and often moribund, at no time did we encounter any circulatory complications that might have resulted from the introduction of the fluid. Local pain and discomfort were frequent complaints and usually responded to changes in position or to sedatives or narcotics. There were no significant local inflammatory processes in the skin or the veins.

As the drip requires frequent adjustment, the patients must be seen from time to time to regulate the rate of flow, add solution or change the position of the arm. This frequently imposed an extra burden on the nursing facilities, particularly when the ward services were active. Under these circumstances, if special nursing was not possible, the drip was removed during the night hours and resumed during the daytime when more members of the staff were in active attendance.

Physicians who practice in outlying communities and who lack hospital facilities for the sterilization of apparatus and solution may take advantage of the ingenious sets that have been commercially devised and that can be purchased and stored indefinitely ¹⁴ These

sets are easily assembled and are free from pyrogenic substances. In our limited experience these sets have been completely satisfactory.

For the benefit of the many clinicians who harbor the fear that an intravenous drip might tend to elevate blood pressure and thus cause or perpetuate bleeding it is important to note that no such occurrence was encountered in the entire series.

During the course of prolonged intravenous infusions the patients should frequently be examined for peripheral edema or edema of the lung. At times these may be due to excessive amounts of salt under which circumstances distilled water may be substituted with from 5 to 50 per cent dextrose. If the edema is severe, the drip must be discontinued temporarily and the patient placed on limitation of fluids or mercurial diuretics.

ABSTRACTS OF CASES ILLUSTRATING THE VALUE OF THE DRIP

The value of the drip may be emphasized by citing briefly illustrations of its use in specific instances in which immediate recovery occurred.

CASE 3—In a patient with tonsillitis an acute glomerulonephritis and uremic coma the drip ran for three days, following which the patient had cluses for four days. Four weeks later the patient had a tonsillectomy without any difficulty.

CASE 4—A patient had a subacute yellow atrophy following the use of cinchophen derivatives. She was admitted with jaundice and fever. The drip ran for two days until the acute symptoms disappeared.

CASE 5—In a patient with a carcinoma of the sigmoid, a colostomy was attempted under spinal anesthesia and shock ensued. The drip was started in the operating room, ephedrine and epinephrine were added to the fluid, and artificial respiration was instituted for the respiratory paralysis. The operation was completed the drip continued to run for two days and the patient made a complete recovery.

CASE 6—A diabetic patient had a duodenal ulcer with pyloric obstruction. Vomiting was persistent and acidosis developed. A drip of dextrose with insulin was given and at the end of three days the patient was in excellent condition. Shortly thereafter the patient was readmitted with hematemesis from the ulcer. Three transfusions of citrated blood were administered, a gastro-enterostomy was performed, and a postoperative prophylactic drip was used for two days.

CASE 7—A child, aged 4 years, suffered extensive first and second degree burns of the face, chest and abdomen, with marked toxemia. A drip was instituted for two days and citrated blood with dextrose was introduced with gratifying results.

CASE 8—A pregnant woman was admitted with the symptoms and signs of an acute surgical condition of the abdomen, shock and persistent vomiting. Because the indications were not clear, the surgeons wisely decided to temporize, and the drip was instituted for twenty-four hours. Following this the symptoms abated and the patient recovered and was discharged.

CASE 9—In this case definite indications for operative intervention abated after the use of the drip for a few days. The patient had a pyloric obstruction from a duodenal ulcer and was admitted with persistent vomiting. He refused operation and was placed on a drip for three days, after which the vomiting subsided and the obstruction disappeared.

CASE 10—A man with a pyelonephritis was admitted in uremia with a urea nitrogen of 108 mg per hundred cubic centimeters of blood. The drip was continued for three days, the urea nitrogen fell to 46 mg per hundred cubic centimeters and the patient recovered sufficiently to be discharged from the hospital.

CASE 11—A patient had a combination of pernicious anemia, diabetes mellitus and cirrhosis of the liver. He was admitted in coma that was probably the result of a combination of hepatic insufficiency and ketosis. The blood sugar was 300 mg. A drip ran for two days and the patient recovered from the acute episode.

¹⁴ The Titus intravenous infusion apparatus (J. A. M. A. 100:1104 [April 8] 1933) and the sterile dextrose in physiologic solution of sodium chloride in vacoliter containers prepared by the Don Baxter Intravenous Products Corporation (J. A. M. A. 102:1154 [April 7] 1934).

CASE 12—A patient injured in a traffic accident had a contusion of the lung with a pleural effusion and marked shock. The drip was instituted for two days and recovery followed.

CASE 13—A patient presented a complicated clinical picture of diabetes mellitus, hypertension and a twisted ovarian cyst. A drip of dextrose and insulin was started before operation and was followed in an hour by a chill and a temperature of 102 F. The drip was discontinued but after operation was resumed again and the patient made a complete recovery. Shortly thereafter she was readmitted with an incarcerated umbilical hernia and intestinal obstruction. Vomiting was persistent. A drip of dextrose and insulin was again instituted and was continued through the hernioplasty and for two days later, after which convalescence was uneventful.

CASE 14—A man with a tabetic bladder and prostatic hypertrophy was admitted in uremia. The drip ran for four days and the patient's condition was sufficiently improved so that the presacral nerves could be resected and a suprapubic cystostomy performed, after which a normal convalescence occurred.

CASE 15—A patient entered the hospital with a toxic hepatitis and gastro-enteritis from arsenical intoxication and a syphilitic iritis. A drip of 10 per cent dextrose with insulin was administered for four days and recovery followed.

CASE 16—This illustrates one of the several instances in which, following acute appendicitis with peritonitis, postoperative ileus developed. A drip was started the stomach drained by a Levin tube and the ileus controlled, and later an intraperitoneal abscess ruptured spontaneously through the wound.

CASE 17—This is also illustrative of several instances in which an incarcerated hernia caused vomiting and distention. The drip was started the hernia was manually reduced the bowels again functioned and, after a free period of a week a hernioplasty was performed.

CASE 18—This was one of several instances of emergency surgery in diabetes. An acute cholecystitis with cholelithiasis developed in a patient. The blood sugar was 270 mg per hundred cubic centimeters and acetonuria was marked. A drip of dextrose and insulin was started a cholecystostomy and drainage was performed. The drip was continued for four days, after which the patient recovered and the diabetes was easily controlled.

CASE 19—Another surgical diabetic patient was admitted in diabetic coma and with a carbuncle of the lip. The blood sugar was 400 mg per hundred cubic centimeters, the carbon dioxide combining power was 11.5 volumes per cent, and acetonuria was marked. A drip of dextrose and insulin ran for two days. The blood sugar fell to 60 mg, the carbon dioxide combining power rose to 57 volumes per cent, the carbuncle of the lip responded to conservative treatment, and the patient was discharged.

CASE 20—This case illustrates the control of the vicissitudes that occur in elderly patients with prostatic hypertrophy. This patient had a first-stage prostatectomy followed by profuse hemorrhage. A drip was given with epinephrine and caffeine, and citrated blood was later introduced. The drip ran for four days, following which the second stage was done with an uneventful convalescence and recovery.

CASE 21—This illustrates another use of the drip in the treatment of poisoning. The patient had barbiturate intoxication and remained in coma for two days, after which the drip was started. In sixteen hours the patient regained consciousness and made a complete recovery.

CASE 22—This is one of several instances in which azotemia occurred during the course of operative intervention on the biliary passages. The patient had a cholecystectomy, and a postoperative prophylactic drip was run for a day and a half. After the cessation of the drip the blood urea nitrogen rose to 66 mg per hundred cubic centimeters and the temperature to 103 F. On the sixth day the patient was stuporous and the drip was resumed for four days, during which time the temperature and urea nitrogen fell to normal.

CASE 23—This illustrates an unusual instance of acidosis, probably from the excessive use of ammonium chloride. Following a suprapubic prostatectomy for fibro-adenoma of the prostate, the patient's blood pressure fell from 160 to 100, he became stuporous and signs of acidosis developed with 14 volumes per cent of carbon dioxide combining power of the blood. A drip

was run for twelve hours, beginning with sodium bicarbonate. The patient reacted thirty minutes after the institution of the drip and made a recovery.

CASE 24—A patient in whom the persistent use of the drip was rewarded by an extraordinary recovery had a common duct stone with jaundice, and a cholecystectomy and choledochotomy were performed. A postoperative prophylactic drip ran for three days. On the fifth day the patient went into collapse from an intraperitoneal hemorrhage, which later became infected. For the next three days the drip was used and citrated blood was added on two occasions. After an intermission of four days this therapy was again resumed for fifteen days. On the twelfth day a direct transfusion was performed, and a chill ensued. The transfusion was repeated without a chill and the patient went on to make a complete recovery.

CASE 25—The use of the drip in preparing patients for operation is well illustrated in a patient who had a bleeding and penetrating duodenal ulcer. For nineteen days the patient was given daily drips and two citrate transfusions. A subtotal gastrectomy was then performed and a postoperative prophylactic drip was started and fortified with a pint of citrated blood. The drip ran for four days, during which time another pint of blood was introduced, and the patient recovered.

CASE 26—This is one of several complicated renal cases in which bilateral calculi occurred. A right nephrostomy and left ureterolithotomy were performed. The blood urea nitrogen rose on the first postoperative day to 53 mg per hundred cubic centimeters. A drip was run for two and a half days and the patient was markedly improved. On the thirteenth postoperative day a pain in the left side and anuria developed. The drip was resumed for four days. Four months later a right nephrectomy was done, following which postoperative vomiting occurred. After a drip that ran for a day and a half, the symptoms were alleviated.

SUMMARY

The intravenous drip has won a permanent place in therapy in our institution. The use of 9,471 sets in thirty months, or of ten sets daily, gives numerical testimony on this point. These figures are supported further by a comparison of the number of intravenous and hypodermoclysis sets that have been used in this period. In 1932, 3,235 intravenous sets were ordered, and 2,157 clysis sets; in 1933, 4,287 of the intravenous sets were used and but 1,539 subcutaneous sets. To date in 1934, 1,949 intravenous sets have been used, and only 322 clysis outfits. In comparison with hypodermoclysis, the intravenous drip has the advantage of more certain absorption, greater adaptability, less discomfort to the patient, and the possibility of adding drugs and whole blood directly into the circulation. At the seemingly slow rate of 2 or 3 cc. per minute, the drip will introduce daily between 2,500 and 4,000 cc. of fluid and may be continued for several days or even weeks, as in patient 18, who received a drip for twenty-four days.

Once the drip is in operation, it is impressive to observe the ease of management of extremely difficult and complicated conditions. By the single technical procedure the problem of nutrition and of the introduction of fluid, salts, drugs, blood and serum becomes automatic.

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ABSTRACT OF DISCUSSION

DR. T. G. ORR, Kansas City, Mo. This important means of therapy is growing in popularity. Continuous venoclysis has been emphasized very much in recent years. The work of Hyman and Hirschfeld has been especially important in introducing the term "speed shock," perhaps not of the term itself, but of emphasizing the importance of speed in giving intravenous solutions. They have shown conclusively that many solutions can be given safely if they are given slowly enough. There are four major dangers, perhaps not so great if given properly but nevertheless constantly present: (1) the immediate

reaction, (2) the possibility of overloading the circulatory tree (3) the production of edema, (4) the production of pulmonary embolism. Any one of those four, I believe, may happen, although perhaps not very frequently. Two or three deaths that occurred recently may have been caused by pulmonary embolism, secondary to continuous venoclysis. This led to experimental work, which has been carried out in the University of Kansas surgical clinic by Dr Mervin Rumold in animals, continuous venoclysis being given as long as the animal lived. He has done this work in several series of experiments with simple salt solution, dextrose in 10 per cent solution, a combination of the two, and by simply placing cannulas and needles in the vein. In every instance he found pulmonary involvement after experimental introduction of these solutions. There is a local irritation of the vein, in which a thrombus forms. Emboli break off and float into the lung. Experimentally, there is certainly definite danger in giving continuous venoclysis by the drip method. Solutions were given very slowly, the animals watched twenty four hours of the day, and inspected every hour to see that the solutions were running properly. In every single instance there were pulmonary complications. It is to be remembered that nature never intended feeding, watering and treatment to be given by vein and that the insult should be properly respected.

DR. PAUL TITUS, Pittsburgh. The indications presented for prolonged, slow intravenous medication seem to be many, but probably they are still incomplete. The advisability of terming this "intravenous drip" is questionable, however and I prefer Hendon's term, prolonged venoclysis," or that of Fantus, "phleboclysis." The solution does not drip into the vein, it runs in a steady, slow stream through the needle, even though a glass drip bulb is sometimes used to measure the rate of flow. Other instruments, such as the one devised in our clinic for several different types of intravenous injections of dextrose, have a valve instead of the drip bulb for this slow flow, and the term 'drip' may give an incorrect impression of the operation. Being convinced of the therapeutic value of the prolonged venoclysis, I should have liked to hear more about flow rates and total dosages. My colleagues and I have been interested in the intravenous use of dextrose solutions in pregnancy toxemia and gynecologic surgery. Clinicians are not dependent on prolonged venoclysis for this, as prolonged injection is not always necessary, but we have available single large therapeutic doses of dextrose (from 75 to 100 Gm.) that may be given faster than the prolonged venoclysis. For example, a 25 per cent solution should be given at 3 cc. per minute in an average sized adult to maintain the physiologic rate of Wilder and Samson, namely, 0.8 Gm per kilogram of body weight per hour, and weaker solutions proportionately faster. The proper rate may easily be computed. Venoclysis of dextrose solution, if prolonged for hours or days in a patient who particularly needs this on account of various chronic states or dehydration, must be given much more slowly than single doses in order to avoid pancreatic stimulation and overproduction of endogenous insulin with hypoglycemic reactions and shock in the actual presence of an intravenous injection of dextrose, if such a paradoxical fact can be accepted. On this account the concentration of the dextrose solution must be reduced for venoclysis to 5, or at the most 10 per cent, while the flow rate must also be slowed down, like that of the hypertonic solutions, to not more than 4 or 5 cc. per minute, in order to avoid this overstimulation of the pancreas, whereupon venoclysis may be prolonged indefinitely to the great benefit of the patient.

DR. ROBERT KAPINOW, Lafayette, La. The intravenous drip is indicated in every condition that results in a blood concentration. This includes the entire field of anhydremia. The mechanism of anhydremia may be divided into three groups: those due to simple water deprivation; those due to excessive fluid lost either through profuse vomiting, sweating or diarrhea, and, lastly, those conditions produced by a loss of fluid from the blood stream due to increased capillary permeability. In the first group, including such conditions as water deprivation on the desert for example, or as found in the mentally deranged patients are quickly restored by the administration of relatively small amounts of fluid introduced through any channel. In the second group are cases of profuse sweating in deep mines or in boiler rooms. Large volumes of fluid

containing sodium and chlorine ions are lost in the profuse vomiting of pregnancy, high intestinal obstruction in adults and pyloric obstruction in infants. Numerous drugs likewise incite pernicious vomiting. Various gastric and intestinal fistulas rapidly lead to depletion of the water storage of the body. The severe diarrheas of cholera or the bacillary types of dysentery, colitis of the ulcerative or tuberculous type, the diarrheas of infancy or the excessive use of purgatives may account for the loss of many liters of fluid daily. This group requires more than the simple administration of plain water. Either sodium chloride or dextrose must be administered. In this group, any method of introduction of fluids will avail. In the third group, resulting in anhydremia due to loss of fluid from increased capillary permeability, the intravenous drip is the most important. These are gas poisoning, influenza, extensive superficial burns, eclampsia, severe urticarial phenomena, acute medical shock or histamine or peptone shock.

DR. HAROLD T. HYMAN, New York. Dr Titus's criticism of our title is just. We use the term "intravenous drip" or "slow intravenous drip" in order to emphasize to the clinicians the necessity of doing this procedure slowly. In our own institution, and despite everything we may say, we find, in a crisis, that the interns become alarmed and turn the drip on as rapidly as possible. Concerning Dr Orr's warning about reactions, I wish to emphasize that I think that it is only fair, though, to point out that one cannot compare conditions in a rabbit weighing 4 or 5 Kg and those in a normal individual weighing 50 or 60 Kg. One cannot give a continuous slow intravenous drip in a rabbit at a rate comparable to 2 cc a minute without that drip stopping up. If it does run, it means that the rabbit is getting comparatively more fluid, and under those circumstances there will be edema of the lungs and emboli. In our clinical experience, even in two fatal cases, we did not find pulmonary emboli. If pulmonary emboli occur, it is probably due to a technical error comparable to what we call speed shock.

THE METABOLISM OF LEVULOSE

VI THE INFLUENCE OF THE LEVEL OF OVARIAN FUNCTION

ALLAN WINTER ROWE, PH D

MARY A McMANUS, AB

AND

ALBERT J PLUMMER, AM

BOSTON

Earlier communications on the levulose tolerance have dealt severally with certain general conditions¹ and with the influence of hepatic dysfunction² and of pregnancy³. The present paper is a complement to the last of the foregoing and deals with the influence of the level of ovarian activity. Previous studies in this field in which galactose was the test sugar⁴ had demonstrated a very marked effect of the age and sexual status on the amount of the latter sugar susceptible of utilization by the organism. In the present instance, similar series have been studied, levulose of the highest purity being used, a necessary precaution,¹ for purposes of control the galactose tolerance has also been

Dr Rowe died, Dec. 6 1934

From the Evans Memorial Massachusetts Memorial Hospitals.
Read before the Section on Pathology and Physiology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1 Rowe, A. W., McManus, Mary A., and Plummer, A. J. The Metabolism of Levulose I. Some General Considerations on Provocative Levulosuria. *Am J M Sc* 186 15 (July) 1933.

2 Rowe, A. W., McManus, Mary A., and Plummer, A. J. The Metabolism of Levulose IV. The Hepatic Influence on the Utilization of Galactose and Levulose. *New England J Med* 210:1163 (May 31) 1934.

3 Rowe, A. W., McManus, Mary A., and Riley, G. A. The Metabolism of Levulose VII. The Influence of Pregnancy. read before the Annual Meeting of the American Physiologic Society, New York, 1934.

4 Rowe, A. W., and McGuinness, Mary. The Metabolism of Galactose IV. The Effect on the Tolerance of the Level of Ovarian Activity. *Am J Obst & Gynec* 16 637 (Nov) 1923.

determined. The general method of approach has already been discussed,¹ it may be enough here to state that each subject was given a thorough general clinical and laboratory survey, which included as a routine a careful physical examination, the compilation of an exhaustive medical history, analyses of the blood and urine, measurement of the respiratory metabolism,

TABLE 1—Composition of Groups

Group	No. of Cases	Age Range	Average Age
Prepubescent	13	5-13 years	10 years
Pubescent	11	11-14 years	13 years
Adult	22	18-26 years	20 years
Castrate	15	21-51 years	34 years
Castrate with endocrine complication	4	50-60 years	57 years

and a variety of other tests and observations among which were a cardiogram, an audiogram, a radiologic study and a neurologic examination.⁵ As in the earlier studies, the Hofmeister⁶ technique, the administration of successive graded doses, was followed, an exceeded tolerance was indicated by the appearance of detectable amounts of levulose in the urine. A positive qualitative test was followed by a quantitative study, the Benedict⁷ and Folin-Berglund⁸ methods being supplemented by fermentation with washed yeast and by the polariscope. The complete analytic approach will be discussed in a forthcoming paper shortly. Earlier studies¹ have demonstrated the limitation of

TABLE 2—Normal Subjects

Author	Dose	Levulosuria
Sabatowski A. R. Gaz. lek. 26:1291 1907	100 Gm	0
Strauss H. Charité Ann. 8:170 1903	100 Gm	0
Landberg G. Deutsche med. Wchnschr. 29:33 (Aug. 6) 1903	100 Gm	57%
Achells H. Klin. Wchnschr. 8:641 (April 2) 1929	60 Gm	9%
Jacoby H. Deutsche med. Wchnschr. 7:3232 (Feb. 4) 1927	50 Gm	0
von Noorden Carl. Die Zuckerkrankheit ed. 3. Berlin E. A. Hirschwald 1910	17 to 21 Gm per kg	
Goetsch E. Cushing, H. and Jacobson C. Bull. Johns Hopkins Hosp. 22:163 (June) 1911	100 Gm	

the approach by the blood sugar curve method, particularly when levulose, with its slight influence on blood sugar levels, is the test sugar. While 10 Gm differences were selected for the galactose program, the recognized higher tolerance of the organism led to the adoption of the larger interval of 25 Gm for grading the levulose dosage. The general program can be shown most compactly in chart 1.

Modifications of this general scheme were easily applied to special cases, thus effecting a saving in time and in the costly sugar used for the study. The basic data of the several groups falling in this series are collected in table 1. Additional details are given in the discussion of the results with each of the several groups. The recognition of departures from the normal presupposes a definition of the latter quantity. As else-

where noted,¹ there are but limited reports of normal studies in the literature, and the results recorded show a serious lack of concordance. The use of so-called hospital normals as test subjects and failure to make due allowance for the carbohydrate paradox (Allen) are unquestionably principal factors in producing this lack of agreement. A few data drawn from the literature serve to illustrate the conflicting evidence. The earliest papers derive from the studies produced by Strauss's¹⁰ initial proposal to use levulose tolerance as a test for liver function, the two latest, the reawakened interest in the potentialities of this sugar for function testing.

Turning to the first study group, we have a series of thirteen normal children ranging in age from 5 to 13 years, none of whom had established the catamenia or indeed gave somatic evidence of an imminent approach of maturation. They were hospitalized during the study, and the more elaborate and detailed approach

TABLE 3—Prepuberal

Datum	Variation	Average
Weight deviation	+10% to -17%	-8%
Basal rate deviation	+1% to -17%	-8%
Alveolar carbon dioxide	33 mm. to 43 mm.	39 mm.
Blood sugar	80 mg. to 107 mg.	93 mg.
Galactose tolerance	20 Gm.	20 Gm.
Levulose tolerance	75 Gm. to 100 Gm.	81 Gm.

designated as the "long form"⁵ was utilized for the investigation of each case.

All these children had been previously institutionalized¹¹ to correct very poor social backgrounds, and the prevailing underweight of the group reflects these unfortunate earlier conditions. They were being most adequately provided for at the time of the transfer for this study, however, and as a further safeguard were given several days of liberal feeding¹² before the sugar testing was initiated. The basal rate levels were probably influenced by an earlier protein inadequacy associated with their undernutrition, although but one (-17 per cent) exceeded the conventional low limit of the normal. The prevailing level of alveolar carbon dioxide tensions was somewhat low throughout the group, and such levels we have found to be a rather common observation in similar groups of children. There is no evidence of an acidosis, it is possibly refer-

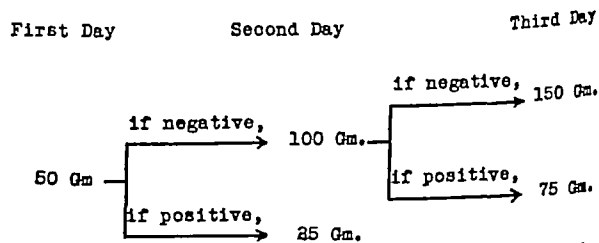


Chart 1—Levulose program: additional doses at appropriate levels when first three days fail to give positive test.

able to their sexual status, but the question is one falling outside the present discussion. Blood sugars are normal, the galactose tolerance was uniformly at the level that the earlier studies have shown to be that of normal prediction. The levulose tolerance, i. e., initial positive response, was at either 75 or 100 Gm, the first

5 Rowe, A. W. The Differential Diagnosis of Endocrine Disorders. Baltimore: Williams & Wilkins, 1932. pp. 14-16 and 17.

6 Hofmeister, F. Ueber die Assimilationsgrenze der Zuckerarten. Arch. f. exper. Path. u. Pharmacol. 25:240 (Feb. 21) 1888-1889.

7 Benedict, S. R. A Reagent for the Detection of Reducing Sugars. J. Biol. Chem. 5:485 1909. Selivanoff, T. Notiz über eine Fruchtsäure-Reaktion. Ber. d. deutschen Chem. Gesellschaft. 20:181 (Jan. 25) 1887.

8 Benedict, S. R. The Detection and Estimation of Glucose in Urine. J. A. M. A. 57:1193 (Oct. 7) 1911.

9 Folin, Otto and Berglund, Hilding. A Colorimetric Method for the Determination of Sugars in Normal Human Urine. J. Biol. Chem. 51:209 (March) 1922.

10 Strauss, H. Zur Funktionsprüfung der Leber. Deutsche med. Wchnschr. 27:757 (Oct. 31) 1901.

11 In these studies we are under especial obligation to the Home for Destitute Catholic Children and in particular to Dr. John A. Foley under whose medical supervision these little patients fall.

12 Traugott, K. Klin. Wchnschr. 1:892 (April 29) 1922.

predominating, as could be inferred from the reported average. The child organism is apparently able to utilize some four times as much of this hexose as of galactose.

The children in the next group (table 4) ranged from those who had just matured to those who had been menstruating for a number of months but all less

TABLE 4—*Pubescent*

Datum	Variation	Average
Weight deviation	-28% to +4%	-10%
Basal rate deviation	-1% to (-2%)	-13%
Alveolar carbon dioxide	35 mm to 38 mm	37 mm
Blood sugar	Not secured	
Number of periods	1 to 10	4
Galactose tolerance	20 Gm to 40 Gm	26 Gm
Levulose tolerance	75 Gm to 100 Gm	89 Gm

than one year. They were drawn from the same institution as the prepubescent children and the same conditions influencing weight had been operative with them. They too were hospitalized and had been given several days of preliminary feeding before the sugar tests were begun. Several of them had basal rates below the conventional limit of -10 per cent, the same earlier condition of a partial protein inanition obtained even more definitely in this group, as from their age they had been longer subjected to subversive nutritional influences. The one patient with marked lowering (-25 per cent) gave no evidence of other physical abnormality than that of underweight (-14 per cent). A thyroid failure could not be excluded in this single instance but, as this condition would have but little if any influence on the sugar tolerance, inclusion of the

TABLE 5—*Young Adult*

Datum	Variation	Average
Weight deviation	+40% to -16%	-2%
Basal rate deviation	+6% to -19%	-6%
Alveolar carbon dioxide	39 mm to 47 mm	41 mm
Blood sugar	80 mg to 95 mg	87 mg
Galactose tolerance	40 Gm	40 Gm
Levulose tolerance	100 Gm to 125 Gm	105 Gm

case is felt to be warranted. The low alveolar carbon dioxide has already received comment with the preceding group.

The galactose tolerance ranged from the prepuberal to the adult tolerance with rough correlation between sugar level and duration of the catamena. Previous studies⁴ already cited have shown that the adult level of 40 Gm is usually attained by the end of the first year or shortly thereafter.

The levulose tolerance shows the same range as with the preceding younger group, but the average is higher, the 100 Gm doses being more frequently encountered. In other words, levulose tolerance shows the same upward trend as does galactose, but in a much less marked degree and seemingly at a slower rate of change.

The group of young women¹³ in table 5 were drawn from several sources, chiefly from the students in two women's colleges and a nurses' training school. They were studied initially under the program of the abridged type ("short form"),⁵ supplemented by such tests and observations as the apparent needs of the individual case required. The one obese girl (+40 per cent) had a somewhat low sitting height index, so that the expression of her overweight is somewhat too high

She was a large framed powerful girl living an actively athletic life, her overweight was seemingly no more than a personal characteristic. Only two of the basal rates were significantly below conventional normal standards (-16 per cent, and -19 per cent), and in both a dietary tribute to current mores was probably the background, as both had low urine nitrogen elimination. They made the sacrifice however of an ample carbohydrate intake for several days before the sugar testing. The carbon dioxide tensions and blood sugar levels are normal both as to average and as to the individual measurements. The galactose tolerance was at the 40 Gm level, which past experience has indicated to be the norm for the premenopausal female adult. Levulose tolerances likewise show a continuance of the upward trend manifested in the pubescent group, with 100 Gm the common result but a sufficient number at 125 Gm to exercise a modest effect on the average. We believe that both must be regarded as normal but

TABLE 6—*Castrates Recent Two to Three Weeks*

Datum	Variation	Average
Weight deviation	+45% to -20%	+1%
Basal rate deviation*	-10% to -1%	-14%
Alveolar carbon dioxide	38 mm to 46 mm	41 mm
Blood sugar	82 mg to 97 mg	89 mg
Galactose tolerance	10 Gm to 30 Gm	22 Gm
Levulose tolerance	75 Gm to 125 Gm	80 Gm

* Incomplete

that the lower level of 100 Gm will be more frequently encountered among the normal, healthy adult group. While the averages for the three groups already discussed show an unmistakable upward trend, there is lacking among them those relatively sharp lines of demarcation which mark the progressive stadia of the galactose tolerance.

As has been noted in several of our previous papers, there is reason to conceive of a special influence of the mammary glands on the metabolism of galactose. Certainly both synthesis and storage of this sugar are implicit in lactation, and we have reported two small series of cases¹⁴ in which patients after bilateral mastectomy, in which malignant neoplasm was ruled out, showed a decline of the galactose tolerance to the characteristic prepuberal level of 20 Gm. Levulose would not enter into any such selective mechanism and the

TABLE 7—*Castrates Established One to Eleven Years*

Datum	Variation	Average
Weight deviation	+50% to -10%	+2%
Basal rate deviation*	-18% to -32%	-20%
Alveolar carbon dioxide	39 mm to 45 mm	42 mm
Blood sugar	89 mg to 104 mg	97 mg
Galactose tolerance	20 Gm	20 Gm
Levulose tolerance	25 Gm to 150 Gm	96 Gm

* Incomplete

† Low protein; later record -10 per cent

present data offer some further support to the general hypothesis. In the second paper cited,³ removal of the breasts produced no significant change in the response to levulose.

Whatever may be the true explanation, it must be recognized that while changes in the levulose tolerance show a rough qualitative agreement with those of galactose, quantitatively they are less significant and less sharply defined.

¹³ The authors are indebted to all who participated in these studies in the case of the patients at no small inconvenience to themselves.

¹⁴ Rowe A. W. and McGuinness Mary. The Metabolism of Galactose. V. The Effect on the Tolerance of the Cycle of Reproduction. Am J Obst & Gynec 1: 351 (March) 1929. Rowe, McManus and Riley.

Turning to pathologic material for an extension of the present thesis, the results of castration may next be considered. In dealing with individuals presenting this condition, however, extreme caution is needed in the interpretation of results. Residua of the influences which initially led to the operation may in themselves modify the sugar metabolism and the presence of significant and possibly independent complications arising

TABLE 8—Castrates With Endocrine Complication

Datum	1*	2	3†	4	Average
Complication	T+	T+	T+	Pan	
Period of castration years	16	13	16	4	12
Weight deviation percent	-16	-31	+14	+32	
Basal rate deviation percent	-51	+53	-2	-10	
Alveolar carbon dioxide mm	42	39	46	39	42
Blood sugar mg	83	86	89	235	
Galactose tolerance Gm	10	10	10	10	10
Levulose tolerance Gm	100	123	100	23	

* Also bilateral breast amputation
† Operated hyperthyroid

at a later date must not be overlooked. For this reason the standardizing studies were made as comprehensive as possible, even with this precaution the need for conservatism in interpretation remains.

The patients in this group (table 6) were examined immediately at the end of their convalescence following castration. Cystic ovaries and inflammatory pelvic conditions—in two instances only of a possibly specific origin—were the basis of the surgical intervention. The weight fluctuations reflect the status of the individual subject, some of whom were undoubtedly cases of functional hypogonadism prior to the operative confirmation of their endocrine status. The basal rates all show a downward tendency, the well known difficulty of securing basality in the case of ovarian failure is emphasized in this group with the added factor of the disturbance of a recent major operation. The carbon dioxide values are transitional and the blood sugars normal as was to be anticipated. The galactose tolerance shows fluctuations both above and below the anticipated terminal level, though the average closely approximates it. The results with levulose practically duplicate those with the galactose, although no one test was inferior to the lower level observed in prepubescence. The average, 86 Gm, approximates that of the latter group.

The second group of castrates (table 7) is composed of a group of women whose ablating operation had taken place from one to eleven years prior to the time of study. With this group the establishment of compensatory adjustments and the development of later complicating and unassociated conditions are both factors to be borne in mind in evaluating the results. Broadly the general data reflect the underlying condition. The tendency to obesity is more pronounced, the basal rate levels are more representative. The carbon dioxide tensions in the relatively normal average reflect a possible compensatory mechanism. The galactose tolerance is at the anticipated prepuberal level, an evidence of the probable absence of disturbing factors that might affect the metabolism of this sugar.

On the other hand, the levulose values show a very wide scatter from a point well below the normal low prepuberal tolerance to one superior to that of the normal adult. With so small a series as the present, a single extreme value exercises an undue influence on any average. For example deleting the single high

value (150 Gm) lowers the average to 85 Gm, while if both of the extreme cases are omitted the average is at the wholly normal level of 100 Gm. Careful study of these individual cases failed to disclose any known reason for their profoundly altered levulose metabolism. The values can only be given as they stand with just recognition of the limitations imposed by so small a group.

One last small group may be added in which an ovarian failure of surgical origin is complicated by a known endocrinopathy involving another focus. Each case must be recorded separately, as there is lacking the necessary parity for collective presentation.

Patients 1 and 2 were castrates of sixteen and fifteen years' standing respectively, with a current hypothyroidism. In addition, in case 1 both breasts had been removed some two years previously for a non malignant condition. They both presented manifestations characteristic of the active thyroid status, the galactose tolerance was depressed to a 10 Gm level, the levulose figures, on the other hand, were those of normal intact adults. Seven other cases of uncomplicated hyperthyroidism ranged from 25 to 125 Gm with an average of 92 Gm (unpublished data), the depressing effect of this condition on the galactose tolerance has been noted in several of our earlier papers. Patient 3 had been successfully operated on for a toxic thyroid some twenty years earlier, and four years later the ovaries had been removed. The normal basal rate may be a reflection of an algebraic compensation between a residual upward influence of the remaining thyroid tissue and the depression from the castration. The galactose level at 10 Gm offers modest support for this interpretation. The levulose tolerance is again that of the normal adult.

Finally, case 4 was one of mild diabetes in which castration had been done four years previously. The galactose level is consistent with this double depressing influence and here the levulose result is equally responsive to the pancreatic action. So low a level, however,

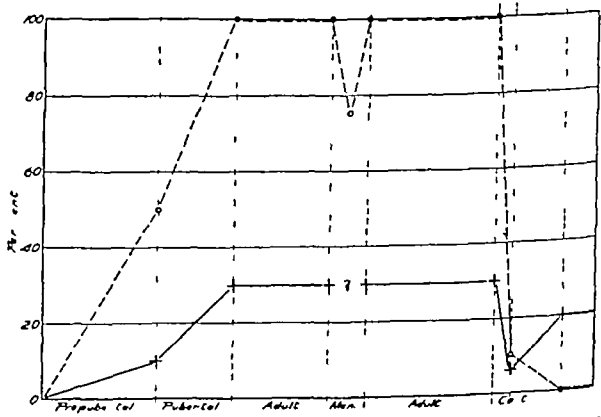


Chart 2—Solid line level of galactose tolerance broken line level of levulose tolerance

is not to be regarded as characteristic, as a small group of patients with uncomplicated diabetes gave an average of 73 Gm for their levulose tolerance (unpublished data).

COMMENT

In view of the running comment on each series, but little additional discussion is needed. Obviously the mechanisms of utilization of the two sugars are not identical, although both respond to certain agencies in kind though not in degree. The level of ovarian

activity, so potent in determining either directly or indirectly the utilization of galactose, is but qualitatively reflected in the changing levels of levulose metabolism. Castration produces a wide scatter in the levulose results, some of which are presumably mediated by agencies at present unknown and seemingly not operative in the metabolism of galactose. A clear-cut thyroid effect on levulose is not significantly indicated in the few available results.

With recognition of its limitations, the fluctuations of the two sugar tolerances may be diagrammatically presented (chart 2)

ABSTRACT OF DISCUSSION

DR HENRY J JOHN, Cleveland This work presents an interesting problem, apparently new, the effect of the gonads on the metabolism of levulose. I found something of that sort in my studies of the dextrose tolerance work in the various endocrine groups, gonadal and otherwise. The metabolism of levulose was once considered to be largely a liver function. Here it is being found that there are other things which are affecting it and changing the picture. Extreme care must be used with regard to what is called a normal standard, a normal individual. If one goes over a small series of any type of test one gets a certain impression. After one has multiplied that series 100 or 1,000 times the picture usually changes extremely, sometimes one has just the opposite impression. The final word here, of course, will be said when the work has progressed still further and when more has been learned about the endocrine end of it as it affects the metabolism of levulose.

ALLERGY TO CHICLE

PRELIMINARY REPORT

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My object in this paper is to report the occurrence of allergic manifestations following the use of chewing gum. There has been no similar report, to my knowledge, in the literature.

CASE 1—A. S., a white school boy, aged 16, seen in October 1933 complained that whenever he chewed gum he experienced attacks of sneezing, itching and swelling of the eyes, and occasionally spasmodic coughing. These symptoms generally set in within one half to three quarters of an hour after the gum was first taken and subsided about two hours after its removal. Subsequently he observed that, if he chewed gum more rapidly, the onset of the symptoms was accelerated.

The past history was that of the usual childhood diseases. There was no history of symptoms of the upper respiratory tract. The tonsils had been removed some years before. With the exception of the present complaint there was no previous history of any form of allergy or drug idiosyncrasy. His younger brother is under treatment for ragweed hay fever and food asthma, and his mother is subject to migraine.

The boy was well developed and nourished, was 5 feet 7 inches (170 cm) in height and weighed 135 pounds (61 Kg). The eyes were normal and the conjunctivae clear. There was no obstruction of the nasal passages, and the nasal mucous membrane appeared normal. There was evidence of tonsillectomy. Examination of the thorax showed the heart and lungs to be within normal limits. The blood pressure was 110 systolic and 80 diastolic. No abnormalities were noted.

In order to establish which constituent of chewing gum caused the allergic symptoms, its several ingredients were used in testing. Intradermal tests with milk and corn meal were negative. A drop of oil of peppermint (he was partial to this flavor), placed on the tongue did not result in any reaction. He was tested for salicylates because oil of wintergreen which contains from 98 to 99 per cent of methyl salicylate is used

as a flavoring in some chewing gum. Acetylsalicylic acid was used for this test by having the patient ingest a five grain tablet and also by the method suggested by Duke.¹ The latter consists of placing several small specks of a tablet on the patient's tongue and allowing the alkaline juices of the saliva to break up the acetylsalicylic acid into sodium salicylate and sodium acetate. The reaction, if any, should occur within one minute. No reaction either immediate or delayed occurred in either instance.

The final substance to be investigated was chicle, and the boy was therefore tested with various extracts of both refined and crude chicle.² Three minutes after the introduction of concentrated chicle extract intradermally the patient commenced to sneeze, the spasms were progressively more violent, the conjunctivae became congested and he complained of severe itching of the eyes and was restless and irritable. Dyspnea and spasmodic coughing became evident and later edema of the eyelids was observed to be setting in. Locally, the sites of the intradermal tests showed wheals measuring 7 by 3 cm in diameter with marked pseudopods. The reaction to the crude and refined chicle extracts appeared to be identical. Because of the severity of the reactions, weaker extracts (4 per cent) were then prepared and on a subsequent occasion the boy was retested with them. At this time the chronological sequence of the symptoms was carefully observed. Five minutes following the tests with the dilute extracts the boy complained of dizziness, which was followed in four minutes by itching of the eyes and sneezing. The latter symptoms, which came on about the same time, became progressively more severe in character. Fifteen minutes after the tests were introduced asthmatic breathing was noted, and twenty minutes afterward edema of the left lower eyelid. The latter became more marked gradually, involving also the upper lid. The wheals that occurred at the sites of the tests reached their maximum dimensions in fifteen minutes and exhibited marked pseudopodic processes. The most marked local reaction occurred from chicle that had been freed from the acetone-soluble fraction and dissolved in Coca's solution. The patient complained of marked itching of the arm around the wheals.

On both occasions, inspection by a nasal speculum revealed the mucous membrane of the nose to be edematous and the turbinates turgescant. The conjunctivae were also congested. On auscultation of the chest, sibilant and sonorous rales were heard. One cc. of epinephrine was required to control the severe symptoms following the use of the concentrated extracts, and 0.3 cc. when the dilute preparation was used. Ephedrine in combination with a sedative was prescribed to be taken at home, on account of the marked systemic reaction. The edema of the eyelids was the last symptom to disappear in both instances.

CASE 2—M. R., a white man, aged 29, a dentist, seen, March 23 1934 complained of a clogged nose, rhinorrhea ever since he could remember, and sneezing attacks with general aggravation of symptoms since December 1933. The rhinorrhea and sneezing were of such a severe character as to inconvenience him seriously and embarrass him in the practice of his profession. No antecedent family history was elicited, but his son aged 3 years, had manifested urticarial eruptions on several occasions. The personal history was that of frequent "colds" all the year round as long as he could remember.

The patient had a mild tendency to obesity, was 5 feet 7½ inches (171 cm) in height and weighed 168 pounds (76 Kg). The nose was obstructed, the turbinates were markedly turgescant, especially on the right side, the septum was deviated and the mucous membrane was pale and boggy in appearance. The tonsils were out and there was no postnasal discharge. The heart showed no evident enlargement. The sounds were somewhat distant. The blood pressure was 110 systolic and 84 diastolic. The lungs were clear at the time of the examination and other physical manifestations within normal limits.

1 Duke, W. W. Aspirin Allergy. A Method of Testing Aspirin Sensitiveness and a Method of Avoiding Aspirin Catastrophes, J. Allergy 5: 426 (July) 1933.

2 The chicle used was obtained from the three main manufacturers of chewing gum in the United States. Two types of extracts were prepared for testing: one was crude or refined chicle in Coca's solution or distilled water; in the other type the chicle was first subjected to extraction with acetone, and the acetone-insoluble residue was extracted with Coca's solution or distilled water.

Intradermal tests were performed with the usual inhalants and foods. Orris root, 0.001 mg of nitrogen per cubic centimeter of extract as determined with the Kjeldahl method, when introduced intradermally, resulted in a tremendous wheal about 6 by 4 cm in diameter with pseudopods. Violent sneezing and rhinorrhea set in about three minutes after the test was introduced. Epinephrine was required to control the symptoms. Marked reactions were also obtained to some vegetables and fruits and also to timothy, but without systemic reactions.

Intradermal tests with extracts of chicle on another occasion resulted in very marked wheals similar to those in case 1 and approximating the patient's orris root reaction, including the nasal and asthmatic symptoms. Clinically it was difficult for him to note any effects from chewing gum as he had been having nasal symptoms almost continuously.

Twenty-five other cases of allergic individuals, mostly cases of seasonal hay fever, and six nonallergic arthritic patients were tested with the concentrated extracts of chicle. Only one case exhibited a moderately positive local skin reaction, but no confirmatory clinical history was elicited.

Ordinary chewing gum has as its base chicle gum, into which are incorporated sugar, corn syrup and flavoring oils. The most common of the latter are wintergreen, peppermint and spearmint. One brand of chewing gum contains also milk. The formula varies with the manufacturer, but the base used in most cases is one or another variety of chicle.

Allergy to chicle is of interest because of its widespread use in the manufacture of chewing gum and medicated gums.

Chicle is the solidified latex or sap of one or more varieties of the species of the genus *Achras* trees.³ The latter are native to Central and South American countries, notably southern Mexico, British Honduras and Guatemala. *Achras zapota*, a plant common in all tropical countries, is stated to be the source for the best grades of chicle. Most of the chicle imported into the United States comes from Mexico.

Chemically, chicle is a mixture of water-soluble gum, resins, gutta and mineral constituents. The composition, according to Dannerth,⁴ is given in the accompanying table.

The chemical nature of the substance in chicle which produced the symptoms cited in our case is at present being investigated.

Composition of Chicle

	Per Cent
Resin (acetone soluble)	40
Gutta and carbohydrates	17.4
Proteins	0.6
Water	3.1
Ash	4.7
Foreign matter	2.3

Before the crude chicle is used in the manufacture of chewing gum, according to Roberts,⁵ it is washed⁶ and dried in separate chambers to reduce the moisture to approximately 4 to 6 per cent. The chicle is then heated until it flows freely and allowed to pass filters under 200 pounds of pressure to remove the fibrinous material. The purified gum is now passed into mixing kettles, where the sugar and flavoring oils are incor-

porated. Specialized automatic machines are used in producing from this mixture the final product ready for market.

SUMMARY

Two cases exhibited marked positive local skin reactions when tested intradermally with extracts of chicle. In one case (case 1) Cooke's postulates⁷ were satisfied. These require (1) that there should be a positive skin reaction with the suspected substance, (2) a history of exposure to the substance in question, and (3) the ability to reproduce the symptoms when the patient is exposed to it. The other case (case 2) presented obvious difficulties in establishing a positive clinical history. The marked positive skin tests, however, associated with systemic reactions, leads one to suspect strongly that this patient also had genuine chicle allergy.

It was also proved that chicle does not act as a skin irritant producing nonspecific reactions by the fact that out of twenty-five allergic patients only one showed a moderately positive skin reaction.

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A SUCCESSFUL METHOD FOR VACCINATION AGAINST ACUTE ANTERIOR POLIOMYELITIS

FURTHER REPORT

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PHILADELPHIA

As recently stated by Kolmer and Rule,¹ it is possible to vaccinate *Macacus rhesus* monkeys safely and successfully against acute anterior poliomyelitis with subcutaneous and intracutaneous injections of vaccines of living but attenuated virus composed of 4 per cent suspensions of poliomyelitic monkey spinal cord in sterile 1 per cent solutions of sodium ricinoleate. All of a series of eighteen monkeys were immunized sufficiently without the slightest evidences of ill effects to protect them completely against infection following the intracerebral injection of about eighteen minimal infective doses of virus given under ether anesthesia about one month after the last dose of vaccine, the disease developing in unvaccinated controls in from five to nine days after inoculation.

Following these observations, two of us received subcutaneous injections of 0.5, 1.5 and 2 cc. of the vaccine at intervals of five days without any ill effects whatever except local reactions at the sites of injection, and two weeks later our serums were found to contain large amounts of antibody in neutralization tests.

During the previous year, Kolmer and Rule succeeded in vaccinating one monkey partially and two

⁷ Cooke, R. A. Bronchial Asthma in Tice, Frederick, Practice of Medicine, section 3 Diseases of the Respiratory System, 5 Hagerstown Md. W. F. Prior Company, 6 497, 1921.

From Temple University School of Medicine and the Research Institute of Cutaneous Medicine of Philadelphia.

Aided by grants from the Daniel J. McCarthy Fund for Research in Neurology of Temple University and two anonymous donations.

¹ Kolmer, J. A. and Rule, Anna M. Am J M Sc. 188, 510 (Oct.) 1934.

² Kolmer, J. A. and Rule, Anna M. J Immunology 20, 505 (June) 1934.

³ These chicle producing trees are known by different names in different areas. Thus in the Spanish American countries they are called Nispero in the British West Indies Sapodilla in Mexico and the Philippine Islands, Zapote chico.

⁴ Dannerth, Frederic. The Industrial Chemistry of Chicle and Chewing Gum. J. Indust. & Engin. Chem. 9: 679 (July) 1917.

⁵ Roberts, S. G. Making Chewing Gum for the Multitude. Comp. Pressed Air Magazine 7, 3176 (July) 1930.

⁶ The exact meaning of the word washed could not be determined by the writer either from the literature or by communication with manufacturers. One manufacturer writes: The washings of some chicles entail the use of some agents which are used for the removal of some of the resins.

additional animals completely, out of a series of six, with subcutaneous and intracutaneous injections of a vaccine of 2 per cent poliomyelitic spinal cord in 10 per cent sodium ricinoleate, so that the latter or stronger vaccine yielded much more satisfactory results with milder local reactions at the sites of injection, owing to the lower concentration of sodium ricinoleate.

Owing to the fact that it appears that living vaccines of attenuated viruses are more vaccinogenic than heat or chemically killed viruses we employed sodium ricinoleate (William Merrell Company^{2a}) as the attenuating agent not only because it is known to be detoxifying,³ but likewise because McKinley and Larson⁴ had successfully immunized three monkeys completely and one partially with intraperitoneal injections of sodium ricinoleate treated emulsions of monkey spinal cord virus. At least it would appear that vaccines of attenuated viruses produce immunity in much smaller amounts than "dead" viruses, with the added advantage that the viruses after injection are probably able to multiply many fold with continued antigenic stimulation as well as requiring the injection of smaller amounts of spinal cord protein and thereby resulting in less strain on the antibody producing tissues and less likelihood of producing allergic sensitization.

Furthermore, marked success in the case of poliomyelitis has followed vaccination of monkeys with subcutaneous and intracutaneous injections of living virus or mixtures of virus and immune serum,⁵ but these have been considered too dangerous for the vaccination of human beings.

Susceptibility, attack rate, mortality and incidence of residual paralysis and other factors in acute poliomyelitis in relation to vaccination of human beings have been discussed elsewhere,⁶ it being pointed out that susceptibility is so high in children and especially among those under 10 years of age that a safe and effective method of vaccination is highly desirable and especially in epidemics, although the majority of adults appear to possess adequate resistance. Even among the latter, however, vaccination is worthy of serious consideration during epidemics at least since serum neutralization tests by different investigators with a group of 128 varying in age from 15 years and upward has shown about 24.7 per cent without demonstrable amounts of neutralizing antibody in the blood.

METHOD OF STUDY

During the last four months we have administered the vaccine to a selected group of twenty-five children varying in age from 8 months to 15 years, as summarized in the table, with completely negative histories of clinical attacks of poliomyelitis. All were immunized at the request or with the written consent of the parents, nineteen being in Temple University Hospital in the pediatric service of Dr Ralph M. Tyson, to whom we are indebted for this cooperation. While all these children were in fairly good health, the majority were convalescing from various medical and surgical ailments.

Fifteen of these children were selected on the basis of showing no antibody in the blood by serum neutralization tests and ten with antibody in order to include both types in the study. These tests were conducted by mixing 0.5 cc of serum with 0.5 cc of a 10 per cent suspension of virus followed by intracerebral injection of 0.5 cc of each mixture into monkeys under ether anesthesia after being allowed to stand about two hours in a water bath at 37 C. Control monkeys injected with 0.5 cc of a mixture of 0.5 cc of sterile saline solution and 0.5 cc of virus after standing under identical conditions developed paralysis in from five to nine days.

Temperature observations and blood examinations were made in twenty-two of the children before and after each dose of vaccine.

From one to three injections were given subcutaneously at weekly intervals, the amounts of each being shown in the table.

Results of Administering Vaccine to Twenty-Five Children with Negative Histories

No	Age	Name	Preliminary Serum Tests for Antibody	Dosage of Vaccine Once a Week Cc.	Final Serum Tests for Antibody
1	8 mos	Raymond B	0*	0.25 0.5 0.5	0
2	9 mos	Nickolas V	0	0.5	+
3	10 mos	Phillip B	0	0.25, 0.5	+
4	12 mo*	Joseph W	0	0.25, 0.5 0.5	0
5	10 mos	Howard N	0	0.5	+
6	22 mos	Francis B	0	0.25, 0.5 0.5	+
7	4 yrs	Carolyn D	0	0.5, 0.5 1.0	+
8	4½ yrs	Margaret Y	+	0.5 1.0 1.0	++
9	6 yrs	Phillip D	+	0.5, 0.5 1.0	++
10	5 yrs	Elizabeth M	0	0.5 0.5 1.0	0
11	6 yrs	Harry W	0	0.5 0.5 1.0	0
12	6 yrs	Gloria A.	+	0.5 1.0 1.0	++
13	6 yrs	Joseph R.	+	0.5 0.5 1.0	++
14	7 yrs	Charles D	+	0.5, 1.0 1.0	++
15	7 yrs	Mildred G	0	0.5 1.0 1.0	+
16	7 yrs	Peter L	0	0.5 0.5 0.5	+
17	7 yrs	Elva W	0	0.5, 0.5 1.0	++
18	8 yrs	Robert K	+	0.5 0.5, 1.0	++
19	8 yrs	Clinton B	0	0.5, 1.0 1.0	+
20	10 yrs	Kathryn D	+	0.5, 1.0 2.0	++
21	10 yrs	Harold L	+	0.5, 0.5 1.0	++
22	11 yrs	Sidney G	+	0.5 1.0 1.0	++
23	11 yrs	Daniel K	0	0.5 1.0 1.0	+
24	11 yrs	George W	0	0.5 1.0 2.0	+
25	15 yrs	John E	+	0.5 1.0 2.0	++

* 0 indicates no antibody +, antibody present ++ antibody increased

RESULTS OF VACCINATION

There were no ill effects in any of the children, and not the slightest evidences of infection. Local reactions of varying degree occurred at the sites of infection. In one of the older children the first dose produced a moderately severe reaction of swelling and erythema corresponding to that sometimes seen following injections of diphtheria toxoid but in the remainder the local reactions were of mild degree.

During the first twenty-four hours after injection and especially after the first, the temperature of some of the children was elevated to a fraction of a degree but only occasionally going as high as 100.2 F and falling to the preinjection levels in about forty-eight hours.

The total leukocytes were increased from 500 to 1,200 per cubic millimeter of blood in some of the children during twenty-four hours following injections and especially after the first, as the result of a slight absolute increase of the polymorphonuclear neutrophils. These and the slight temperature changes were

^{2a} We are indebted to the William Merrell Company for a generous supply of this substance (patent 1621118).

³ Larson W P and others. *Proc Soc Exper Biol & Med* 21: 278 1924. ²² 194. ¹⁹²⁴ Larson W P. *ibid* 23: 497 (March) 1926.

Kolmer J A. Rule Anna M and Madden Bernard J. *Lab & Clin Med* 19: 972 (June) 1934.

⁴ McKinley J C and Larson W P. *Proc Soc Exper Biol & Med* 24: 297 (Jan) 1927.

⁵ Flexner Simon and Lewis P A. *Experimental Poliomyelitis in Monkeys*. J A M A 64: 1780 (May 28) 1910. Aycock W L and Kagan J R. *J Immunology* 14: 85 (Aug) 1927. Stewart F W and Rhoads C P. *J Exper Med* 48: 959 (June) 1929. Rhoads C P. *ibid* 51: 1 (Jan) 1930. 53: 115 (Jan) 1931.

⁶ Kolmer J A. *Susceptibility and Immunity in Relation to Vaccination in Acute Anterior Poliomyelitis*. *Am J M Sc* to be published.

ascribed to the effects of the local reactions, as they appeared to vary with the degree of the latter

Serum neutralization tests for antibody were conducted one week after the last dose of vaccine by mixing 0.5 cc of serum with 0.5 cc of a 10 per cent suspension of virus, allowing it to stand at 37 C for but one to two hours, and injecting 0.5 cc of each mixture intracerebrally into monkeys under ether anesthesia

In the fifteen children without antibody before immunization, eleven or 75 per cent, showed sufficient amounts of antibody to neutralize the virus after immunization, the monkeys showing absolutely no evidences of infection over three to four weeks following intracerebral inoculation of the serum-virus mixtures, while the controls inoculated with but 0.1 cc of virus alone became paralyzed in from six to nine days and succumbed

Since Brodie⁷ has recently shown that the maximum immunity from two intracutaneous doses of poliomyelitis virus in monkeys is obtained by giving the second while the first is giving its effects in other words at intervals of from ten to fourteen days apart, it is quite likely that our injections at weekly intervals were too closely spaced and that even better results might have been produced by giving the injections at longer intervals. Furthermore, while antibody production in some of the children appeared to be quite prompt after injections of the vaccine, as will be discussed shortly in more detail it is likely that serum neutralization tests for antibody should be delayed for at least two weeks after the last dose instead of but one week as conducted by us

In addition it should be stated as previously mentioned that the majority of children included in this group were convalescing in the hospital from various medical and surgical conditions with the possibility that antibody response may not be as good under the circumstances as occurs in children in excellent general health

Despite these conditions, however, the production of large amounts of antibody in eleven out of fifteen, or 75 per cent, of susceptible antibody-free children by from one to three doses of vaccine, with absolutely no ill effects other than the slight local reactions at the sites of subcutaneous injection, indicates a satisfactory and successful degree of immunization

Furthermore, the serums of the ten children containing antiviral antibody in the blood before vaccination showed a sharp increase of antibody after immunization, since 0.5 cc of serum mixed with as much as 0.5 cc of 50 per cent suspension of virus followed by the intracerebral injection into monkeys under ether anesthesia of 0.5 cc of the mixtures, after standing but one to two hours at 37 C, showed complete neutralization. Indeed, it would appear from additional quantitative tests that the vaccine probably produces more antibody in those children carrying natural antibody in the blood than it does in those who do not, suggesting that the body cells in the former are probably sensitized or "tuned up" by previous unrecognized infection with virus, with the result that they produce large additional amounts of antibody on additional stimulation by vaccine. At least twenty-one, or 84 per cent of the group of twenty-five children, showed good antibody response to the vaccine

DOSAGE OF VACCINE

The matter of dosage is of course one of considerable importance. Monkeys receiving a total of 0.5 cc. per kilogram in divided doses by subcutaneous injection have been successfully vaccinated,¹ but, if it is true that human beings acquire immunity to poliomyelitis by clinically unrecognized infection with virus, it would appear that less vaccine may be required per body weight for effective immunization than in the case of monkeys

With this possibility in mind and as an additional factor of safety, we have made the first dose 0.25 cc. for children under 3 years of age and 0.5 cc. for older children and adults. Second doses have varied from 0.5 to 1 cc. and third doses 1 or 2 cc., as shown in the table

From the results observed up to the present time, it would appear that three doses are sufficient in the following amounts

From 1 to 3 years	first 0.25 cc., second 0.5 cc., third, 0.5 cc.
From 4 to 10 years	first 0.5 cc., second 0.5 cc., third, 1 cc.
From 11 to 15 years	first, 0.5 cc. second, 1 cc., third, 1 or 2 cc.
Adults	first, 0.5 cc., second, 1 cc., third, 2 cc.

For children of standard weight the totals of these amounts of vaccine varied from about 0.06 to 0.1 cc. per kilogram, which were therefore approximately five to ten times less per body weight than given to monkeys. But we have assumed, as stated before, that human beings may require less than monkeys per kilogram of weight and the results summarized in the table appear to substantiate this assumption. A possible exception was in the case of the two children (1 and 4) of 8 and 12 months respectively, who probably should have received 1 cc. for the third dose instead of 0.5 cc., but otherwise we believe that the foregoing scale is about right in view of our present information on this subject

However, it would appear that but one or two doses of vaccine have produced considerable antibody in at least some of the children

For example, the serums of Nicholas V (patient 2) aged 9 months, and Howard N (patient 5) aged 19 months, gave good neutralization tests four days after one dose of 0.5 cc. Joseph W (patient 4), aged 12 months, gave a good neutralization test one week after the second dose, although this result was not known when the third dose was given, and Clinton B (patient 19), aged 8 years, also gave a good neutralization test four days after the first dose of 0.5 cc., although the second and third doses were also given before this result was known. These results indicate that with some children at least one or two doses may suffice, but since Raymond B (patient 1), Phillip B (patient 3) and Francis B (patient 6) did not show antibody in the serums one week after the first dose, we believe it is advisable to give two and preferably three doses of the vaccine

RAPIDITY OF ANTIBODY PRODUCTION AND SPACING OF INJECTIONS

In view, however, of Dr Brodie's observations previously referred to on the rate of production of antibody in monkeys given subinfective doses of living virus intracutaneously, it would appear advisable to give the injections every ten days instead of every seven days as we gave them

On the other hand, we have observed rather rapid antibody production in the cases just referred to,

namely, Nickolas V (patient 2), Howard N (patient 5) and Clinton B (patient 19), since their serums taken ninety-six hours after the first dose of vaccine gave good neutralization tests. Indeed, in the case of Nickolas V, serum taken forty-eight hours after the first dose of vaccine appeared to contain already a very slight amount of antibody, as this monkey did not develop paralysis until eighteen days after intracerebral inoculation, whereas the control monkey and that tested with serum before vaccine was given developed severe paralysis thirteen or fourteen days after inoculation.

Further evidence of rather rapid antibody production was indicated by the fact that a monkey weighing 4 Kg injected intracerebrally under ether anesthesia with 0.5 cc of 5 per cent virus seventy-two hours after a subcutaneous injection of 0.5 cc of vaccine remained perfectly well and entirely free of infection, whereas a control developed paralysis eight days after inoculation with but 0.1 cc of the same virus given at the same time. In the case of a second monkey, however, receiving the same dose of vaccine the antibody response, while present, was not quite as good, as this animal developed paralysis about nineteen days after the intracerebral injection under ether anesthesia of 0.5 cc of the 5 per cent virus.

In this connection, observations on the rapidity of antibody production with the serums of individuals and monkeys with poliomyelitis are not without interest and some bearing on this question. Flexner and Amoss,⁸ for example, have found antibody in the serum as early as the sixth day of the disease. Amoss⁹ has found it in monkeys as early as three and one-half days after the onset of paralysis and in human beings as early as the fifth day. Leiner and von Wiesner¹⁰ found it after seven, and in one case two days after the development of active disease in monkeys. Brodie¹¹ also found antibody in the blood of monkeys on the second day after the height of paralysis, while Howitt¹² failed to find it earlier than fifteen days after the onset of the disease in monkeys.

On the whole, therefore it would appear that antibody may be produced rather rapidly in poliomyelitis and after subcutaneous injections of the vaccine and for this reason we believe that vaccination may prove particularly helpful in the immunization of individuals during epidemics. Furthermore, as has been discussed elsewhere,⁶ it does not appear that the vaccine produces a detectable "negative phase" or period of increased susceptibility in monkeys at least, which also appears to justify its use in combating epidemics of poliomyelitis.

THE VACCINE

The method of preparing the vaccine has already been described¹ and need not be here given. Suffice it to emphasize that it is prepared of a remote monkey passage strain of the virus with the possibility of having lost at least some of its infectivity for human beings. That the antibody it produces is capable of neutralizing human virus⁶ is indicated by the fact that the antibody in the serums of several of the vaccinated children was found to neutralize completely human virus from the 1934 epidemic in California sent us by Dr Jessel of Los Angeles and a second virus in the third monkey transfer sent by Miss Howitt of San Francisco.

The vaccine however, cannot be prepared of brain tissue because it contains insufficient virus. The intracerebral inoculation of monkeys with as much as 1 cc of a 50 per cent suspension of fresh brain has failed to infect because virus was absent or present in insufficient amounts. But the spinal cord of one monkey will furnish about 150 cc of vaccine, which is sufficient for the immunization of from forty to seventy-five children depending on age and dosage.

We believe that the virus in the vaccine is attenuated to some extent by the amounts of sodium ricinoleate employed. While the intracerebral injection into monkeys under ether anesthesia of 0.1 cc of 5 per cent fresh virus produced poliomyelitis in about eight days, the intracerebral injection of 0.2 cc of a vaccine 3 weeks old and carrying 4 per cent of virus produced poliomyelitis in eleven days, while a second vaccine 2 months old produced paralysis in nine days and a third about 5 months old in about twelve days all being injected in doses of 0.2 cc under ether anesthesia.

The vaccine is allowed to stand at least two weeks before use and we now believe that a month may be better. After this time attenuation of the vaccine appears to stop when kept in the refrigerator at about 10 C., since vaccine prepared a year ago still possesses about the same infectivity for the monkey and the same vaccinogenic activity. In order to render different vaccines comparable in attenuated virus and immunizing activity, they are now prepared of mixtures of from ten to twenty cords taken only from monkeys that have been severely paralyzed.

In the preparation of the vaccine due care must be exercised against contamination of the cords in removal and the preparation of finely divided suspensions. But it is our custom to place the cords in 50 per cent chemically pure glycerol in sterile saline solution for at least a month before use and under the circumstances the great majority of vaccines are found to be sterile on careful bacteriologic examination by culture.

The 1 per cent sodium ricinoleate possesses some bacteriostatic activity, but due care must be exercised against contamination of the vaccine when administered.

Since we have never seen the slightest ill effects, aside from mild local reactions at the sites of injection in monkeys or the twenty-seven human beings including two of us (J A K and A M R) who have taken it, we lost all fear of infection from its administration and are sure that it is perfectly safe. Unfortunately the monkey serum neutralization test is the only one available at present for the detection of susceptibility,¹² since skin tests,¹³ colloidal gold, complement fixation and precipitation tests¹⁴ have proved inadequate, but the majority of children under 10 years of age are devoid of antiviral antibody and probably susceptible, and since Aycock has shown that there is an important hereditary factor in susceptibility it would appear particularly important to vaccinate all children in those families in which the disease has appeared.

Not only is it quite likely that the remote passage virus employed has lost some if not all infectivity for human beings, but it is certainly attenuated to some extent by the sodium ricinoleate employed. Furthermore subcutaneous injections appear to add another very important factor of added safety, as it represents a portal of entry in which virulent virus itself has a

⁸ Flexner Simon and Amoss H L J Exper Med 25 499 (April) 1917

⁹ Amoss, H L. South M J 23: 18 (Jan.) 1930

¹⁰ Leiner C. and von Wiesner R. Wien Klin Wchnschr 22 323 1910

¹¹ Howitt Beatrice F J Infect Dis. 31 565 (Nov Dec.) 1932

¹² Kolmer J A and Rule Anna M J Immunology to be published.

¹³ Kolmer J A Klugh George Jr and Rule Anna M J Immunology, to be published

¹⁴ Kolmer J A and Rule Anna M J Immunology to be published

very low rate of infectivity for monkeys. In addition the injection of such a small first dose as from 0.25 to 0.5 cc to children and adults and waiting at least a week before the second dose is given adds another important factor of safety since it appears that antibody response is quite prompt. For these reasons we do not hesitate recommending the vaccine especially during epidemics, and among the first children to receive it were the two sons of the senior author the younger of whom was without any antibody at all in his serum before the first dose of 0.5 cc was given.

SUMMARY

1 Twenty-five children varying in age from 8 months to 15 years have been given from one to three injections of poliomyelitis vaccine at the request or with the consent of parents.

2 Fifteen of these children were without antibody in serum neutralization tests before immunization and eleven or 75 per cent, showed large amounts of antibody in the blood one week after the last dose of vaccine.

3 Ten of the children showed the presence of antiviral antibody in the blood before immunization, but all have shown a considerable increase of this antibody after vaccination so that antibody production occurred in twenty-one or 84 per cent of the group of twenty-five children.

4 None of the twenty-five children have shown the slightest ill effects from the vaccine.

5 Mild local reactions were produced at the sites of subcutaneous injection, with occasional slight elevation of temperature and slight leukocytosis subsiding within forty-eight hours.

6 The dosage for children from 1 to 3 years of age has been 0.25, 0.5 and 0.5 cc at weekly intervals, for children from 4 to 10 years 0.5, 0.5 and 1 cc, for children from 11 to 15 years 0.5, 1 and 1 or 2 cc. For adults the dosage recommended is 0.5, 1 and 2 cc.

7 The vaccine is prepared of spinal cord only, as brain contains too small amounts of virus. But the spinal cord of a single monkey will furnish about 150 cc of vaccine which is sufficient for the immunization of from forty to seventy-five children, depending on age and dosage.

8 It is likely that the maximum antibody response may be obtained by giving the injection every ten days instead of weekly.

9 Antibody production, however, appears to be fairly rapid as three susceptible children developed antibody in the blood within four days after the first injection of vaccine and one monkey was found completely and a second partially immune seventy-two hours after the subcutaneous injection of 0.5 cc of vaccine per animal on intracerebral inoculations of large amounts of virus.

10 The vaccine does not appear to produce a demonstrable "negative phase" of increased susceptibility after injection.

11 The vaccine is a 4 per cent suspension of spinal cords of monkeys developing poliomyelitis after intracerebral inoculation with a remote passage strain of virus in a 1 per cent sterile solution of sodium ricinoleate prepared as previously described. The virus is attenuated and the vaccine regarded as entirely safe for the immunization of human beings not only because prepared of remote passage virus which probably has

lost in infectivity for human beings but likewise because of attenuation by sodium ricinoleate, the route of administration and the injection of a small first dose.

12 The amount of antibody produced by immunizations is comparable to that found in the blood in natural immunity and is believed to be sufficient for affording protection against acute anterior poliomyelitis.

13 The antibody present in the serums of vaccinated children has successfully neutralized human virus from the 1934 California epidemic.

14 The duration of the immunity following vaccination is unknown but has lasted for more than two years in vaccinated monkeys.

15 It is believed that the vaccine is now ready for vaccination of human beings and especially children against poliomyelitis and particularly during epidemics.

Clinical Notes, Suggestions and New Instruments

LYMPHOBLASTOMA WITH PARAPLEGIA AND PROLONGED IRRADIATION

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This case of lymphoblastoma (Hodgkin's type) is reported because of a number of points of unusual interest: certain neurologic and skin manifestations, its response to radiation therapy over a considerable period of time, and the changes found at autopsy.

The patient first came under my observation at 12 years of age with a negative family history and negative past history until 9 years of age, when she had mumps in the left parotid gland. A year later there was an enlarged cervical gland on the same side which was removed surgically. A year later there was a recurrence, which was again operated on. At this time it was considered tuberculous and the patient was referred to a tuberculosis sanatorium, where routine examination of the chest disclosed a large superior mediastinal growth corresponding to Wessler's group I—expanding mediastinal tumor. A recurring cervical gland enlargement was excised at this time and microscopic examination showed it to be a slow growing lymphoblastoma of the Hodgkin's type, which thus identified the mediastinal growth. At this time then three years after her first glandular involvement she was referred to me for radiation therapy. She was given heavily filtered high voltage (180 kilovolts) radiation over the upper mediastinum, anteriorly and posteriorly approximately a 40 per cent depth dose into the tumor mass, and moderate voltage (125 kilovolts) with a filter of 3 mm of aluminum over the cervical gland. The mediastinal growth entirely disappeared following this treatment.

She remained well for five years, when gastro-intestinal symptoms and a slight rise of temperature occurred, which I thought due to probable mesenteric lymphoid involvement. Chest examination showed some recurrence of the mediastinal tumor mass, which promptly receded again under radiation therapy.

A year later she developed partial paraplegia, exhibiting great difficulty in walking and numbness from the shoulders down. I considered this evidence of the extension of the mediastinal growth into the spinal cord and pressure on the nerve exits from the vertebral bodies. Roentgen examination showed no erosion of the vertebral bodies. Heavy (200 kilovolts) irradiation was again done over the upper dorsal spine, 860 roentgens being administered through each of two oblique portals within a week. Three months later she reported herself able to swim and to walk a mile with the aid of a cane, and her numbness was nearly gone. Six months after the onset she was apparently in a normal condition again. During this time she had two cycles of therapy similar to the one described. She remained well for nearly a year longer, when she again returned with aggravation of all the symptoms. At this time

she also had an aggravated case of herpes zoster, completely encircling the body on the level with the twelfth dorsal vertebra, which left deep scars. Radiation directed over the spine again relieved the gastro intestinal symptoms, but the condition gradually grew worse. A laminectomy was considered to relieve pressure on the cord, but she was in very poor condition and I did not feel justified in taking the risk. Complete paralysis and anesthesia of both extremities, paralytic ileus, and urinary and fecal incontinence with ascending urinary infection developed, and the patient died.

AUTOPSY

When the chest cavity was opened the left lung was seen to be adherent with numerous adhesions to the entire lateral wall and to the diaphragm, with more dense adhesions about the apex. The entire chest contents, including the mediastinum and heart, were removed *en masse*. The heart was small and the pericardium was adherent to the epicardium throughout the thin easily separated fibrous adhesion, which left the epicardium smooth but remained as tags on the pericardium. There were numerous various sized lymph nodes scattered all along the spinal column retroperitoneally, and one large calcified lymph node in the mesentery of the small intestine. The spinal cord was exposed and completely removed from the fourth lumbar vertebra to the brain. Beginning at the level of the sixth dorsal vertebra and extending to the last cervical vertebra was an extradural tumor mass adherent to the dura and extending out between the ribs on the right side most markedly in the third interspace, but also in the second and fourth interspaces. This mass was entirely extradural and undoubtedly caused pressure on the cord. Opening of the dura, however, revealed no internal involvement whatever, and grossly the cord appeared perfectly normal. The tissue extending between the third and fourth ribs was excised and extended through to the pleural cavity, with no apparent bulging or involvement of the pleura itself. A single lymph node in the right neck was removed which on gross examination showed hemorrhagic mottlings.

Microscopic examination of sections of the node removed from the neck showed a cellular structure with large areas of necrosis. The cells were of a size suggesting those of the germinal centers of a lymph node. On occasion larger multinucleated cells were seen also in places there was some fibrous tissue and a few eosinophils were present. The normal architecture of the lymph nodes had disappeared. A retroperitoneal lymph node was quite similar but gave the impression of a more rapidly growing structure. An occasional dividing nucleus was seen. The extradural growth from the spinal canal and the extension out from that showed a similar picture as regards the type of cell present, but there was more fibrous tissue here than was seen of the lymph node described.

In my opinion the picture in this tissue and of the lymph node is to be explained as a chronic lymphoblastoma. Sections from the scar tissue in each apex of the lung showed compact fibrous tissue such as might have resulted from an old tuberculous process though no tubercles were present to make such a diagnosis definite. The spinal cord showed no evident degeneration.

COMMENT

Paraplegia occurring in the course of Hodgkin's disease is a relatively well known condition although few autopsy records have been reported. The response of such cases to irradiation are less well known or at least less frequently reported. It is of interest to note the initial response to irradiation which held it in check for nearly a year in this case. The mediastinal mass and the extension into the spinal canal had been reduced to fibrous tissue and it was the pressure of this mass confined within an elastic bony chamber that produced this paraplegia. It is fair to presume that if the patient had been in any condition to withstand a laminectomy she might have survived for a considerable period longer.

In a review of the literature, Paullen¹ reports four cases of lymphogranuloma of the central nervous system, with extension by the way of the intervertebral foramen and destruction of the vertebral bodies with discrete growth in the epidural

tissue of the spinal cord. There was temporary response to radiation treatment.

Parkes Weber² reports that there are very few definite cases with autopsy confirmation on record and but few with a history of improvement after high voltage radiation therapy.

Johnston³ describes two types of spinal involvement (a) degeneration of the cord due to anemia with resulting interference of the blood supply, and (b) pressure atrophy due to perineural infiltration. He states that most cases show compression myelitis from crushing of the bony canal or massive infiltration of the cord by granulomatous tissue.

Weil⁴ reports forty-three cases with spinal cord involvement in which 85 per cent showed this as due to granulomatous tissue, in 80 per cent the thoracic segments were involved in 16 per cent the cervical, and in 4 per cent the lumbar. There was no prolongation of life because of roentgen treatment, although he advocated early irradiation and laminectomy.

Cooper⁵ reported a case proved at autopsy of direct extension of this lymphogranulomatous tissue from an extradural tumor, with extensions by the way of the nerve roots to the subdural space.

In the case here reported, it was found at autopsy that lymphogranulomatous tissue reached the vertebral canal by direct extension from the mediastinal tumor mass by way of the intervertebral foramen and that there was no actual destruction of the cord but the extension into the subdural space produced symptoms by compression only.

The occurrence of herpes zoster has been reported by Craven and Haagensen⁶ as the expression of the involvement of the nervous system by granulomatous tissue, and they conclude that herpes zoster was caused by the new growth surrounding and compressing the ganglions corresponding to the peripheral areas involved. This conclusion was based on the autopsy.

Keichline⁷ states that in every case this is a trophic expression of inflammation corresponding to the ganglion of the posterior roots either spinal or cranial.

The blood Wassermann was 4+ and precipitation test (Kahn) was 3+, confirmed on several examinations. The father's and mother's blood were both negative on repeated examinations. The occurrence of repeated positive Wassermann reactions is of considerable interest. Moore, in his textbook of Modern Treatment of Syphilis, acknowledges a non-specific positive occurring in certain conditions such as malignant cachexias, glandular tuberculosis and yaws. The apparent close relation between Hodgkin's disease and tuberculosis suggests that Hodgkin's disease might possibly be included in this list. On the other hand other syphilologists feel that there is a congenital syphilis in these cases and that repeated negatives in the parents indicate a spontaneous cure. In the present case there was a history of the father having been treated with mercurial inunctions when a youth, but there is no further history bearing on this point. The autopsy was entirely negative for any evidence of syphilis and there had never been any clinical evidence suggestive of this condition.

SUMMARY

A case of lymphoblastoma was observed over a period of ten years and kept under almost complete control by roentgen therapy up to three months before the patient's death. The recurring mediastinal growth was held in check and finally reduced to a small mass of scar tissue. The developing paraplegia also responded to irradiation and almost complete relief of symptoms for a period of one year and I believe might further have been controlled had the patient's condition justified a laminectomy. The patient developed an aggravated case of herpes zoster and showed a persistent Wassermann reaction without clinical or autopsy confirmation.

420 Temple Street

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AN OBSTETRIC RING FOR ARTIFICIAL PUNCTURE
OF THE MEMBRANES

IRVING F. STEIN, M.D., CHICAGO

Artificial puncture of the membranes is the simplest of obstetric operations. When one observes the awkwardness with which the operation is performed by inexperienced physicians and the amount of unnecessary trauma sometimes inflicted in attempting to rupture the membranes, the need for a simple, effective and harmless instrument becomes obvious.

The ring that I have devised is made of malleable metal so that it can be fitted to the gloved forefinger just behind the first joint. A rigid, notched projection extends along the dor-

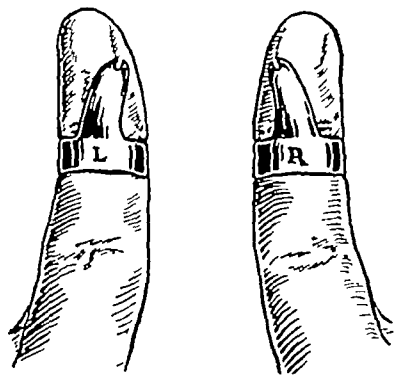


Fig. 1—Obstetric rings for fingers of right or left hand

sum of the first phalanx with the point directed to the inner aspect of the fingernail. When the finger is introduced into the vagina, the projection lies flat against the gloved finger, so that no trauma is inflicted on the mucous membrane of the vagina or on the cervix. Examination of the cervix and of the presenting parts may be made by means of the palmar surface or the tip of the finger and when puncture of the membranes is indicated the finger is bent slightly, releasing the notched projection. The puncture is readily accomplished by rotating the finger medially. The finger is again straightened and further examination of the presenting parts may be made to verify the position and to feel for a prolapsed cord, an extremity and so on. Furthermore, the finger is in a favorable position to control the rate of escape of the liquor.

The disadvantages of previous methods employed for artificial rupture of the membranes are as follows: 1. The notched finger-nail described by Edgar appropriated from the ancient midwife, is obviously antiquated by the universal use of rubber gloves and is no longer approved by obstetricians. 2. The notched thumb requires a separate introduction of the finger into the vagina after the diagnosis has been made and a decision reached that the membranes shall be ruptured. The touch

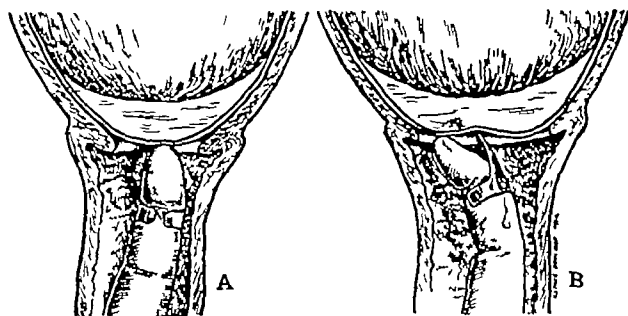


Fig. 2—A. palpation of bag of waters with palmar surface of finger. B. method of rupturing bag of waters with author's instrument by bending and rotating finger.

surface of the finger is obliterated by the thumb. 3. Blunt or sharp forceps, scissors or crochet hooks require a separate insertion into the vagina and also carry the danger of trauma to the cervix and to the presenting part of the fetus.

The obstetric ring here described may be worn for every vaginal examination whether or not it is needed. It is light in weight and does not interfere with the vaginal touch or cause trauma. Thus the necessity of a second insertion of the finger or of an instrument is obviated if a decision is made

to puncture the bag of forewaters. The obstetric ring has been tested in the Michael Reese Hospital maternity for several months, during which time it has been employed by members of the attending and house staffs with entire satisfaction. It may be obtained for use on either the right or the left hand according to the habit of the individual physician.¹

DEVICE FOR PROTECTION OF THE TEETH DURING
BRONCHOSCOPY AND ESOPHAGOSCOPY

SIDNEY ISRAEL, M.D., HOUSTON, TEXAS

Protection of the upper teeth is one of the important factors in the technic to be observed during a bronchoscopic or esophagoscopic examination. There have been numerous occurrences of injury to the upper teeth, regardless of what instrument or method has been employed.

Unless the teeth have been properly protected, patients frequently complain of sensitiveness or tenderness of the teeth, particularly on the edges, lasting for several days after a bronchoscopic or esophagoscopic examination, as a result of the pressure of the metal tube, which rests on the edges of the teeth.

Heretofore to protect the upper teeth from injury by the bronchoscopic or esophagoscopic tube it has been the accepted



Rubber protector in place over upper teeth ready for introduction of the bronchoscopic or esophagoscopic tube

custom to use the examiner's thumb or a pad of gauze or cotton. Neither of these measures is completely satisfactory. When the thumb of one hand is used, that hand is eliminated so far as the execution of any operative manipulation is concerned. When gauze or cotton is employed to protect the upper teeth the bulk either obstructs the mouth or is easily displaced.

For the purpose of protecting the upper teeth and safeguarding them from any injury or discomfort following an endoscopic examination, flexible rubber tooth guards were devised to cover the upper teeth. The endoscopic tube rests on the rubber guards over the teeth, rendering both hands free for the performance of any necessary operative procedure. These rubber protectors have accomplished the purpose for which they were designed and have proved very successful.

In order to arrive at standard or universal sizes, the mouths of a number of children and adults, as well as edentulous individuals, were examined. From these three classifications an average was obtained, and from these averages molds were made which represent standard sizes in the three classifications: (1) child, (2) adult and (3) edentulous. The three sizes of tooth guards, as the result of their flexibility, will conform to fit all mouths belonging in their respective class. They offer no obstruction or curtailment to instrumentation, remain in

place, and completely protect the teeth from injury. They can be easily cleaned or sterilized and are quickly applied or removed.

Aside from the protection offered through this medium of safeguarding the patient's teeth, it does much to eliminate any medicolegal controversy that may arise.

These tooth protectors are available through the Electro-Surgical Instrument Company of Rochester, N. Y.

2010 Esperson Building

Special Articles

GLANDULAR PHYSIOLOGY AND THERAPY INTRODUCTION

MORRIS FISHBEIN, M.D.
CHICAGO

In 1924 a series of articles—published in book form the following year and revised in 1927—was prepared under the auspices of the Council on Pharmacy and Chemistry of the American Medical Association with the general title "Glandular Therapy." In a brief introduction to that series Dr. Frank Billings emphasized certain significant factors in relationship to our knowledge of the glands which at that time many endocrinologists considered as established but which to some physiologists and clinicians were not quite acceptable. The points to which he referred concerned the alleged reciprocal action of the glands of internal secretion, i. e., the idea that the glands represent an interlocking chain of structures correlated in their activities through hormones carried in the blood stream. This led to the view that the entire functioning of the body might be stimulated, retarded or perverted by hyperfunction, hypofunction or alleged dysfunction of the ductless glands. It seems reasonable to believe today that the endocrinologists have established this view. In 1927, when the revised edition of "Glandular Therapy" was published, evidence was still fragmentary. Today it is more elaborate but, of course, only a beginning has really been made in our knowledge of this exceedingly complex and fascinating field.

One of the reasons why the Council on Pharmacy and Chemistry took up the subject specifically in 1924 was the tremendous abuse already evident in the use of preparations of glandular materials promoted by pharmaceutical manufacturers who were willing to exploit such preparations on slight evidence. Notwithstanding the fact that evidence was already available at that time to indicate that most glandular materials could not become effective in the human body when taken by mouth, manufacturers offered tablets, powders and solutions to be taken orally, representing every tissue in the body that might even remotely be assumed to elaborate something in the nature of an internal secretion. The tonsil, the kidney, the spleen and the heart as well as the tissue of the brain were included in such mixtures. One manufacturer even went so far as to prepare a series of revolving wheels on which

were indicated various symptoms and a long series of numbered glandular preparations, the suggestion being that a summation of the symptoms would lead invariably to a glandular preparation of a certain number. Such obvious charlatanism could not long survive, particularly in the face of exact knowledge, which began to be accumulated. True, there are still some manufacturers who exploit preparations without scientific basis and with equally mysterious methods, but the majority of the medical profession seem to realize the folly of such therapeutics.

In 1927 there was but little in glandular therapy actually established. The entire volume made a book of some ninety-eight pages. There was evidence as to the usefulness of epinephrine and of the extract of the posterior pituitary. There was some usefulness indicated for thyroxine, thyroid gland tissue, insulin and parathyroid material, but beyond these there was little indeed that could be considered worth while. A comparison of that series of articles with the thirty contributions listed below as the constituents of the present series will indicate how interesting a road has been traveled in the intervening period. The concluding chapters of the book issued in 1927 dealt with the ovary and the mammary gland. The conclusion was then reached that ovarian therapy was wholly experimental and that there seemed to be little established, yet laboratory investigators indicated certain definite possibilities for the future. Mammary gland preparations were rejected entirely. In the present series of articles great emphasis is placed on the urinary, pituitary and placental gonadotropic factors. This pituitary-gonad relationship has led to conceptions of remarkable significance for clinical medicine.

Since 1927 the pituitary gland has been discovered to be a veritable storehouse of hormones. In addition to the growth hormone discussed by Evans and the gonadotropic principles considered by P. E. Smith, Collip speaks of diabetogenic, thyrotropic, adrenotropic and parathyrotropic factors. Riddle discusses the lactogenic factor, and Zondek the chromatophorotropic principle. The corpus luteum still constitutes a field for hopeful study rather than for any established therapeutic agent. Particularly significant from the discoveries of recent years have been those related to the estrogenic and gonadotropic substances and the application of such studies to the diagnosis of pregnancy. These, together with the work on the cortex of the adrenal, the thymus, the parathyroid and the testis, represent new phases of endocrinology that were hardly mentioned in the previous series.

The scope of research is today exceedingly broad. Hardly a month passes without an announcement of significance. Indeed, the progress is so rapid that it is hardly likely that another seven years will pass before a new edition, including many new facts and suggestions, will be required. Since it is of the greatest importance that clinicians be aware of what is established and what is still theoretical in this important field, the Council on Pharmacy and Chemistry has rendered another distinguished service in making available this series of articles.

Dr Morton S Biskind of the headquarters staff of the Council outlined the general series and assisted in editing the articles toward uniform expression and avoidance of excessive duplication

The articles in the new series include

- Clinical Manifestations of Dysfunction of the Anterior Pituitary H M EVANS MD, University of California
- General Physiology of the Anterior Hypophysis P E SMITH, PH D Columbia University
- Growth Factor of the Anterior Pituitary H M EVANS MD, University of California
- The Hypophyseal Gonadotropic Hormones P L SMITH PH D Columbia University
- Interrelationships Among Urinary, Pituitary and Placental Gonadotropic Factors J B COLLIP MD McGill University
- Lactogenic Factor of the Pituitary OSCAR RIDDLE, PH D Cold Spring Harbor
- Diabetogenic, Adrenotropic Thyrotropic and Parathyrotropic Factors of the Pituitary J B COLLIP MD McGill University
- Anterior Pituitary and Anterior Pituitary Like Substances—Therapeutic Applications EMIL NOVAK MD Johns Hopkins University
- Chromatophorotropic Principle of the Pars Intermedia of the Pituitary BERNHARD ZONDEK MD Jerusalem Palestine
- Posterior Hypophysis E M K GEILING, MD Johns Hopkins University
- Physiology of Estrogenic Principles EDGAR ALLEN PH D, Yale University
- Estrogenic Hormones and Carcinogenesis LEO LOEB MD Washington University
- Therapeutic Applications of Estrogenic Preparations EMIL NOVAK, MD Johns Hopkins University
- Corpus Luteum G W CORNER MD University of Rochester
- Menstruation EDGAR ALLEN PH D Yale University
- Sex Endocrine Factors in Blood and Urine R T FRANK, MD Mount Sinai Hospital New York
- Pregnancy Tests SELMAR ASCHHEIM MD University of Berlin
- Testis Hormone C R MOORE, PH D University of Chicago
- Physiology of the Thyroid DAVID MARINE, MD, Montefiore Hospital New York
- Pathogenesis and Prevention of Goiter DAVID MARINE, MD Montefiore Hospital New York
- Therapeutics of the Thyroid J H MEANS MD, Harvard University
- Physiology of the Parathyroid A M HANSON MD Faribault Minn
- Parathyroid Hormone Therapy J C AUB, MD Harvard University
- Adrenal Medulla J M ROGOFF, MD University of Chicago
- Adrenal Cortex ROBERT F LOEB MD Columbia University
- Thymus L G ROWNTREE, MD Philadelphia Institute for Medical Research
- The Internal Secretion of the Pancreas C H BEST, MD University of Toronto
- Therapeutic Applications of Insulin E P JOSLIN, MD Harvard University
- Liver and Stomach Preparations (Antranemic) RANDOLPH WEST MD Columbia University
- Gastro-Intestinal Principles A C EVANS MD Northwestern University

CLINICAL MANIFESTATIONS OF DYSFUNCTION OF THE ANTERIOR PITUITARY

HERBERT McLEAN EVANS, MD
BERKELEY, CALIF

Correct conceptions in almost every phase of the whole field of medicine rest on advances in experimental physiology. Belief in this view has been so well justified by the achievements of the last century that one may well claim the actual inauguration of modern medicine by the life work of such an investigator as Claude Bernard.

Endocrinology, a more or less well recognized clinical specialty, already possesses in some portions of its realm sufficiently precise and quantitative procedures for diagnosis and therapy, but in its other territories such tools are frequently so woefully lacking as to have led to a widespread feeling of insecurity in the field as a whole. Not only has a clinic of endocrine diseases been born in the last few decades, but a host of skilfully contrived and fruitful laboratory studies has been given to the world, the present moment is an appropriate one for inquiry as to the aid given clinical endocrinology by the results of modern experimental biology. The series of articles in *THE JOURNAL* of which this is the first is devoted to this end.

The experimental biology of the last decade, which has been directed toward securing both overfunction and underfunction of the pituitary gland, has now finally given adequate grounds for belief in the existence of at least five separate internal secretions or hormones of the anterior pituitary: the somatotrophic,¹ the gonadotropic,² the thyrotropic,³ the mammatropic,⁴ and the interrenotropic⁵ hormones. It is felt that the relation of these achievements to clinical medicine will be disclosed most successfully by the discussion of pituitary and related diseases with reference to the existence of proved deficiency or excess of these five known substances, for the recognition of which there are now specific tests.

I GROWTH HORMONE

Underproduction—Dwarfism. The first solidly won achievement of experimental research in the pituitary field may be described as the production of dwarfism and sexual infantilism following hypophysectomy in young animals, especially puppies. Mammals are unable to continue to increase in skeletal dimensions after hypophysectomy. The surprising stasis in the growth of the long bones can be confirmed in a few weeks by roentgenograms. They are similarly unable to increase their body substance strikingly, as determined by post operative weighings.⁶

From the Institute of Experimental Biology, University of California. For collaboration in this work the author is indebted to his associates Drs Miriam E Simpson, W R Lyons and E H Rynearson.

1 Somatotrophic hormone: the growth hormone, phyone, antuitrin G, somatotropin.

2 Gonadotropic hormone: gonad stimulating hormone, glandular heb, sex hormone of the anterior lobe, gonadotropin.

3 Thyrotropic hormone: thyrotropic or thyroid stimulating hormone, thyrotropin.

4 Mammatropic hormone: lactogenic hormone, mammary-stimulating hormone, galactin or prolactin, mammotropin.

5 Interrenotropic hormone: adrenotropic, adrenolatropic or adrenocorticotrophic hormone, interrenotropin.

6 In cases in which the hypophysectomy has injured the contiguous hypothalamus adiposity may result (Camus and Roussy Smith) and it is to be borne in mind that weight increases after a complete hypophysectomy may be thus explained. Selye states that a slight and temporary capacity for growth is present if the hypophysectomy has been done on very young animals.

Cases of human dwarfism due to defective function of the anterior lobe have been designated by Erdheim as nanosomia pituitaria. It is not improbable that any and all forms of dwarfism are directly caused by inadequate pituitary function, regardless of the ulterior cause. Cretinic dwarfs are apparently the result of the depression of pituitary function due to thyroid subnormality, and restoration of their growth can be effected either by the administration of thyroid (which can be understood to stimulate the hypophysis) or by direct treatment with pituitary extracts.

The growth of hypophysectomized rats or puppies can be readily produced by the use of anterior lobe extracts, these may now be freed sufficiently from contaminating hormones as to produce normal growth while the thyroids, sex glands and adrenal cortex remain atrophic.

The classification of human dwarfism is not completely satisfactory at the present time. Part of the difficulty is due to the fact that the defective growth may or may not be associated with sexual infantilism. Diminutive individuals with adult proportions exist, more often the childhood proportions are retained, the upper length of the body exceeding the lower. The latter cases are usually sexually delayed or infantile. In some of them a peculiar, unexplained, senile appearance manifests itself (progeria).

Human dwarfism has been treated with pituitary extracts by several careful workers⁸ who have reported that children who had ceased growth, or were growing at a subnormal rate, resumed normal growth or even exceeded the growth rate normal for the age at treatment.

Deficiency of Growth Hormone in Adult Life It has thus far been impossible for the experimentalist to eliminate the growth hormone only, either in infantile or in adult life, nor are there adequate grounds for believing that in human hypopituitary states only the growth hormone has been eliminated. In 1914 the Hamburg pathologist E. A. Simmonds reported a cachectic and rapidly wasting state associated with the finding at necropsy of complete destruction or sclerosis of the pituitary. Animals deprived of the pituitary frequently develop a similar cachectic state. Our reason for believing that the growth hormone is not concerned here rests on the fact that although such animals can be forced to grow with growth hormone extracts, the cachexia continues. The cachexia is relieved by crude anterior lobe extracts but not by adrenal cortical extracts, so that it has no affinities with Addison's disease.

The role of the growth hormone in adult life is thoroughly obscure. The return of hair over shaved areas is speedier in its presence than in its absence. Brugsch (1927) has described a disease, akromikrie, which he considers the converse of acromegaly. It is characterized by thinning of acral parts, subnormal growth, falling hair, thirst, amenorrhea and acrocyanosis.

The growth hormone is not more abundant in the anterior lobes of young calves than in those of adult cattle, and it is certain that the hormone is employed in the physiologic mechanism of the body throughout life.

Overproduction—Gigantism and Acromegaly Clinicians felt secure in the interpretation that general symmetrical overgrowth (gigantism) and also an asymmetrical disfiguring overgrowth in adult life (acromegaly) were both due to overactivity of the anterior hypophysis. The pituitary was found to be hypertrophied in both conditions, in acromegaly the gland is enlarged, essentially owing to increase of the eosinophilic cells.⁹ Any insecurity in this interpretation may be said to have ended with the experimental production of gigantic rats and of acromegalic dogs.

No source for growth hormone preparations other than anterior lobe tissue itself has yet been discovered. The hormone has not been recognized as yet in the blood or urine in acromegaly, nor has the claim of its presence in the urine of pregnancy been substantiated.

II GONAD-STIMULATING HORMONES

In 1926 Zondek and Aschheim and, independently, P. E. Smith discovered that anterior pituitary tissue implanted under the skin or intramuscularly in immature rats or mice brought about a development of the ovaries and other signs of precocious sexuality within four days. The ovarian picture was complex. Along with typical follicular growth, ovulation and the formation of corpora lutea there occurred a premature lutein transformation of the walls of many ovum-containing follicles. The growth of the ovarian follicles is now referred to a specific one of the two gonadotropic hormones which it is thought are secreted by the pituitary gland. It has been called "the follicle-stimulating hormone". The development of lutein tissue is regarded as an effect of another gonadotropic substance—the luteinizing hormone.¹⁰ Zondek and Aschheim quickly extended their discovery to the domain of clinical medicine by detecting gonadotropic hormone in the urine of pregnancy, later they found gonadotropic substance in body fluids and tissues in other conditions. These authors early showed that predominantly follicle-stimulating effects were produced by the principle found in menopause urine¹¹ but that these were combined with luteinizing effects when pregnancy urine¹² was given. The Berlin investigators unfortunately spoke of both urinary substances as anterior lobe substances, and much confusion in the literature has been created thereby. The gonad-stimulating substance present in pregnancy urine does not exactly resemble any chemical fraction that has been hitherto secured from anterior lobe substance, a long series of studies, beginning with that of Evans and Simpson in 1929, has shown it to be less efficacious than pituitary implants.

9 This was first recognized by Benda (1900) and securely established by the studies of Fischer (Die Beziehungen des Hypophysentumors zu Akromegalie und Fettsucht Wiesbaden Bergmann 1920) and of Bailey and Cushing. The histophysiology and histopathology of the anterior hypophysis is in a thoroughly unsatisfactory state. Such previously well established concepts as pregnancy and castration cells are either now denied validity or described as differing in different animal forms.

10 The ovarian effects of gonadotropic substances from various sources and from various treatments of anterior lobe tissue are not yet completely understood. The terms follicle stimulating and "luteinizing" may turn out to be somewhat inappropriate when more is learned of their mechanism of action.

11 Menopause urine prolan A follicle stimulating urine castration prolan castration urine

12 Pregnancy urine prolan chorionic prolan pregnancy prolan urinary hebin antuitrin S follutein

7 P. E. Smith (Increased Skeletal Effects in A. P. Growth Hormone Injections by Administration of Thyroid in Hypophysectomized Thyroparathyroidectomized Rats Proc. Soc. Exper. Biol. & Med. 30:1252 [June] 1933) has shown that an enhanced growth of such animals can be obtained by simultaneous administration of thyroid extracts with such preparations.

8 Shelton E. K., Cavanaugh L. A. and Evans H. M. Hypophyseal Infantilism. Treatment with Anterior Hypophyseal Extract. Preliminary Study. Am. J. Dis. Child. 47:719 (April) 1934. Engelbach W., Schaefer R. I. and Brossius W. L. Endocrine Growth Deficiencies. Diagnosis and Treatment. Endocrinology 1: 250 (May/June) 1933.

or extracts of whole anterior lobe substance. Some of these differences are that

1 It cannot stimulate the growth of follicles and corpora in the ovaries of hypophysectomized animals¹³

2 It does not affect the development of the immature avian testis. This is readily produced by anterior lobe substance¹⁴

3 It has only slight effects on the monkey ovary—effects that do not lead to reddening of the sexual skin. This is produced by anterior lobe substance¹⁵

4 When administered to normal immature rats, no matter how frequently or in what doses, it rarely produces ovarian weights in excess of from 40 to 70 mg in ninety-six hours, whereas with anterior lobe substance increased effects are secured with increasing dosage the ovaries attaining from two to three times the weight stimulated by pregnancy urine¹⁶

Struck by the ineffectiveness of the gonadotropic substance in pregnancy urine in hypophysectomized animals and its partial effectiveness in normal immature ones, Evans, Simpson and Austin extracted anterior lobes in various ways in order to discover the substance needed to make the factor in pregnancy urine maximally effective. They designated this hypophyseal substance the "synergist." When combined with the gonad-stimulating principle of pregnancy urine normal gonadotropic effects were secured even in hypophysectomized animals¹⁷. It is highly interesting that Leonard and Smith,¹⁸ by the simple addition of the principle in menopause urine to that in pregnancy urine, have secured similar results. A chemical separation of anterior lobe extracts into follicle-stimulating and luteinizing components was at least partially made and announced as early as 1930 by Fevold, Hisaw and Leonard. Wallen-Lawrence¹⁹ has also successfully fractionated anterior lobe substance into extracts with similar effects. Fevold and Hisaw²⁰ have recently suggested that their follicle-stimulating hormone is identical with the synergist shown to be essential for completing the action of the gonadotropic factor of pregnancy urine.

It would appear therefore, that in the menopause and in pregnancy the body fluids contain types of gonadotropic hormone that are similar to, if not identical with, types that can be secured by chemical treatment of the pituitary gland. Combinations of either urinary component with the complementary gland component behave synergically. More than this cannot be said at the present time, nor will it be well to hazard a guess as to the identity of substances still incompletely known both biologically and chemically.

13 Reichert, F. L., Pencharz, R. I., Simpson, Miriam E., Meyer, Karl and Evans, H. M. Ineffectiveness of Prolan in Hypophysectomized Animals. *Proc. Soc. Exper. Biol. & Med.* 28: 843 (May) 1931.

14 Riddle, Oscar. Studies on Pituitary Function. *Endocrinology* 15: 307 (July-Aug.) 1931.

15 Engle, E. T. Biological Differences in Response of the Female Macacus Monkey to Extracts of the Anterior Pituitary and of Human Pregnancy Urine. *Am. J. Physiol.* 106: 145 (Oct.) 1933.

16 Evans, H. M. and Simpson, Miriam E. A Comparison of the Ovarian Changes Produced in Immature Animals by Implants of Hypophyseal Tissue and Hormone from the Urine of Pregnant Women. *Am. J. Physiol.* 89: 381 (July) 1929.

17 Evans, H. M., Pencharz, R. I. and Simpson, Miriam E. The Repair of the Reproductive System of Hypophysectomized Female Rats by Combinations of a Hypophyseal Extract (Synergist) with Pregnancy Prolan. *Endocrinology* 18: 601 (Sept. Oct.) 1934. Maintenance and Repair of the Reproductive System of Hypophysectomized Male Rats by Hypophyseal Synergist, Pregnancy Prolan and Combinations Thereof. *ibid.* 18: 607 (Sept. Oct.) 1934.

18 Leonard, S. L. and Smith, P. E. Ovarian Response of Hypophysectomized Rats to Urinary Follicle Stimulating Principle. *Proc. Soc. Exper. Biol. & Med.* 31: 283 (Nov.) 1933.

19 Wallen-Lawrence, Z. Proof of the Existence of a Follicle Stimulating and a Luteinizing Hormone in the Anterior Lobe of the Pituitary Body. *J. Pharmacol. & Exper. Therap.* 51: 263 (July) 1934.

20 Fevold, H. L. and Hisaw, F. L. Interactions of Gonad Stimulating Hormones in Ovarian Development. *Am. J. Physiol.* 109: 655 (Oct.) 1934.

There are reasons for believing that the gonadotropic factor of the urine of pregnancy arises through the function of chorionic tissue and is not a product of the anterior hypophysis. These are that

1 The chorionic tissue of the placenta has large amounts of gonadotropic substance in it, as demonstrated by implantation or injection of extracts, whereas the anterior lobe of women dying in pregnancy has little or no gonadotropic hormone in it (Philipp)

2 The same hormone is present in high amounts in all types of chorionic tissue growth, especially hydatidiform mole and chorionepithelioma, whether in women or in men.

3 A rare case of hydatidiform mole has been described in which the body fluids were singularly lacking in this substance. Study of the uterine wall showed that the mole had been delimited from the maternal circulatory system by a massive fibrin boundary zone, conceivably preventing leakage of the hormone shown to be actually abundant in the mole tissue.²¹

4 The hormone content is high in the chorionic villi of extremely young ova as well as in the body fluids before the hypophysis shows histologic pregnancy changes.

For all these reasons it would seem best to designate this substance as chorionic gonadotropic hormone.²² Admittedly the proof of its production by the chorion, without contribution by the pituitary, could be secured only by quantitative studies of its secretion in a pregnant hypophysectomized monkey. It is almost certain that the placenta likewise manufactures the massive quantities of estrogenic substance produced in pregnancy.²³

The substance found in the blood stream and urine in underfunction of the ovary, in the menopause and following castration is certainly a product of the anterior pituitary. It would now appear certain that even the particular cells of the anterior lobe forming and storing this hormone are known—the basophils. The chain of evidence here is as follows:

1 The anterior lobe of castrated rats contains as a new feature the peculiar, enlarged signet-ring basophils or castration cells.

2 Such pituitaries contain an increased content of gonadotropic hormone.

3 The parabiotic union of a hypophysectomized female with a castrated male leads to the development of constant estrus and the presence exclusively of large follicles in the ovary of the female parabiont.²⁴

Follicle-stimulating urine and the hypophyseal synergist have both been administered to hypophysectomized male rats, and it is highly interesting that in both cases there occurred marked stimulation of the germinal tissue (the seminiferous tubules) without stimulation of the interstitial tissue or accessory sexual apparatus. In the male, these particular gonadotropic substances are hence quite purely gametogenic in their effects and without influence on the secretion of the testis hormone by the Leydig cells, whereas other anterior lobe extracts or chorionic gonadotropic hormone affect the testicular interstitial tissue and accessory organs predominantly.

Inadequacy of gonadotropic hormones—Hypophysectomy in young animals invariably leaves them sexually infantile, in fact, regression occurs from the stage of development of the genital system encountered

21 Philipp, E. Blasenmole mit negativer Schwangerschaftsreaktion. *Zentralbl. f. Gynak.* 55: 491 (Feb. 21) 1931.

22a. Or chorionic gonadotropin.

22 Hart, G. H. and Cole, H. H. The Source of Oestrin in the Pregnant Mare. *Am. J. Physiol.* 109: 320 (Aug.) 1934.

23 Witschi, E. and Levine, W. T. Oestrin in Hypophysectomized Rats Parabiotically Connected with Castrates. *Proc. Soc. Exper. Biol. & Med.* 32: 101 (Oct.) 1934.

at the time of operation Human infantilism is doubtless also in a large majority of cases referable to hypopituitarism. A satisfactory beginning has already been made in its treatment with gonadotropic hormones,²⁴ especially in delayed sexual development and cryptorchidism²⁵ in boys.

The relations between the pituitary and gonads are such that, while proper functioning of the latter may be prevented by inadequate secretion of the pituitary gonadotropic hormones, these hormones in other cases may be produced in normal amounts, but the gonads fail to respond. One can thus justifiably speak of primary and secondary hypogonadism. In the former case the gonad itself is at fault, as shown by abundant pituitary gonadotropic secretion in the blood stream, in the latter the pituitary gonadotropic function is at fault. The diagnosis is facilitated in women by the fortunate circumstance that both ovarian (estrogenic) and pituitary (gonadotropic) hormones are normally present in low amounts in the blood and urine after puberty.²⁶ Primary and secondary amenorrheas can therefore often be clearly segregated. Mazer and Goldstein ascribe some 80 per cent of cases of amenorrhea to hypophyseal insufficiency.

Gonadotropic therapy in amenorrhea, which will be more fully dealt with in a special article in this series, has on the whole been disappointing. As had been mentioned in the treatment of hypogonadism in the male, this has been largely due to the almost exclusive employment of the hormone found in the urine of pregnant women.

Underfunction of the hypophysis is not always expressed in the female as amenorrhea. It would appear from the successful results of therapy with the gonad-stimulating factor of pregnancy urine that Schroeder's disease (characterized by hypertrophic endometrium and excessive bleeding) may be the result of deficiency of gonadotropic hormone. The situation is further explained by the view that only one of the two hypophyseal gonadotropic hormones normally secreted is deficient, namely, the luteinizing hormone. The excessive amount of estrogenic substance produced by the cystic follicles undoubtedly causes endometrial proliferation, and an interruption of its production leads to the profuse uterine bleeding that

characterizes these cases. The improvement resulting from the administration of gonadotropic substance is apparently due to its luteinizing power. At any rate, the cysts or large follicles characterizing the ovaries of these women are luteinized by the treatment and the condition in the uterus, and consequent excessive bleeding is corrected. Long continued amenorrhea may be present in such cases if there is no intermission in the outpouring of estrogenic substance from the cystic follicles present. Such an amenorrhea has been described recently by Zondek, exactly the same conditions were found in the ovary and the uterus as in metropathia hemorrhagica.

Overabundance of gonadotropic hormone—*Pregnancy*. It is now well known that an outstanding characteristic of human pregnancy is the abundance in the blood and urine of estrogenic substance and of a gonadotropic hormone probably derived from the chorion. The increased quantity of estrogenic principle in these fluids appears somewhat later than does the rise in amount of gonadotropic hormone, though the estrus-inducing hormone lasts until birth, at which time it very abruptly diminishes. The gonadotropic hormone, on the other hand, is already abundant in the urine by the first missed period, constituting the well known Aschheim-Zondek test for pregnancy, a practically infallible means of recognizing gestation. The hormone reaches its maximum in the urine around the fourth or fifth month of pregnancy (from 5,000 to 20,000 mouse units per liter). The Aschheim-Zondek test has yielded outstanding service in the recognition of extra-uterine pregnancy. In the toxemias of pregnancy, extremely high amounts have been encountered in the last third of gestation.²⁷

Parturition. At birth, gonadotropic hormone disappears promptly from the maternal urine, even though this may not take place with such spectacular suddenness as the withdrawal of estrogenic substance. One thousand mouse units per liter of gonad-stimulating hormone has been found in the first day or two of the puerperium, though it is reported absent by the tenth to the fourteenth day. A continuing high titer in the puerperium is always associated with retained membranes. The same phenomenon is seen with death of the fetus, but failure to expel it, in earlier stages of pregnancy.

Hydatidiform Mole and Chorionepithelioma. Very extraordinary titers are given with the hydatidiform transformation of the chorion, and in chorionepithelioma amounts of from 100,000 to 520,000 mouse units per liter have been reported. The complete removal of the mole or malignant tissue usually leads to rapid disappearance of the hormone, but a few cases have been reported in which the hormone lingered unduly. These cases have been used to support the hypothesis of the formation of the hormone by the pituitary itself. The argument is unconvincing. Besides reservoirs for the very temporary storage of gonadotropic substance, the possibility of metastases which later regress must be considered. Should the test remain positive after a mole has been passed or removed, it must be repeated every fortnight until negative, and thence once a month for, say, three times, for malignant transformation may come late. If the test should continue to be positive a

24 But it is unfortunate that the majority of the reported cases concern only the employment of the principle in pregnancy urine. This substance as disclosed further in the present paper, is markedly limited in its gonadotropic effects in all animals and especially in primates.

25 Rubinstein H. S. The Production of Testicular Descent with the Water Soluble (Anterior Pituitary Like) Fraction of Pregnancy Urine. *Endocrinology* 18: 475 (July Aug.) 1934. Sexton D. L. Treatment of Sexual Underdevelopment in the Human Male with Anterior Pituitary Like Hormone of Urine of Pregnancy *ibid.* 18: 47 (Jan. Feb.) 1934. Goldberg M. M. Treatment of Pituitary Infantilism with Antuitrin *ibid.* 18: 233 (March April) 1934.

26 P. Wirz (H. V. H. and Amennorrhoe Ztschr. f. Geburtsh. u. Gynak. 104: 293 1933) finds only follicle stimulating hormone in the urine of small children the luteinizing factor appearing first at puberty to its appearance he attributes the onset of the cycle. In men the quantity is extremely small (Evans H. M. Simpson Miriam E. and Austin P. R. The Recognition and Comparison of Prolan and Prolan-like Substances. *J. Exper. Med.* 58: 561 [Nov.] 1933. Katzman P. A. and Doisy E. A. The Quantitative Determination of Small Amounts of Gonadotropic Material. *J. Biol. Chem.* 106: 125 [Aug.] 1934) but in women the quantity is large enough to be demonstrable at moderate dosage of the alcohol precipitate out of urine. Zondek says that on the average 5 mouse units per liter is present. Frank and his co-workers (Frank R. T. Goldberger M. A. and Spielman Frank. Present Endocrine Diagnosis and Therapy. *J. A. M. A.* 103: 393 [Aug. 11] 1934) find a definite variation with the cycle, a full mouse unit not being present in 40 cc. of blood until seven days before onset of the menses (Estrogenic substance is found by them also to vary increased excretion occurring about the tenth day and again about three days before onset of the next menstrual flow about 1,200 to 1,500 mouse units being excreted per month.) Kurzrok and his associates (Kurzrok, R. Kirkman I. J. and Creelman M. Studies Relating to the Time of Human Ovulation. *Am. J. Obst. & Gynec.* 28: 319 [Sept.] 1934) describe a definite rise in gonad-stimulating hormone in blood just preceding or at the time of ovulation on days 10 to 13 of the cycle.

27 Heim K. Ergebnisse quantitativer Hormonanaysen bei Schwangerschaftstoxikosen. *Klin. Wchnschr.* 13: 1614 (Nov. 10) 1934.

month after removal of the uterus for definite chorion-epithelioma, one may be sure of the growth of metastases

It is in cases of mole and chorionepithelioma that the hormone is found in the cerebrospinal fluid, it is not detectable in the liquor in normal pregnancy

Testicular Tumors Testicular tumors of particular types (the classic work is Chevassu's), which are now recognized as teratoid though they possess undifferentiated or embryonal cells (embryonal carcinoma and sometimes true chorionepithelioma), also give astonishingly high amounts in the urine. We have ourselves seen a case in conjunction with Himman and Powell in which the urine shortly before death contained one million rat units per liter. Several cases of retroperitoneal and mediastinal locus of these tumors with complete freedom of both testes have now been reported. As in malignant transformation of the chorion in the female, the following of the titer in the urine is important as indicating local or metastatic recurrence.

Castration Hypogonadism and the Menopause It has been found that women who for any reason have partial or complete loss of ovarian function often²⁸ excrete considerable amounts of castration gonadotropic hormone, e. g., after the menopause after operative removal of the gonads, after roentgen castration or after hypogonadism resulting from pathologic processes in the gonads. Other amenorrheas due to unexplained ovarian insufficiency and the amenorrhea of lactation belong here. Zondek, Wirz and others agree that urinary titers of more than 100 mouse units per liter indicate absence of function of the ovary. Osterreicher²⁹ finds from 80 to 300 mouse units per liter in the urine in both castration and the menopause. The hormone is also found in the urine of castrated men.

Genital Cancer Zondek's early studies convinced him that malignant tumors of the genital tract were three or four times as prone to be associated with the presence of urinary gonadotropic hormone as were benign growths. In fact he felt that some indication of the malignancy of a genital neoplasm could be secured by implanting fragments of the tumor tissue into immature rodents, if strongly positive malignancy was indicated. But neither this procedure nor the titration of urines for gonadotropic hormone has yielded the same spectacular service in genital cancer afforded by similar tests of the body fluids in mole and chorionepithelioma.

Miscellaneous Conditions with Increased Hormone Riley and his associates³⁰ have shown the presence of the menopause hormone in the urine in migraine, its appearance being correlated with the seizures. Kraus³¹ has shown the hormone in cases of brain tumor and in 60 per cent of women with increased intracranial pressure. In skin diseases, e. g., pruritus vulvae and acne rosacea, the urinary hormone has also been reported.

III LACTOGENIC HORMONE

The invariable association of milk secretion with reproduction in the female was itself an a priori reason for supposing that the hormone characteristic of preg-

nancy, that of the corpus luteum (progesterin), was responsible for the mammary changes. Yet it would appear that nothing is better established than the non-concern of luteal function with mammary activity. The latter is now known to be due primarily to the secretion of another special hormone (prolactin, or the lactogenic hormone) by the anterior lobe. Experimental biology may be said to have demonstrated

1 The necessity of estrogenic substance³² to provide the growth stimulus to the mammary gland

2 The fact that the estrogenic factor is limited in its effects—it causes an unfolding of the duct system but not development of secretory alveoli

3 The non-necessity of progesterin³³ in mammary physiology

4 The invariable dependence of the mammary gland for functional development on prolactin

5 The inhibition of prolactin secretion by estrogenic substance

It is probably safe to say that all mammary glands have been exposed to estrogenic hormone, even if only temporarily, during fetal life and immediately post partum. The majority of new-born infants show a mammary growth spurt, and often secretion, following the elimination of estrogenic substance from the system in the first week of life. The preliminary action of estrogenic hormone, its withdrawal or diminution, followed by a temporary prolactin secretion, would seem to explain the long debated phenomenon of witch's milk.

The cyclic changes in the breast showing maximum development, and often secretion, at the time of menstruation have as their best explanation a cyclic secretion of prolactin. Cases have been described wherein milk is secreted regularly during menstruation or in place of menstruation, at the usual intervals.³⁴ The fact that breast growth and lactation may follow ovariectomy or the menopause forces one to the conclusion that continued stimulation by estrogenic substance is not necessary to the breast and that prolactin may continue to be effectively secreted long after the influence of the estrogenic factor has disappeared. Cows lactate for two years following ovariectomy, and women have been known to do so for several months. The stripping of these spontaneously lactating glands would probably prolong lactation by virtue of a reflex prolactin secretion³⁵ as well as by preventing regression due to alveolar stagnation. The fact that one fourth of all women show parenchymal breast hypertrophy following the menopause, instances of senile lactation, cases of prolonged lactation (especially those associated with amenorrhea, uterine regression or fibroid) point to hypersecretion of prolactin or at any rate to a prolactin effect, which to some extent may be due to the removal of the inhibition exercised by estrogenic substance.

In pregnancy or pseudopregnancy, a gradual continuous growth of the breasts is substituted for the cyclic changes. The fetus plays no important role, if

32 A generic term used throughout this series to avoid the confusion entailed by the current employment of its many alleged synonyms. The reader is referred to an editorial, *The Nomenclature of Glandular Products* (THE JOURNAL Oct. 13, 1934, p. 1152) in which this subject is discussed.

33 Progesterin corporin hormone of the corpus luteum

34 Schweitzer B. Zu der Wechselbeziehung zwischen Genital und Mammafunktion. Zentralbl. f. Gynak. 47:717 (May 5) 1923. Gauthier. *Un cas de secretion lactée remplaçant les règles chez une jeune fille vierge*. Lyon med. 100:199, 1903. Landau I. Ueber einige Anomalien der Brustdrüsensekretion. Deutsche med. Wchnschr. 10:745, 1890. Landau described a nullipara who lactated in place of menstruation for one and a half years following double ovariectomy.

35 Selye Hans. On the Nervous Control of Lactation. Am. J. Physiol. 107:535 (March) 1934.

28 Some claim that 100 per cent of old women will be found to have a hormone in their urine if repeated examination is made.

29 Osterreicher W. Vermehrte Ausscheidung von Hypophysenvorderlappenhormon (Prolan) im Harn in der Involutionperiode bzw. im Senium. Klin. Wchnschr. 11:813 (May 7) 1932.

30 Riley H. A., Brickner R. M. and Kuzrok R. The Abnormal Excretion of Theelin and Prolan in Patients Suffering from Migraine. Bull. Neurol. Inst., New York, 3:53 (June) 1933.

31 Kraus E. J. Zur Genese der kleinsten Degeneration der Ovarien. Arch. f. Gynak. 152:383, 1933.

any, in mammary physiology and the chorion probably need only be considered because of its contents of estrogenic and gonadotropic hormones. Guinea-pigs and women may continue pregnancy and deliver and suckle their young following ovariectomy,³⁶ but if an animal is hypophysectomized during pregnancy the mammary growth is inhibited and even though a small amount of milk may be present after parturition the breasts quickly atrophy.³⁷ It is not unlikely that prolactin is alone responsible for the growth of the breast in pregnancy and in the puerperium, since with prolactin one may obtain full development and lactation in animals ovariectomized after reaching sexual maturity.³⁸ Estrogenic substance depresses prolactin secretion during pregnancy, the expulsion of the placenta, whether at term or prematurely, releases that inhibition, and full growth of the breasts and lactation follow.³⁹ Failure to lactate following parturition may in some instances be explained by an excess of estrogenic substance in the system or simply by insufficient prolactin. The continuance of secretion of estrogenic hormone in cases of retained membranes amply explains the impairment of mammary function observed in this condition.

The clinical and postmortem observations in gynecomastia are variable and confusing. Aside from being found in true gynandromorphism, where it might be expected, it is also associated with tumors of the testis known to contain estrogenic substance, and with pituitary, adrenal and pineal tumors. It is very difficult as yet to evaluate degrees of gynecomastia in terms of estrogenic substance and prolactin, respectively. However, if the organism were saturated with estrogenic hormone and the anterior lobe did not secrete prolactin no parenchymal growth over and above nipple and duct hypertrophy would occur. It is not unlikely that the presence of chorionepitheliomas with their high contents of estrogenic and gonadotropic hormones is inhibitory toward the prolactin secreting cells since only about 6 per cent of these cases show gynecomastia.⁴⁰

Since pituitary dysfunction rarely manifests itself with respect to a single hormone, it is not surprising that abnormal mammary hyperplasia with or without lactation has been found associated with gigantism or acromegaly in both sexes indicating that at least two of the established anterior lobe hormones are in excess. Male impotence as well as amenorrhea, accompanied by abnormal breast development and lactation, may in some instances be due to hypogonadotropic hormone secretion coupled with oversecretion of prolactin, while lactation in sexually normal males with pituitary tumors implies hyperactivity of the prolactin secreting cells without impairment of the gonadotropic hormone secretion.

Until the physiopathologist duplicates the various abnormal breast hyperplasias with hormones in such a form as the hypophysectomized monkey, it would be better to abstain from too much conjecture regarding hormonal etiology. Animal experiments suggest how-

ever, that abnormal nipple or duct growth may be accomplished by excess of estrogenic hormone alone, whereas abnormal alveolar hyperplasia may require preliminary stimulation by estrogenic substance followed by prolactin. By injecting estrogenic substance to inhibit prolactin secretion, Mazer⁴¹ obtained some measure of regression in cases diagnosed by the effect of treatment as lobular hyperplasias. Geschickter and his colleagues⁴² have partly reproduced the picture of fibro-adenoma in the male monkey by injections of estrogenic substance and prolactin.

One is tempted to search for hormonal explanations of the well known fact that the great bulk of benign mammary tumors occur before, while most malignant growths occur after, the menopause. Transplantable or spontaneous mammary tumors are partly inhibited by their growth by hypophysectomy and are accelerated by pituitary injections.⁴³ The slightest indication of a relationship between prolactin and the incidence or proliferation of malignant conditions will undoubtedly restrain the zeal of those clinicians anxious to improve breast function.

For a better understanding of abnormal breast conditions, a suitable test for prolactin in the body fluids is needed. With simultaneous assays of estrogenic and gonadotropic hormones and prolactin in bloods and urines, the gynecologist should be able more accurately to decide on the hormonal relationships in any given mammary condition, and the actual need of nursing mothers for prolactin therapy.⁴⁴

IV THYROTROPIC HORMONE

The discovery of thyroid-stimulating effects from anterior pituitary substance was made simultaneously and independently by Loeb and by Aron in 1929. It is now known that these thyrotropic⁴⁵ or thyrotropic effects are due to a specific hormone of the anterior lobe, i e., to a substance which, although not yet finally purified, does not give the other effects of anterior lobe implants or extracts (somatotrophic, gonadotropic and the like). As will be disclosed in a special paper of this series, its first approximate purification was achieved independently by Junckmann and Schoeller and by Loeser in 1932. The researches of the Aron group at Strasbourg, of Jansen and Loeser and their co-workers at Freiburg, and of Collip, Anderson and their associates at Montreal have done much to elucidate the biologic effects of this substance. The thyrotropic hormone exerts its action only in the presence of the thyroid gland, a complete thyroidectomy obliterating any and all of its specific effects.

Underproduction of Thyrotropic Hormone—Pituitary ablation is invariably followed by hypothyroidism, conditions of underfunction of the pituitary could therefore be followed by hypothyroid states. One may therefore justifiably ask to what extent cretinism or myxedema may be regarded as being primarily pituitary and only secondarily thyroid disorders, i e., due to inadequate amounts of thyrotropic hormone. Unfortunately the titration of the body fluids for thyrotropic

36 Nelson W O. Reciprocal Relationship Between the Ovaries and Anterior Hypophysis as a Factor in Control of Lactation. *Proc Soc Exper Biol & Med* 30 953 (April) 1933.

37 Penczarz R I and Long J A. Hypophysectomy in the Pregnant Rat. *Am J Anat* 53 117 (July) 1933. Selye Hans Collip J B and Thomson D L. Effect of Hypophysectomy upon Pregnancy and Lactation. *Proc Soc Exper Biol & Med* 30 589 (Feb.) 1933.

38 Corner G W. The Hormonal Control of Lactation. *Am J Physiol* 95: 43 (Oct.) 1930.

39 Nelson W O. Studies on the Physiology of Lactation. *Endocrinology* 18 33 (Jan Feb.) 1934.

40 Kruis B. Einige Bemerkungen zur Arbeit von Heidrich Fels und Mathias. Testicular Chorionepitheliom mit Gynkomastie. *Arch f Gynak* 145: 327 1931.

41 Mazer C. The Endocrine Glands in Relation to Abnormal Breast Hyperplasias. *M Rec* 140 417 (Oct 17) 476 (Nov 7) 1934.

42 Geschickter C F Lewis Dean and Hartman C G. Tumors of the Breast Related to the Oestrian Hormone. *Am J Cancer* 21 828 (Aug.) 1934.

43 Further work of this nature might well take advantage of spontaneous metastasizing mammary tumors of mice and a purified prolactin.

44 Kuzrook R Bates R W Riddle Oscar and Miller E G. The Clinical Use of Prolactin. *Endocrinology* 18 16 (Jan Feb.) 1934.

45 The term was first suggested by Wiesner and Crew.

hormone is not in as satisfactory a state as that concerning the gonadotropic hormones. It must be confessed that although Aron⁴⁶ and his associates feel that this titration can be effected and that the body fluids are indeed enormously high in thyrotropic hormone in myxedema,⁴⁷ his results are under dispute, Marie Krogh⁴⁸ denies their validity entirely. Paal⁴⁹ and Nielsen⁵⁰ both report the hormone in the urine. Giedosz,⁵¹ while finding it in the urine, finds it in a motley array of disorders not specifically related to thyroid or pituitary disorders.

Overproduction of the Thyrotropic Hormone—It has already been noted that Aron feels that one can recognize very high titers of this substance in many cases of myxedema, and it is interesting that the same observer reports his lowest recorded titers (subnormal amounts) in cases of exophthalmic goiter, which he is hence inclined to classify as primary thyroid overactivity not induced by overabundant thyrotropic substance.⁵²

The discovery of an antithyrotropic hormone by Anderson and Collip, and the extension of this discovery to the detection of other anterior pituitary anti-hormones (antigrowth, antigonadotropic, antiketogenic) has introduced a new epoch of theoretical as well as clinical research. The amelioration of exophthalmic goiter by antithyrotropic hormone has already been reported, it being fortunate that the thyroid secretion does not oppose or modify the effects of antithyrotropic hormone. Collip's⁵³ conception that all hormones are accompanied by and "buffered" by a normal blood content of antihormone, and his statements that the antihormones do not arise concurrently with other known antibodies, all indicate that the phenomena are distinct from those hitherto studied in the field of immunity.

V INTERRENOTROPIC HORMONE

There is both experimental and clinical evidence to support the concept of an interrelationship between the anterior pituitary and the cortical tissue of the adrenal gland. Houssay⁵⁴ and Shumacker and Firor⁵⁵ have both recently and rather comprehensively reviewed this subject.

46 Aron M. Le titrage des hormones prehypophysaire dans l'urine humaine son interet dans l'exploration fonctionnelle des diverses glandes endocrines. *Bull. Acad. de med. Paris* 111: 273 (Feb. 20) 1934.

47 Aron's observations if substantiated will prove that many if not most cretinic and myxedematous conditions are primary thyroid disorders just as the overabundance of gonadotropic hormone in the menopause and the primary amenorrheas indicate primary inability of the ovary to respond to gonadotropic hormones that are normally or even excessively present. Aron's results also explain the unfavorable results in the few cases in which thyrotropic therapy has been tried in myxedema. Schittenhelm and Eisler have for instance injected from 600 to 1 000 guinea pig units daily of the thyrotropic hormone without significant improvement.

48 Krogh Marie and Okkels H. L'hormone thyreo-stimulante de la prehypophyse. *Compt. rend. Soc. de biol.* 116: 255 (April 12) 1934.

49 Paal H. Ueber Hormothyrin das Schilddrusenanregende Hormon des Hypophysenvorderlappens. *Klin. Wchnschr.* 10: 2172 (Nov. 21) 1931.

50 Nielsen, Herman. Ein Thyreostil durch Harninjektion in Kaninchen. *Klin. Wchnschr.* 12: 508 (April 1) 1933.

51 Giedosz B. Ueber thyreotropische Substanzen im menschlichen Harn. *Klin. Wchnschr.* 13: 1507 (Oct. 20) 1934.

52 It may be felt that such a deduction can hardly be allowed on conclusive validity for it is conceivable that a hypertrophied thyroid could demand and utilize such large amounts of the thyrotropic hormone as to depress the normal titer in this substance. On the other hand Aron and others have shown that thyroxine renders thyrotropic hormone ineffective and thyroid overactivity might therefore automatically control itself in the normal mechanism quite apart from the thyrotropic antithyrotropic balance. The improvement in some cases of exophthalmic goiter following roentgen therapy of the pituitary reported by Merklin and Aron (1933) and by Peters (1934) lends inadequate support to the conception of pituitary exophthalmic goiter.

53 Collip J. B. Inhibitory Hormones and the Principle of Inverse Response. *Ann. Int. Med.* 8: 10 (July) 1934.

54 Houssay B. A. Relaciones entre la hipofisis y las suprarrenales. *Prensa med. argent.* 20: 1563 (July 19) 1933.

55 Shumacker H. B. and Firor W. M. The Interrelationship of the Adrenal Cortex and the Anterior Lobe of the Hypophysis. *Endocrinology* 18: 676 (Nov. Dec.) 1934.

Hypopituitary States—Following hypophysectomy there is a rapid and extensive atrophy of the adrenal cortex, which can be restored by the use of pituitary implants or injections of extracts but not by injecting cortical hormone. It seems certain that this repair is due to a special hormone of the anterior lobe, the adrenotropic or, better, adrenocorticotrophic or interrenotropic hormone.⁵⁶ Following unilateral adrenalectomy in normal animals there is a marked compensatory hypertrophy of the remaining adrenal, which does not take place in a hypophysectomized animal. In clinical conditions such as pituitary cachexia and dwarfism the adrenals have been reported as disproportionately small. In anencephaly the hypophysis is small or absent and it is interesting that there is also hypoplasia of the adrenal cortex.

Hypocortical States—Adrenalectomized rats can be made to grow by adequate treatment with cortical hormone, but this is not the case if the animal has been hypophysectomized. In Addison's disease histologic changes occur in the pituitary gland, chiefly a diminution in the number of basophils. Similar changes have been found in the pituitary of an adrenalectomized dog. The treatment of Addison's disease with pituitary extract has been reported by Wilder.⁵⁷

Hyperpituitary States—The implantation of anterior pituitary tissue or injection of pituitary extracts into normal animals brings about a marked hypertrophy of the adrenals. This is apparently due to the same hormone that repairs adrenal-cortical atrophy after hypophysectomy, and the preparation of the hormone in a rather pure state has been reported.⁵⁸ The thyroid is necessary in this pituitary production of adrenal hyperplasia, although the thyrotropic hormone does not seem to be the essential cause of it, for pituitary extracts devoid of thyrotropic effects are able to produce the adrenal enlargement, and the enlargement cannot be produced by administering the thyroid hormone.⁵⁹ In cases of acromegaly, adrenal hyperplasia and cortical adenomas are often present, and one case has been reported in which an acromegalic girl suddenly developed hirsutism, interpreted as an adrenal effect.

Hypercortical States—In addition to being essential for life, the adrenal cortex seems definitely related to the reproductive and integumentary system, as is well illustrated in a rather well defined group of changes produced by certain cortical tumors (interrenalism).⁶⁰ It remained for the acumen of Harvey Cushing to discover that a group of these cases is produced by basophilic adenoma of the pituitary (Cushing's disease).⁶¹ Similar pictures are given by arrhenoblastomas.

56 If the carbohydrate upset caused by the anterior lobe extracts should be established as an epinephrine diabetes (hyperepinephrinism) thus produced by a pituitary hormone it may then be appropriate to speak of the latter as the adrenomedullotropic or chromaffinotropic hormone.

57 Wilder R. M. The Use of Anterior Lobe Pituitary Extract in the Treatment of Addison's Disease. *Proc. Staff Meet. Mayo Clin.* 9: 689 (Nov.) 1934.

58 Collip J. B., Anderson E. M. and Thomson D. L. The Adrenotropic Hormone of the Anterior Pituitary Lobe. *Lancet* 2: 347 (Aug. 12) 1933. Anselmino K. J., Hoffman F. and Herold L. Ueber das corticotrope Hormon des Hypophysenvorderlappens. *Klin. Wchnschr.* 13: 209 (Feb. 10) 1934.

59 McQueen Williams M. Necessary Concurrence of the Thyroid in the Marked Adrenal Cortical Hypertrophy Following Beef Anterior Pituitary Implants. *Proc. Soc. Exper. Biol. & Med.* 32: 296 (Nov.) 1934. Emery F. E. and Winter C. A. The Adrenotropic Substance of the Hypophysis as Influenced by Age, Castration, Sex and Thyroparathyroidectomy. *Anat. Rec.* 60: 381 (Nov.) 1934. Loesser A. Beziehungen zwischen der thyreotropen Substanz des Hypophysenvorderlappens und den Nebennieren. *Klin. Wchnschr.* 12: 1614 (Oct. 14) 1933.

60 Walters, Wiltman, Wilder R. M. and Kepler E. J. Suprarenal Cortical Syndromes. *Ann. Surg.* 100: 670 (Oct.) 1934.

61 Cushing Harvey. The Basophil Adenomas of the Pituitary Body and Their Clinical Manifestations. *Bull. Johns Hopkins Hosp.* 50: 137 (March) 1932.

of the ovaries^{61a} The many symptoms common to these groups form strong substantiation for a special pituitary-adrenal-gonadal interrelationship The titration of the body fluids for the gonadal and gonadotropic hormones in these various conditions has not yet been adequately undertaken⁶² Pituitary transplants have been found to have an effect on the reproductive system of adrenalectomized animals, but cortical hormone did not affect hypophysectomized animals

VI METABOLIC HORMONES

In addition to the metabolic effects that have already been mentioned in the discussion of the thyrotropic and interrenotropic hormones, there have been studies made on some special relationships of the anterior hypophysis to metabolism These deal largely with the metabolism of carbohydrate and fat, and to a less extent of protein The interpretation of such studies is especially difficult because of the many species used the varying technics of operation, the many types of extracts injected, the different methods of chemical analysis, and the acknowledged interrelationship of many factors other than the pituitary gland involved in general metabolism

Until recently it seemed most likely that water metabolism was controlled solely by hypothalamic centers to which it was admitted the posterior lobe had a relation not wholly understood, the outstanding fact being the therapeutic control of diabetes insipidus with posterior lobe extracts Evidence of a relation of the anterior lobe to water metabolism has recently been furnished I shall not discuss this but concern myself with the more carefully investigated but perhaps equally obscure relation of the anterior lobe to carbohydrate, fat and protein metabolism

Carbohydrate Metabolism—This field may be considered as having been opened by the announcement of Houssay and Magenta in 1924 that hypophysectomized dogs have a markedly increased sensitiveness to insulin This has been confirmed abundantly, although it awaits thoroughgoing elucidation In 1930 Biasotti and Houssay extended to mammals an experience with toads to the effect that hypophysectomy lessens the severity of diabetes from pancreatectomy and that after such double operations an intensification of the diabetes ensues from anterior lobe but not from posterior lobe implants These announcements, sufficiently spectacular, suffered temporary neglect, but energetic refutation or confirmation and extension of the Houssay phenomena is now being undertaken In 1932 came the independent announcements by Evans and his co-workers and by Houssay of the production of hyperglycemia and glycosuria in normal animals by injection of anterior pituitary extracts

This, which is perhaps the most deeply interesting field of pituitary research, continues to remain in the least satisfactory state, and clinical applications are premature

The studies that have been made on hypophysectomized animals may be summarized thus

1 A temporary glycosuria occurs which, it is generally agreed, is secondary to cerebral trauma rather than to the absence of the gland

61a Meyer Robert The Pathology of Some Special Ovarian Tumors and Their Relation to Sex Characteristics *Am J Obst. & Gynec* 22: 607 (Nov.) 1931

62 Though in one instance a substance having the effects of the testis hormone was found in a woman's urine (Simpson S L Clinical and Pathological Aspects of the Adrenal Glands *Proc Roy Soc. Med.* 27: 383 1934)

2 Hypoglycemia develops sometimes to the point of convulsions and death

3 The animals are markedly more sensitive to small amounts of insulin

4 The intensity of the diabetes of pancreatectomized dogs is lessened⁶³

5 The glycogen reserves are usually reported as diminished, though some reports of their normality have been made

As regards normal animals injected with pituitary extracts, one may state that

1 Disturbed carbohydrate metabolism is manifest by glycosuria hyperglycemia and decreased (diabetic) sugar tolerance curve

2 Houssay reports that these effects can still be secured in the absence of various organs including the thyroids, adrenal medulla gonads and sympathetic nerves Lucke states that the adrenal is essential

3 Most of the effects of the extracts require chronic injections for several days Only Lucke reports effects within a few hours

4 With the disturbance in carbohydrate metabolism there are associated disturbances in fat metabolism

The new conception that diabetes may be due to an overacting hypophysis⁶⁴ and not solely to inadequate pancreatic insular function is engaging, but the only conclusion now warranted is that, while there is some substance in the anterior pituitary that affects carbohydrate metabolism, the isolation of a special "diabetogenic" or 'contra-insular' hormone has not yet been effected

Fat Metabolism—Hoffman and Anselmino (1931) and Magstris (1932) have secured from the anterior pituitary of beees a material causing increased acetoneuria and simultaneous diminution of the neutral fats of the blood Bevin and Ling (1933) found increased acetoneuria of rats on a butter diet when injected with alkaline extracts of bovine anterior pituitary Extracts containing the thyrotropic hormone had been reported to give some of these effects, so that it is important that Black, Collip and Thomson⁶⁵ have recently secured the increased acetoneuria in thyroidectomized rats The evidence adduced up to the present time makes it probable that the "ketogenic principle" is indeed a separate hormone, for, although it contaminates growth and thyrotropic fractions, it may be secured in growth fractions free of thyrotropic and in thyrotropic fractions free of growth hormone, and it is said to be absent from the best adrenotropic preparations

Protein Metabolism—O H Gaebler^{66a} and Lee and Schaffer⁶⁶ have demonstrated the retention of nitrogen provoked by the growth hormone Houssay and his associates report that in phlorhizinized, hypophysectomized dogs, sugar and nitrogen excretion is markedly less than in unoperated on or thyroidectomized animals

63 Unfortunately not all published reports contain detailed necropsies

64 Some special students of the subject state that no pathognomonic lesions of the islets have ever really been established in diabetes mellitus But the newer studies of E J Kraus Labbé and Petresco Glenn and others on the microscopic pathologic changes of the pituitaries of patients dead from diabetes are not more satisfactory Barnes and his co-workers have sought to improve diabetes by injections of estrogenic substance which would depress pituitary function diabetic treatment by radiation of the pituitary has been attempted with inconclusive results Selle and his co-workers (Selle W A, Westra J J and Johnson J B Effect of Irradiation of the Hypophysis on Experimental Diabetes *Proc Soc. Exper Biol & Med.* 31: 949 [May] 1934) were unable to affect diabetes in dogs by roentgen therapy

65 Black P R Collip J B and Thomson D L The Effect of Anterior Pituitary Extracts on Acetone Body Excretion in the Rat *J Physiol* 82: 385 (Oct. 17) 1934

66a Gaebler O H Some Effects of Anterior Pituitary Extracts on Nitrogen Metabolism Water Balance and Energy Metabolism *J Exper Med.* 57: 349 (March) 1933

66 Lee M O and Schaffer N K Anterior Pituitary Growth Hormone and the Composition of Growth *J Nutrition* 7: 337 (March 10) 1934

given phlorhizin⁶⁷ The former die in hypoglycemic crises whereas the latter do not Death can be prevented by feeding meat or sugar but not by feeding fat These observations are interpreted to mean that in the absence of the hypophysis there is an interference with the conversion of protein to carbohydrate

Varying results have followed the studies of the specific dynamic action in hypophysectomized animals and in clinical cases of hypopituitary disease No conclusions can be drawn from the work at this time

Clinical studies are not yet able to yield critical information regarding the relationship of the pituitary to metabolism Perhaps the earliest noted and best established phenomenon is the occurrence of glycosuria in about 40 per cent of the cases of acromegaly

The possible role of the pituitary in spontaneous hypoglycemia has been raised by Josef Wilder, who reported two cases with roentgen evidence of enlargement of the sella Were a contra-insular hormone available, it would be interesting to see its effect in those particular cases of this unfortunate condition in which no island tumor of the pancreas is found

While there can be no doubt that the pituitary gland plays a role in the metabolism of carbohydrates, fats and probably proteins, its modus operandi will not be sufficiently clarified until the researches of the immediate future are accomplished Its role may be to furnish specific hormones that act in conjunction with or as antagonists to other hormones In many laboratories efforts are being made to obtain these substances in at least partially purified form, though none are yet available for clinical use

CONCLUSION

The reader must not carry away the impression that the foregoing discussion comprises all that is known of the relations of the anterior pituitary with other glands and tissues of the body Indications of a special relation with the parathyroid are beginning to appear, and a role in erythropoiesis has been claimed An insular-pancreatotropic and an adrenomedullotropic hormone have been foreshadowed

The study of the possible derangement of many physiologic mechanisms in hypophysectomized animals has hardly begun Finally, this review has neglected completely the relation of the pituitary with the hypothalamus Future discoveries may irrefutably establish humeroneural mechanisms concerning which almost nothing is now known

It is perhaps somewhat surprising that not one of the five established pituitary hormones is accurately known chemically The protein nature of these substances has undoubtedly played a chief role in their intractability Yet in all cases a wide going purification has been attained, the minimal effective daily dose for test animals in the case of all them being below a milligram of substance

The desirability of increasing our power to estimate these materials quantitatively in the blood stream or urine could hardly be overstressed, and in the case of each one of them one must covet for the internist of the future the satisfaction now possessed by the gynecologist in his ability to determine the titers of estrogenic and gonadotropic hormones in the body fluids

67 Blasotti A and Houssay B A Phloridzin Diabetes in Fasting or Fed Hypophysectomized Dogs *J Physiol* 77:81 (Dec.) 1932 Houssay B A Blasotti A di Benedetto E, and Rietti C T Actions des extraits antéro hypophysaire sur le diabète phlorhizinique *Compt rend Soc de biol* 112:497 (Feb 10) 1933

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, MD

CHICAGO

NOTE—In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr Bernard Fantus The views expressed by various members are incorporated in the final draft for publication The series of articles will be continued from time to time in these columns—ED

THERAPY OF UNCINARIASIS

Uncinariasis should be thought of in any case of hypochromic anemia with eosinophilia, though the absence of eosinophilia does not eliminate uncinariasis, as in very severe cases the eosinophil count may fall to the normal average or even below it A stool examination is called for, especially if there is also a history of exposure in infested regions While the dried smear examination may show the eggs, it is best to stir up a gram of feces with about 20 cc of saturated solution of sodium chloride After about fifteen minutes, the eggs floating on the surface are transferred, possibly by means of the mouth of an inverted test tube, to the microscopic slide

PROPHYLAXIS

The prophylaxis depends on proper disposal of the feces of all infected persons (sanitary latrines), avoidance of walking barefoot and thorough treatment of all infested persons, which, if possible, would greatly hasten the eradication of the disease

TREATMENT

The treatment of uncinariasis is a story in two chapters the expulsion of the worms and the cure of the anemia

PRESCRIPTION 1—Tetra Chloro-Ethylene Capsules

B. Tetra-chloro-ethylene
Divide into six capsules

3.00 cc

Label Take in the morning on empty stomach

1 *Anthelmintic*—Tetra-chloro-ethylene is the preferred agent at present It requires no preliminary measures, excepting that the patient have no breakfast Instead of this meal the patient takes 3 cc of tetra-chloro-ethylene, preferably in capsules (prescription 1), followed immediately by a dose of 30 Gm of magnesium sulphate dissolved in a glassful of water If the patient believes he cannot swallow capsules, the tetra-chloro-ethylene is poured on a little sugar and is thus taken readily Children are given 0.2 cc for each year of age and 2 Gm of magnesium sulphate for each 5 Kg of body weight The patient should rest until the purge has acted, if it does not act within a few hours, a second dose of purgative should be taken After the bowel evacuation, the patient may eat preferably cooked cereal It is probably well to avoid the use of fats or alcohol just before and after administration of the drug, as these favor its absorption Its chief untoward effect is the occasional production of a transient dizziness, sometimes nausea, vomiting, headache, abdominal pains and malaise The patient should be warned against their possible occurrence They usually do not require treatment

After two weeks a stool examination should be made, and if no ova are found in flotation preparations the worms may be considered eradicated. If they are found, the treatment should be repeated, possibly with a dose of 4 cc of tetra-chloro-ethylene.

PRESCRIPTION 2—Reduced Iron Capsules

R Reduced iron 30.00 Gm
Divide into thirty capsules
Label Take two capsules three times daily after meals

2 *Hematine*—While there is a tendency to blood regeneration after expulsion of the worms, iron decidedly hastens this recovery, if given in large doses (e g, as in prescription 2)

3 *General Regimen*—Usually the patient may be permitted to continue with his occupation. Bed treatment is required only in extreme cases, especially in those with edema. An abundance of nutritious food is required in addition to the iron to favor rebuilding of the much depleted blood, and, no doubt, fresh air and sunshine are also useful in this direction.

THERAPY OF TRICHINIASIS

DIAGNOSIS

Marked eosinophilia should always lead one to suspect the possibility of some form of helminthiasis, though it must be remembered that eosinophilia may be due to many other conditions and that it is especially common in children. Some of the manifestations of the classic syndrome muscle pain, edema and fever might then suggest trichiniasis, the presence of which is rendered probable by discovery of the cysts in the suspected pork, and proved by the finding of the worms in the feces (difficult), in muscle tissue (after surgical excision under local anesthesia of a piece of the biceps, deltoid or gastrocnemius), or in the spinal fluid (after centrifugation) in cases presenting meningeal symptoms. The presence or absence of the trichiniasis skin test¹ strengthens the evidence for or against this diagnosis.

PROPHYLAXIS

Unfortunately, the usual microscopic inspection of fresh pork and pork products is no adequate criterion of freedom of the pork from trichinae. As complete cooking of pork will absolutely prevent the disease, every one should be educated to the importance of eating only thoroughly cooked pork and pork products. "Cook pork well" is the slogan of prevention, and it must be remembered that an adequate degree of heat (137 F) is slow in reaching the center of a thick piece of meat. Refrigeration kills the encysted larvae, but it must be at 0 F for forty-eight hours.

TREATMENT

1 *Active Purgation*—Even in cases not seen until six weeks after infection, active purgation should not be neglected. Mild Mercurous Chloride, in doses of 0.2 Gm, followed in six or eight hours by Magnesium Sulphate (30 Gm) and this by a colon flushing several hours later, might be repeated for several days, in the hope of sweeping out some of the worms that have not yet invaded the submucosa.

2 *General Care*—In cases presenting fever, it is fever regimen (q v) followed during convalescence by a long period of rest and highly nutritive diet.

3 *Relief of Clinical Manifestations*—(a) *Myositis*. Muscular pain, when well localized, might be relieved by limitation of motion by means of adhesive plaster strapping, provided it is not applied tightly enough to aggravate the muscular soreness. Morphine might be required, if milder analgesics fail (cf Therapy of Pain). It has been suggested that treatment with Calcium, as in the accompanying prescription, and parathyroid extract (from 20 to 40 units every twelve hours for not more than ten days) might hasten calcification of the cysts and thus shorten the course of the trichinal "rheumatism".

Calcium Lactate

R Calcium lactate 20.00 Gm
Lactose 40.00 Gm
Dispense in a box
Label Heaping teaspoonful in water before meals and at bedtime

(b) *Allergic Symptoms*. Urticaria, pruritus and the late edema, appearing about three weeks after the ingestion of the parasites, might possibly be benefited by Solution of Epinephrine (from 0.5 to 1 cc) injected intramuscularly and repeated as often as the rather transient improvement might demand.

(c) *Meningismus*. This might be ameliorated by lumbar puncture.

(d) *Failure of Respirations*. The failure of respirations from muscular involvement might call for treatment in a respirator.

DISCUSSION OF PREVIOUSLY PUBLISHED ARTICLES

DISTURBANCES DUE TO HEAT

To the Editor—May I submit the following comment on the article on the therapy of disturbances due to heat (THE JOURNAL, September 29, p 990).

Recent experience has fairly demonstrated that heat exhaustion is essentially dehydration. The human body is dependent on the vaporization of water from its surface for the dissipation of excessive heat. Water passing from a liquid to a vapor requires heat. Thus it takes from the body, thereby cooling it. Hence the call for water and more water, perspiration and more perspiration, depletion of water, dehydration and shock. There is no injury to the machinery of the body. All it needs is volume of water, and salt to maintain the proper osmotic balance. This dehydration precedes by considerable time any damage from hyperpyrexia. To still advise bleeding for sunstroke seems a bit out of date. The unconsciousness is due to brain anemia, and the demand is for fluid to fill the blood vessels and thus restore the needed pressure in the brain.

It is realized by all that by perspiration 8 or 10 pounds up to 20 pounds can be lost in one day. Most football players lose 6 or 8 pounds for each game, and still the coaches insist that they must not drink during the game.

The experiences at Hoover Dam at the Los Angeles aqueduct and at numerous other places in California and elsewhere demonstrate this principle. At these points the prophylaxis is the same as that advised by Dr Fantus and he has covered it very well. If he had simply continued the same fundamental principle into his therapeutics he would save many lives and many days of illness because it has been repeatedly demonstrated that intravenous salt or dextrose solution will by filling the empty blood vessels almost immediately put patients on their feet.

Pathologists find the heart and major blood vessels empty at autopsy and the skin suffused with what little blood is left in the body. This dusky cyanotic picture has always suggested bleeding and this undoubtedly is the basis of the advice in this article to draw blood in the asphyxial form of heat exhaustion.

¹ McCoy, O R, Miller J J, Jr and Friedlander R D. The Use of the Intradermal Test in the Diagnosis of Trichiniasis. J Immunol 24:1 (Jan) 1931.

However the mechanics of the condition indicates that instead of depletion there is a demand for fluid to fill the central blood vessels. The essential mechanics is that heat dilates capillaries and increases the permeability and keeps on dilating them and drawing blood from the heart and large blood vessels until cyanosis appears. The capillary permeability sometimes is so great that ecchymoses result.

The records at Hoover Dam are striking and are summarized as follows:

Summer of 1931 From 100 to 150 cases (no record), 17 deaths

Summer of 1932 Seven cases, no deaths (Prevention and treatment based on the dehydration principle were instituted in the spring of 1932)

Summer of 1933 Thirteen cases, no deaths

Summer of 1934 Very few cases, no record, no deaths

A record of these experiences is given by Dr R O Schofield, "Heat Prostration—Its Treatment at Boulder Dam," in *California and Western Medicine* 41 83 (Aug) 1934

Further references are

Van Zwalenburg, Cornelius. Heat Prostration and Dehydration. *THE JOURNAL* Oct 17 1931 p 1169

Dehydration in Heat Exhaustion and in Fatigue. *California & West Med* 38 354 (May) 1933

Heat Prostration and Dehydration. *THE JOURNAL* Oct 14 1933 p 1253

Prevention and Treatment of Heat Exhaustion and Sunstroke. *Weekly Bulletin California State Department of Public Health* 13 June 16 1934

Dill D B, Bock A V and Edwards H T. Mechanisms for Dissipating Heat in Man and Dog. *Am J Physiol* 104:36 (April) 1933

CORNELIUS VAN ZWALENBURG, M D, Riverside, Calif

COMMENT — Unfortunately, the pathology of an established case of sunstroke is not simple dehydration, as is shown by the fact that mere rehydration is usually not sufficient for cure. Even though dehydration might have been the original factor, secondary changes are present in sunstroke, as is evidenced, for instance, by the postmortem changes, among which multiple hemorrhages are quite common. Bleeding, of course, is not advocated and should not be resorted to until after thorough and complete rehydration. It is only then, and especially if symptoms of increased intracranial tension or of pulmonary edema manifest themselves, that bleeding might be thought of.

THERAPY OF CARBUNCLE

Dr Sumner L Koch presents the following much simpler treatment for carbuncle than that described in *THE JOURNAL*, Oct 6, 1934, page 1066

It is my belief that carbuncles, particularly small carbuncles, should be treated in the early stages by the application of warm wet dressings. If spread of inflammation is not halted and drainage does not take place promptly, the infected area should be opened, but the operative treatment should be confined to incision, undercutting of the flaps and the insertion of soft drainage material, such as petrolatum gauze or rubber tissue, simply to keep the flaps from falling back in place and immediately becoming adherent again to the surface from which they had become separated. Surgical treatment should be followed by the continued application of warm wet dressings until the acute inflammation subsides. When the acute inflammatory process has subsided, the use of dressings saturated with surgical solution of chlorinated soda undoubtedly is helpful in dissolving the necrotic tissue and so taking away the most important part of the culture medium for the bacteria present.

Until we can impress our students with the fact that tissues, whether normal or infected, are delicate living structures that need to be handled with every possible care and protected from every possible insult and injury, we shall fail in our purpose. The sooner we can get rid of the old idea that phenol

iodoform gauze, pastes and salves are helpful in the treatment of an infectious process associated with sloughing and necrosis of tissue, the better off we shall be.

COMMENT — *Simplex est sigillum veri* (the simple is the sign of the truth) is probably correct in medicine as well as in philosophy

RINGWORM OF THE HAIRY PARTS

To the Editor — Referring to the article on the treatment of trichophytosis (The Therapy of the Cook County Hospital) appearing in *THE JOURNAL*, Sept 15, 1934, page 832, attention should be directed to the paragraph headed "Ringworm of the Hairy Parts." The treatment there recommended consists of temporary epilation by means of roentgen rays, thallium or manual extraction. Epilation therapy is requisite in only certain forms of trichophytosis capitis—chiefly that caused by *Microsporon Audouinii*. In many cases of ringworm of the scalp, the causative fungus is an "animal-borne" fungus, producing inflammatory and kerionic scalp lesions in children, these do not require depilation, as the large majority of them are readily curable by means of local antiseptic ointments.

Recently this fact was brought to the attention of readers of the Year Book of Dermatology and Syphilology (Year Book Publishers, Chicago) for 1933, page 267, by its editors, in a comment following an article on ringworm by R. L. Gilman. A more detailed discussion will be found in an article by George M. Lewis, Ringworm of the Scalp. A Report of Three Cases Due to the *Microsporon Lanosum* with a Tendency to Spontaneous Recovery, *Arch Dermat & Syph* 29 890 (June) 1934

FRED WISE, M.D., New York.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION. RAYMOND HERTWIG, Secretary



KELLOGG'S ALL-BRAN

FLAVORED WITH MALT, SUGAR AND SALT

Manufacturer—Kellogg Company, Inc., Battle Creek, Mich.

Description—Cooked wheat bran flavored with sucrose, malt extract and salt

Manufacture—Wheat bran is cooked under steam pressure with water, sucrose, malt syrup and sodium chloride. The mixture is partially dried, shredded, toasted, cooled and packed in wax paper lined cartons

Analysis (submitted by manufacturer) —	per cent
Moisture	2.3
Ash	8.2
Sodium chloride	3.1
Fat (ether extraction method)	3.2
Protein (N × 5.7)	12.7
Reducing sugars as maltose	2.6
Sucrose	9.0
Crude fiber	7.7
Carbohydrates other than crude fiber (by difference)	65.9
Calcium (Ca)	0.10
Phosphorus (P)	1.34
*Iron (Fe)	0.017
†Copper (Cu)	0.0010

* J Biol Chem. 86:463 (April) 1930
† J Biol Chem 81 435 (Feb) 1929

Calories—3.4 per gram 97 per ounce

Vitamin—One ounce furnishes 45 Sherman and Chase vitamin B units

Claims of Manufacturer—Bran fiber is more resistant to disintegration in the intestine than is the fiber of fruit or vegetable and is therefore more effective for counteracting constipation due to insufficient bulk. Good source of vitamin B and iron

GIRAFFE VACUUM PACKED FLORIDA
NATURAL ORANGE JUICE

Manufacturer—Tropical Juice Corporation of Florida, Miami and Titusville, Fla

Description—Canned orange juice, no added sugar or flavoring, retains in high degree the natural vitamin content

Manufacture—Tree ripened Florida oranges are washed, disinfected with borax or soda ash, rinsed, and stored in clean bins until used. The fruit is automatically halved. The juice is burred out by machine, the pressure being adjusted to avoid as far as possible extracting essential oil from the peel. The juice is strained through a series of screens, cooled to 4 C, processed at mild temperature, filled into containers which are sealed under reduced pressure (15 inches), processed at 71 C. for fifteen minutes, and cooled

<i>Analysis</i> (submitted by manufacturer) —	per cent
Moisture	87.0
Total solids	13.0
Ash	0.5
Fat (ether extract)	0.0
Protein (N \times 6.25)	0.8
Reducing sugar as invert sugar	4.5
Sucrose	5.3
Crude fiber	0.0
Carbohydrates (by difference)	10.9
Titrate acidity as citric acid	0.8
Test for borax	negative

Calories—0.5 per gram 14 per ounce

Vitamins—Assay shows retention in high degree of vitamin C content

Claims of Manufacturer—Retains practically all the nutritive values of orange juice. For all dietary and table uses

VITAMIN D FORTIFIED HOMOGENIZED
PASTEURIZED MILK

Distributors—Babcock's Dairy Company, Port Huron, Mich. Alfalfa Creamery Company, West Palm Beach, Fla

Description—Bottled homogenized pasteurized milk fortified with vitamin D (vitamin D concentrate extracted from cod liver oil), contains 400 U S P X (Revised, 1934) vitamin D units per quart

Preparation—The milk complies with legal requirements and is homogenized and pasteurized by the standard holding method. See THE JOURNAL, July 1, 1933, page 34, for description of fortification with vitamin D

Vitamins—The vitamin D concentrate used and the fortified milk are regularly tested biologically. Clinical investigation shows this milk to be a reliable antirachitic agent if the proper amount is used.

Claims of Distributors—A vitamin D fortified antirachitic homogenized pasteurized milk having otherwise the flavor and food values of usual homogenized pasteurized milk. The cream does not separate

AMERICAN LADY BRAND STRAINED BEETS CAR-
ROTS, CELERY, GREEN BEANS, PEAS, PRUNES
FLAVORED WITH LEMON JUICE, SPINACH
TOMATOES AND VEGETABLES WITH
CEREAL AND BEEF BROTH

UNSEASONED

Distributor—General Grocer Company, St. Louis

Packer—The Larsen Company, Green Bay, Wis

Description—Respectively sieved beets carrots celery, green beans, peas prunes flavored with lemon juice spinach, tomatoes and vegetables (carrots, potatoes tomatoes, celery peas, beans spinach) with pearl barley and beef extract, prepared by efficient methods for retention in high degree of the natural mineral and vitamin values. No added sugar or salt. These products are the same as the respective accepted Larsen's vegetables and fruits (THE JOURNAL, July 1 1933, p 35, July 8, 1933, p 125 July 22 1933 p 282, July 29 1933, p 366, Aug 12 1933 p 525 Aug 19, 1933 p 605 Aug 26, 1933, p 675 Sept 2 1933, p 779)

DAVIDSON'S ANGEL FOOD CAKE

Manufacturer—Davidson Baking Company, Portland, Ore

Description—Angel food cake prepared from egg whites, sucrose, flour, cream of tartar, vanilla extract, sodium chloride and baking powder

Manufacture—The formula ingredients are worked into the egg whites in definite order. The batter is scaled, baked and cooled and the cake packed in cartons

<i>Analysis</i> (submitted by manufacturer) —	per cent
Moisture	29.8
Ash	0.7
Fat (ether extraction method)	0.2
Protein (N \times 6.25)	7.1
Reducing sugars as dextrose	0.7
Sucrose	48.3
Crude fiber	0.03
Carbohydrates (by difference)	62.2
Lipoid phosphoric acid (P ₂ O ₅)	0.01

Calories—2.8 per gram 80 per ounce.

Claims of Manufacturer—White of thirteen eggs contained in each cake (1½ pounds)

- 1 CHAPIN BRAND TOMATO JUICE
- 2 ECCO TOMATO JUICE
- 3 FFOG BRAND TOMATO JUICE
- 4 FI-NA-ST PURE TOMATO JUICE
- 5 GARDEN BRAND TOMATO JUICE
- 6 GIBRALTAR TOMATO JUICE
- 7 ISLAND CLUB SPECIAL TOMATO JUICE
- 8 MATCHLESS BRAND TOMATO JUICE
- 9 RADIO TOMATO JUICE

Distributors—1 Chapin Grocery Specialties Co., Inc., Springfield, Mass. 2 Economy Grocery Stores Corp., Boston. 3 Ridenour-Baker Grocery Company, Kansas City Mo. 4 First National Stores, Inc., Somerville, Mass. 5 John Price & Company, Philadelphia. 6 H L Caplan & Co., Inc., Baltimore. 7 Lawrence Grocery Corp., Lawrence, Mass. 8 Webster-Thomas Company, Boston. 9 M J Caplan & Co., Inc., Lawrence, Mass.

Packer—Vincennes Packing Corporation, Vincennes, Ind

Description—Pasteurized tomato juice with added salt retains in high degree the natural vitamin content. The same as Alice of Old Vincennes Tomato Juice (THE JOURNAL, Feb 20 1932, p 640)

PERFECTION FLOUR (BLEACHED)

Manufacturer—The Robinson Milling Company, Salina, Kan

Description—Hard winter wheat straight flour, bleached

Manufacture—Selected hard winter wheat is cleaned scoured tempered and milled by essentially the same procedures as described in THE JOURNAL, June 18 1932 page 2210. Chosen flour streams are blended and bleached with a mixture of benzoyl peroxide and calcium phosphate (14.2 Gm per barrel) and nitrogen trichloride (4 Gm per barrel)

<i>Analysis</i> (submitted by manufacturer) —	per cent
Moisture	15.0
Ash	0.4
Fat (ether extraction method)	1.2
Protein (N \times 5.7)	10.6
Starch	69.5
Crude fiber	0.4
Carbohydrates other than crude fiber (by difference)	72.4

Calories—3.4 per gram 97 per ounce

PENFORD BRAND GOLDEN SYRUP
PENFORD BRAND CRYSTAL WHITE SYRUP

Manufacturer—Penick and Ford Sales Company, Inc., Cedar Rapids, Iowa

Description—Table syrups, corn syrup flavored with refiners syrup and corn syrup sweetened with sucrose the same as the accepted Penick Golden Syrup (THE JOURNAL, April 2, 1932, p 1159) and Penick Crystal White Syrup (THE JOURNAL, April 9 1932 p 1268) respectively

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SATURDAY, FEBRUARY 9, 1935

PSYCHOLOGIC CONCOMITANTS OF PAIN

Pain in its various aspects offers an attractive field for study and speculation. According to Waterston¹ it is often, but not invariably, accompanied by other symptoms such as pallor, fainting and sweating, these are sometimes ascribed to the pain. They are not, however, invariable concomitants of pain and may hence be produced in a different way by afferent impulses other than those which cause pain traveling by a different path and producing their effects often by exciting the sympathetic system.

The psychologic concomitants of pain, Critchley² says, are manifold. An acute and severe pain usually dominates the victim's sensorium, often to the exclusion of other internal and external impressions. Inability to concentrate and irritability are of frequent occurrence during states of painful experience. The major affects of rage, fear, anxiety or despair may also accompany the feeling of pain. Their presence depends on the nature of the pain and the circumstances surrounding its production. Under the stress of an agonizing experience the sense of time may be disordered. This effect is commonly expressed as "each minute seemed an hour." Mental depression is, however, rare as a concomitant of severe pain. Thus, as Ribot puts it, "It seems as though the organism had but a limited capacity for either pleasure or pain and that neither feeling can exist at the same time in its double (physical and moral) form." Sleep may follow intense suffering, and in that which succeeds or accompanies the exhaustion of torture, dreams of a peculiarly vivid or complex character are often experienced. Jack London has described in *The Jacket* (the *Star Rover*) the particularly coherent and continuous visions of Durrell Standing while undergoing a series of ordeals by strait-jacket. "He would dream that he was addressing learned societies on abstruse problems, often waking to the sound of his voice ringing in his

ears and with imaginary pages of manuscript floating before his eyes, that he was journeying on horseback through the meadows of some vast farm, day by day the dream story would develop coherently and consecutively, and unroll itself before him. Shrubs and plants would grow from small beginnings into tall vegetation, which would later be felled by the laborers' axes, collected, dried and burnt in great heaps."

Accompanying the pain feeling—and even at times replacing it—there may be a stimulation of one of the special senses. In literary descriptions of painful experiences the language of some special sense is often used to describe the quality or intensity. Often it is in terms of color, and thus Homer refers to "black pains." In a minute analysis of this question Bleuler and Lehmann write "Pains are never felt or recollected without their appropriate colors. They are colored variously, according to their intensity. Violent pains are accompanied by an idea of white, still more intense pains go from yellow to red and to dark brown, dull headaches give a tint which is almost black, darting pains, an idea of white dots, a pinch, a yellow tint, which is clearer the keener the pain is, indigestion, a more or less clear gray, colic a clear yellowish tint, which may pass over the red or brown." This phenomenon may of course be reversed, as in the old lady in Kipling's "They," whom certain colors "hurt."

In spite of differences in subjective description, there does exist an obvious variation in the pain reactions of individuals to what is, as near as possible, an identical stimulus. Common experience teaches, Critchley states, that the burly, lymphatic artisan feels pain less than the fragile artist or thinker. As Mrs. Browning put it, "the mark of rank in nature is capacity for pain." Precise data in the matter are scanty, however, although MacDonald some years ago made a careful psychometric study of pain sensitivity. His observations confirmed the general impressions by demonstrating a greater sensitiveness in the young than in the old, and in women than in men. Such generalizations are dangerous, however, and it remains problematic how, for example, men would stand the pangs of childbirth.

Indifference and insensitivity to pain is a matter of great interest. A marked degree of indifference has been associated by Lombroso with habitual criminals. Occasionally persons are seen who seem to possess such a high threshold for nociceptive stimuli that pain rarely, if ever, enters their experience. One of the best examples of unusual insensitivity was E. H. Gibson, known in American vaudeville as "the human pincushion."

At times pain contributes a pleasurable sensation. In such instances it is often closely bound up with religion and has been associated with a subtle process of refining or cleansing whereby the individual is exalted. Self-infliction of pain may represent an effort to appease a sense of guilt or to atone for a misdeed. In

¹ Waterston, David. Pain and the Mechanism of Its Production. *Brit. M. J.* 2: 1087 (Dec. 15) 1934.

² Critchley, Macdonald. Some Aspects of Pain. *Brit. M. J.* 2: 891 (Nov. 17) 1934.

this connection the Biblical injunction is recalled "If thy right hand offend thee, cut it off and if thine eye offend thee, pluck it out" It is also possible that pain may be deliberately sought in order to relieve a more distressing discomfort or sensation Here the action appears to be counterirritant, but the exact limits at which it becomes a sign of insanity are hard to define

There are no words in English, Critchley says, to signify the state of mind that follows the cessation of a severe or protracted painful experience The resulting emotional state of relief is perhaps attended by definite, even if transient, physical and psychologic gratification Some psychologic concomitants of painful experience may linger after the pain has ceased Thus, as Hugh Walpole wrote in his novel *Hans Frost*, "I am suffering tonight from toothache, and I have always noticed that a toothache is the most unintellectual pain in one's body, just as, in all probability, a stomachache is the most intellectual Have you ever noticed, sir, how bright and clear one's brain becomes between the spasms of indigestion?" Many can, from their own experience, agree with one or both statements, but whether the clear headedness associated with some gastro-intestinal upsets is due to relief from pain or to starvation might well serve to inaugurate further investigation

RECENT ADVANCES IN THE STUDY OF GANGRENE OF THE EXTREMITIES

Experimental and clinical research into the etiology of gangrene of the extremities occupies an increasingly important place in modern medicine In this research the study of the larger vessels by morphologic methods has proved inadequate Thus Herrman and Reid¹ have concluded that neither arteriographic examination nor morphologic studies of the large vessels can furnish a satisfactory explanation of the clinical manifestations Rabinowitz² says "While an outstanding lesion in thrombo-angitis obliterans is a thrombotic closure of both large and small vessels, many clinical features of the disease cannot be attributed solely to this lesion" And now recent work by Popoff³ throws new light on the limitation and inadequacy of morphologic research confined mainly to the state of the large vessels of the extremities

In his studies on the digital vascular system, Popoff pays particular attention to the peripheral arteriovenous anastomosis in inflammation, arteriosclerotic gangrene, diabetic gangrene, obliterating thrombo-angitis and

supernumerary digits in man These arteriovenous anastomoses were discovered by Sucquet in 1862 and again by Hoyer in 1887, and they are recognized now as a normal constituent of the peripheral vascular system Popoff gives a detailed description of the anastomoses and discusses their function, which is controlled by local and general vasomotor mechanisms According to his description, peripheral arteriovenous anastomoses or, as he calls them, the digital glomus or digital glomic system, serve two functions, one local and the other general If the digits are exposed to cold it is through the agency of the glomic system that local temperature is maintained and even raised This is accomplished by diverting blood from the capillaries and rushing it through anastomoses into collecting veins with a highly developed surface area The glomic system also forms an important factor in the mechanism regulating the general temperature of the body When fully opened it aids the dispersal of heat by allowing an enormous flow of blood to pass through the digits The glomic system is not found in premature infants To this Popoff attributes their poor control of the temperature of the body No glomic system is found in cold blooded animals In man, with the advance of age, the glomic system undergoes atrophy and in old age it may disappear completely Comparative studies by Popoff on the glomic system in arteriosclerotic and diabetic gangrene indicate that in arteriosclerosis the destruction of the glomic system is due primarily to sclerosis of the afferent artery of the glomus, while in diabetes the arteriovenous anastomosis itself is involved first and this leads later to the destruction of the glomus In both cases functional incapacitation of the glomic system is sufficient to cause the trophic changes in these diseases Thus according to this concept the neurovascular and trophic changes in the digits of arteriosclerotic patients and persons with diabetes may be due primarily to changes in the glomic system and not to inflammatory, degenerative or obstructive changes in the large arteries

Popoff also offers a new concept of the etiology of obliterating thrombo-angitis In the cases of thrombo-angitis that he studied he found in the digits abnormal arteriovenous communications or anastomoses that are different from the normal arteriovenous anastomoses just discussed These abnormal anastomoses are found in the peripheral network of the digital vascular system By diverting blood directly and continuously into the veins they diminish seriously the amount flowing from the capillary bed As a result of this self-limited circulatory disturbance, the peripheral tissues of the digits suffer chronic and unrelievable anoxia with consequent development of the trophic changes and other manifestations characteristic of obliterating thrombo-angitis Both arteries and veins of the affected extremity undergo structural changes and, depending on the duration of the disease and the size of the abnormal arteriovenous anastomoses, the entire vas-

1 Herrman L G and Reid M R The Conservative Treatment of the Arteriosclerotic Peripheral Vascular Diseases *Ann Surg* 100 750 (Oct) 1934

2 Rabinowitz, H M Newer Concepts on the Physiotherapy and Treatment of Thrombo-Angitis Obliterans *Am J Surg* 21 260 (Aug) 1933

3 Popoff N W The Digital Vascular System with Reference to the State of the Glomus in Infection Arteriosclerotic Gangrene Diabetic Gangrene Thrombo-Angitis Obliterans and Supernumerary Digits in Man *Arch Path* 18 295 (Sept) 1934

cular system of the body may show signs of involvement. This concept of the centripetal spread of obliterating thrombo-angitis with the vascular anomaly as a causative agent is new and, if Popoff's results are corroborated, the nature of the disease will receive a new explanation.

THIRTIETH ANNIVERSARY OF THE COUNCIL ON PHARMACY AND CHEMISTRY

February 11, the Council on Pharmacy and Chemistry will complete its thirtieth year of service to the medical profession. For nearly a third of a century it has made contributions of inestimable value to rational therapeutics. Unique at its inception in 1905, it has no successful counterpart outside the United States. It has moreover served as a model for the Council on Physical Therapy and the Committee on Foods of the American Medical Association and for the Council on Dental Therapeutics of the American Dental Association.

Of the personnel of the Council, which serve entirely without remuneration, four members have been active ever since the meeting in Pittsburgh on Feb. 11, 1905, when the organization of this group was perfected. The secretary during the greater part of this period, W. A. Puckner, performed a notable service to medicine for twenty-seven years, until his death in 1932.

A comparison of the conditions prevailing in the marketing of drugs in this country before 1905 and those obtaining today indicates the debt that American medicine owes to the Council on Pharmacy and Chemistry. The rules governing the acceptance or rejection of remedies adopted in the beginning have gradually been amplified and clarified to meet new conditions. Thus the use of secret, ineffective and irrational preparations has decreased notably, advertising claims employed by manufacturers of pharmaceuticals for products accepted by the Council have attained standards of accuracy and truthfulness unequalled in any other field of marketing. *THE JOURNAL* and many other medical publications in this country, including the journals of all the state associations with the exception of Illinois, accept advertising for Council-accepted or official drugs only. But the Council's work would have come to naught had it not been for the militant aid of *THE JOURNAL* and the ever increasing support of the medical profession. True, many physicians still prescribe secret or semisecret or irrational preparations under the spell of persuasive, if unfounded, advertising claims made by certain manufacturers. But these clinicians are decreasing in number, more and more does the practitioner meet the claims of the detail man for a new pharmaceutical with the question "Is it accepted by the Council?"

Among the important contributions of the Council have been the evaluation of new drugs on the basis of available evidence, the publication of reports giving the

results of this evaluation, the standardization with the assistance of the A. M. A. Chemical Laboratory of products that show promise of therapeutic usefulness and the publication of special articles in review of subjects of current interest to the medical profession. A notable example of the latter is the series on Glandular Physiology and Therapy, which begins in the present issue of *THE JOURNAL*. In addition the Council issues several books: *New and Nonofficial Remedies* (revised yearly), *Useful Drugs*, the *Epitome of the U. S. Pharmacopeia and National Formulary*, and (in cooperation with the Council on Medical Education and Hospitals) *Hospital Practice for Interns*. It is impossible to present adequately, in so brief a compass, all the valuable services of the Council, which have made themselves felt wherever medicine is practiced throughout the civilized world. It continues its important tasks, ever increasing in number and volume, unselfishly and with intelligence and foresight. It merits unflinching support by the medical profession.

Current Comment

ASBESTOSIS

The nature of the effects of silica dust expressed in the term "silicosis," with the resultant extraordinary predisposition to pulmonary tuberculosis, is well known. Some of the more cogent etiologic, metabolic and legal aspects of this condition have been discussed in these columns.¹ These important developments in the study of lung diseases due to the inhalation of dust have now been extended in this country² to the pneumoconiosis caused by asbestos dust and termed "asbestosis." This preliminary study of the asbestos industry presents data obtained from an examination of dust conditions in five asbestos fabricating plants along the Atlantic seaboard. The investigation included physical examinations of asbestos workers, together with x-ray films, and a consideration of the dust exhaust systems designed to eliminate asbestos dust. It appears evident that prolonged exposure to this dust causes a pulmonary fibrosis demonstrable on x-ray films. This condition appears to be of a type different from silicosis and somewhat milder. Furthermore, a predisposition to tuberculosis due to asbestos dust was not indicated in this study. There were, however, cases of definite cardiac enlargement frequently associated with the asbestosis. The authors propose valuable recommendations, which include a thorough physical examination of prospective employees and suggestions for the control of dust hazards in the industry. Equally important is the proposal that the manufacturers sponsor studies of known cases of asbestosis as well as investigations on effects of the condition on the heart and the circulation. A more detailed report of the asbestos industry in the United States will undoubtedly provide further

1 Absorption and Excretion of Silica editorial J. A. M. A. 102: 1303 (April 21) 1934. Protection Against Dusts ibid 103: 1543 (Nov. 17) 1934.
2 Lanza A. J., McConnell W. J. and Fehnel J. W. Pub. Health Rep. 50: 1 (Jan. 4) 1935.

illuminating information on the nature of the occupational hazard encountered in this industry and the measures that should be taken to prevent or control this condition

Medical Economics

WORKMEN'S COMPENSATION IN NEW YORK AND PENNSYLVANIA

Reports of committees on workmen's compensation in the states of New York and Pennsylvania respectively have recently been published.¹ These reports give an opportunity for judgment on a little more than twenty years' experience with workmen's compensation legislation in two large industrial states. The New York committee was composed entirely of physicians. The Pennsylvania committee contained two physicians out of seven members but also had an advisory committee of nine, seven of whom were physicians.

It is significant that in both cases the least satisfactory features of the operation of the law were in the provisions for medical care. It is fair to draw the conclusion from these reports that this weakness is largely due to the fact that there was little or no consultation with the medical profession at the time the laws were enacted. It is also worthy of note that among the more important recommendations of both committees is a wider participation of the medical profession in the administration of the provisions for medical care.

The New York committee subdivided the abuses in the operation of the law into "those over which the medical profession had at present no control and those directly attributable to the medical profession." Those which are beyond the control of the medical profession are listed as

- 1 The hiring of cheap and incompetent medical service by employers and insurance carriers
- 2 Reduced charges by hospitals in order to obtain cases
- 3 "Lifting"
- 4 Errors in causal relationship, where carriers have frequently attempted to prove wrongly that patients were malingering or where awards had been made by lay referees for conditions which had no relationship to the antecedent injury or occupation, or where a lay referee attempted to evaluate opposing medical testimony of experts employed by the interested parties
- 5 Postponement of compensation awards
- 6 Other legal injustices, most of which were also due to the control of the physician and medical records by an employer or an insurance carrier

Another set of abuses were ascribed to the medical profession. These are listed as

- 1 Inefficient medical treatment due to a failure to refer cases to a specialist when such treatment was needed
- 2 Overtreatment and overcharging
- 3 Prolonged period of compensation due to the fact that physicians have occasionally conspired with injured workmen to obtain compensation for him for a longer period than his injury warranted"
- 4 Prolonged physical therapy
- 5 Inadequate medical testimony
- 6 Medical advertising and racketeering in order to secure cases

The committee submits a series of recommendations to remove these abuses. The first is a "limited free choice of physician by the employee." It is also recommended that opportunity be given for transfer of cases when this is found desirable and that the county medical society "function as the fact finding agency on professional conduct and professional competence."

Furthermore, it is recommended in the New York report that medical fees should be standardized by the medical society and arrangements made for the arbitration of disputed bills for medical service, medical practice by insurance carriers should be eliminated and there should be greater supervision of self insurers. The lay referees who are to determine disability

should have the right to avail themselves of expert medical opinion, and for this purpose a medical advisory and appeal board should be set up.

The Pennsylvania report is based on a very extensive study in which as many as 125 workers, paid through the CWA, investigated more than 7,000 workmen's compensation cases. There is a close resemblance between the medical recommendations of the committees in these two states. The Pennsylvania committee, however, urges that the present inadequate provisions for medical care of the Pennsylvania law be extended. It also urges at least a limited free choice of physician, wider opportunities for consultation and provision for impartial medical opinion.

This report contains an extensive and valuable graphic presentation of the features of the Pennsylvania compensation law in comparison with the laws of other states. There is considerable criticism of the self-insurance provisions of the law, although it is recognized that much of this criticism applies to only a minority of the self insurers.

Of the 7,000 cases studied, about "70 per cent of the persons interviewed expressed belief that they had received fair treatment. The others complained of delay, unfairness, and the necessity of litigation." They also complained of inadequate medical treatment and it was shown that more than two thirds were treated over a period of two months or longer and one fourth required medical treatment for four months or longer, although the law provides treatment for only thirty days.

It would seem to be a fair summary of the two reports to state that in the opinion of these committees, absence of medical advice in the formation of the law and dominance of lay interests, often seeking financial advantage, had defeated many of the purposes of the law, especially in regard to medical service. There is unanimous agreement that improvement in the medical service and in the other features of compensation which depend on that service must be based on a much wider participation of the medical profession and medical societies.

Association News

SPECIAL SESSION OF HOUSE OF DELEGATES AT CHICAGO, FEBRUARY 15

Reduced Railroad Rates for Return Tickets

Special rates have been granted by various passenger associations for the benefit of the members of the Annual Congress on Medical Education, Hospitals and Licensure and the Special Session of the House of Delegates in Chicago.

To have the benefit of a return rate of one-third fare, it will be necessary for each member to secure a Certificate from the railroad ticket agent when he purchases his ticket to Chicago. When the Certificate has been certified to and validated at the Palmer House in Chicago, it will entitle its holder to purchase a return ticket to his home, over the same route traveled to Chicago, at one-third fare.

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next three broadcasts will be delivered by Dr. W. W. Bauer. The titles are as follows:

- February 14 Heart Valves
- February 21 Heart Muscles
- February 28 Protecting the Heart

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next three broadcasts will be as follows:

- February 12 What the Public is Thinking About Health W. W. Bauer M.D.
- February 19 Rheumatism and Gout, Morris Fishbein M.D.
- February 26 Health and Education, Morris Fishbein M.D.

¹ Report of Governors Committee on Workmen's Compensation Pennsylvania Labor and Industry 31:4 (Nov.) 1934. Report of Committee on Workmen's Compensation appointed by Governor Herbert H. Lehman of New York.

Special Coast to Coast Broadcast

The American Medical Association will broadcast on a special program arranged through the courtesy of the National Broadcasting Company over a network of stations, beginning at 6 p m, eastern standard time Monday, February 18. The program will include music and three speakers from among physicians in attendance at the Annual Congress on Medical Education and Medical Licensure, meeting in Chicago on that day. The speakers will be introduced by Dr. Morris Fishbein. The speakers and their topics are as follows:

Advancement of Medical Education: Walter L. Biering, M.D.
The Prolongation of Life: Ray Lyman Wilbur, M.D.
The Battle Against Tuberculosis: Kendall Emerson, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Bills Introduced—H 30 proposes to prohibit cities and towns of from 15,000 to 20,000 population from collecting occupational taxes on physicians practicing within their jurisdictions. S 26 proposes to authorize the sexual sterilization of certain socially inadequate inmates of state institutions.

ARIZONA

Bill Introduced—S 15 proposes to repeal the laws regulating the distribution and possession of narcotic drugs and to enact what apparently is the uniform narcotic drug act.

ARKANSAS

Bill Passed—S 126 to supplement the medical practice act, has passed the senate, proposing that licentiates of the eclectic medical examining board shall register annually with that board and pay at that time a registration fee of \$2. Failure of an eclectic licentiate to register within the time stated is to suspend automatically his right to practice and a failure to register for three consecutive years shall automatically cancel his license to practice.

Bills Introduced—H 15 proposes to require any physician treating a person suffering from a gunshot pistol or bullet wound to report that fact immediately to the appropriate police authorities. H 105 apparently to supplement the pharmacy practice act proposes (1) to define drugs as any drug or compound listed in the United States Pharmacopeia or National Formulary, or both, which are [sic] used for the prevention, mitigation, or cure of disease; (2) to prohibit the distribution of drugs, as defined, except by registered pharmacies; (3) to permit the board of pharmacy to enjoin the operation of any store not complying with the pharmacy laws. H 110 and S 67 propose to repeal the laws regulating the possession and distribution of narcotic drugs and to enact what the draftsmen of these bills cite as the uniform narcotic drug act. The bills, however, differ from the model uniform narcotic drug act in some important particulars and contain obvious errors in phraseology. They omit the provisions in the model bill intended to limit the gross quantity of a habit-forming drug a person can buy in exempt preparations within a period of forty-eight hours. S 142 proposes that all persons who have engaged in the practice of medicine for twenty years continuously prior to Jan. 1, 1935, shall, on presentation of such proof be entitled to registration by the eclectic medical examining board. H 82 proposes to provide compensation to workmen for injuries and occupational diseases or infections arising out of or in the course of their employment. The employer is to be required to furnish such medical, surgical and other attendance or treatment, nursing and hospital services, and medicines, crutches and apparatus for such period as the nature of the injury or the process of recovery may require. Apparently the employer is to have the right to designate the physician and the hospital that are to treat or care for the injured employee. If the employer does not provide the services referred to after request by the employee, the employee may obtain them himself at the employer's expense. H 172 proposes to make it unlawful for a corporation to keep for its own benefit any unused portion of sums collected from its employees to provide them with medical services. It is to be

the duty of such a corporation to refund quarterly to its employees any accumulation of such funds not necessary to keep the medical service plan in operation. H 189 prohibits the sale of barbituric acid derivatives and/or compounds thereof except on the prescription of a licensed physician. S 107 proposes that all persons who have been engaged in the practice of medicine twenty years continuously prior to Jan. 1, 1935, on presentation of such proof be licensed by the homeopathic board, by the eclectic board or by the nonsectarian board of medical examiners, according to the applicant's school of practice.

CALIFORNIA

Special Meeting Called for House of Delegates—To formulate principles and policies on pending and proposed federal and state legislation related to medical care and medical services, a special meeting of the house of delegates of the California Medical Association has been called for March 2 in Los Angeles.

Bills Introduced—A 246 proposes to authorize the organization of corporations to provide on a nonprofit basis hospital care for their members and to exempt such corporations from the requirements of the state insurance law. The funds of a corporation organized under the provisions of this bill are to be exempt from all forms of state, county, municipal and school taxes. Such a corporation is specifically prohibited from in any manner providing medical service "in connection with the diagnosis or treatment of disease as controlled or prescribed by the medical practice act of the state of California or in any manner whatsoever engaging in the corporate practice of medicine and/or dentistry." A 255 proposes that the expert medical witnesses and the medical examiners whom the law permits a court to appoint to testify in a pending case shall be selected from a list of qualified physicians, prepared by the civil service commission after consultation with the state board of medical examiners, the medical director of the industrial accident commission, the deans of the medical schools of the University of California and of Stanford University, and the judicial council. A 429 proposes that every public and private school be so equipped as to render first medical aid to injured students. S 154 to amend the medical practice act, proposes (1) that a licentiate appealing from a judgment of the board of medical examiners revoking or suspending his license or placing him on probation must file with the clerk of the court a surety bond for \$250 to secure payment of the costs of appeal and (2) to make the following acts additional causes for the revocation or suspension of licenses: (a) fraudulent representation that a manifestly incurable condition can be cured, (b) advertising that the licentiate will treat syphilis or prostate conditions or prostatic ailments, (c) the execution by a licentiate in his professional capacity of any false certificate, and (d) acceptance by a licentiate of employment from persons who directly or indirectly solicit patients. S 155 to amend the medical practice act, proposes to permit the issuance of a physician's and surgeon's certificate to an applicant who has completed three years' study in a medical school and has served at least one year's internship. S 311 to amend the laws regulating the sale, possession, distribution and use of narcotic drugs proposes that, in addition to any other penalty, any person convicted of unlawfully distributing narcotic drugs, who is not himself a drug addict, may be subject to from one to twenty lashes at a whipping post.

COLORADO

Annual Registration Due Before March 1—Every person licensed to practice any form of the healing art in Colorado is required by law to register annually before March 1, with the secretary-treasurer of the board of medical examiners and to pay a fee of \$2 if a resident of Colorado or \$10 if a non-resident. Failure to pay this fee within the time stated automatically suspends the right of a licentiate to practice while delinquent. If he nevertheless continues to practice he is subject to the penalties provided by law for practicing medicine without a license. Failure to pay this fee for three consecutive years results in the automatic cancellation of a delinquent practitioner's license to practice.

Bills Introduced—S 699 to amend the workmen's compensation act, proposes that if an employee or his representative is awarded compensation under the act no action may thereafter be brought against the physician who treated the industrial injury which was the basis of the award. S 700 proposes that every contract by which a hospital or a licensed practitioner of the healing art warrants or guarantees the specific result of treatment or care to be given any patient shall be void unless such contract or some note or memorandum thereof be in writ.

ing and be signed by the party sought to be charged therewith S 701 proposes that all actions for malpractice against a hospital must be instituted within two years after the accrual of the cause of action.

CONNECTICUT

Bill Introduced—H 28, to amend the chiropody practice act, proposes to define chiropody, or podiatry, as "the diagnosis of foot ailments and the practice of minor surgery upon the feet, limited to those structures of the foot superficial to the inner layer of the fascia of the foot, the dressing, padding and strapping of the feet, the making of plaster models of the feet and the palliative and mechanical treatment of functional disturbances of the feet as taught and practiced in the schools of chiropody recognized by the examining board

Lectures on Social Aspects of Medicine—The department of public health of Yale University School of Medicine is sponsoring a series of lectures in New Haven dealing with the backgrounds of medical practice. Dr Henry E Sigerist, director of the Institute of the History of Medicine, Johns Hopkins University, Baltimore, opened the series with three lectures on the development of medicine in relation to changing social conditions, January 14, 15 and 17. These lectures on the social aspects of medicine are designed especially for students of medicine but will also be open to the public. The department of public health has for some time been interested in furthering the investigation of the social backgrounds of disease in individual patients. According to an announcement the work has been developed under the direction of Ira V Hiscock, C.P.H., professor of public health, to the point at which a more comprehensive survey of the many aspects of American life as they pertain to health problems, is now thought desirable. The work on social backgrounds has been conducted with the cooperation of various agencies including the social agencies of New Haven, the city department of health, the social service department of the medical school and more recently the social science division of the Institute of Human Relations at Yale.

DELAWARE

Bill Introduced—H 38, to amend the workmen's compensation act, proposes to make compensable "any injury or disease arising out of and in the course of the employment as well as such disease or infection as naturally results directly therefrom when reasonably treated"

Society News—Dr Abraham Cantarow, Philadelphia, addressed the New Castle County Medical Society in Wilmington, January 10, on "Practical Aspects of Specific and Non-specific Calcium Therapy." Dr William H Speer, Wilmington, addressed the society, Dec. 18, 1934, on "The Injection Treatment of Varicose Veins"

ILLINOIS

Bills Introduced—H 96 proposes to impose a tax of 10 per cent of the gross cash receipts from sales in Illinois on persons manufacturing patent and proprietary medicines in the state. H 97 proposes to authorize the sexual sterilization of insane, feeble-minded mentally defective, idiot, imbecile or epileptic inmates of state institutions. H 44 proposes to repeal the laws regulating the distribution and possession of narcotic drugs and to enact what apparently is the uniform narcotic drug act. H 109 proposes to accord liens to physicians and hospitals treating persons injured through the negligence of others, on all rights of actions, suits, claims or demands accruing to the injured persons because of their injuries.

District Meeting—The Iowa and Illinois Central District Medical Association held its quarterly meeting at the Blackhawk Hotel in Davenport, Iowa, January 11. The president, Dr John C Souders, Rock Island, gave a tribute to Dr George L. Eyster, who practiced medicine in the community for fifty-five years and who now lives in Coral Gables, Fla. Other speakers were Drs Merrill M Benfer, Davenport, on 'Consideration in the Treatment of Hypertrophied Prostate'; William H Olmstead, St Louis, 'Vascular Diseases of the Extremities'; and Louis G Herrmann, Cincinnati, 'Recent Advances in the Treatment of Obliterative Arterial Diseases of the Extremities'. Several patients with arterial disease of the extremities were presented at this meeting.

Chicago

Malaria Among Narcotic Addicts—The use of the same syringe by several narcotic addicts was said to be the cause of an outbreak of malaria recently. Five deaths from the disease in the county hospital prompted a raid on the hotel where two

of the victims lived. Two of the men arrested were found to be potential malaria carriers, having had the disease several years ago. They confessed to being part of a group of addicts that usually met together and used the same syringe.

Society News—A symposium on transurethral resection constituted the program of the Chicago Urological Society, January 24, speakers were Drs Edward W White, Harry Culver, Herman L Kretschmer and Irvin S Koff. Dr Royd R Sayers of the U S Public Health Service, Washington, D C, discussed "Silicosis as a Factor in Compensation and Personal Injury Cases" at a meeting, January 26, sponsored by the hospitality committee of the Chicago Bar Association. Members of the Chicago Medical Society and the Chicago Society of Industrial Medicine and Surgery were invited. The Chicago Medical Society held a memorial meeting, January 27, in honor of its members who have died in the past year. In addition to a musical program, Dr William Allen Pusey discussed "Medicine the Last Fifty Years and the Next Fifty," and Frederick F Shannon, pastor of the Central Church, "Some Doctors I Have Known." Dr George W Crile, Cleveland, addressed the Public Affairs Round Table of the Union League Club of Chicago, January 25, on "Medical Research, Health and Longevity." This lecture accompanied the first showing of the sound motion picture "That Man May Live," prepared by the American College of Surgeons.

INDIANA

Bills Introduced—H 113 proposes to authorize the state board of pharmacy to appoint a narcotic inspector to enforce, and to collect information necessary to enforce, the state and federal laws relating to narcotic drugs. S 83 proposes to repeal the laws regulating the distribution and possession of narcotic drugs and to enact what apparently is the uniform narcotic drug act. S 118, to amend the workmen's compensation act, proposes (1) to make occupational diseases compensable, and (2) that no physician be permitted to testify at any hearing provided for in the act or in any action at law brought against an employer who is subject to the act, unless, at the time of making his report to the party employing him, he shall also furnish the opposite party with a copy of the report, setting out in detail the history, complaints and findings. H 211 proposes to authorize counties, cities and towns to supply insulin free of charge to citizens who are in need of insulin treatment for diabetes and who are financially unable to purchase the drug.

IOWA

Bill Introduced—S 20 proposes that before any applicant for a license to practice medicine, osteopathy, osteopathy and surgery or chiropractic may be examined by his professional board he must first pass an examination before an impartial basic science board in anatomy, physiology, chemistry, pathology, bacteriology and hygiene. The basic science examining board is to consist of five members of the faculties of the State University, the State College of Agriculture and Mechanic Arts, the Iowa State Teachers College and any other university or college accredited by the Iowa state board of educational examiners. All members of the board must be learned in the basic sciences and no member may be licensed to practice any of the healing arts.

LOUISIANA

Centennial Celebration at Tulane—The one hundredth anniversary of the establishment of Tulane University of Louisiana School of Medicine, New Orleans, was commemorated in a program sponsored by the Orleans Parish Medical Society, January 7. This observance is a forerunner of the celebration planned by the university in June for three or four days, culminating on commencement day, June 12. The recent program marked the actual day of its founding the first Monday in January 1835. The history of the institution was reviewed by Mayor T Semmes Walmsley, and Drs Charles C Bass, dean, Waldemar R. Metz, Albert E Fossier and Rudolph Matas.

MARYLAND

Bills Introduced—H 36, to amend the workmen's compensation act, proposes to eliminate those provisions in the present law which define the evidence that must be submitted in order to permit recovery of compensation for hernia. H 53 proposes to require both parties to prospective marriages, as a condition precedent to obtaining licenses to wed, to present certificates from licensed physicians that both parties are free from contagious disease.

MASSACHUSETTS

Personal—Dr Edward B Lane, Boston, has resigned as medical superintendent of an institution for mild nervous disorders, after twenty-five years' service. He has been succeeded by Dr James Martin Woodall.—Dr James B Atwater, Westfield, resigned as chief of staff of the Noble Hospital, Nov. 24, 1934, after twenty-seven years' service, he was made chief emeritus and Dr Edward S Smith was appointed to succeed him.

Bills Introduced—H 358 proposes to authorize the department of mental diseases to construct a hospital for drug addicts on Rainsford Island, in the city of Boston. H 1736 proposes to prohibit the distribution of any article intended as a sex inciting device or contrivance and to prohibit the distribution, except by physicians or pharmacists, of any article intended to be used for the prevention of venereal disease. H 1400 proposes a system of compulsory and voluntary sickness insurance. The benefits proposed consist of cash and all forms of medical and dental service. Persons employed at "other than manual labor" and receiving wages in excess of \$60 a week, farm laborers and persons employed by an employer having less than three employees in personal or domestic services, are excluded from the compulsory insurance of the bill but are entitled to participate in the voluntary insurance.

MICHIGAN

Bill Introduced—H 92, to amend the workmen's compensation act, proposes to make compensable all disabilities or death suffered by an employee as a result of occupational injury or disease.

Detroit Health Council—The creation of a Metropolitan Detroit Health Council to secure good health service for all the people at a minimum of expense was unanimously endorsed at a meeting of the Wayne County Medical Society, Dec. 17, 1934. It was recommended that the officers of the society be empowered to effect this organization in cooperation with community agencies dealing with medical service and health protection. About 400 members of the society attended the meeting. Following a discussion of medical economics, William J Burns, executive secretary of the society, outlined the plans for the organization of the health council, and Dr Charles Godwin Jennings introduced the resolution that recommended its creation.

MINNESOTA

Lectures for Teachers' Colleges—The Minnesota State Medical Association, cooperating with the Minnesota Public Health Association, is providing a health lecture course for the teachers colleges of the state. The course consists of a series of five lectures, one each month, by prominent physicians of the state. The titles of the lectures are Milestones of Medicine, Youth's Greatest Enemy, That Heart of Yours, Heritage of Health, and Your Senses and You.

Bills Introduced—H 86 proposes to authorize the sexual sterilization of inmates of state institutions who are afflicted with mental deficiency, perversion, marked departures from normal mentality or from disease of a syphilitic nature, likely to be transmitted to descendants. S 145 proposes to amend the law prohibiting the procuring of an abortion or miscarriage. The present law permits the use of any means to procure a miscarriage if "the same is necessary to preserve" the life of the woman. This bill proposes to permit also the procuring of a miscarriage if it is necessary to preserve the life of the fetus. S 177 proposes to provide for the licensing of dental hygienists by the board of dental examiners. A dental hygienist is to be authorized to remove lime deposits, accretions and stains from the exposed surfaces of the teeth, administer gas, ether and general anesthesia, and to make instrumental examination of the teeth or cavities. A dental hygienist, however, must operate (1) in the office of a licensed dentist and at all times under his direct supervision or (2) in a public institution or school if at all times under the general supervision of a licensed dentist. H 212 proposes to require every physician or the governing authorities of every hospital, on treating persons suffering from gunshot or knife wounds, to report the facts immediately to the proper police officials.

MISSOURI

Physical Therapy Committee Appointed—At the annual meeting of the council of the Missouri Medical Association in Columbia, Nov. 19, 1934, the organization of a committee on physical therapy was approved. Drs Alexander J Kotkis and Frank H Everhardt St. Louis were named members of the committee, with three other members to be appointed later.

Bills Introduced—S 28 proposes to make it unlawful for any person to cultivate, cure, prepare, distribute in any manner or possess marijuana. Physicians, dentists and osteopaths, however, are to be permitted to prescribe marijuana. H 144, to amend the workmen's compensation act, proposes, in effect, to permit chiropractors and osteopaths to render the medical and surgical treatment called for in that act.

MONTANA

Bill Passed—S 35, to supplement the pharmacy practice act, has passed the house, proposing to authorize the state board of pharmacy to adopt rules requiring registered pharmacists to keep a record of all poisons sold or disposed of, containing the signatures of the purchasers and such other information as may be required by the board.

Bill Introduced—H 86, to amend the chiropractic practice act proposes (1) to define chiropractic as "the science that teaches that disease results from anatomic disrelation and teaches the art of restoring anatomic relation by adjustment by hand and the use of such other physical, thermal and electrical methods and modalities as are necessary to the restoration of proper anatomic relation," and (2) to require a chiropractic licensee to show as a condition precedent to his right to annual reregistration that during the past year he has attended a postgraduate course in a recognized chiropractic college or has attended at least one of the "educational" programs as conducted by the Montana chiropractic association.

NEBRASKA

Bills Introduced—H 143 proposes to make it the duty of every physician, hospital or pharmacy treating any person suffering from any injury inflicted by a knife, gun, pistol or other deadly weapon, or by other means of violence, to report immediately to the appropriate police officials the name and address of the patient and the nature and extent of the injuries. S 50, to amend the optometry practice act, proposes, among other things, to define optometry as "the science of diagnosing disturbances of the visual apparatus and functions." H 137 and H 147 propose to repeal the laws regulating the distribution and possession of narcotic drugs and to enact what apparently is the uniform narcotic drug act. H 230 proposes a system of compulsory and voluntary sickness insurance. The benefits proposed consist of cash and of all forms of medical and dental services. Persons employed at "other than manual labor receiving wages in excess of \$250 monthly," farm laborers, and persons employed by an employer having less than three employees in personal or domestic services, are excluded from the compulsory insurance of the bill but are entitled to participate in its voluntary insurance.

NEW HAMPSHIRE

Bills Introduced—H 143 proposes to make it the duty of pension act, among other things proposes to require the employer to furnish to an injured employee, without limit as to time or amount, reasonable medical and hospital services and other remedial care. H 196 proposes to limit the administration of anesthetics to licensed physicians and dentists. It proposes also to prohibit the administering of an anesthetic unless a responsible adult third person is present at the administration and during the period the patient is under the anesthetic. H 270, to amend the chiropody practice act, proposes to define a chiropodist as "one who examines, diagnoses, or treats medically, mechanically, surgically, or by electrical and manipulative means, or by bandaging and strapping, the ailments of the human foot not requiring the use of anesthetics other than local." H 153 proposes to accord to hospitals, caring for persons injured through the fault of others, liens on all rights of action, claims judgments, settlements or compromises accruing to the injured persons by reason of their injuries.

NEW JERSEY

Bill Introduced—S 50 proposes to authorize the sexual sterilization of idiot, epileptic, imbecile and feebleminded inmates of state institutions.

Surgeons' Annual Meeting—Dr Briscoe B Ranson Jr., Maplewood, was elected president of the Society of Surgeons of New Jersey at Newark, January 9. Speakers included Dr. George W Cride Cleveland The Adrenal Sympathetic System and Its Diseases
Dr. Arthur H Curtis Chicago, Obstructive Lesions of the Uterus and Their Complications
Dr. Walter E Dandy, Baltimore, Diagnosis and Treatment of Disturbances of the Cranial Nerves.
Dr. Philip D Wilson, New York Injuries in the Region of the Elbow
Dr. Henry Bugbee New York Present Status of the Prostatic Problem.
Dr. William Wayne Babcock Philadelphia Management of Carcinoma of the Large Bowel

NEW MEXICO

Bill Passed—H 57 has passed the house, proposing to require the board of pharmacy to license, without examination, any licensed physician who owns or operates a drug store or any other business requiring the services of a registered pharmacist

NEW YORK

Bills Introduced—S 401 proposes to prohibit the advertisement, display, sale or other disposal of appliances, drugs or medicinal preparations intended or having special utility for the prevention of venereal disease and/or used in gynecologic hygiene or treatments, except in places duly registered by the state board of pharmacy S 357 and H 445 propose to safeguard the distribution of "dangerous caustic or corrosive substances," as defined in the Federal Caustic Poison Act, by requiring their labeling as poison S 344 proposes to amend that provision in the vital statistics law which requires that the personal particulars called for in a certificate of birth shall be authenticated by the signature of an informant, who may be any competent person acquainted with the facts, by providing that such personal particulars shall be obtained from such a person. A 461, to amend the medical practice act, proposes to make it unlawful for any one other than a licensed physician to conduct, direct, supervise or control the work or reports of a clinical laboratory, which is defined as "a laboratory in which tests are made on individual persons, their secretions, excretions, blood and tissues, to aid in the diagnosis, prognosis, or treatment of the individual's physical or mental state or states" The provisions of this bill, however, are not to apply to qualitative or quantitative analysis of urine by a licensed pharmacist, or to a clinical laboratory director duly licensed to conduct, direct or supervise a clinical laboratory within the city of New York or to any person who has conducted, directed or supervised a clinical laboratory in the state for a period of at least six months prior to the date this bill may become enacted. S 409 and A 551 propose that that portion of a street in front of a physician's residence, if properly marked, shall at all times be reserved as a parking space for the physician's personal use and for the use of persons visiting him professionally A 558 proposes to prohibit the employment of nurses by state, county or city hospitals or in hospitals supported in whole or in part by public funds, for more than eight hours in any one day

New York City

Laboratory Service on Pneumonia.—The bureau of laboratories of the department of health has recently extended its diagnostic service for the typing of pneumococci by opening a branch laboratory for that purpose at Bellevue Hospital

Study of Amebic Dysentery.—The U S Public Health Service reports a study of the occurrence of amebic dysentery in New York between Nov 1, 1933 and Sept 30 1934 Before October 1933 dysentery was rarely reported in the city, only nineteen, twenty and twenty cases having been listed in 1930, 1931 and 1932 When a warning was received from the Chicago health department that an outbreak had occurred in that city, intensive studies were begun of all cases reported to the New York health department Of 121 cases that occurred between Nov 1, 1933, and Sept 30 1934 seventy-three, or 60.3 per cent, originated in Chicago Of the remaining cases, thirteen apparently originated in New York, fifteen in places in the United States outside of Chicago and New York and twelve in foreign countries In eight instances the source of infection could not be traced At the end of the period studied seventeen deaths had occurred, forty-one patients were said to have recovered and sixty-three were still undergoing treatment The largest number of cases, twenty-seven, was reported in December 1933 The number of cases reported from January to September 1934 thirty two attributed to sources other than Chicago affords a better indication of the normal incidence of dysentery in the city the report concludes Of the usual number a fairly constant percentage comes from foreign sources The apparent increase over earlier years may be ascribed to greater interest or increased diagnostic skill on the part of physicians or to better reporting, it is noted

NORTH DAKOTA

Bill Introduced—H 73 proposes to create a board of naturopathic examiners and to regulate the practice of naturopathy According to the bill naturopathy, which includes physiotherapy, is defined to be "The treating of the human body for hygienic [sic] or remedial purposes by means of massage, baths heat, light vibration, manipulation, nontoxic herbs and diet as taught by Naturopathic Schools and Colleges"

OHIO

Columbus Credit Bureau—The Columbus Academy of Medicine has authorized the establishment of a credit bureau to be known as the Columbus Bureau of Medical Economics, through which patients' credit ratings will be recorded and exchanged, and delinquent accounts will be handled Dr Eugene F McCampbell has been named president and Dr Russel G Means, secretary

Personal—Dr Gustav Eckstein Jr, Cincinnati, author of several novels and of "Noguchi," received the Sachs Prize of \$500, given annually to a Cincinnati who has made a notable contribution to art, literature, science or education.—Dr and Mrs Florus Fremont Lawrence, Columbus, celebrated their golden wedding anniversary, January 1 Dr Lawrence was professor of surgery, anatomy and clinical surgery at the old Ohio Medical University, clinical lecturer in abdominal pelvic surgery at Starling Medical College, and in later years, 1906-1916, clinical lecturer on surgery at Ohio State University College of Medicine In recent years he has been on the staffs of McKinley and White Cross hospitals He is a former president of the Columbus Academy of Medicine.

OKLAHOMA

Bills Introduced—H 126 proposes to create a board of chiropody examiners and to regulate the practice of chiropody which the bill defines as the examination, diagnosis or treatment manually, mechanically, medically or surgically of the ailments of the human foot except the amputation of a toe or foot, and the use of anesthetics other than local H 101 proposes to amend the laws relating to divorce by permitting a divorce when either spouse has been adjudicated insane and has been confined in an institution for treatment for three years or more

OREGON

Bills Introduced—H 57, to amend the laws relating to taxation, proposes to deny exemption from taxation to any incorporated hospital which makes a charge for its services on the ground that such a hospital is a noncharitable institution H 85 proposes to repeal the law requiring applicants for marriage licenses to present medical certificates showing their freedom from venereal and certain other communicable diseases and certain inheritable diseases and conditions

Bill Passed—H 112, to amend the medical practice act, has passed the house It proposes (1) to permit the medical examining board to hold meetings for examinations whenever it deems them advisable, provided such meetings are held at least twice each year, the present law requiring that meetings for examination be held on the first Tuesdays of January and July, (2) to permit the board to suspend licenses as well as to refuse to issue or to revoke them for the causes now stated in the law, and (3) to add to the conduct which shall be deemed to be "unprofessional or dishonorable conduct" "the obtaining of any fee through fraud or misrepresentation"

PENNSYLVANIA

Survey of Maternal Health—The Medical Society of the State of Pennsylvania through its commission on maternal welfare is undertaking a complete survey of the problem in the state. Dr James S Taylor, Altoona, chairman of the commission, has asked each county society to appoint a local committee whose chairman will become a member of the councilor district committee and the chairman of the district will in turn be a member of the commission

Bills Introduced.—H 187 proposes an amendment to the constitution to permit the general assembly to establish a system of compulsory health insurance H 188 proposes to establish a system of compulsory health insurance in favor of all persons engaged in manual labor and all other employed persons earning \$50 a month or less The proposed benefits, in case of illness or accident, consist of necessary medical, surgical, dental, nursing and hospital attendance and treatment, available alike to the employed person and to the dependent members of his family H 271 proposes to authorize the establishment of a state tuberculosis sanatorium in one of the state forest reservations

Philadelphia

Neurologic Society Fifty Years Old—The Philadelphia Neurological Society celebrated its fiftieth anniversary, January 22 with a meeting at the headquarters of the College of Physicians of Philadelphia Dr William G Spiller read a paper on "Fifty Years of Psychiatry," and Dr Charles H Frazier one on "Neurosurgical Activities of Members of the Philadelphia Neurological Society"

Bequest to Pennsylvania Hospital—Mrs Henrietta Dallas Pepper, a great-great-granddaughter of Benjamin Franklin, left the greater part of her \$200,000 estate to the Pennsylvania Hospital to establish a ward "for persons of gentle birth but unable to pay," according to newspaper reports. The ward is to be a memorial to her husband, John W. Pepper, who died in 1918. Mrs Pepper died, Dec. 23, 1934.

Pittsburgh

Travel Club Meeting—The Obstetrical and Gynecological Travel Club including physicians from Montreal, Boston, New York, Philadelphia, Chicago, Rochester (Minn.) and Washington, D. C., held its annual meeting in Pittsburgh, Dec. 2-4, 1934. Clinics were presented at various hospitals by the following Pittsburgh physicians: Drs. Charles H. Aufhammer, Charles J. Barone, Bender Z. Cashman, Sidney A. Chalfant, Josiah R. Eisaman, Thomas Evans Jr., Raymond A. D. Gillis, James L. Gilmore, Raleigh R. Huggins, David B. Ludwig, Thomas K. Reeves and Paul Titus. Among social features were a buffet supper at the home of Dr. Titus and a dinner at the University Club at which Dr. Frederick C. Irving, Boston, read a paper on toxemias of pregnancy.

TENNESSEE

Bills Introduced—H. 204 to amend the chiropractic practice act, proposes (1) that the membership of the board of chiropractic examiners be increased from three to five, (2) that the board be appointed by the governor from a list of names submitted by the Tennessee Chiropractic Association, and (3) to provide staggered terms of three years for board members. H. 265 and S. 168 propose, among other things, to impose an annual occupational tax on physicians equal to 1 per cent of the gross income derived from the practice of their profession.

Bill Enacted—S. 97 has become a law, providing that the board of health shall consist of nine members appointed by the governor, of whom six shall be licensed practitioners of medicine, one a licensed dentist, one a licensed pharmacist and one a member of the Tennessee congress of parents and teachers and the Tennessee Federation of Women's Clubs. The medical members are to be appointed from a list of names submitted by the Tennessee State Medical Association. The board is to formulate the policies and supervise the activities of the department of public health.

TEXAS

Bills Introduced—S. 59 and H. 107 propose to authorize the sexual sterilization of mentally defective, deficient or diseased inmates of state institutions.

Gastro-Enterologists Organize—The Texas Society of Gastro-Enterologists was organized, Nov. 16, 1934, during the meeting of the Southern Medical Association in San Antonio. Dr. Harry G. Walcott, Dallas, was elected president and Dr. Franklin D. Garrett, El Paso, secretary. The next meeting will be in connection with the annual session of the Texas State Medical Association in Dallas in May.

UTAH

Bill Introduced—H. 4, to amend the workmen's compensation act, among other things proposes to make compensable any "disease which is the result of the occupation or employment."

WASHINGTON

Bills Introduced—S. 14 proposes to authorize the establishment of a hospital for the treatment of drug addicts and to provide a procedure for the commitment of drug addicts to it. The bill defines a "drug addict" as one "who unlawfully administers to himself or unlawfully has administered to himself by others any habit-forming narcotic drug." S. 32 proposes to eliminate from the criminal code those provisions prohibiting the possession, sale or other distribution, or the use, of contraceptives. H. 28 proposes to accord to physicians, nurses and hospitals, treating persons injured through the negligence of others, liens on all rights of action, claims, judgments, compromises or settlements accruing to the injured persons by reason of their injuries.

WISCONSIN

Bill Introduced—A. 70 proposes to require every physician or midwife attending a confinement case to instil a 1 per cent solution of silver nitrate into the eyes of the baby immediately after its birth.

Two Positions for Women Physicians—The state bureau of personnel announces that two vacancies are anticipated in the

state board of health, for which women physicians are invited to apply: supervisor of the maternity and child welfare division, a permanent position, and maternity and child welfare physician, a position that will last about ten months, during a leave of absence of the present incumbent. Minimum qualifications are training equivalent to that represented by graduation from a medical school of recognized standing, a license or eligibility for a license to practice in Wisconsin, five years of practice with special experience in pediatrics and public health, ability as a public speaker, endurance, and good physical condition. Out of state candidates who are citizens of the United States will be accepted for both positions. Photographs and medical certificates must accompany applications which must be filed before February 15. Blanks may be obtained from the bureau of personnel, Madison.

WYOMING

Bill Introduced—S. 47 proposes to authorize any school district to employ a licensed physician to care for and treat school children.

GENERAL

License Missing—Dr. Lewis Robert Wolberg, Kings Park, Long Island, N. Y., recently reported to the California State Board of Medical Examiners the disappearance of his license to practice medicine in California.

Association Favors New Food and Drug Legislation—The American Association for the Advancement of Science at its meeting in Pittsburgh, Dec. 31, 1934, adopted a resolution supporting revision of the Food and Drugs Act. The statement expressed the conviction that cosmetics should be included in any new bill presented and that manufacturers, their salesmen or other agents, should be allowed to use in their advertising, printed, broadcast or otherwise presented, only such statements as are not misleading and are essentially in accordance with fact.

Orthopedists Form Examining Board—At the annual session of the American Academy of Orthopedic Surgeons in New York, January 15-17, the American Board of Orthopedic Surgeons was organized to certify qualifications of physicians who wish to specialize in that field. Dr. Melvin S. Henderson, Rochester, Minn., was named chairman, and other members include Drs. Fremont A. Chandler, Edwin W. Ryerson and Philip Lewin, Chicago; Henry W. Meyerding, Rochester, Minn.; William Barnett Owen, Louisville, Ky.; John C. Wilson, Los Angeles; Hulett J. Wickoff, Seattle; and Samuel Klemberg, New York. Dr. Henderson was also chosen president-elect of the academy and Dr. Frank D. Dickson, Kansas City, Mo., was installed as president. Dr. Lionel D. Prince, San Francisco, was elected vice president and Dr. Philip Lewin, Chicago, reelected secretary.

Lea and Febiger Publish Memorial Volume—In recognition of 150 years of publishing, Lea and Febiger have just made available a sketch originally prepared by Mr. Henry Charles Lea in 1885 to celebrate the one hundredth anniversary of the founding of that business, revised and amplified to bring it up to date. The volume is beautifully illustrated with facsimiles of letters and with some fine portraits. This company has been operated continuously by members of the same family. The first editor of the *Philadelphia Journal of the Medical and Physical Sciences* established in 1820, later the *American Journal of the Medical Sciences* was Nathaniel Chapman, also the first president of the American Medical Association. The publication became the *American Journal of the Medical Sciences* in 1827, under the editorship of Dr. Isaac Hays, who was also in charge of the committee that prepared the *Principles of Ethics of the American Medical Association*. The company takes particular pride in its continuous publication in America of Gray's *Anatomy*, beginning with 1859.

Annual Report of Commonwealth Fund—Fifty-eight per cent of the \$1,720,514.54 expended by the Commonwealth Fund in the year ended Sept. 30, 1934, was devoted to public health, rural hospitals, medical education and medical research, according to the annual report issued January 14. During the year the fund helped to finance a community hospital in Kingsport, Tenn., in the region served by the Tennessee Valley Authority, similar to the six community hospitals it has supported in the past few years. In the latter hospitals, average occupancy increased 22 per cent over the previous year and collections on patients' accounts increased 33 per cent. The fund has aided rural health agencies in Massachusetts, Mississippi and Tennessee. In Mississippi a special epidemiologic unit has been in operation. During the past few years 272 scholarships for graduate medical work have been given to physicians.

The fund is now subsidizing experiments at the Boston Children's Hospital and the New York Babies Hospital, in which students of pediatrics may observe psychiatric and psychologic methods of handling children. Support of the Child Guidance Clinic in London is being continued. Medical research sponsored by this foundation included a study of tuberculosis in the infant and preschool child at Johns Hopkins University School of Medicine, of placental extract at Harvard Medical School, and of serum treatment of pneumonia under the direction of the Massachusetts State Department of Health.

Medical Bills in Congress—Changes in Status S 1226 has passed the Senate, proposing to prohibit the sending of unsolicited merchandise through the mails. S 1175 has passed the Senate and House, extending the functions of the Reconstruction Finance Corporation for two years. The House rejected an amendment that would have authorized loans to colleges, universities and institutions of learning, and to hospitals. **Bills Introduced** S 337, introduced by Senator Vandenberg, Michigan, proposes to furnish to certain seamen hospitalization and medical treatment at hospitals and relief stations of the United States Public Health Service. S 1375, introduced by Senator Copeland, New York, proposes to amend the penal laws of the United States so as to authorize the importation into the United States, and the interstate transmission by any express company or other common carrier, of books or information relating to the prevention of conception, or articles, instruments, substances, drugs, medicines, or things designed, adapted, or intended solely for the prevention of conception, if (1) for use by any physician legally licensed to practice medicine, or by his direction or prescription, (2) for use by any druggist in filling any prescription of any such licensed physician, (3) for use by any medical college legally chartered under the laws of the United States or of any state or territory, or of the District of Columbia, or (4) for use by any hospital or clinic chartered under the laws of the United States or licensed under the laws of any state or of any territory, or of the District of Columbia. H J Res 8, introduced by Representative Bland, Virginia, would authorize Hugh S. Cumming, Surgeon General John D. Long, Medical Director, and Clifford R. Eskey, surgeon, all of the United States Public Health Service, to accept certain decorations bestowed on them by the governments of Ecuador, Chile and Cuba. H R 25, introduced by Representative Huddleston, Alabama, proposes to authorize the Bureau of Standards to adopt and prescribe grades and standards of quality of objects of commerce and to adopt and prescribe marks and symbols and/or figures indicating such grades and standards, and to adopt regulations for the use of such marks, symbols and figures as indicating quality, grade or standard. H R 2061, introduced (by request) by Representative Knutson, Minnesota, proposes to revise the laws and regulations relating to pensions and other allowances for veterans and their dependents. H R 3039 introduced by Representative McSwain, South Carolina, proposes to authorize the acquisition of additional land for the use of the Walter Reed General Hospital. H R 4317, introduced (by request) by Representative Zioncheck, Washington, proposes to incorporate the American White Cross Association on Drug Addiction. H R 4513, introduced by Representative Kopplemann, Connecticut, proposes to authorize the payment of claims for unauthorized emergency treatment of World War veterans. H R 4871, introduced by Representative Pearson, Tennessee, proposes to authorize the Reconstruction Finance Corporation to make loans to institutions of learning, and to hospitals. H R 5055, introduced by Representative Dockweiler, California, proposes to provide for the rehabilitation of and uniform pensions for, all totally blind soldiers of the Army, Navy and Marine Corps and war nurses

are on the waiting list for examination. This work is financed by federal and state funds from various sources, with impetus from funds provided by the Agricultural Adjustment Administration.

Internship Available at St. Elizabeth's

The U S Civil Service Commission has announced a competitive examination for junior medical officer (intern) at St. Elizabeth's Hospital, Washington, D C, for which applications must be on file not later than February 18. Two types of internship are offered. The first type is a two year internship consisting of a rotating service of four months each of surgery, acute medical service and chronic medical service, six weeks each of obstetrics and pediatrics (affiliation), three months of general laboratory work, and six months of psychiatry. The second type is a graduate internship of one year in psychiatry, for which physicians who have already had an accredited internship are desired, although applications will be accepted from those who have not. Applications will be accepted from fourth year students in medical schools that require a year of internship before granting a degree, as senior students to serve the intern year, and from senior students in other schools subject to their furnishing proof of graduation during the existence of the eligible register. Full information may be obtained from the secretary of the U S Civil Service Board at the postoffice or customhouse in any city that has a postoffice of the first or second class or from the Civil Service Commission, Washington, D C.

Annual Report on Health of Army

For the first time in the U S Army, injuries from athletics lead the causes of admission to sick report with a rate of 28.4 per thousand, according to the annual report of the surgeon general for 1933. The lowest admission rate (57.85) ever achieved was recorded for this year, while a new low rate (34.4 per thousand) was indicated for venereal disease incidence as compared with 42 for the previous year. The total army had an average daily strength of 136,491 during the year, an increase of 4,566 over that of the previous year. The percentage of first enlistments of the total number enlisted was 38.2 which was higher than the two previous years (25.5 and 29.8) but lower than the rate of 43.6 for 1930. The total number of days spent in the hospital during the year was 1,355,245. In addition there were 1,008,140 hospital days chargeable to beneficiaries of the Veterans' Administration, soldiers' homes, members of the national guard, officers' reserve corps, reserve officers training corps, citizens military training camps, civilian conservation corps and civilians entitled to medical treatment. This totals 2,363,385 hospital days as compared with a total of 2,425,343 days spent in hospital during 1932. In addition there was an average of 395 patients each day treated in quarters and 1,290,142 outpatients treated. There were 686,327 physical examinations performed and 949,966 vaccinations of various kinds administered. For the fiscal year 1934 the per diem cost of hospitalization in army hospitals was \$4.60. The number of Veterans Administration beneficiaries was materially reduced but this was offset by the influx of civilian conservation corps patients. The admission rate for officers (4.87) was the lowest for the past decade. There were 577 deaths during 1933, as compared with 567 in 1932 and 626 during 1931. Excluding three of these deaths, which were among nurses, the death rate for the whole army was 4.2 per thousand, as compared with 4.3 the previous year. Automobile accidents headed the list as the most important cause of death, as they have since 1930. During 1933 there were seven more than in 1932 but twelve less than in 1931. Collisions with other vehicles accounted for eighteen of the eighty deaths from this cause. Suicides stood second as a cause of death accounting for fifty-seven deaths. Airplanes responsible for fifty-six deaths were third. Deaths from external causes gave a rate of 2.10, almost as high as the total rate for diseases, 2.11. During the year ninety-two officers and 1,721 enlisted men were discharged from the service on account of physical or mental disability, a total of 1,813 as compared with 1,566 for 1932. The rate of discharge for the year for the entire army was 13.3. The noneffective rate for the whole army for the year was 29.4, as compared with 30.5 for 1932 and 32.5 for 1931. Gonorrhea was the leading cause for the loss of time 2,863 cases accounting for 133,531 days lost. However tuberculosis led the conditions causing the greatest loss of time per case on account of the long continued treatment required. Injuries caused 197 per cent of all noneffectiveness, as compared with 18.8 for 1932. The rate 5.6 was the lowest on record for alcoholism for the total army with the exception of the war years. Twelve drug addicts were detected, as compared with sixteen in 1932.

Government Services

Progress in Testing of Cattle

Testing of cattle for tuberculosis is progressing more rapidly than at any time in the history of tuberculosis eradication, according to a statement from A. E. Wight in charge of eradication of tuberculosis and Bang's disease for the U S Department of Agriculture. During November 1934 a total of 2,122,035 cattle were tested more than in any month in the history of the nation wide campaign. Although the work against Bang's disease is more recent, reports from forty-four states show that more than 286,000 agglutination tests were made in November. Nearly 15 per cent of the cattle reacted and will be removed for slaughter. Large numbers of cattle

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan 12, 1935

The State Assistance of the Unemployed

Following the war the unprecedented unemployment led to equally unprecedented government expenditure for its relief, and controversy arose as to the amount of food necessary for the maintenance of health and its cost. The question was at first scientific but it quickly became political, for, whatever was given, the labor party demanded more. In the house of commons, Mr Oliver Stanley introduced for the government a draft of unemployment assistance regulations. He said that the scales proposed were the result of a careful survey by the Unemployment Assistance Board of the primary needs of the people for whom the board was responsible. There were great differences in the results arrived at by different social surveys. In the spring of 1934 a hotly contested debate took place in the house of commons as to whether the allowance for a child should be 48 or 72 cents a week. (This does not mean that parents were expected to keep children on this expenditure but merely that it is an allowance per child to persons with other resources such as the unemployment dole.) In the new scale the minimum allowance for any child is 72 cents and that amount increases with age, which is a new principle. Dealing with the question of the treatment of resources other than earnings in assessing needs, the basis to be adopted with regard to milk and meals given to children at schools is as follows. All meals given on a physician's certificate that a child is suffering from a specific condition and requires extra nourishment are to be regarded as personal medical requirements and ignored. Milk or other special items, such as cod liver oil, will also be entirely ignored. Meals up to two a day for a single child in a household or one meal for two children will be ignored as constituting a negligible saving for the family. That is to say, twelve meals a week will be free. After that some deduction will be made in respect of those meals, which works out roughly at two cents a meal. As regards medical relief, maternity and child welfare, and tuberculosis services any payments or allowances in kind under these services will be regarded as special needs and will be ignored. In the case of pensions for old age, widows and orphans and the blind, any balance after providing for the pensioner's needs would be allowed for the personal needs when there were no other resources, that is, they would be ignored. In the debate that followed, a physician, Sir Francis Freemantle (a retired health officer), described the new regulations as a great measure but they were opposed by the labor party as inadequate. They were carried by a large majority.

An organization called "The Children's Minimum Committee," formed to ensure the adequate nutrition of children welcomes the new regulations as a considerable advance but points out that for families with two or more children the proposed scale will not permit of an expenditure satisfying the standards laid down by the British Medical Association's Committee on Nutrition. The Children's Minimum Committee urges that the scale should be supplemented by free meals and milk, which should not be taken into account in assessing the family resources.

The Prevention of Mule Spinners' Cancer

The Manchester Committee on Cancer, formed in 1925, is representative of all the hospitals and public health authorities in the city. Its major work has been the establishment of a laboratory unit in the university, primarily for investigating the causes and prevention of mule spinners' cancer so alarmingly

prevalent in the cotton mills of Manchester and the neighboring towns. Increasing incidence of mule spinners' cancer began to be noticed about 1908. This led to the appointment by the government of a special committee of investigation. In 1920 it was reported that the death rate from this form of cancer in cotton operatives was 137 for spinners and 72 for other cotton workers, while the mean national death rate was 4 per million living males. It was found that spinners' cancer was due in part if not entirely, to mineral oil. The Manchester committee therefore undertook an investigation as to the possibility of purifying the mineral oils likely to cause cancer. Their scientists were the first to examine this problem from the special point of view of cotton mills. The results have now reached a practical stage. The amount of work done by pathologists, chemists and physicists in the investigation during the nine years is enormous.

As reported previously (*THE JOURNAL*, Dec. 22 1934 p 1959), the director of the Cancer Research Laboratories, Dr C. C. Twort, has been able to lay down a specification for lubricating oils that should reduce the risk of cancer to a minimum. The precancerous conditions of the skin due to handling mineral oils are now being almost altogether prevented by the precautionary measures recommended. These observations constitute the first real preventive work in cancer that has been effected in this country and, so far as is known, in the world. A similar line of investigation is now being carried out in relation to tar compounds and concern gas tar workers, distillers, tarmac road workers, and others. Considerable evidence has been collected to show that the increasing incidence of cancer of the lung is associated with contamination of the atmosphere by smoke. The action of the exhaust fumes of automobiles is also under investigation.

Some mineral oils were found to be more carcinogenic than others, but all other than white oils (such as medicinal liquid petrolatum and the lighter boiling spirits), were potentially carcinogenic. Textile oils were the most carcinogenic considerably more than the heavier internal combustion engine oils. The animal test of carcinogenicity is lengthy, laborious and expensive. To avoid these difficulties the chemical and physical characters of the oils were investigated and the results proved to be of the greatest utility, allowing oils to be condemned or recommended. The refractive index and the specific gravity were the test of greatest value and allowed animal tests to be dispensed with entirely. As a prophylactic against industrial cancers, an ointment composed of equal parts of wool fat and olive oil gave the greatest protection. It is recommended that all parts of the body likely to come in contact with the suspected material should be smeared with this before work is begun. After work the parts should be washed with soap and water and carefully dried, a little of the ointment being again rubbed in.

The Laboratory and the Clinic

In his presidential address to the Royal Society, Sir F. Gowland Hopkins said that practice in the ward and activity in the laboratory, which only a generation ago made few contacts, have now come into close relations, with a degree of mutual respect between their respective workers that was perhaps lacking in the past. It seemed that the minds of some physicians have been disturbed by one aspect of this new orientation. Not doubting that the laboratory has assisted and must continue to assist the growth of medical knowledge, they have felt that the introduction of multitudinous laboratory methods into the domain of diagnosis is tending to destroy the true clinical art. It had been said that the older physicians with minds undisturbed by a crowd of scientific facts developed a clinical sense, sui generis, as subtle as the sense of taste or the sense of smell, and that it was on this sense that the great school of English medicine was founded. The president did

not know whether there was truth in the view that reliance on laboratory reports tended to destroy this sense. Great emphasis was being laid on the fact that, distinct from all the laboratory science which was ancillary to medicine, there was a clinical science, the progress of which depended on the direct and intimate study of disease as manifested by human beings. The need had been expressed for the endowment of a phalanx of trained clinicians who shall bring clinical science to a new pitch of efficiency.

The Relation Between Stammering and Left-Handedness

At the annual Conference of Educational Associations, Dr. Millais Culpin, lecturer on psychoneuroses to the London Hospital Medical School, in introducing a discussion on speech therapy, spoke of the relation between stammering and left-handedness. In right-handed persons, he said the left cerebral hemisphere was trained, but at the same time the right hemisphere was, one might say, acquiring knowledge in mirror fashion. If a man lost his right arm he tried to write with his left hand, and if he was allowed to write in mirror fashion he would do so in a very short time. In a child born left-handed stuttering resulted, according to the view of a famous anatomist, from conflicting control—ineffectual attempt to enunciate by reversal of the proper muscular action. This sounded simple, but there were objections to the theory. The same anatomists said that to a sensitive child the mental conflict that might arise from such causes might have serious consequences on the temper and character. What kind of person, however, was the left-handed? The left-handed had a peculiar make up. They were calm and deliberate, they demanded justice for themselves and others, and they showed a spirit of deliberate obstinacy. They did not get wild, they just calmly went on their own road. In the discussion which followed Dr. E. J. Boone, director of speech therapy of the London County Council Schools, said that speech therapy was coming into its own and had come to stay. His own experience was that stammering was definitely curable.

PARIS

(From Our Regular Correspondent)

Dec. 27, 1934

Foreign Physicians in France

According to de Lafond, the number of foreigners practicing medicine in France was 99 per cent of the total of 26,205 physicians in 1931. In the latter year, 28.2 per cent of the licenses in Paris were given to foreigners. There were only 429 medical students of foreign birth in 1920 and 1,511 in 1930 out of a total of 4,500 in the Paris medical school.

There are a number of ways to explain this plethora of foreigners. One is the reputation of the Paris school. Another is that the number of medical students has been greatly restricted by legislation in Brazil, the United States, Canada, Sweden and a number of other countries. A third reason is that many prizes and cheap living quarters in the Cite universitaire tempt the foreign student to come to France. Last of all, especially since the World War, France has become a harbor of safety for the refugees from all other countries such as Russia and more recently Germany.

There will be a decided reduction in the number of medical students and hence of practitioners of foreign birth in the near future. A new law termed the Armbruster law abolishes permitting foreigners to be excused from any of the required work in the medical school. Heretofore they could be admitted to the fourth year and thus were obliged to pass the examinations only of this and the final or fifth year. In the future, the full six years in the medical school and a bachelor of arts degree from a French university will be required of every foreigner the same as for any native student. Up to the present,

Rumanian students have not been obliged to pass the French baccalaureate examinations. In 1933 more than 700, or about one sixth of the students, in the Paris medical school were Rumanian who had taken advantage of such a clause in a treaty between France and Rumania dating back to 1860.

No one will be permitted to practice medicine in France unless he becomes naturalized. The only exception is that in the case of countries like the United States and England, which allow a French citizen to obtain a license without becoming naturalized, are exempt from this portion of the Armbruster law, which is now in effect. Of course, in about one third of the states in the case of the United States, an applicant for a license must agree to become a citizen. As a result of the Armbruster law, the number of American and English physicians in France will be greatly lessened and possibly may reach a negligible figure.

In the past, the medical schools have granted a diploma, termed "Diplome universitaire," which did not carry with it the privilege to practice in France or its colonies. If as many foreigners continue to take the courses as in the past, there will be but little relief from the present overcrowding in the medical schools, even though the Armbruster law is in effect. Fortunately, the economic crisis existing in the majority of countries has begun to decrease the number of foreign students in France since 1931, at which period there were 17,281, while in 1934 there were only 14,495. That medical schools are stricter in granting diplomas is shown by the fact that in 1931, 1,446 were given in a total of 7,336 medical students, while in 1933 there were 12,407 students in the medical schools but only 1,552 diplomas were bestowed.

Is Phrenic Resection Beneficial in Pulmonary Tuberculosis

In the Dec. 1, 1934, issue of the French medical gazette, the results of seventy-four phrenicectomies are reported by Delay, Colbert and Mollard. The three indications for the operation were, first, those cases of pulmonary tuberculosis in which a pneumothorax had not been followed by any improvement or was impossible because of pleural bands or adhesions. The second group included cases in which the resection of the phrenic nerve supplemented the pneumothorax. Later, and this forms the third group, the nerve resection was done primarily in preference to a pneumothorax, either because the latter appeared contraindicated by extensive bilateral lesions or because the lesions in the lung were still too recent.

No complications were observed in the seventy-four cases in which phrenicectomy was performed such as gastric disturbances or lighting up of foci on the same or opposite side. In one third of the cases there was considerable pain during the operation due to prolonged search for the nerve. There are also some cases in which one finds anomalies, such as that the nerve that was resected is found, after the operation not to have contained any of the motor fibers for the diaphragm.

As to the results of the seventy-four operations, thirty-one patients were markedly and eleven only slightly (symptomatically) improved. Thirty-two cases failed to show any benefit from the nerve resection. In the thirty-one in which there was marked improvement the lesions in the immobilized lung had diminished in size and the clinical symptoms had disappeared completely. None of these thirty-one cases had shown previously any improvement after prolonged sanatorium treatment. Eight of the thirty-one can be considered as completely recovered. The less active the lesions the greater is the chance of success after phrenicectomy. If the lesions occupy half or two thirds of a lung the operation is of no avail. Phrenicectomy is especially useful for lesions of the base hilus or central regions of the lung. The nerve should be resected for a distance of 7 or 8 cm.

BERLIN

(From Our Regular Correspondent)

Dec 3, 1934

Research on Leukemia

Since the essential nature of leukemia has appeared to be less in the increase in the leukocytes than in the tumor-like proliferations of the blood-forming organs leukemia has been classified with the malignant tumors by some investigators. Leukemia has been considered a true tumor of the hematopoietic tissue, usually accompanied by a flooding of the blood stream with a large number of immature cells. Objections have been made to the interpretation of leukemia as a tumorous condition but no agreement has been reached. Dr. Walter Büngeler of the pathologic institute in Danzig has attempted to produce experimentally in mammals, leukemia, leukemic myelosis, lymphadenosis and lymphosarcoma. Büngeler was able to demonstrate that the development of leukemia takes place according to the same laws as do malignant tumors, and, moreover, that the tissue metabolism of leukemic proliferations differs in no respect from the tissue metabolism of malignant growths.

Disturbances in embryonal development are the first factors in the etiology of leukemia, and this is the case also in malignant growths. Congenital leukemias have been described repeatedly. Then there are studies based on the regeneration theory. Fischer-Wasels in Frankfurt-on-Main as well as Büngeler demonstrated that regenerative processes which under normal conditions lead without exception to complete restoration frequently become the seat of a tumor formation, if in the experimental animals a predisposition has been produced by the prolonged administration of tar or arsenic. This predisposition can be recognized by certain changes of the metabolism. The parenteral administration of indole produces similar metabolic changes as those resulting from the administration of tar and arsenic. In studies on indole Büngeler observed peculiar organic changes on the hematopoietic tissue. A large number of the white mice die within the first eight weeks with the signs of poisoning if they are subjected to intensive indole treatment, in others hemolytic anemias developed accompanied by a reduction in the leukocytes and by hemorrhages and necroses in the bone marrow, in the spleen or in the liver. During the eighth month of the indole treatment, tumor-like proliferations of the hematopoietic organs develop in a large percentage of the animals. Apparently it depends on constitutional factors whether under the influence of the same treatment, one group of animals develops a tumor of the lymphatic tissues or a tumor of the myeloid tissue. However, the observation that the same experiments may result in leukemia or in lymphosarcoma justifies the conclusion that the two conditions are closely related. These experiments prove that leukemias, like other malignant tumors may develop on the basis of regenerative processes. Accordingly the pathogenesis of this fatal disease is governed by the same laws as is that of other malignant tumors. Moreover, the leukemic proliferations have a metabolism which, with its greatly increased fermentation, resembles in all respects that of malignant growths. Büngeler concludes that leukemia is a malignant growth of the blood-forming apparatus. Lignac recently arrived at the same results by means of chronic poisoning with benzene. Indole is a compound that develops in the course of intestinal putrefaction. These studies are carried on with the support of the Lady-Tata Memorial Foundation.

Silicic Acid in Blood of Patients with Silicosis

In the Kaiser Wilhelm Institute in Dortmund and Münster (Westphalia) experiments on silicosis have been conducted for some time. They were discussed in *THE JOURNAL*, Feb. 10, 1934, page 471. Prof. Heinrich Kraut determined previously that the silicic acid content of the blood of normal persons

amounts to from 1 to 3 per cent of the ash. The average value of the silicic anhydride in the blood ash of sixty persons was 1.8 per cent. The limits were 1.5 and 2.1 per cent, respectively. Tests on seventy-nine patients with silicosis revealed that their blood ash nearly always had high silicic acid values, on the average 3.5 per cent of silicic anhydride. The values fluctuated between 2.4 and 4.5 per cent. Patients with silicosis thus have an increased silicic acid content of the blood, that is, dissolved silicic anhydride has been absorbed by the organism. To determine the length of time a miner works on rock formations containing silicic acid before these chemical influences on the organism become manifest, the blood of 265 miners was tested for the silicic acid content in connection with the roentgenologic examination to which they were subjected at regular intervals. The blood ash of these workers has about the same average silicic anhydride content as has that of other persons, namely, 1.9 per cent, but the upper and the lower limits are considerably farther apart (3.1 and 1 per cent). In workers without demonstrable silicotic changes the upper and lower limits of the silicic acid content move farther apart within the first six years of time they have worked on silica rock, and in the following twelve years the movement is primarily upward. In workers who develop a slight silicosis within the first six years without becoming incapacitated a great increase becomes noticeable up to 3.8 per cent of silicic anhydride. In the two subsequent six-year periods, this increase partly subsides again, doubtless because men with high silicic acid content of the blood are eliminated from the group, because of severe silicosis. This is indicated not only by the comparison with the values of those silicosis patients no longer able to work but also by the results of the examinations of miners who have worked on silica rock more than eighteen years in whom the values closely approach once more the upper and lower limits in normal persons. This is the case particularly in workers without signs of silicosis and also in those who already have a slight silicosis. The wide fluctuations prevent as yet the elimination of those who are in danger on the basis of the abnormal silicic acid values of their blood.

The Psychiatric Examination of van der Lubbe

Professor Bonhoefer, director of the psychiatric clinic of the University of Berlin, and his assistant Dr. Zutt have published the testimony they rendered in the case of M. van der Lubbe, the incendiary of the Reichstag fire. They stress that, on the basis of the public trial, it was impossible to get a clear picture of van der Lubbe's mental condition, and this fact has favored the spread of phantastic rumors. For persons with psychiatric training it would have been unnecessary to refute the explanation that the behavior of the defendant was due to hypnosis and the administration of scopolamine; nevertheless, they examine these charges briefly and call attention to the absence of dilatation of the pupils and of all signs of a narcotic or hypnotic condition. The scientific value of the neuropsychiatric examination would have been greater in case of a conclusive solution of the case which was not accomplished. But even with this limitation the psychiatric testimony is of interest. While the authors deny the existence of a disturbance of the consciousness when the deed was committed this does not prove that van der Lubbe was normal. They consider him a psychopath who has to be considered accountable for his actions. His mutistic behavior during the trial is interpreted as a spite reaction. It was not an intentionally assumed attitude but rather a psychogenic-reactive state that can be compared to the obstinacy stupors of children. The outburst on the forty-second day of the trial on which van der Lubbe talked for the first time of inner voices was no surprise to the psychiatrists. It is interpreted as the expression of a prison reaction. However, the attitude of the defendant during the entire duration of the imprisonment the affective inexorability and the consequent

moroseness, is an astounding performance, which is understandable when it is considered that van der Lubbe was an extraordinary person. According to the psychiatrists, he was a confused fanatic with a mixture of craving for applause and self sacrifice, good natured responsiveness and an attitude of defiance. His average intelligence was not equal to his essentially mental interests, but in spite of this he showed an astounding determination by steadfastly refusing to identify the accomplices he may have had. The expert in matters of arson questioned the statements of van der Lubbe, and that may have been a contributory cause in the outburst on the forty-second day of the trial. The two psychiatrists reach the conclusion that the psychopathically predisposed defendant cannot be considered mentally diseased.

VIENNA

(From Our Regular Correspondent)

Dec 10, 1934

The Birth and Death Rates

The federal ministry for public health recently published a summary of the status of the population of Austria of the last few years. The decrease in the birth rate has advanced further. Compared with the preceding year the numbers were as follows:

	1932	1933
Total number of births	105,514	98,861
Total number of deaths	93,721	89,071
Excess of births	11,793	9,790

Thus the excess of births was reduced by 2,000. If one looks back twenty years the falling birth rate is even more evident. There were born in the region of present-day Austria and in Vienna

	In Region of Present Day Austria	In Vienna
1913	169,060	39,155
1923	155,704	29,691
1933	98,861	13,746

That reveals for Austria a reduction in births of more than 70,000, or 40 per cent and for Vienna alone more than 66 per cent (26,000) in twenty years. Whereas in Vienna the status of the population is kept at the same level only by immigration from the provinces—the death rate far exceeds the birth rate—there is still a slight excess of births in the provinces but this will probably disappear within the next ten years if there is no noticeable change in the mortality. Ten years ago (1923) the number of deaths in Austria per thousand inhabitants was 15.3, the births 22.5; that is, there was an excess of births amounting to 7.2. In 1933, however, the death rate was 13.6, the births only 15.1, an excess of 1.5, which doubtless will soon disappear. For Vienna the figures are

	1923	1933
born per thousand inhabitants	15.9	7.3
deaths per thousand inhabitants	13.7	13.6

that is, an excess of deaths over births of more than 6 per thousand inhabitants. The mortality is constantly decreasing. There is a shifting of the average age at death into the higher age groups. The population becomes older as shown in the following tabulation of 1,000 deaths, as to the age group:

	1923	1932	1933
0 to 5 years	246	149	128
5 to 15 years	29	26	26
15 to 30 years	80	63	60
30 to 50 years	132	137	131
50 to 70 years	266	310	317
Over 70 years	246	324	338

The death rate of nurslings is likewise constantly decreasing. Of 1,000 live births there died during the first year of life

	1923	1932	1933
In Vienna	110	75	64
In Austria	140	106	94

The mortality rate of nurslings is satisfactory since it is constantly decreasing. However the growing reduction in the birth rate as demonstrated above is to be deplored. There is

still a constant number (above 4 per cent) of births that take place without trained helpers. This is explained by the considerable number of women who live in forests and in the mountains. The number of stillbirths likewise is about constant, on the average 2.5 per cent during the last ten years. The number of illegitimate births likewise remains about the same, about 2.6 per cent.

As regards the causes of death, the diseases of the heart and of the circulatory system take the first place, 15,966, then follow malignant tumors 11,249, then tuberculosis in all its forms, 8,086, then pneumonia, 7,383, then apoplexy, 5,838. Infectious diseases (with the exception of children's diseases) caused 1,590 deaths, wound infections, 1,370, fatal injuries due to accidents caused 2,287 deaths, the number of suicides was 2,853 and the homicides 198. Only 244 women died of puerperal sepsis. This number is rather small when it is considered that over 4,000 births take place without assistance. During the last five years there was not a single fatality due to smallpox, typhus and cholera, but diphtheria caused 990 fatalities, whooping cough 147, scarlet fever 124 and measles 89 (compared to 300 in the previous year). On the whole, the children's diseases caused a much greater number of fatalities during the previous year. Cholera infantum caused 526 (compared to 813). Abdominal typhoid caused 121 fatalities and dysentery 21. The reports of recent years show with increasing clarity that the mortality rate of cardiac and cerebral disorders steadily increases, relatively as well as absolutely. These two factors are now responsible for 20 per cent of all deaths, while twenty years ago they were responsible for only 12 per cent.

Investigation of Methods of Irradiation of Carcinomas

At a recent session of the Vienna Society for Roentgenology, Dr. A. Frank reported about his studies on the method of irradiation of large carcinomas consisting of pavement epithelium. Half of the carcinoma was irradiated with one large dose (1,800 roentgens), while the other half was daily irradiated with a so-called fractional dose consisting of 200 roentgens until a total of 4,000 roentgens had been reached. The quality of the rays and the roentgen minute dose were the same. By the time 1,000 roentgens had been administered to the side that was given the fractional irradiations a considerable decrease in the size of the tumor was noticeable, while the side to which the single large dose had been applied showed no macroscopic signs of a change, in spite of the fact that the surrounding skin, which had been exposed to this radiation reacted noticeably. When 1,800 roentgens had been reached, the same dose that the other side had had, the tumor had largely disappeared on the side irradiated with the small doses, while on the other side macroscopic changes were still lacking. In the further course it was observed that on the side to which the single large dose had been applied the tumor was still partly in evidence, while it had completely disappeared on the side to which the fractional doses had been applied. Histologic studies revealed that on the side of the fractional irradiations the tumor cells were destroyed by undergoing cornification and maturation, while on the side of the large dose a vacuolizing degeneration took place. Studies conducted in several other suitable cases led to the same results. In view of these observations, Dr. Frank formulated the thesis that the application of a single large dose leads to a less rapid disappearance of a tumor than the fractional irradiations. This factor is important when the danger of metastasis is considered, for it has been assumed erroneously that in case of fractional irradiation the danger of metastasis is greater. In the discussion it was pointed out that the nature of the cells of the neoplasm as well as its reaction capacity to the x-rays is of great importance in the evaluation of a method of irradiation. However, many agreed that fractional irradiations are generally to be preferred.

Pictures of a Giant

Prof D H Fuchs, who recently returned to Vienna from the Orient, showed at the last meeting of the Society of Physicians photographs of a giant, whom he had seen in Bushire, Persia. The giant was 10 feet 6 inches (3.2 meters) tall and was 19 years old. He had developed normally up to his tenth year, when he began to grow enormously. Mighty humps developed on his forehead, chin and behind the ears. The head became so heavy that the man could not hold it up. The humps on the forehead caused a great forward curvature. They have the appearance of tumors. There are many other lighter, loose nodules in the wrinkled skin. In the enormous head the eyes appear, in spite of their normal size, extremely small; the vision is good and the teeth are normal. The extremities are of an enormous length, the proximal phalanx being as long as the index finger of a normal man. The legs are too weak to enable him to walk, so he is generally lying down, but he is able to stand up when supported by a cane. His intelligence is almost normal, he complains frequently of vague pains. Recklinghausen's disease has been considered as the etiologic factor and it is assumed that an early localization of the process in the hypophysis or in the growth center is responsible for the giant growth. The patient was unable to ride in an ordinary carriage and he had to be placed on a boat by means of a crane. His weight exceeded 200 Kg (450 pounds).

ROME

(From Our Regular Correspondent)

Dec 31, 1934

The Readjustment of Clinically Cured Tuberculous Patients

Dr Alfonso Muzzarelli of the Consorzio Provinciale Antitubercolare of Florence reported the results of studies on readjustment to work of tuberculous patients who have been discharged from sanatoriums as "clinically cured." When these patients reenter work, they are confronted by demands beyond their physical conditions. It seems advisable therefore to establish postsanatorial colonies adjacent to the sanatoriums to prepare patients for work while still under medical supervision. A temporary regimen for tuberculous patients in these colonies will result in the correction of lazy habits acquired during their long stay in the sanatoriums. It will also open up new fields of work when the work previously done has to be changed more in accordance with the type of cure obtained in the given case.

Prizes in Ophthalmology

The Societa Italiana di oculistica has reviewed the most important articles presented in the annual competition for ophthalmologic prizes. The awards were as follows: The national prize, 20,000 lire (about \$1,400), to Dr Parnico of Rome for an article on biomicroscopy of the palpebral margins, and of conjunctivitis. The first international prize, 20,000 lire to Dr Benedetto Strampelli for an article on biomicroscopy and histology of cataract with polarized light. The second international prize to Dr Nordmann of Strasbourg for his physico-chemical studies of the crystalline lens in normal and pathologic conditions.

The National Congress of Pediatrics

The fifteenth National Congress of Pediatrics was held at Sienna, with a large attendance from Italy and abroad. The first topic was "Sepsis in New-Born Infants and Nurslings." Dr Bocchini said that sepsis causes symptoms of a grave general infection that overshadow those of the first focus of infection. The predisposition to the development of sepsis in infants is related to their conditions of immunity. A passive but transient immunity is acquired from the mother, which protects them against diseases to which the mother herself is immune. This defense mechanism in infants is built up by

organic processes of slow evolution and may be weak against pyogenic infections because of minimal cellular reactions and the scant activity of the phagocytes. Breast feeding provides the child with the proper nutrition whereby the organism can promptly meet the immunologic demands. Artificial feeding may cause nutritional disturbances that result in a lowering of the defense against infections. A diminished amount of vitamins in the milk, environmental conditions, and the existence of some constitutional diathesis are the most important factors in the onset of septic infections.

Dr Gerbasì discussed the pathology, blood picture, diagnosis, prognosis, prevention and treatment of sepsis. The most important changes are in the liver, respiratory tract, adrenals and bones of the skull. The blood picture is not definite and it has a prognostic value only when it is within certain limits. Immature erythrocytes and leukocytes frequently appear in the blood, simulating the picture of anemia of the Jaksch-Hayem type. The roentgen examination of skeletal foci gives diagnostic results as satisfactory as those given by the bacteriologic examination of the blood. Prevention depends largely on the care of infants and their environment. The attempts at immunization in the prevention and therapy of sepsis have not given satisfactory results as yet.

Dr Vaglio said that attenuated forms of sepsis are difficult to diagnose and may be mistaken for nutritional disturbances, prematurity and congenital weakness. Sepsis may be of the hyperacute, acute or attenuated form. Symptoms similar to those observed in sepsis may be observed also in diphtheria, alimentary toxicosis, malaria, tuberculosis and congenital syphilis. The members of the congress voted to recommend a revision of the projects concerned with the construction of pediatric institutions, special training for the personnel concerned with the care of infants, and the provision of sterilized linen for them.

The second topic was "Indications for Climatotherapy for Infants." Dr Bentivoglio classified climates into stimulative, sedative and indifferent, and insisted on the importance of establishing a classification for each climatic station.

Dr Magni spoke on the indications for the sojourn of children at the seashore. He concluded that the climate at the seashore is a powerful agent for the prevention and treatment of certain infantile diseases, especially certain forms of external tuberculosis, rickets and peribronchial adenopathies.

The third topic was "The Sympathetic Nervous System in Infants." Dr Careddu said that this subject should be considered, as yet, a program to be developed rather than as an exposition of results already acquired. He discussed the evolution of the sympathetic cells, which need several years during the first two decades of life to reach their complete development and definite adjustment. The main function of the sympathetic nervous system is the regulation of the internal equilibrium of the body by means of rhythmic sympathetic, visceral, motor and sensory reflexes. The parasympathetic energies predominate during childhood in order to provide a greater activity to the anabolic processes.

Dr Guassardo said that the physiology and pathology of infants are chiefly controlled by the vagus nerve, the preponderance of which determines an exaggerated reaction of the body to even slight stimulations, which may result in disturbing the normal sympathetic equilibrium necessary for the conservation of health. The development of diseases in infants depends on the constitutional tendency, and that statement applies especially to such diseases as exudative diathesis, spasmophilia, anaphylaxis and cyclic vomiting. That is why the conception of the existence of a hypervagal sympathetic diathesis establishes a bridge connecting the pathology of the parents with the future morbid predisposition of the children.

The next national pediatric congress will meet at Genoa.

Marriages

CHARLES LEE ANDERSON to Miss Frances Elizabeth Behnes, both of Jackson Heights, N Y, Dec 21, 1934

WILLIAM JOHN MACKENZIE to Miss Enid Howell, both of Vancouver, B C, Canada, Dec 15, 1934

JACOB MOSCOVICH to Miss Mary Armstrong, both of Vancouver, B C, Canada, Nov 30, 1934

MOSES KAHN ROSENBAUM, Milwaukee, to Miss Pearl Finnegan, in Chicago, Dec 22, 1934

SAMUEL E. KOHN, Milwaukee, to Miss Rita Jane Goldman of Whitefish Bay, January 10

THOMAS HARDGROVE to Miss Evelyn O Leary, both of Milwaukee, Dec. 29, 1934

LAWRENCE M CALDWELL, Newton, N C, to Miss Macel Ratchford, January 4

BENJAMIN POLOW to Miss Buddy Wachstein, both of Newark, N J, January 23

MORTE SALVIN to Miss Joyce Tichnor, both of Los Angeles, January 26

Deaths

Clarence Pierson ☉ Pineville, La, Tulane University of Louisiana Medical Department, New Orleans, 1894, member of the House of Delegates of the American Medical Association, 1919-1920, past president, and formerly councilor of the sixth district, Louisiana State Medical Society, member of the American Psychiatric Association, past president of the Louisiana Hospital Association, veteran of the Spanish-American War, parish coroner, 1896-1900, at one time bank president, formerly medical superintendent of the Central Louisiana State Hospital, Pineville, and the East Louisiana State Hospital, Jackson, special consultant to the three eleemosynary institutions for the insane and feeble-minded, Central Louisiana State Hospital, Pineville, East Louisiana State Hospital, Jackson, and the State Colony and Training School, Alexandria, aged 66, died, Dec. 27, 1934, in the Touro Infirmary, New Orleans, of carcinoma of the stomach

Alfred Owre, Pine Plains, N Y, Minneapolis College of Physicians and Surgeons, 1895, also a dentist, dean and professor of dentistry, School of Dental and Oral Surgery, Columbia University, 1927-1934 student assistant in operative dentistry, 1893-1894, instructor in dental metallurgy, 1895-1896, instructor in operative dentistry and dental metallurgy, 1896-1897, clinical professor of operative dentistry in 1899 and dean and professor of theory and practice, 1905-1927, College of Dentistry, University of Minnesota member of various international dental congresses, past president of the Minnesota Dental Association, special consultant in dentistry, Presbyterian Hospital New York, aged 64 died, January 2, in the Beth Israel Hospital, New York

Gaston Holcombe Edwards ☉ Orlando, Fla, Yale University School of Medicine, New Haven, 1902, member of the House of Delegates of the American Medical Association in 1925 and in 1931, fellow of the American College of Surgeons, councilor of the seventeenth district and past president of the Florida Medical Association, Florida Railway Surgeons' Association and the Orange County Medical Society, aged 59, consulting gynecologist and obstetrician to the Florida Sanitarium and Hospital and chief of staff department of gynecology and obstetrics at the Orange General Hospital where he died, Dec. 29, 1934, of heart disease

Leonard Samuel Hughes ☉ Lieut Colonel, U S Army, retired, Los Angeles, Louisville (Ky) Medical College, 1897, a contract surgeon from 1898 to 1908 when he was commissioned in the medical reserve corps as a first lieutenant and served in this capacity until 1911 when he was appointed first lieutenant in the medical corps, promoted to major in 1917 in 1918 was commissioned lieutenant colonel in the National army and reverted to his permanent rank of major in 1920 retired in 1922 and promoted to lieutenant colonel retired in 1930, aged 62, died, January 3, of ruptured duodenal ulcer and peritonitis.

Henry Maynadier Fitzhugh ☉ Westminster, Md, University of Maryland School of Medicine, Baltimore, 1897 member of the House of Delegates of the American Medical Association 1933-1934, president of the Federation of State Medical Boards of the United States since 1910 member and

since 1924 secretary and treasurer of the state board of medical examiners in 1930 president of the Medical and Chirurgical Faculty of Maryland, president of the state board of education, aged 59 died, January 25 in the University Hospital, Baltimore, of acute streptococcal osteomyelitis of the femur

Edmund Brown Piper ☉ Philadelphia, University of Pennsylvania School of Medicine, Philadelphia, 1911, professor of obstetrics at his alma mater and the graduate school of medicine member of the American Gynecological Society, fellow of the American College of Surgeons, served during the World War, obstetrician to the Pennsylvania Hospital and Hospital of the University of Pennsylvania, gynecologist to the Philadelphia General Hospital, consulting obstetrician to the Bryn Mawr (Pa) Hospital, aged 53, died, January 14, of angina pectoris

Thomas Morris Murray, Pomfret Center, Conn, University of Maryland School of Medicine, Baltimore, 1873, at one time emeritus professor of physical diagnosis, laryngology and rhinology, Georgetown University School of Medicine, Washington, D C., formerly on the staffs of the Emergency and Garfield hospitals, Washington, aged 83, died, Dec 16 1934, of coronary thrombosis, diabetes mellitus and cirrhosis of the liver

Alfred Goldstein Nadler, New Haven Conn Yale University School of Medicine, New Haven, 1896, member of the Connecticut State Medical Society, clinical professor of dermatology at his alma mater, member of the New England Dermatological Society and the American Roentgen Ray Society, on the staffs of the New Haven Hospital and St Raphael's Hospital, aged 61, died, January 14, of heart disease.

Albert James Welch ☉ Kansas City, Mo, Starling Medical College, Columbus, 1894, past president of the Jackson County Medical Society, councilor to the thirteenth district of the Missouri State Medical Association, served during the World War in the public health department stationed at Washington, D C., aged 67, on the staff of St Joseph's Hospital, where he died, Dec 15, 1934, of coronary heart disease

Oscar L Norsworthy, San Antonio, Texas, Tulane University of Louisiana Medical Department, New Orleans, 1895, member of the State Medical Association of Texas fellow of the American College of Surgeons, formerly member of the board of health of Houston, director of radium and cancer division, Medical and Surgical Hospital, aged 63, died, January 5, in Los Angeles, of heart disease.

Bertram H Buxton, Byfleet, Surrey, England New York University Medical College, 1897, in 1898 instructor in bacteriology, in 1903 associate professor of biology and in 1904 to 1912 professor of experimental pathology, Cornell University Medical College, New York, formerly on the staff of the Memorial Hospital for the Treatment of Cancer and Allied Diseases, aged 80, died, Dec. 6, 1934

Richard Penn Smith ☉ Captain, U S Army, retired, Philadelphia, Temple University School of Medicine, Philadelphia, 1912 veteran of the Spanish-American and World wars, entered the medical corps of the U S Army in 1920 and retired in 1928 for disability in line of duty, aged 59 on the staffs of the Germantown Hospital and the Temple University Hospital, where he died, Dec. 23, 1934, of hypertension and nephritis

William Fitzhugh Carter ☉ Major, U S Army, retired Crozet, Va University of Virginia Department of Medicine, Charlottesville, 1872, entered the army as assistant surgeon in 1879 and was promoted through the various grades to that of major in 1897, retired in 1909 at his own request after thirty years' service, aged 84, died, January 1, in Richmond, of lobar pneumonia

John Rowan Morrison ☉ Louisville, Ky Louisville Medical College, 1898 formerly adjunct professor of medicine and clinical medicine, University of Louisville School of Medicine fellow of the American College of Physicians, on the staffs of the Norton Memorial Infirmary and St. Joseph's Infirmary, aged 57, died, January 8 of arteriosclerosis

George Morley Marshall ☉ Philadelphia, University of Pennsylvania School of Medicine Philadelphia, 1886 formerly associate professor of laryngology, University of Pennsylvania Graduate School of Medicine, fellow of the American College of Surgeons, otolaryngologist to St Joseph's Hospital, aged 76, died, January 8, of heart disease

Howard Donald Urquhart ☉ New York, University and Bellevue Hospital Medical College, New York 1906, formerly clinical professor of orthopedic surgery New York Polyclinic Medical School and Hospital formerly on the staff of the Seaside Hospital, Staten Island, aged 55, died, Nov 8 1934, of heart disease

Jacob William Holderman, Duluth, Minn., Rush Medical College, Chicago, 1918 member of the Minnesota State Medical Association, formerly resident in laryngology and otology at his alma mater, on the staffs of St. Mary's and St. Luke's hospitals, aged 44, died suddenly, January 22, of coronary thrombosis.

Warren Wallace St. John * Troy, N. Y., Columbia University College of Physicians and Surgeons, New York 1905, past president of the Rensselaer County Medical Society, president of the hospital staff of the Samaritan Hospital, aged 52 died, Dec. 22, 1934, of cerebral thrombosis and cerebral arteriosclerosis.

Charles Egbert Willard, Catskill, N. Y., College of Physicians and Surgeons, Medical Department of Columbia College, 1869, member of the Medical Society of the State of New York, for many years treasurer of Green County, and village health officer, aged 88, died, January 12, of arteriosclerosis.

John Harvey Graff, Perryville, Mo., Chicago College of Medicine and Surgery, 1916, served during the World War for many years connected with the U. S. Public Health Service, aged 41 died January 6 in the Veterans' Administration Facility Jefferson Barracks, following a thyroidectomy.

Beverley Z. Milner, Toronto, Ont., Canada, Trinity Medical College Toronto, 1889, for many years on the staffs of the Toronto General Hospital and the Hospital for Sick Children, aged 69, was found dead slumped over the steering wheel of his automobile, Dec. 7 1934 of heart disease.

Oscar Simon Hornick, Brooklyn University and Bellevue Hospital Medical College New York, 1928 member of the Medical Society of the State of New York, aged 34 on the staff of the Israel Zion Hospital where he died, January 7 of osteomyelitis of the jaw and cerebral abscess.

Edward Smith Winslow, Harwich Port Mass., Dartmouth Medical School, Hanover N. H. 1892 member of the Massachusetts Medical Society, served during the World War, on the staff of the Cape Cod Hospital Hyannis, aged 68 died Dec. 28 1934 of cerebral hemorrhage.

James M. Shields * Seymour, Ind., Kentucky School of Medicine, Louisville 1881 president of the Jackson County Medical Society, formerly mayor of Seymour, formerly on the staff of the Schneck Memorial Hospital, aged 75 died suddenly, Nov. 30 1934, in New York.

John Howard Wyman, Medway, Mass., Harvard University Medical School, Boston, 1906, served during the World War, medical examiner of Norfolk County, aged 55 on the staff of the Milford (Mass.) Hospital, where he died, Dec. 17, 1934, of cerebral hemorrhage.

Homer Monroe Mace, Peekskill, N. Y., University of the City of New York Medical Department 1890 member of the Medical Society of the State of New York, aged 70, on the staff of the Peekskill Hospital where he died, January 6, of splenic infarct and leukemia.

Wilton McCarthy, Des Moines, Iowa, Drake University Medical Department Des Moines 1894 member of the Western Surgical Association, fellow of the American College of Surgeons, formerly professor of clinical surgery at his alma mater, aged 62, died Dec. 14, 1934.

Charles Lincoln Mohr, Jersey Shore Pa., College of Physicians and Surgeons, Baltimore, 1885, member of the Medical Society of the State of Pennsylvania, for many years on the staff of the Jersey Shore Hospital, aged 70 died Dec. 19, 1934, of heart disease.

Benjamin Franklin McMillan, Red Springs, N. C., University of Maryland School of Medicine, Baltimore 1882, member of the Medical Society of the State of North Carolina, formerly member of the state legislature, aged 81, died, January 14, of pneumonia.

Peter Alfred Kearney, San Francisco, Cooper Medical College San Francisco 1884 at one time superintendent of the San Francisco County Hospital, aged 87, died, Dec. 15, 1934 in the Alameda (Calif.) Sanatorium on the South Shore of coronary thrombosis.

Alvin Barney Eberhart, McDonough, Ga., Emory University School of Medicine Atlanta, 1922 member of the Medical Association of Georgia, served during the World War, aged 44, died, Dec. 28 1934 of gastric hemorrhage resulting from carcinoma.

Frank Eli Hurtle, Little Rock, Ark., University of Arkansas School of Medicine, Little Rock 1911, also a pharmacist member of the Arkansas Medical Society, aged 53 died, January 14 in a local hospital of injuries received in an automobile accident.

Henry Jeter Edmonds, Kilmarnock, Va., University of Maryland School of Medicine, Baltimore 1887, member of the Medical Society of Virginia, past president of the Northern Neck Medical Society, aged 68, died, Dec. 13, 1934, of cerebral hemorrhage.

Thomas Melchor Meisenheimer, Charlotte, N. C., Medical College of the State of South Carolina, Charleston, 1925 member of the Medical Society of the State of North Carolina, aged 37, died, January 4, in the New Charlotte Sanatorium, of leukemia.

Leonidas A. Suggs, Park Place, Ore., Vanderbilt University School of Medicine, Nashville Tenn. 1892, member of the State Medical Association of Texas, past president of the Tarrant (Texas) County Medical Society, aged 70, died, Dec. 7, 1934.

Robert Andrew Poynton, Chicago, Niagara University Medical Department, Buffalo, 1891, on the associate staff of the South Chicago Hospital, aged 69, died, January 22, of uremia, cerebral arteriosclerosis and subacute coronary thrombosis.

W. Francis B. Wakefield, Los Gatos Calif., Trinity Medical College, Toronto Ont., Canada, 1893, University of Toronto Faculty of Medicine, Toronto, 1893, fellow of the American College of Surgeons, aged 68, died Dec. 4, 1934.

Joseph Albertus Hedding, Minneapolis, Minneapolis College of Physicians and Surgeons, 1906, member of the Minnesota State Medical Association on the staff of St. Barnabas Hospital, aged 51, died, Dec. 26, 1934, of hypertension.

Jesse Gullledge, Tallahassee, Ala., University of Alabama Medical Department, Mobile 1900, member of the Medical Association of the State of Alabama, aged 61, died Dec. 19 1934, in the Community Hospital, East Tallahassee.

James I. Miller, Huntington W. Va., College of Physicians and Surgeons, Baltimore, 1906, aged 55, died, January 6 in a local hospital of pneumonia, as the result of burns received in a gas explosion in the basement of his home.

John Aulde, Philadelphia, Jefferson Medical College of Philadelphia, 1882, formerly demonstrator of physical diagnosis and clinical medicine, Medico-Chirurgical College of Philadelphia, aged 88, died Dec. 23, 1934.

Clarence C. Spicher * Johnstown, Pa., Baltimore Medical College, 1903, aged 62, chief on the medical service of the Conemaugh Valley Memorial Hospital, 1921-1934, where he died, January 1, of heart disease.

Lewis Joseph Hammers, Goodland, Kan., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902, aged 57, died January 19, of angina pectoris and coronary thrombosis.

Josiah Winslow Edgerly, New York, University and Bellevue Hospital Medical College, 1899, member of the Medical Society of the State of New York, aged 62, died, January 14, of lymphatic leukemia.

George Alexander Angus, Denver, Denver Homeopathic College, 1906, aged 64, died, Dec. 11 1934, in the Denver General Hospital, of ataxic paraplegia, chronic pernicious anemia and myocarditis.

Rankin Robert Lowery, Augusta, Ga., Atlanta Medical College, 1916 served during the World War, aged 43 died, Dec. 23, 1934 in Veterans' Administration Facility, of epidemic (lethargic) encephalitis.

Frederick Huhne, Kingston, N. Y., University of Vermont College of Medicine, Burlington, 1884, for many years member of the board of health of Kingston, aged 78 died, January 4, of chronic arteriosclerosis.

Charles Webb Sheppard, Honoraville, Ala., Southern Medical College Atlanta 1891 member of the Medical Association of the State of Alabama, aged 73, died, Dec. 9, 1934 of acute nephritis.

Daniel A. Wilson Sr., Norristown Pa., Hahnemann Medical College and Hospital of Philadelphia, 1890 served during the World War, aged 67, died, Dec. 22, 1934, of cerebral hemorrhage.

Reginald James Peer, Bangor, Maine, University of Toronto Faculty of Medicine, Toronto Ont., Canada 1930, aged 29, died, Nov. 12 1934, of morphine sulphate poisoning self administered.

Ellery Newell Peck * Boonton N. J., Cornell University Medical College, New York 1904, served during the World War, aged 55 died Dec. 20 1934 in the Deaconess Hospital Brookline Mass.

James E W Price, Kingston Tenn, University of Tennessee Medical Department, Nashville, 1899, member of the county board of education, also a pharmacist, aged 68, died, Dec. 4, 1934

Patrick H O'Connor, Amboy, Minn., Kansas City (Mo) Hahnemann Medical College, 1906, member of the Minnesota State Medical Association, aged 56, died, Dec. 25, 1934, of heart disease

Gustave Julius Dierkes & Winona, Minn., John A. Creighton Medical College, Omaha, 1917, on the staff of the Winona General Hospital aged 43 died Dec. 9 1934, of pneumonia

Irving S Freeman, Rocky, Okla. Fort Worth School of Medicine, Medical Department of Texas Christian University 1913, aged 49, died, Dec. 27, 1934, in Tulsa of bronchopneumonia

Henry Lee Yoder & Morton Ill., Missouri Medical College, St. Louis, 1899, aged 62, died, Nov. 21, 1934 in the John C. Proctor Hospital, Peoria of prostatic obstruction and pyonephrosis

Joseph P Morris, St. Clair Pa. Jefferson Medical College of Philadelphia, 1896, member of the Medical Society of the State of Pennsylvania, aged 61, died suddenly Dec. 2, 1934

Isaiah Thomas Harbour, Cowlington Okla. Kentucky School of Medicine, Louisville 1888 aged 82 died, January 11, in Fort Smith, Ark., of adenocarcinoma of the pancreas

Martha Louise Dedrick Bayles, Townsend Mont. University of Illinois College of Medicine Chicago, 1930 aged 28, died January 6 in St. John's Hospital, Helena, of septicemia

Hugh Sawyer James, McArthur Ohio, Columbus Medical College, 1890, member of the Ohio State Medical Association served during the World War, aged 69, died, Nov. 15 1934

Clara T Dercum, Philadelphia Woman's Medical College of Pennsylvania Philadelphia 1887 for many years on the staff of the Woman's Hospital aged 76 died, Dec. 23, 1934

John Thomas Deemar, Kittanning, Pa. Jefferson Medical College of Philadelphia, 1879, member of the Medical Society of the State of Pennsylvania aged 80 died, Dec. 9, 1934

James Dennis, Albuquerque N. M., Howard University College of Medicine Washington, 1906 aged 52, died Dec. 23, 1934, of bronchopneumonia following a prostatectomy

Frank Van Rensselaer Phelps, New York, Bellevue Hospital Medical College New York 1893 aged 68, was found dead in his automobile, January 9, of heart disease

Irving Cyrus Blaisdell, Wilmore, Pa., Bellevue Hospital Medical College, New York 1871 aged 90 died, Dec. 12, 1934 of cardiac decompensation and bronchopneumonia.

Louis M Hanemann, New Orleans Tulane University of Louisiana Medical Department New Orleans 1891, aged 65, died, January 8 of cardiovascular renal disease

William Frederick Marten, Ferguson Mo., Hahnemann Medical College and Hospital, Chicago, 1903, aged 46 died Dec. 31, 1934 of a self-inflicted bullet wound

John Anthony Regan, Scranton, Pa., Chicago Medical School, 1934 aged 30 died suddenly Dec. 27, 1934, in the Scranton State Hospital, of diabetes mellitus

William A Powel, Hernando Miss., College of Physicians and Surgeons Baltimore 1886 aged 72 died January 5 of injuries received in an automobile accident

John Kelly Moeur, Tempe, Ariz. University of Illinois College of Medicine, Chicago 1928 aged 37, died, Nov. 30, 1934, in St. Joseph's Hospital Phoenix

James A Melvin, Baltimore University of Maryland School of Medicine Baltimore 1887 aged 71 died, Dec. 6, 1934 in the Union Memorial Hospital

Abel Mathias, Rapid City S. D. University of Pennsylvania School of Medicine Philadelphia, 1865 aged 91 died, Nov. 11 1934 of cerebral hemorrhage

John P Williams, Minneapolis Chicago Medical College 1876 aged 88 died Nov. 11 1934 of coronary sclerosis, arteriosclerosis and chronic nephritis

Augustus F Kempton & Philadelphia Jefferson Medical College of Philadelphia 1880 aged 79 died, Dec. 6 1934 in Ventnor N. J. of chronic nephritis

John Patrick Mulrenan & Philadelphia University of Pennsylvania School of Medicine Philadelphia 1897 aged 64 died January 5 of heart disease.

Samuel Lewis Wilkinson & Belen N. M., University of Arkansas School of Medicine Little Rock 1907 aged 54 died Dec. 30 1934 of angina pectoris

Ephraim Daniel McKenna, Oneonta, N. Y., University of Vermont College of Medicine, Burlington 1887, aged 75, died, January 13, of nephritis

John C Ware, Yellville, Ark., Arkansas Industrial University Medical Department, Little Rock, 1886, aged 85, died, Nov. 5, 1934, of heart disease

George Blatchford, Clinton, Mich. University of Michigan Homeopathic Medical School, 1884, aged 87, died January 2, of chronic myocarditis.

John Duncan, Toronto, Ont., Canada, University of Toronto Faculty of Medicine, 1906, M.R.C.S., England, 1907, aged 59, died, Nov. 22, 1934

William Scholes Kimmell, Uniontown Pa., Medico-Chirurgical College of Philadelphia, 1901, aged 65 died, Nov. 21 1934, of paralysis agitans

David Heist Wentz, Philadelphia, University of Pennsylvania School of Medicine, Philadelphia, 1883, aged 76, died, Dec. 27 1934, of pneumonia

A Marshall Haas, Bunkie, La., Tulane University of Louisiana Medical Department, New Orleans, 1896, coroner, aged 61, died, Dec. 13, 1934

Frank Busby Parker, Ursa, Ill., Keokuk (Iowa) Medical College, 1893, aged 63, died, Dec. 10 1934 in St. Mary Hospital, Quincy, of encephalitis

Simon J Hampshire, Overbrook, Kan., College of Physicians and Surgeons, Keokuk, Iowa 1884 aged 74, died, Oct. 31, 1934 of arteriosclerosis

Maurice R Perlestein, Chicago Chicago College of Medicine and Surgery, 1914 aged 43 died, January 21, of hydro-nephrosis and myocarditis

David A Maxwell, Lockesburg, Ark. Memphis (Tenn) Hospital Medical College 1889, aged 78, died, Nov. 18, 1934 of cerebral hemorrhage.

Lewis Augustus Williams, Huntington W. Va., Medical College of Ohio, Cincinnati, 1891, aged 70, died, Dec. 27, 1934, of gastric carcinoma

Michael Joseph Brown, Toronto Ont. Canada, University of Toronto Faculty of Medicine 1920, aged 41, died, Nov. 11, 1934, of heart disease

Henry John Plenz, Chicago, Northwestern University Medical School, Chicago, 1910, aged 46, died January 14, of organic heart disease.

Thomas P W Brooks, Hackleburg Ala. Georgia College of Eclectic Medicine and Surgery, Atlanta, 1897, aged 87, died, Dec. 15, 1934

Manassa Thomas Pope, Raleigh, N. C. Leonard Medical School, Raleigh, 1886, died, Nov. 13, 1934 of strangulated hernia and cystitis

John Henry Watson, Toronto, Ont., Canada Victoria University Medical Department, Coburg, 1869, aged 87 died Nov. 16, 1934

William Oscar Sauermann & Houston Texas, University of Michigan Medical School Ann Arbor, 1893 aged 67 died, Nov. 26, 1934

Simon Cameron Bowes, Canonsburg, Pa., Western Pennsylvania Medical College, Pittsburgh, 1893, aged 70 died, Dec. 17, 1934

Everett A Wood, Los Angeles, Keokuk Medical College, 1895, aged 70, died, Dec. 10 1934 in the Los Angeles General Hospital

Napoleon Wagner, Denver, St. Louis College of Physicians and Surgeons, 1884, also a lawyer, aged 76, died Nov. 15, 1934

Charles Mikula, Dwight, Kan. (licensed in Kansas in 1901) aged 72, died Dec. 14, 1934, of carcinoma of the stomach

Geoffrey Boyd, Toronto, Ont. Canada University of Toronto Faculty of Medicine, 1891, aged 65, died, Dec. 22, 1934

James Archibald Hamilton, Winnipeg Manit. Canada Manitoba Medical College Winnipeg, 1904 died, Dec. 26, 1934

Dennis P Russell Chicago, Rush Medical College, Chicago, 1890, aged 74, died January 15, of cirrhosis of the liver

Thomas Nathan Eblen, Orme Tenn. Chattanooga (Tenn) Medical College, 1899, aged 62 died, January 5, of pneumonia

Robert S Medearis, North Little Rock, Ark. (licensed in Arkansas in 1903) aged 64 died Dec. 8, 1934

John G Chessher, Falco, Ala. Chattanooga (Tenn) Medical College 1901 aged 76, died Nov. 17, 1934

Bureau of Investigation

AMERICAN INSTITUTE OF MEDICINE AND SURGERY, INC

An Impudent Scheme Designed to Capitalize the Vanity of Physicians and Others

In December, 1934, news items began appearing in newspapers—usually those published in the smaller towns—regarding an alleged "honor" that had been conferred upon some local citizen by the "American Institute of Medicine and Surgery" at a meeting of the "nominating committee" in New York. Such local celebrities appeared at first to be mainly optometrists, although the list has since been extended to cover osteopaths and physicians.

Following the appearance of the local news item, the person whose name was mentioned would receive a letter informing him in detail of the alleged honor and asking him to sign a "pledge" that is enclosed, and to return it with a check or money order for \$25 on receipt of which the American Institute of Medicine and Surgery would send a handsome certificate for framing and hanging in the reception room.

Some of the members of the American Optometric Association, recognizing that as they practice neither medicine nor surgery the alleged honor that was said to have been conferred on them was obviously undeserved, questioned the bona-fides of the imposingly named "Institute." As a result, the *Optometric Weekly* published in its issue of Dec. 27, 1934, a warning item entitled "Look Out for This Racket."

This probably interfered with the success of the scheme among optometrists and may explain why osteopaths and physicians were then worked on.

The news items already referred to have appeared in various parts of the United States ranging from Florida to California. The letter that the individuals whose names were published in the local papers received from the so-called American Institute of Medicine and Surgery, Inc., of 150 Nassau St., New York City, read as follows:

Dear Doctor—It is my privilege to announce that the Board of Directors has qualified you for a life-time honorary membership in the American Institute of Medicine and Surgery. This is to take effect upon your signing the inclosed pledge and fulfilling the usual preliminary requirements of honorary membership.

Because the American Institute of Medicine and Surgery is a non profit making corporation there are no annual dues. One initiation fee of Twenty five dollars (\$25.00) alone is required from each honorary member.

Please sign your name to the inclosed pledge and print your name plainly below in the form you wish it to appear on the Certificate of Honorary Membership a facsimile of which is printed on the pledge. The Certificate as it is sent to you is 14 inches by 17 inches in size and may be framed and hung in the reception room of your office thereby showing to whom it may concern that you have been signally honored by this organization.

We heartily congratulate you upon your selection as an outstanding representative of your profession in your district and trust that you will at your earliest convenience return the pledge properly signed together with check or money order to cover the initiation fee.

Accompanying the letter, which was signed 'John J. Caldwell Secretary,' was a miniature reproduction of the "certificate of honorary membership" for which the optometrist, osteopath or physician was asked to send \$25, there was also the 'honorary membership pledge,' which the recipient was asked to sign and return with his \$25.00. The "pledge" read as follows:

I pledge myself to maintain the highest ethics of my profession and to do all within my power to bring a new era of physical and mental well-being to the peoples of the world.

WITH TRUE APPRECIATION of the dignity nobility and sacrifice of this my life work I sign my name to this pledge.

There was the inevitable dotted line just below the 'pledge' for the signature of the person to whom it was sent. The 'certificate' itself is reproduced with this article, in order to

give a general idea of the character of the piece of paper for which physicians and others are expected to pay \$25. Because of the great reduction in size made necessary by the limitations of space, the wording of this certificate is here reproduced.

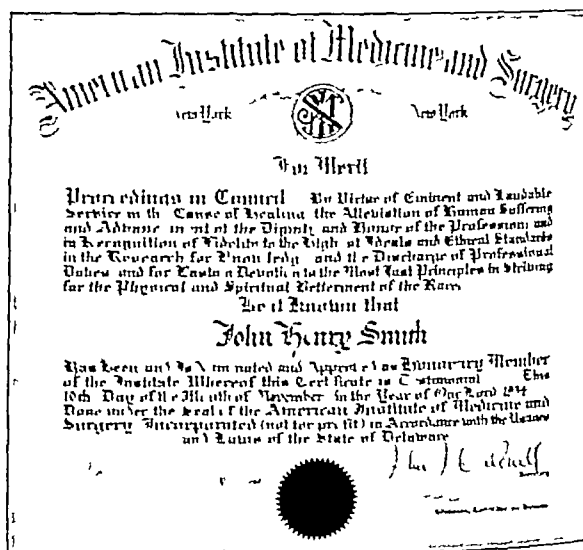
'Proceedings in Council By Virtue of Eminent and Laudable Service in the Cause of Healing the Alleviation of Human Suffering and Advancement of the Dignity and Honor of the Profession and in Recognition of Fidelity to the Highest Ideals and Ethical Standards in the Research for Knowledge and the Discharge of Professional Duties and for Lasting Devotion to the Most Just Principles in Striving for the Physical and Spiritual Betterment of the Race,

Be it known that

JOHN HENRY SMITH

Has Been and Is Nominated and Approved as Honorary Member of the Institute Whereof this Certificate is Testimonial. This 10th Day of the Month of November in the Year of Our Lord 1934 Done under the Seal of the American Institute of Medicine and Surgery Incorporated (not for profit) in Accordance with the Usages and Laws of the State of Delaware

The certificate is signed by the "President," "Secretary" and "Chairman, Committee on Honors." As well as can be deciphered from the reproduction sent out, the president's name appears to be Robert V. Steele the secretary's John J. Caldwell.



Reproduction (greatly reduced—the originals are 14 inches by 17 inches) of the Certificate of Honorary Membership which the "American Institute of Medicine and Surgery, Inc." attempts to sell to optometrists, osteopaths and physicians for \$25.00. The alleged institute does not exist except on paper. What the certificate actually certifies to is that the possessor is an easy mark or a poseur.

—whose name also appears in connection with the letter—and that of the chairman of the "Committee on honors" [1] E. L. Fogelsonger.

The American Institute of Medicine and Surgery, Inc., was not to be found in any record possessed by the Bureau of Investigation, it was obviously a new humbug. Neither did one find the names of Steele, Caldwell or Fogelsonger.

From investigation it appears that the so-called American Institute of Medicine and Surgery, Inc., is a New York organization incorporated in November, 1934, with no stated authorized capital, that Fogelsonger is the dominating factor in the enterprise and that he is alleged to have formerly been financially interested in the "Book Craft Guild"—whatever that may have been—said to have been established in April 1932, but now to be out of business. The headquarters of this imposingly named outfit were simply rented quarters in Room 736 in the office building at 150 Nassau Street. Efforts to obtain an interview with Fogelsonger were fruitless, and no one could be found who either had or was willing to furnish information on which an estimate of the responsibility of the concern could be determined. Further help was sought through both the National Better Business Bureau and the Better Business

Bureau of New York City The latter organization reported that the post-office officials were investigating and that both Caldwell and Fogelsonger had disappeared It reported, also, that Ann Lord, a reputed publicity agent at 53 Park Row, had a mailing address there, but her identity was unknown

A search of the files of the Bureau of Investigation failed to show any record of any "Ann Lord" as a publicity agent There was a record of one Annie Lord, who has sometimes, it appears gone by the title Dr In 1933 there was one Annie Lord who called herself a "Consulting Psychologist" operating from Studio 603 Carnegie Hall, New York City Then there was an Annie Lord whose advertisement was published in the *Chicago Tribune* April 17, 1932, in which the lady was described as an "Eminent Business Analyst of Washington, D C" The Bureau also has a record of one Annie Lord, a "naturopath," who in 1928 was prosecuted and found guilty of practicing medicine without a license by the state authorities of New Jersey A news item to this effect was published in *THE JOURNAL* July 28, 1928 None of these Annie Lords, however, seem to fit in with the Ann Lord referred to by the Better Business Bureau of New York City In fact, a later letter from that organization reported that the current telephone directory of New York City carried the name 'Annie Lord, Psychic' at 210 West 72d Street

As the "certificate" of the American Institute of Medicine and Surgery definitely states that the concern is a Delaware corporation, the Bureau of Investigation asked the Secretary of State of Delaware, for the names of the officers and incorporators The secretary replied on January 16 1935 that (1) the "institute" was incorporated August 6 1934, but the annual report showing the names of the officers had not yet been filed (2) the Capital Trust Co of Delaware was the resident agent and (3) the incorporators were Robert V Steele, 2449 28th St., Astoria, L I, N Y John J Caldwell 68 East 90th St., New York City Fogelsonger (no given name or initials), 165 W 87th St, N Y C

The Better Business Bureau of New York City reported further, that on January 21 Post Office Inspector Frank Shea had instructed Fogelsonger to call at his office, at which time a representative of the Better Business Bureau of New York City was present The entire matter was submitted to Mr Pfann, Assistant United States Attorney, who, after reviewing the facts, is reported to have told Fogelsonger that while there was not at present sufficient evidence to warrant prosecution for a mail-order fraud, Fogelsonger, Caldwell and Steele were heading for trouble None of the three men back of the scheme are physicians or have any interest in the medical profession—other, presumably than the effort to get \$25 from certain members of that profession

The scheme is not original Nearly forty years ago a quack named Probert sold from Niles Michigan, so called 'Certificates of Merit' from the fake 'St Luke's Hospital' of that city After the Michigan legislature outlawed this swindle the name and locality was changed and it became the 'Christian Hospital' of Chicago A quarter of a century ago many of these 'certificates' adorned the walls of advertising quacks Then there was the imposingly named Incorporated Society of Science Letters and Art of London' an English swindle that sold Fellowships to all and sundry at one guinea (\$5 00) apiece. These permitted the owners to write the mystic letters 'F S Sc.(Lond)' after their names which many American patent medicine exploiters did In Italy there was the Italian 'Physio-Chemical Society' of Palermo which sold diplomas at \$5 00 and 'First Class Medals for Technical Work and Scientific Merit' for \$10 00 to vainglorious or gullible Americans

One needs waste no sympathy on physicians, osteopaths or optometrists who have parted with \$25 00 for the gaudy piece of paper sold by Messrs Steele Caldwell and Fogelsonger and obviously designed to deceive the public and appeal to the vanity of the purchasers It is obvious that membership in American Institute of Medicine and Surgery, Inc., simply means that the "member" is either an easy mark or a poseur who would assume an erudition he does not possess or both

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed Every letter must contain the writer's name and address but these will be omitted on request

DETERMINATION OF HEMOGLOBIN

To the Editor—There has been a considerable amount of controversy regarding the determination of hemoglobin At the present time I am using the improved Sahli instrument graduated in per cent and in grams per hundred cubic centimeters, 14.5 Gm per hundred cubic centimeters being the equivalent of 100 per cent It has also been my practice to estimate the color index by using percentage rather than Sahli units The latter were used on the tubes formerly supplied and having a circular cross section It is claimed that my hemoglobin determinations are too high and that Sahli units should be used for this purpose Just what does a Sahli unit indicate? I am anxious to know this particularly because I am contemplating the purchase of a new instrument Please omit name

M.D. New York.

ANSWER—Much of the controversy that exists regarding the determination of hemoglobin is due to the method employed or the manner in which the results are expressed. There are now on the market several accurate hemoglobinometers that may be conveniently used for office practice. Unless these have been carefully checked before leaving the factory, however, inaccuracies may arise. Errors in the bore and graduation of the tube and pipet may contribute to wrong values. Despite the precaution in providing an accurate instrument, discrepancies may arise also in the manner of expressing hemoglobin values. Formerly hemoglobin was expressed by an empirical scale of per cent and Sahli units. For example, the old Sahli tube had a scale showing Sahli units and opposite this was a per cent scale for those who prefer to express their results by this designation. The 100 per cent mark was opposite 80 Sahli units. These two readings had a value of 17 Gm of hemoglobin per hundred cubic centimeters of blood. Different hemoglobinometers also graduated in per cent gave different values on the same sample of blood. The confusion lay not in the method of determination but in the lack in agreement as to how many grams of hemoglobin constituted 100 per cent. As an illustration of this situation the following values have been suggested as being equal to 100 per cent: Dare (new), 160 Gm; Haldane, 138 Gm; Tallqvist, 158 Gm; Haden, 156 Gm; Osgood, 146 Gm; and Wintrobe, 145 Gm. Obviously, unless one knew the method by which per cent was determined and reduced to a common factor such as grams per hundred cubic centimeters of blood, there would be considerable disagreement even on the same sample of blood. Because of the potential confusion when values are reported in per cent without stating the standard on which it is based, it has been urged that hemoglobin be reported in grams per hundred cubic centimeters of blood. Theoretically, this would avoid confusion regardless of what instrument is used. Practically, however, there are still discrepancies, because the various methods are not all carefully standardized and accurate, and errors in technic also may arise. Therefore, it is best when purchasing a hemoglobinometer to find out whether it has been carefully checked against the Van Slyke oxygen capacity method or the more accurate methods for iron determination and standardized. It should also be as free as possible from any potential technical error. The instrument that the correspondent has is satisfactory. The new Heilige Sahli is based on the recent work of Dr M M Wintrobe and has been carefully checked and standardized. Because of the preference of some clinicians still to express hemoglobin in per cent, the tube is graduated in per cent as well as in grams. When the hemoglobin is expressed in per cent, 14.5 Gm is used as the equivalent of 100 per cent. While the adoption of this value for 100 per cent gives a reliable color index it yields high percentages for most adult males. The reason for this is that the hemoglobin values for normal male adults average about 16 Gm. per hundred cubic centimeters of blood, with from 14 to 18 Gm as the limits of normal adult women average 14 Gm, with a normal range of from 12 to 16 Gm. It is therefore preferable to express hemoglobin values in grams rather than in per cent. It may be that the correspondent's values are too high because he reports them in per cent based on 14.5 Gm of hemoglobin per hundred cubic centimeters of blood as being equivalent to 100 per cent. If this is not the case it is advisable to make sure that the hemoglobinometer has been properly standardized.

ECZEMA OF AUDITORY CANAL

To the Editor—A woman, aged 30 has chronic eczema of the external auditory canal of both ears. There is a constant desquamation with considerable amounts of creamy moisture that has an unpleasant odor. There is intense itching and it is almost impossible for the patient to refrain from rubbing the mucous membrane either with a twisted handkerchief or with a toothpick applicator. On thorough cleansing there is no abnormality except a slight thickening and marked redness of the lining of the canal. There are no foci of infection the patient is perfectly healthy in every respect except that she may be hypersensitive to the slight odor of this aural discharge. The discharge is not excessive but if it is allowed to remain for a few days the canal becomes partially filled with moist creamy looking scales which produce a fetid odor. Under daily cleansing treatment the canal remains clean but after two days or more the condition constantly recurs. I have tried every form of treatment that I have access to such as boric acid powder insufflation, metaphen applied topically and by the pack method quartz light treatment salicylic acid in collodion painted on the mucosa phenol and glycerin and hydrogen dioxide and all that has been accomplished is a temporary relief from symptoms. Even when the patient leaves the canal strictly alone a discharge and moist appearance of the mucosa will occur. I should like to know what more I can do for this woman. Please omit name.

M D Illinois

ANSWER.—The quickest and cleanest method of giving relief would be roentgen rays, one-fourth erythema dose once a week. If this is not available, solution of aluminum acetate 1 part to 16 parts of water, may be applied on a roll of cotton or gauze. When this has succeeded in stopping the discharge, 1 per cent salicylic acid and resorcinol in 30 per cent alcohol should be swabbed on frequently and allowed to dry on. The patient must refrain from scratching or rubbing or the condition will not clear up. She should apply the lotion when tempted to scratch.

After the surface has ceased to weep gentle applications with a swab, once or twice a day, should be made of rectified oil of birch tar, 0.8 cc, resorcinol 0.4 cc, and liquid petrolatum sufficient to make 16 cc. If this causes oozing or increased itching, it cannot be used. For soothing 10 per cent boric acid in petrolatum should be used. If oozing recurs the solution of aluminum acetate treatment should be resumed. If improvement ceases after a considerable use of the oil the strength may be doubled or ointment of rose water containing 5 per cent of coal tar solution and 2 per cent of salicylic acid may be substituted. For cleansing oil or liquid petrolatum may be used. It must be expected that the dermatitis will return after a time. A definite cure of such a condition is hard to promise.

SINUS INTO ANTRUM

To the Editor—About a year ago a man aged 55 had a tooth extracted and an infection of the antrum developed. There were the usual symptoms of pain and purulent discharge for which he did nothing until several weeks elapsed and then I saw him though only for a few times as he thought that he could care for himself. Now he comes with a sinus that is quite open, with a little discharge and expects it to be healed in a short time. Will you please give me the best treatment for it? Will irrigations do any good and also is curettement of the antrum indicated? Kindly omit name.

M D Minnesota

ANSWER.—The fistula that occasionally develops after extraction of a tooth the root of which extends to or into the maxillary sinus is often resistant to treatments so far as closure is concerned. If there is a change in the mucosa of the antrum it would be necessary to operate either intranasally or by way of the canine fossa, removing all diseased tissue freshening the edges of the fistula, and suturing. In some cases in which the changes in the antrum are not definite a few irrigations followed by freshening of the edges of the mucosa of the fistula, and suturing, may suffice. In other cases it is impossible to approximate the edges of the mucous membrane without making a flap in order to effect the perfect closure of the opening leading into the antrum.

INTELLIGENCE OF CHILDREN WITH CONGENITAL SYPHILIS

To the Editor—In THE JOURNAL Nov 24 1934 appears the statement for they are frequently somewhat above the ordinary in intelligence, in a query and minor note entitled Child with Congenital Syphilis. It will be appreciated if you will kindly extend the statement in detail.

EDGAR C. HAYHOW Paterson N J
Superintendent Paterson General Hospital

ANSWER.—A statement regarding precocity in children with congenital syphilis deserves emphasis because of the tendency among the uninitiated to regard congenital syphilis as a principal cause of imbecility, feeble-mindedness, idiocy, backwardness and mental retardation. White and Vieder in 443 cases found

157 per cent of mental retardation, including all grades from idiocy upward. The milder grades seem much the more common. In Stokes's series, 25 per cent were below par mentally as expressed by slow progress in school and difficulties in adaptation. Twenty-two per cent of his patients exhibited heightened nervous irritability with emotional instability, fits of temper, night terrors, the easy development of tics and habit spasms, and the like. Twelve per cent of Stokes's series exhibited a mental development well beyond their years. In many cases, in spite of the handicaps of eye trouble and susceptibility to other illness it was quite sufficient to place them well beyond the average in school. The Solomons call attention to the precocity observed in certain syphilitic children, with citation of a case illustration but properly emphasize that this precocity does not indicate that syphilitic heredity is an asset but that the disease had no effect on this child's mentality. The general studies of Haines and of Bazeley and Anderson do not greatly clarify the problems of conduct disorder with which they deal in relation to syphilis but support the general view that the disease markedly influence abnormalities in this field.

It is apparent, therefore, that the mental and nervous state of children with congenital syphilis may vary between idiocy and precocity and that a sharp distinction must be drawn between the coincidence and the possible etiologic association between the syphilis and the mental state. At least it can be definitely shown, and is familiar to all syphilologists of experience, that a high degree of precocity is in no way inconsistent with the presence of a congenital syphilitic infection.

POSITION OF HEAD IN TONSILLECTOMY

To the Editor—I should like to know whether it is feasible to have a patient during a tonsillectomy tilted head down at an angle of about 10 degrees. The most frequent serious complication of tonsillectomy is lung abscess due to aspiration during or shortly after the operation. The article by Smith (THE JOURNAL, September 29 p 971) in which he stated that in thirty-nine cases of lung abscess fourteen followed tonsillectomy prompted my query. Murphy (Am. J. Obst. & Gynec. 27 118 [Jan] 1934) has shown that in curarized cats kept alive in a respirator and tilted head down at an angle of from 15 to 20 degrees, fluid dropped into the trachea was not aspirated into the lungs. Probably the tendency to aspiration is greater in a respirator than during anesthesia when breathing is shallow. For that reason a patient might be tilted only 10 degrees or so to avoid aspiration. It may be that some surgeons do tilt their patients during tonsillectomy but I have seen only one do so and that was Dr Sullivan of Mount Vernon. There may be some objection to such a procedure which I do not realize but it seems a simple prophylactic measure. After the operation the patient's bed could be tilted head down until he regains his cough reflex.

M BERNARD BRAHDI M D Mount Vernon N Y

ANSWER.—It would seem that there is no contraindication whatever to having the head tilted down when tonsillectomy is performed under general anesthesia. Many years ago the late Dr F. Gurney Stubbs did all his operations in this manner without any difficulty so far as any postoperative complications were concerned. With the head tilted down, he and many other good operators were in the habit of sitting directly behind the patient instead of to one side, as is ordinarily done while the head lies flat on the table.

MANAGEMENT OF THYROID CRISES

To the Editor—I am particularly interested in the use of compound solution of iodine (Lugol's solution) by the intravenous route both in thyroid crisis and as a routine procedure following thyroidectomy for hyperthyroidism. Has this method of administration been used to any extent and if so is there any literature to which I can refer? Please omit name.

M D New Jersey

ANSWER.—The questions suggest that the inquirer believes that compound solution of iodine is a unique and necessary formula for the administration of iodine to patients with hyperthyroidism. Many studies now prove that iodine in whatever form is the effective agent. It is not necessary, therefore, to give compound solution of iodine intravenously as a matter of fact its chemical nature prohibits such usage. Potassium iodide in concentrated sterile solution—from pharmaceutical ampules—or diluted in other fluids—given by venoclysis may be given intravenously during thyroid crises. However, the instantaneous absorption of iodine from the gastro-intestinal tract makes the parenteral route unnecessary. A diluted compound solution of iodine may be given into the corner of the mouth with a medicine dropper, 136 cc (200 minims a day of compound solution of iodine may thus be given. Examples of the management of thyroid crises are given by Paul Starr (The Course of Hyperthyroidism under Iodine Medication, Arch. Int. Med. 39 520 [April] 1927).

HEART DISEASE

To the Editor—Mrs A aged 27 married nine years has no children. The childhood history is negative except for tonsillar infections. The latter were treated subsequently by the electrocautery at the time of the cardiac infection. Several weeks after her marriage about nine years ago after having a subacute throat infection she was suddenly taken ill with cardiac collapse characterized by arrhythmia and extrasystoles. She was not then under my care, but the history of that illness was one of long duration (about nine months), little or no fever at onset with negative blood cultures and throat cultures. The last three months included invalidism continued asthma and extrasystoles. The bearing of children was not advised. Since that original illness she has always experienced missing heartbeats with greater or less frequency never being entirely free from them for more than some hours. Since then she has had several periods a year of acute relapse being bed ridden for weeks at a time suffering from missing heartbeats and shortness of breath the extrasystoles then always being accompanied by severe shock and a dry, hacking cough. I first treated the patient last spring when she went through a relapse lasting about six weeks. When she is feeling comparatively well and strong the extrasystoles though they occur are not accompanied by cough dyspnea or shock. But when she has a relapse the missing heartbeats are extremely exhausting and the patient coughs continuously. She may have a period of feeling very well and without any exciting cause her heart becomes bad and she commences to cough. The patient is well nourished and otherwise normal. The tonsils are now small and she rarely suffers from sore throats. The electrocardiogram taken several times is entirely normal as the extrasystoles disappear apparently when the pulse reaches about 100 as a result of nervous excitement. Ordinarily her pulse is between 70 and 80. Sedatives have an uncertain action as well as digitalis. Roentgen examination shows only a slightly enlarged heart. The lungs are normal. There are no cardiac murmurs. Even under morphine I have seen her cough and the heart miss for six to twelve hours. I would appreciate therapeutic suggestions and discussion of this case. Kindly omit my name in publishing.

M D New York

ANSWER—Heart disease at the age of 27, with the history of cardiac infection at the time of or following tonsillitis, suggests that this case is an example of chronic rheumatic carditis. This condition complicated by subacute bacterial endocarditis may well be the explanation of the continued invalidism and periodic acute exacerbations even though blood cultures have been negative. Low fever or its absence would not exclude this possibility nor would the failure to observe embolic phenomena or splenic enlargement entirely remove the possibility from consideration.

However, from the description of the relapses, with dyspnea and cough, it would be easy to believe that recurrent congestive heart failure with passive congestion of the lungs is the cause. This of course, is frequent in mitral stenosis. A disorder of cardiac mechanism such as paroxysmal auricular fibrillation might be responsible.

It is unlikely that extrasystoles in a normal mechanism would cause such a picture even though they occur with great frequency. The fact that the patient complains of the heart missing suggests heart consciousness. Neurotic individuals frequently complain of extrasystoles even when there is no other impairment of cardiac function. On the other hand, many people who have frequent premature contractions either are unconscious of them or at least offer no complaint.

Digitalis is not indicated unless decompensation is present or imminent because its effect on heart muscle irritability will increase the frequency of extrasystoles. Sedatives have relatively little effect on premature contractions. Quinidine might be useful but only too often even in large doses, it will not alter this type of arrhythmia. It is noted that increase in heart rate causes the rhythm to become regular. If there is no contraindication to its use and extrasystoles are the main cause of complaint, desiccated thyroid in cautious doses may be helpful by increasing the heart rate to the point at which the arrhythmia disappears.

BED SORES

To the Editor—A white patient aged 28 had a fracture of the spine at the junction of the twelfth dorsal and first lumbar vertebrae with a resulting paralysis. A body cast was applied for two months and as a result large bed sores formed over the great trochanters of each femur and over the area of the sacrum. These sores are cleansed each day with alcohol and zinc oxide ointment is applied. The patient is given a balanced diet and insulin daily. Healing has been very slow. What suggestions have you for the treatment of these bed sores? This patient is at home and hospitalization is out of the question because of the family's economic condition.

ADRIAN B CAIRNS M D Pollock, La

ANSWER—It is advisable to discontinue the daily cleansing with alcohol as this might kill the new growth of cells. The ulcers probably require stimulation, for which purpose balsam of peru is the time honored remedy. It may be applied full strength or mixed with castor oil in whatever proportion is required to subdue the burning sensation produced in the more sensitive ulcers. Especially stimulant to the growth of

epithelium is scarlet red ointment (5 per cent) which might be applied on days alternating with the balsam of peru dressing. Thiocresol compresses have of late been advocated to stimulate healing of very extensive ulcers. A freshly prepared 1:10,000 solution (of the 2 per cent alcoholic stock solution, 5 cc is mixed with 100 cc of distilled water) is applied on gauze which is then covered with waterproof material. This dressing is changed every two hours. To avoid excessive irritation, it is best alternated with compresses of physiologic solution of sodium chloride at possibly forty eight hour periods. Skin grafting should be undertaken for all large ulcers as soon as a bed of healthy granulations has been secured, and the modern method of "seed implants" is so simple and uniformly successful that there should be no hesitancy in resorting to it promptly.

USE OF WHOOPING COUGH VACCINE

To the Editor—I have attempted recently to immunize a number of children against whooping cough. I have used a vaccine manufactured by Squibb & Sons which is claimed to contain 10,000 million bacilli (*Haemophilus pertussis*) per cubic centimeter. The literature accompanying the vaccine recommends a dose of 0.5 and 1 cc. at intervals of about five days irrespective of age. I have given the children 0.5 and 1 cc subcutaneously at five day intervals and have had a number of rather severe general and local reactions. The reactions consist of fever, nausea, vomiting, diarrhea, malaise and occasionally a cough. The local reactions consist of redness, swelling and pain. I would appreciate an opinion of the following questions: Does the present status of pertussis vaccine warrant its use as an immunizing agent? Would the use of the higher dosage as recommended be likely to give rise to reactions of a serious nature? Please discuss accepted dosage. Kindly omit name.

M D New York

ANSWER—The Council on Pharmacy and Chemistry omitted in 1931 all pertussis vaccines from New and Nonofficial Remedies because in twenty years no conclusive evidence had been accumulated regarding the therapeutic or prophylactic efficacy of such preparations. Recently Sauer (Whooping Cough A Study in Immunization *THE JOURNAL*, Jan 28 1933, p 239) Immunization with *Bacillus Pertussis* Vaccine Nov 4 1933 p 1449) has brought the first convincing evidence that his vaccine, prepared from recently isolated, hemolytic strains, of the pertussis bacillus grown on medium prepared with human blood, will confer prolonged immunity in a high percentage of young children if injected at least several months before exposure. This vaccine is now available (Lilly's V 374 Parke Davis Bio 204). A total of 8 cc (1, 1.5 and 1.5 cc. bilaterally) is given hypodermically in the course of three successive weeks. Prepared without alien blood, local and systemic reactions when they occur are seldom severe and have never been serious in the seven years that it has been in use.

NEPHROPTOSIS AND URETERAL STRICTURE

To the Editor—A white American woman aged 31 a teacher was laid up in the hospital for six weeks in May and June with an attack of acute bilateral pyelitis of *Bacillus coli* type. Last week a pyelogram was taken and it showed a general visceral ptosis especially involving the left kidney. The left ureter was kinked and bound down and near the pelvis of the kidney it was narrowed. It is being dilated now and a kidney belt has been ordered from the United States. The urologist intends to dilate the ureter about four or five times. What I want to know is this: Are there any exercises that will tend to hold the kidneys in place? Are there any postural treatments that will supplement the action of the kidney belt and in time enable the patient to do without a belt which is rather hard to wear in a tropical climate? The patient is 5 feet 6 inches (168 cm) tall and weighs 130 pounds (59 kg). She has always been an active girl swimming riding horseback and bowling. Her musculature is good. Please omit name.

M D Canal Zone

ANSWER—There is no postural treatment that is of definite value in nephroptosis. It must be kept in mind however, that patients must be instructed to apply the kidney belt while they are recumbent and not while they are standing. As a general rule, patients with nephroptosis are underweight. The administration of a high caloric diet is indicated to increase the patient's weight particularly to add to the renal fat. This may assist materially in the elimination of symptoms. The more strenuous exercises such as riding horseback and bowling, should be avoided but swimming may be permitted.

It is unusual for a patient to have both nephroptosis and ureteral stricture. In most instances the narrowing and kinking of the ureter is only an apparent one which is the result of faulty technique in making the pyelogram. Unless there is evidence of back pressure such as dilatation of the renal pelvis and calices, it would be well to review the diagnosis.

The use of the ketogenic diet to eliminate the infection with colon bacilli may be all that is needed and continued use of the belt might become unnecessary.

ADENOMA IN THYROID AND EFFECTS ON
HEART MUSCULATURE

To the Editor—Question has arisen locally as to whether the presence of an adenoma of the thyroid gland whether associated with increased metabolic rate or not existing over a period of years should be a source of danger to the heart musculature. The question has arisen regarding a case in which a man is known to have had an adenoma of the thyroid gland over a period of twenty years and who in the last two or three years has developed cardiac decompensation. Lacking a specific cause I wonder whether this adenoma although causing no increase in metabolism may not have been the underlying factor. I would appreciate your letting me have whatever references may appear in the literature on this subject.

J. STUART STALEY, M.D. Marion, Va.

ANSWER—An adenoma of the thyroid gland associated with an increased metabolic rate is regarded by all observers as a cause of cardiac embarrassment. It is doubtful whether any form of thyroid disease of itself produces significant permanent organic changes in the heart muscle, or congestive heart failure. When the latter developments are found, there is almost always an additional and independent form of heart disease such as a valvular hypertensive coronary artery or syphilitic process. Symptoms such as fibrillation, palpitation, dyspnea and weakness, however, can occur as a result of the thyroid disease alone. It is unlikely that an adenoma unassociated with toxicity or an increase in the metabolic rate is a significant danger to the heart musculature. But finding the basal metabolism within normal limits is no proof that it always has been normal and plus 80 per cent may be 20 per cent above that patient's normal rate if he started from a minus 12 per cent. Furthermore there are certain "toxic" effects that are supposed to be due to the thyroid gland that are independent of the metabolic rate and may be going on when the metabolic determinations are normal. Following are references:

- Coller, F. A. The Morbidity of Endocrine Gout. *THE JOURNAL*, May 31, 1924, p. 1745.
Barker, P. S., Bohning, Anne L. and Wilson, F. A. Auricular Fibrillation in Graves Disease. *Am Heart J* 8: 121 (Oct.) 1932.
Morris, R. S. The Thyroid Heart with Low Basal Metabolic Rate. *Am J M Sc* 181: 297 (March) 1931.
Levine, S. A. and Walker, G. I. Further Observations on Latent Hyperthyroidism Masked as Heart Disease. *Angina Pectoris Aetiology*. *England J Med* 201: 1021 (Nov. 21) 1929.

USE OF PITUITARY PREPARATIONS FOR
INCREASING GROWTH

To the Editor—Recently a well nourished girl of 12 asked me what I could do to increase her stature which is decidedly short for her age. She is quite bright and does not complain of cold weather, so I did not have her basal metabolism taken. I know that pituitary preparations are sometimes used for this purpose but should like further information as to the method of administration by mouth or otherwise, dose, method of control and efficiency and general advisability. Kindly omit name.

M.D. Colorado

ANSWER—It is not possible to determine the precise nature of the growth disturbance in this case. If it is assumed, however, that the patient is suffering from hypopituitarism (and it is known from animal experiments that the anterior lobe of the pituitary gland exercises control of bodily growth, particularly on bone development) the treatment of this child may be considered through the use of pituitary substances. The use of the dried anterior pituitary gland given by mouth, even in large doses has usually failed to produce any results. Evans in 1921 showed that the simple watery extracts of the anterior pituitary glands of oxen injected into rats caused acceleration of growth. Later on, one of Evans's students working in Cushing's Laboratory at Harvard produced experimental acromegaly as well as an increase in size of the internal organs by injecting into dogs products containing the anterior pituitary growth hormone. A similar preparation may be given hypodermically in doses of 1 cc. daily. The preparation made by E. R. Squibb and Son containing the anterior pituitary growth hormone has been administered in doses of from 7 to 15 minims (0.4 to 0.9 cc.) intramuscularly once daily. Engelbach and Schaefer (*THE JOURNAL*, Aug. 18, 1934, p. 464) have treated seven cases of endocrine dwarfism by using the solution of the pituitary growth factor marketed by Parke, Davis & Co. under the name "antuitrin-G." They injected 2 cc. of this substance three times a week and report that no untoward results were noted at any time. The increase in height varied from 1 to 2 7/10 inches. These patients were from 7 to 18 years of age. They were under observation before treatment from four to six months and under treatment with antuitrin-G from three to five months. These investigators found that the addition of thyroid extract was a valuable adjunct in the treatment. The improvement was indicated not only by increase in height but also by roentgen examination of the bones, which showed an advance in osseous development.

In the use of these remedies one should not be oversanguine as to results. The writer of the query is advised to read the editorial contained in *THE JOURNAL*, August 18, 1934, "Antihormones," which emphasizes that antihormones may be produced in the body by the administration of endocrine substances and indicates the advisability of utmost caution in their clinical use.

PREVENTION OF HEMORRHAGE IN CESAREAN
OPERATION

To the Editor—In doing a cesarean section what medicine is usually injected to prevent uterine hemorrhage? I understand that solution of pituitary and ergot are usually employed. Should they be injected together? How long does it take for them to work ordinarily? Should they be injected into the uterus or subcutaneously or intramuscularly? If the solution of pituitary starts to act as the incision is started in the uterus is there any likelihood of its causing such fast or strong contraction of the uterine musculature that the uterus will tear by its own contraction? The work is being done under spinal anesthesia. Please omit name.

M.D. Texas

ANSWER—Obstetricians who employ solution of pituitary and ergot to prevent uterine hemorrhage in cases of cesarean section generally give 1 cc. of ergotamine tartrate, or Gynergen, hypodermically just before the operation is begun and 1 cc. of solution of pituitary immediately after the baby is extracted from the uterus. Both injections are usually given intramuscularly in the deltoid muscle. However, not infrequently the solution of pituitary is injected directly into the uterine musculature a sterile needle being used, of course. This method produces much more prompt contractions of the uterus. Often the uterus becomes contracted and blanched within one minute after the injection. When the solution of pituitary is injected into the arm the uterus usually contracts within two or three minutes. The general belief is that the effect of ergot does not become manifest for from fifteen to twenty minutes, hence this drug is given before the operation is begun.

Recently there has arisen doubt about the potency of hypodermic preparations of ergot, some investigators maintaining that such preparations have practically no effect on the uterus. There is, however, almost unanimity of opinion concerning the fact that fluidextract of ergot, as administered by mouth, has a definite stimulating effect on the uterus. Hence ergot may be given by mouth before a cesarean section, especially if local anesthesia is to be used. If solution of pituitary is given before the baby is delivered the uterus may contract so markedly that there will be difficulty in extracting the child. The uterus, however, will not tear unless the operator attempts to deliver the child forcibly.

Spinal anesthesia will not inhibit the effect of pituitary extract on the uterus. However, as has been pointed out by a number of observers, spinal anesthesia is much more hazardous for pregnant than for nonpregnant women. Whenever possible, direct infiltration anesthesia should be used instead of spinal anesthesia, because it is simple and much safer than spinal anesthesia.

SPINAL FLUID EXAMINATION IN SYPHILIS

To the Editor—I should like to know the consensus on the interpretation of the spinal fluid examination in the different forms of syphilis with the presence and absence of the characteristic laboratory observations, including the blood Kahn and Wassermann tests. I am particularly interested in whether a diagnosis of dementia paralytica could be made on the finding of a paretic curve with a negative spinal Wassermann reaction, a positive blood Wassermann reaction and normal cells. Ross Jones and Pandey. The diagnosis of dementia paralytica in this particular case was disputed despite the fact that the clinical picture would well fit that of dementia paralytica. Kindly omit name.

M.D., Chicago

ANSWER—Spinal fluid changes may occur in the primary and secondary stages of syphilis but are most pronounced and of highest diagnostic value in the late stages of the disease.

In the latter, however, the blood Wassermann and Kahn tests may give positive reactions with no abnormal changes in the spinal fluid. However, just the reverse may occur with pronounced spinal fluid changes of pleocytosis, increase of protein, positive Wassermann reaction and a colloidal gold curve (usually of the zone II type) when the blood tests give negative reactions. Such usually occur in cases of asymptomatic neurosyphilis but constitute a very important reason for the routine examination of the spinal fluid in cases of chronic syphilis, and particularly before treatment is stopped, to prevent the regrettable mistake of undertreating the disease.

Unfortunately, the colloidal gold test is subject to error because of difficulties in the preparation of the reagent. In the case cited the spinal fluid gave a paretic curve (zone I) with a negative Wassermann reaction, normal cell count and no increase of protein. Under these conditions the question of probable dementia paralytica must be questioned since in this

type of neurosyphilis the Wassermann reaction by an acceptable method is almost invariably positive along with pleocytosis and increase of protein. It would be hazardous to conclude that dementia paralytica is present on the basis of the colloidal gold reaction alone because of the chances of technical error referable to the reagent, which may precipitate if the gold is insufficiently "protected."

On the other hand the colloidal gold test with a proper reagent is of high diagnostic value but curves of precipitation are associated with positive Wassermann reactions and pleocytosis in the majority of cases. Indeed, a parietic curve in association with positive blood and spinal fluid Wassermann reactions may be the earliest indications of impending dementia paralytica when the signs and symptoms of the disease are indefinite and uncertain.

STERILITY WITH ENDOCRINE DEFICIENCIES

To the Editor—A woman, aged 29 married six years apparently enjoys good health except for the following complaints. She is unable to become pregnant. The periods are irregular. Sometimes she misses one completely, they are of normal amount and duration. The patient's hair will not take a permanent wave (she tried four times in two years) since an operation for appendicitis about two years ago it was normal to that time. There is occasional arthritis of the middle fingers with no evidence of focal infection except sinusitis at times. The patient is 5 feet 5 inches (165 cm) tall and weighs 130 pounds (59 kg). Her habits are normal. The basal metabolic rate was plus 2 about eighteen months ago. Four tubal insufflation tests have been made in the past two years. The first test required higher than normal pressure but the others were fairly normal. At the time of the appendectomy a laparotomy was done and the pelvic organs were found to be normal. The tubes were traversed with a small probe and iodized oil was injected into the fimbriated ends. The external genitalia are normal. Alkaline douches have been taken before intercourse. The husband's spermatozoa have been found to be virile. What part do you think the pituitary and the ovaries have to do with these complaints? Please omit name.

M D Illinois.

ANSWER—A thorough and systematic investigation of both partners is indicated to determine the cause or causes of the apparent sterility. The history indicates several faults in the wife. A check-up of the husband may likewise reveal constitutional or endocrine causes for his share in the reproductive failure in spite of the finding of live spermatozoa.

In the wife a definite endocrine fault is suggested by the history of irregular menstruation, infertility, and the stringy condition of the hair. The latter probably relates to a thyroid gland deficiency, although the pituitary gland may be partly responsible. Lowered constitutional states may also cause changes in the texture and quality of the hair. The history of digital arthritis suggests a possible focus of infection and the recurrent sinusitis may well be responsible for this condition. The same condition may adversely influence the general constitution and thus predispose to lowered fertility. The disturbed ovarian function is probably only secondary to the other endocrine gland derangements. The therapy indicated is: 1. Attention to the sinus and any other foci of infection that may be discovered. 2. Endocrine treatment, thyroid extract may be given in small doses even if the metabolism measures within the normal range. The condition of the hair will probably improve on thyroid therapy and the menstrual cycle may become regular. 3. General hygienic and tonic measures.

If the health level in both partners is raised and their constitutional states are improved, fertility in their mating may be established.

APPEARANCE OF HEART MURMUR AFTER INJECTION OF DIPHTHERIA TOXOID

To the Editor—A boy aged 9 months was given one hypodermic injection of diphtheria toxoid (Lederle). Two able men had given him routine physical examinations previously and he was examined at the time of the injection and nothing abnormal was found. Six months later at another routine examination he is found to have an apparent cardiac enlargement with a loud rough mitral murmur. His mother states that neither previous to the injection nor since it has he had any type of infection especially any infection of the upper respiratory tract, has not missed a meal and has not had any other symptom. Do you believe the toxoid is responsible here if not what else could be? Please omit name.

M D Connecticut

ANSWER—There is no evidence anywhere that diphtheria toxoid can produce a cardiac enlargement or murmur. Without any history of infection or any sign of illness from the time of the toxoid inoculation to the accidental finding of the cardiac signs, it can only be concluded that the condition had been present earlier. Cardiac murmurs are so common in infancy that the examiner frequently ignores them in the record even when he notices the sign on examination.

RECURRING HEMOLYTIC CRISES

To the Editor—An American girl aged 10 years has intermittent attacks of anemia occurring about every five or six months. She complains of "hurting all over" and marked weakness. Examination reveals a marked dyspnea, tachycardia and yellow skin. The hemoglobin (Tallqvist) is 16 per cent. The edge of the spleen extends almost to the crest of the ilium. The edge of the liver is at the umbilicus. The liver is tender. There is a hemic murmur in the heart. The coagulation time is normal. The red count is 250,000. The bleeding time is prolonged. The white count is 7,000 with 19 per cent small lymphocytes, 19 per cent large lymphocytes and 62 per cent polymorphonuclears. There is only a moderate anisocytosis but the shape of the red cells includes tennis rackets. The history revealed that liver extract by mouth had revived the patient from these attacks for several years. I gave it intramuscularly and the child gradually showed improvement. After three or four days of improvement hemorrhage began from the nose. This is the only place she has ever bled. The bleeding from the nose continued for two days and two nights regardless of treatment (the father's blood was used intramuscularly and fibrinogen was administered). No platelet count has been made. Repeated stool examinations show no ova. No infection or allergic evidence is found. Between these attacks the patient has a red count of about 1,000,000, the color index is from 0.9 to 1.1 and she is up and out with the children. My impression is that the child has an idiopathic thrombocytopenic purpura haemorrhagica. Please give me your opinion of this case. What do you think of splenectomy? What is the chance of cure with and without splenectomy? How high should the red count and hemoglobin be before the operation is performed? Please furnish other suggestions as regards treatment and operation.

JOHN D CAMPBELL, M D Duncan, Okla

ANSWER—It is possible that this patient has severe, recurring, hemolytic crises. This suspicion leads to a request for an estimation of the percentage of reticulated erythrocytes and of the fragility of the erythrocytes. If the percentage of reticulated erythrocytes is abnormally high and the fragility of the erythrocytes is increased, hemolytic icterus would almost certainly be the correct diagnosis and, in the event of exclusion of other diagnoses, splenectomy would be indicated. The question of thrombocytopenic purpura is raised in the query. The physician's notes do not indicate that clinically the features of hemorrhagic purpura have been consistently present, and there is no note concerning retractility of clot or platelet count. It is not indicated in the notes whether or not syphilis has been excluded. It would also be well to have roentgenograms of the skull and of the long bones, particularly to exclude the possible existence of Gaucher's disease or some other type of lipid histiocytosis. The erythrocyte count of 250,000 during attacks and a count of 1,000,000 when the child is up and about with other children are most likely clerical errors, if the count of 250,000 is correct it is one of the lowest on record. The question of treatment would depend entirely on accurate diagnosis. In the event of splenectomy it is desirable to have the erythrocyte count more than 3,000,000 before the operation, and splenectomy should not be done during an acute crisis.

VACCINATION OF ASTHMATIC PATIENTS

To the Editor—Will you please tell me what if any, variation of reaction one gets in vaccinating asthmatic patients against smallpox? An instance came to my attention of a very severe reaction in a person who had asthma. Is it liable to produce more severe local reaction or set up asthmatic attacks? Kindly omit name.

M D Michigan

ANSWER—The reactions that may occur with smallpox vaccination in persons with asthma are similar to those that may occur with any foreign protein inoculation in any allergic individual. There is a tendency for nonspecific proteins to cause a more marked local reaction in allergic individuals. This is by no means constant nor does it occur in the majority. There is a similar tendency to produce a more severe systemic disturbance in allergic persons—a higher temperature and more marked malaise. This is probably due to the fact that the temperature-regulating mechanism in allergic persons is as a whole more easily disturbed. Frequently one sees for example, high temperatures with a slight rhinitis, constipation or other minor disturbances in asthmatic children.

It may be possible to precipitate an attack of asthma by non-specific means acting as a disturbing factor in overthrowing the allergic equilibrium. The reaction from smallpox vaccination may be such a factor. However, this is not very likely to occur. The more likely possibility is that the fever resulting from the vaccination may cause an actual temporary relief of the asthma when the latter is chronic. The latter effect of fever with or without infection, on the course of asthma and other allergic conditions is a frequent clinical observation.

It is possible that the patient may be sensitive to the beef protein contained in the vaccine virus. It is not likely, however, that there would be sufficient absorption from scratches to produce an allergic reaction. Such a response, if it should occur, would take place within a few minutes or an hour or two.

ENURESIS AFTER SPINAL INJURY

To the Editor—I have a patient aged 20 who in an accident received a crushing fracture of the third lumbar vertebra with involvement of the lateral arches also a fracture of the transverse processes of the fourth lumbar vertebra. There was no gross injury of the spinal cord. The reflexes are normal. Sensory reactions as well as muscle reactions and use of the limbs is normal. There is no residual urine. There is no difficulty with urination during the daytime. There is no bladder infection. Blood tests are negative. Following the injury there was no difficulty in any way with injury or with the bladder and urine but there has now developed bed wetting. The patient had never had any such previous trouble since childhood. The sympathetic fibers that run through the sympathetic chain go through the third fourth and fifth lumbar roots. Could the fibers that go to the bladder have been injured at the time of the injury or could they be involved in callus formation at the present time? Stimulation of these sympathetic fibers causes increase of tone of the bladder sphincter. Could there be a degenerative involvement of these fibers with loss of tone of bladder sphincter resulting in bed wetting? If not just what would anatomically be the basis for this symptom, which is most distressing to the patient? Please omit name and locality.

M D Missouri

ANSWER—The sympathetic fibers innervating the bladder in man arise somewhere between the ninth dorsal and the fourth lumbar vertebrae. The exact origin is not known. They are motor to the ureterovesicular orifices, the trigonal musculature and the internal sphincter, and inhibitory to the detrusor muscles of the bladder. It is not likely that these fibers were injured at the time of the accident, since the difficulty with the function of the bladder came on much later, but they may be now involved in the formation of the callus.

The bed wetting from which the patient suffers is probably due to weakening of the internal sphincter. It is quite possible that there may be connective tissue adhesions which involve the nerves within the spinal canal. One might get some evidence by means of Queckenstedt's test or by injection of iodized oil into the spinal canal.

SALT IN HYPERTENSION AND IN PREGNANCY

To the Editor—In answer to a query by a physician in Iowa on pregnancy and hypertension published on page 1011 of the Sept. 29, 1934 issue of THE JOURNAL among other things it is stated that it is advisable to eliminate all salt from the food. The patient described by the physician who asks the question has a systolic blood pressure varying between 160 to 176 mm and has no edema. I should like to know why the man who wrote the answer proscribed salt. My recollection is that the work of the Fishbergs as well as that of others has definitely proved that sodium chloride plays no part in hypertension.

ALBERT W. HOLMAN, M.D., Portland, Ore.

ANSWER—The experimental results obtained by V. J. Harding and H. B. Van Wyck (*J. Obst. & Gynec. Brit. Emp.* 33:17, 1926) led them to conclude that "in the treatment of pre-eclampsia there is only one pertinent dietetic factor. It is the presence or absence of salt." Later (*Canad. M. A. J.* 24:635 [May] 1931) the same authors expressed the opinion that a high intake of salt, taken at the right moment, in a developing toxemia will produce an albuminuria, an increased blood pressure and convulsions in a short time. They therefore consider salt restriction a necessary part of prenatal care.

It is true that in recent years a great deal of doubt has been cast on salt as a harmful substance in cases of hypertension and the toxemias of pregnancy. In spite of this there are still adherents of a strictly salt-free diet in cases of hypertension (Allen, F. M., and Sherrill, J. N. *J. Metab. Research* 2:429, 1922 and Blaisdell, E. A. *Boston M. & S. J.* 196:808 [May 19] 1927). Most authorities agree that an excess of salt may be injurious. Probably the safest procedure is to permit patients who have hypertension to eat food that contains the customary amount of salt added during cooking. However, the patient should not add more salt when the food is eaten.

GLASSITE AS INDUSTRIAL HAZARD

To the Editor—I should like to know the composition of the abrasive Glasstite which is used in glass polishing and whether its use constitutes a hazard of silicosis. Please omit name.

M D Ohio

ANSWER—In Thomas's Register of American Manufacturers, in the section headed "Leading Trade Marks" is the following entry: "Glasstite Bone Dry Black Rouge, James H. Rhodes & Co., 153 W. Austin Ave. Chicago, Ill. Black rouge Black rouge is ferrous ferric oxide (black iron oxide) having the formula $\text{Fe}_3\text{O}_4 \cdot \text{H}_2\text{O}$. This substance is widely used in glass polishing but is less used than the common red oxide of iron. The black oxide is less abrasive than the red oxide and is employed for scratch polishing and wherever a very fine finish is required. Black rouge is not an industrial toxic agent. Gross exposure causes practically no changes in the lungs. Very certainly it may not be classed as similar to silica in its action.

Any dusty lung disease produced should be termed 'siderosis' but so called cases of siderosis are often properly attributable to silica or silicates associated with iron ores. At this time the belief is that black rouge may not become the source of any direct pulmonary condition other than a minor 'increased noncharacteristic fibrosis'."

RENAL TUBERCULOSIS

To the Editor—A woman aged 26 a college graduate and athletically inclined married one year has been complaining of dysuria for the past two years. Cystoscopy has been done repeatedly by prominent urologists and she has been placed on various urinary antiseptics to no avail. Oil of santal interferes with her digestion within twenty-four hours. The attacks last from several days to several weeks with relief for only three or four days at a time. On cystoscopy three months ago I found a moderately inflamed trigon and urethra. The left ureter was readily catheterized. A No. 6 catheter encountered an obstruction in the right ureter about 5 cm. above the orifice but passed with some slight difficulty. Kidney function on both sides was normal. The urine from the right kidney pelvis showed several pus cells. The following week cystoscopy was repeated by a urologist in another city who had been treating her previously. He was able to pass a No. 9 catheter apparently with relative ease. She then had relief for more than a month. This physician has suggested pregnancy on the supposition that the resultant pelvic congestion may cure the condition. Roentgenograms show a spasm-like stricture of moderate degree at the region of the obstruction. Physical examination is essentially negative. She has never had any inflammatory process in the abdomen or the pelvis. The patient is very desirous of having a child. Would you advise the risk of pregnancy? Is it true that pregnancy occasionally affords relief in such a condition? Have you any suggestions to offer other than repeated ureteral dilations? Incidentally bladder irrigations with silver nitrate potassium permanganate and mild silver protein have been tried with relief only during the time during which she was receiving treatment. Please omit name.

M D, New York.

ANSWER—The presence of pus cells in one kidney in a woman of 26 who complains of dysuria leads one to suspect that she might have tuberculosis of the kidney. Therefore it is in order to make repeated examinations of catheterized bladder specimens for the presence of tubercle bacilli. If they cannot be demonstrated in smear it might be well to inoculate several guinea-pigs. If pyelograms have been made, they should be studied carefully for the possibility of renal tuberculosis. It might be a good plan to have some plain roentgenograms made to rule out stone.

If dilation has been done with No. 9 bougies or catheters and if the trouble is due to a ureteral stricture, this amount of dilation should relieve the symptoms. Therefore I would discontinue further ureteral dilation and bladder treatments.

It may be possible that the symptoms are due to a chronic urethritis, and it may be a good plan to strip out the urethra for the presence of pus and to search for the presence of infection in Skene's glands.

Pregnancy probably would not relieve the patient of her symptoms. If the patient does not have renal tuberculosis, there would seem to be no reason why she should not become pregnant.

DIFFERENTIAL DIAGNOSIS IN ERYTHEMA MULTIFORME

To the Editor—A man aged 60 of Italian ancestry noticed a small bluish spot on the dorsum of the proximal phalanx of the left little finger. This gradually spread until it advanced across the back of the hand and up the arm. The skin seems to separate leaving a granulated surface dotted with islands of unharmed skin. Healing takes place without scarring. He reports to me that he has had five previous attacks at intervals of about two years. His physical examination and blood chemistry are negative. What is the diagnosis and what would you suggest in the way of treatment? Please omit name.

M D, Ohio

ANSWER—The periodicity of the attacks and the apparently extensive destruction of the skin which, however, proves to be too superficial a process to cause scarring, suggests erythema multiforme, which causes just such apparently gangrenous conditions. They are so superficial, however, that scarring never results. Erythema multiforme is typically bilateral and symmetrical. It is supposed by some to be caused by showers of bacilli producing emboli in the small vessels of the skin. It is conceivable that such a process might be active in the arteries of one arm. The vascular supply should be studied carefully. If possible, the patient should be seen by a dermatologist during an attack.

Erythema multiforme like eruptions are sometimes caused by drugs, quinine, iodine, bromine and some of the coal tar derivatives.

Recurrent erysipelas might be considered, but no bluish spot or deep erosions are apt to be seen in this disease. No diagnosis can be made without a careful study of the case which is evidently a rare one.

Medical Examinations and Licensure

COMING EXAMINATIONS

ALASKA Juneau March 5 Sec. Dr. W. W. Connel, Juneau
AMERICAN BOARD OF DERMATOLOGY AND SYPHILIGOLOGY Written (Group B candidates) The examination will be held in various cities throughout the country April 29 Oral (Group 1 and Group B candidates) New York June 10 Sec. Dr. C. Guy Lane 416 Marlborough St. Boston

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written (Group B candidates) The examination will be held in various cities of the United States and Canada March 23 Final oral and clinical examination (Group A and Group B candidates) Atlantic City, N. J. June 10 11 Group B application lists close Feb. 23 and Group A application lists close May 10 Sec. Dr. Paul Titus 1015 Highland Bldg. Pittsburgh

AMERICAN BOARD OF OPHTHALMOLOGY Philadelphia, June 8 and New York June 10 Application must be filed at least sixty days prior to date of examination Sec. Dr. William H. Wilder, 122 S. Michigan Bldg. Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY New York June 8 Sec. Dr. W. P. Wherry 1500 Medical Arts Bldg. Omaha

AMERICAN BOARD OF PEDIATRICS Atlantic City, N. J. June 10 and St. Louis Nov. 19 Sec. Dr. C. A. Aldrich 723 Elm St. Winnetka Ill.

ARIZONA Basic Science Tucson March 19 Sec. Dr. Robert L. Nugent, Science Hall University of Arizona Tucson

CALIFORNIA Reciprocity Los Angeles March 13 Sec. Dr. Charles B. Pinkham 420 State Office Building Sacramento

CONNECTICUT Regular Hartford, March 12 13 Endorsement Hartford March 26 Sec. Dr. Thomas P. Murdock 147 W. Main St. Meriden Homeopathic March 12 Sec. Dr. J. H. Evans 1488 Chapel St. New Haven

MAINE Portland March 12 13 Sec. Board of Registration of Medicine, Dr. Adam P. Leighton Jr. 192 State St. Portland

MASSACHUSETTS Boston March 12 14 Sec. Board of Registration in Medicine, Dr. Stephen Rushmore 144 State House Boston

NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II The examinations will be held in medical centers where there are five or more candidates, Feb. 13 15 Ex. Sec. Mr. Everett S. Elwood 225 S. 15th St. Philadelphia

NEW HAMPSHIRE Concord March 14 15 Sec. Board of Registration in Medicine Dr. Charles Duncan State House Concord

OKLAHOMA Oklahoma City March 12 13 Sec. Dr. J. M. Byrum Mammoth Bldg. Shawnee

Puerto Rico San Juan March 5 Act. Sec. Dr. Ramon M. Suarez Box 536 San Juan

VERMONT BURLINGTON, Feb. 13 15 Sec. Board of Medical Registration Dr. W. Scott Day Underhill

WEST VIRGINIA Charleston March 18 State Health Commissioner Dr. Arthur E. McClue Charleston

WISCONSIN Basic Science Madison March 16 Sec. Prof. Robert N. Bauer, 3414 W. Wisconsin Ave. Milwaukee

Arizona October Report

Dr. J. H. Patterson, secretary, Arizona State Board of Medical Examiners, reports the written examination held in Phoenix Oct. 2-3, 1934. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Two candidates were examined, both of whom passed. Four physicians were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad	Per Cent
George Washington University School of Medicine	(1933)	85	8
Northwestern University Medical School	(1934)	85	2

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
School of Medicine of the Division of the Biological Sciences University of Chicago	(1932)	Illinois	
St. Louis University School of Medicine	(1926)	Utah	
University of Tennessee College of Medicine	(1915)	Oklahoma	
Baylor University College of Medicine	(1931)	Texas	

Rhode Island October Examination

Dr. Lester A. Round, director, Rhode Island Public Health Commission, reports the written examination held in Providence, Oct. 4-5, 1934. The examination covered 7 subjects and included 70 questions. An average of 80 per cent was required to pass. Twelve candidates were examined, 10 of whom passed and 2 failed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Georgetown University School of Medicine	(1934)	84*	89*
Boston University School of Medicine (1934) 82* 84*	(1932)	82	1
Tufts College Medical School	(1933)	84	5
Hahnemann Med. College and Hospital of Philadelphia	(1934)	91	1*
Temple University School of Medicine	(1933)	85	4
University of Toronto Faculty of Medicine	(1933)	89	5

School	FAILED	Year Grad	Per Cent
Tufts College Medical School	(1934)	76	5
Universidade de Lisboa Faculdade de Medicina	(1932)	72	

* License withheld pending completion of internship

Illinois October Examination

Mr. Eugene R. Schwartz, superintendent of registration, Illinois Department of Registration and Education, reports the written and oral examination held in Chicago, Oct. 16-18, 1934. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Sixty-five candidates were examined, 62 of whom passed and 3 failed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Chicago Medical School	78* 78 81 86	(1934)	77*
Loyola University School of Medicine	82 86*	(1934)	77
Northwestern University Medical School	(1934) 81, 82* 82 84* 84* 84* 84 85* 85	(1925)	81
Rush Medical College	(1932) 84* (1934) 79, 79 82* 82 83, 83 83 84, 85* 85* 85	(1930)	77
Sch. of Med. of the Division of the Biological Sciences	(1933)	78*	
University of Illinois College of Medicine	78 80 81* 82 83 83, 84* 84, 85, 85* 85 85 86*	(1934)	78*
Indiana University School of Medicine	(1921)	82	
Harvard University Medical School	(1931)	85	
Tufts College Medical School	(1933)	81*	
Hahnemann Med. College and Hospital of Philadelphia	(1932)	82*	
University of Wisconsin Medical School	(1932) 80*	(1933)	82*
University of Manitoba Faculty of Medicine	(1934)	77*	
Ludwig Maximilians Universität Medizinische Fakultät München Bavaria Germany	(1931)	77†	
Schlesische Friedrich Wilhelms Universität Medizinische Fakultät Breslau Prussia Germany	(1927)	79†	

School	FAILED	Year Grad	Number Failed
Chicago Medical School	(1932)	(1933)	2
McHenry Medical College	(1916)	(1916)	1

Thirty physicians passed the practical examination for reciprocity and endorsement applicants. The following schools were represented:

School	PASSED	Year Grad	Reciprocity with
Northwestern University Medical School	(1928)	Wisconsin	
(1930)* Arizona Texas			
University of Illinois College of Medicine	(1933)*	Missouri	
State University of Iowa College of Medicine	(1932)*	Iowa	
University of Louisville School of Medicine	(1933)	Kentucky	
University of Maryland School of Medicine and College of Physicians and Surgeons	(1928)	Maryland	
Detroit College of Medicine and Surgery	(1931)	Michigan	
Univ. of Michigan Dept. of Medicine and Surgery	(1914)*	Michigan	
University of Minnesota Medical School	(1927)*	Minnesota	
Washington Univ. School of Med. (1932)* (1932)	(1933) 2	Missouri	
University of Nebraska College of Medicine (1933)*	(1933)	Nebraska	
University of Cincinnati College of Medicine	(1934)	Ohio	
Jefferson Medical College of Philadelphia	(1926)*	Ohio	
University of Tennessee College of Medicine	(1931)*	Tennessee	
Medical College of Virginia	(1933)	Virginia	
University of Wisconsin Medical School	(1928)	(1930)* Wisconsin	
McGill University Faculty of Medicine	(1928)	Maryland	

School	PASSED	Year Grad	Endorsement of
Northwestern University Medical School	(1933)* N B M Ex.		
Rush Medical College	(1934)* N B M Ex.		
University of Illinois College of Medicine	(1931)* N B M Ex.		
Jefferson Medical College of Philadelphia	(1917)* N B M Ex.		
University of Pennsylvania School of Medicine	(1928)* N B M Ex.		

* License withheld pending payment of fee
† Verification of graduation in process

Hawaii October Examination

Dr. James A. Morgan, secretary, Board of Medical Examiners, reports the oral and written examination held in Honolulu, Oct. 8-11, 1934. The examination covered 10 subjects and included 55 questions. An average of 75 per cent was required to pass. Five candidates were examined, 2 of whom passed and 3 failed. Three physicians were licensed by endorsement after an oral examination. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Northwestern University Medical School	(1934)	84*	
Jefferson Medical College of Philadelphia	(1934)	81†	
School	FAILED	Year Grad	Per Cent
Loyola University School of Medicine	(1934)	77†	
Washington University School of Medicine	(1932)	81†	
University of Oregon Medical School	(1934)	80†	

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
College of Medical Evangelists	(1934) 2 N B M Ex.		
Northwestern University Medical School	(1932) N B M Ex.		
* This applicant has received an M.D. degree and will receive an M.D. degree and Hawaii license on completion of internship			
† License withheld pending completion of internship			
† Failed in more than three subjects			

Book Notices

Accepted Dental Remedies Containing a List of Official Drugs Selected to Promote a Rational Dental Materia Medica and Descriptions of Acceptable Nonofficial Articles 1934 Council on Dental Therapeutics Cloth Price \$1 Pp 204 Chicago American Dental Association 1934

This book should be as valuable to the dental profession as are its prototypes, *Useful Drugs* and *New and Nonofficial Remedies*, to the medical profession. In format and general scope it resembles the former publication, but in that it lists and describes nonofficial remedies proposed for use by dentists it resembles the latter. The typography is excellent.

The names appearing in the list of members of the Council on Dental Therapeutics as well as the text of the rules governing the admission of articles assure both the scientific background and the practical soundness of the council's actions and consequently of the contents of this book. The official preparations included represent such an admirably short and selective *materia medica* as will be of most usefulness to the busy dental practitioner. The point of view of the dentist has been constantly and effectively kept in mind. It is planned to revise the list of drugs annually.

In a book such as this, sponsored by the dental association, both the professional and the lay reader will be much interested in the section devoted to dentifrices. The well informed will highly approve the sound and sane presentation of the subject. The council holds that "the sole function of a dentifrice is to aid in keeping the teeth clean by the removal of loose food debris by the mechanical use of the tooth brush." This offers small encouragement to manufacturers who would "protect the danger line," "avoid pink tooth brush" or propagate the many other fantastic claims advanced to make a "tooth conscious" public justify their advertising appropriations. The book lists some sixteen accepted preparations of this class, giving the composition and permitted claims for each. Among these appear the names of only two widely advertised products, 'Iodent Tooth Paste No. I' and 'Iodent Tooth Paste No. II.' With the descriptions of these appears a statement by the firm to the effect that no therapeutic claims will be made until sound evidence is available to warrant them.

The book contains descriptions of various accepted cod liver oils and related preparations. In the general discussion under which these are listed, the council takes a wisely conservative stand on the dental claims that may be made for such products. This is shown by the following statement:

Cod liver oil is considered to be among the medicinal foods which because of their vitamin content, apparently have a beneficial effect on the development of teeth and aid in the prophylaxis against dental caries. The exact role that vitamin D plays in such prophylaxis is at present not clearly understood (Diet and the Teeth Reports of the Council J. A. D. A. 19 1843 [Oct.] 1932)

The dosages given are based on the curative properties against experimental rickets in the absence of the available data no dosage is given for prophylaxis against caries or other dental diseases.

The bibliographic indexes at the end of the book give an idea of the scope and volume of the work done by the council on accepted products and subjects of general interest to dentists since 1930. Some ninety regular reports of the council and some twenty-five special reports, including those of the American Dental Association Bureau of Chemistry, have been published in the *Journal of the American Dental Association*. The bureau's report on mouth washes shows agreement between the Council on Dental Therapeutics and the Council on Pharmacy and Chemistry in skepticism concerning the much vaunted efficacy of these preparations.

The book has a well prepared section on symptoms and treatment of acute poisoning, a list of recorded solubilities, helpful tables of weights and measures and a therapeutic index based on that given in the latest edition of Cushny's *Pharmacology and Therapeutics*. There is an adequate index to the text of the book itself.

The American Dental Association is to be congratulated on this new step in the fostering of rational therapeutics, for which it is indebted to its excellent Council on Dental Therapeutics. It is to be hoped that the book will receive from dental practitioners the attention—and support—it so well deserves.

Krebs und Vererbung Von Prof. Dr. Hans R. Schlitz und Dr. Franz Buschke. Paper. Price 21 marks. Pp. 280 with 160 illustrations. Leipzig: Georg Thieme 1935.

This is a critical review of much of the present-day literature on the influence of heredity on the occurrence of cancer both in man and in experimental animals. After a brief presentation of the principles of heredity in the light of modern work, the literature on the genetics of spontaneous tumors in laboratory animals is reviewed. From the evidence now available the authors conclude that "at present the assumption of a simple recessive factor for the adenocarcinoma of the mamma of the mouse is most easily harmonized with the observed facts which conclusion is in agreement with the views advanced in this country by Maud Slye. They further state, however, 'But we must be clear that this conclusion is valid only for this one tumor' and cannot be applied indiscriminately to all tumors. They then consider some of the evidence on the genetics of human tumors, of transplanted tumors in animals and of the tumors produced by chemical or parasitic stimulation of tissues. As to the relative importance of hereditary and environmental influences in the production, the evidence indicates that this varies greatly with different sorts of tumors thus there are three great groups: 1. Cancers almost entirely dependent on the hereditary background, e. g., retinal gliomas; 2. Cancers in which the exciting stimulus is much more important than the heredity, as with superficial cancers resulting from protracted stimulation by tar, x-rays, and so on, but even here the hereditary background is a primary factor in determining at least the time required to produce such cancers; 3. The majority of human cancers, which seem to lie between these two groups, the hereditary background being essential and the exciting agent often being a physiologic stimulus (e. g., the influence of endocrine stimulation of mammary gland cancers). Apparently, with glandular cancers the heredity factor seems to be more important than with squamous cell carcinomas. While active workers in the field of cancer etiology and genetics will probably take exception to many statements and deductions made by these authors as they do with one another's utterances in this new and unstabilized field, this publication gives a good general survey of an important subject—perhaps the best now available. An extensive bibliography is appended.

Clinical Pathology of the Jaws with a Histologic and Roentgen Study of Practical Cases By Kurt H. Thoma, D.M.D., Charles A. Brackett, Professor of Oral Pathology in Harvard University. Cloth. Price \$9. Pp. 643 with 423 illustrations. Springfield, Illinois and Baltimore: Charles C. Thomas 1934.

This book contains a wealth of material that is not available anywhere else. The author has had an unusual opportunity to study lesions of the jaw bones from the point of view of the clinic and the laboratory and has been diligent and faithful in the accumulation of the records of this experience, such as case histories, photographs and histologic slides. Of the illustrations, 189 are reproductions of roentgenograms, more than 100 are prints of photomicrographs of histologic preparations and the remainder are photographs and drawings chiefly of the gross aspects of jaw disease. There are 171 case histories, of which eighty-three concern tumors, twenty-three deal with cysts and the remainder have to do with all other conditions. Each of the chapters has a generous bibliography, especially those on malformations, endocrine disturbances and tumors. There are two indexes, one of the conventional type, which is quite adequate, and one for the case histories. Because of the general excellence of the book, minor defects become unduly conspicuous. Most of the illustrations are without legends, so that one has to refer to the text for names and explanations. The task of coordinating reading and study of the illustrations is thereby made unduly laborious. All of the illustrations except many of the photomicrographs attain a high standard of excellence, partly because of technical superiority in reproduction and the high quality of the paper used. Since the interpretation of even an excellent histologic illustration is generally difficult for the average reader there is little excuse for the use of inferior reproductions of tissue sections. The statement on page 140 that 75 per cent of the infections of the maxillary sinus are secondary to infections of the teeth should be questioned as it seems too high. The failure to refer to Gilmer's work on jaw fractures and to Partsch's con-

tribution to the treatment of jaw cysts should be noted. For a first edition there are relatively few minor errors in printing and proofreading. This text is highly recommended to all those interested in diseases of the jaws, including medical and dental students, teachers and clinicians.

Über Carcinome Sarcome und Lymphomatosis Infiltrans bei weissen Mäusen. Versuche menschlichen Cancer auf Versuchstiere zu übertragen. Von Jols V. Andersen. Mit einer englischen und dänischen Zusammenfassung. Paper. Pp 143 with illustrations. Copenhagen. Levin & Munksgaard 1934.

For many years, investigators of cancer have endeavored to transfer neoplasms from one species to another by grafting. Recently the German investigators Keysser and Heidenhain stated that they were able to transfer human cancer to mice. While of no practical interest, except in arousing fears of the layman that he may catch cancer from laboratory animals, these statements have considerable biologic importance. Andersen has repeated all this work on a large scale and has found that it is almost certain that the tumors which Keysser and Heidenhain observed in their mice were spontaneous mouse tumors and not transplanted neoplasms derived from the human tumors which they had inoculated into their animals. The care with which Andersen's work is done, the accurate statistical analysis of the experimental material and the admirable photomicrographic reproductions of the tumors found will render unnecessary any future repetition of such experiments.

Questions cliniques d'actualité. 4^e série. Par MM. Armand Delille et autres. Leçons professées à charité service du Professeur Sergent. Paper. Price 45 francs. Pp 280 with 33 illustrations. Paris. Masson & Cie 1934.

The fourth volume of clinical discussions presented at the Hôpital de la Charité, Paris, France, covers the discussion of a variety of clinical and related problems by eminent French clinicians. The character and scope of these lectures varies from the empirical to the philosophical, as is illustrated by the following titles: the principal forms of onset and diagnosis of pulmonary tuberculosis in the child; pneumothorax in various clinical types of pulmonary tuberculosis; the pseudolithiasis form of carcinoma of the ampulla of Vater; a new technique for the treatment of lung abscess; dissociated symptoms of hypothyroidism in the child; the treatment of arterial obstruction in the extremities; acute primary infectious purpura; the mean arterial pressure and its importance; the danger of simple explanations in biology and medicine; a case of malignant granulomatosis with a mediastinal syndrome; periarteritis nodosum; clinical and anatomic studies of disseminated sclerosis; the general and therapeutic principles of bacteriophage; hyperpyrexia in nurslings; diaphragmatic hernia; some clinical considerations of the phrenic nerve; spirochetal meningitis; the onset of acquired characteristics. The character of the subjects presented by such representative authors offers a good index of French thought in clinical medicine and should therefore interest the general reader in medicine. This volume, however, is of little value as a general reference work on the various subjects discussed because of the lack of references to the international literature and the point of view, which is limited to the French school.

Recent Advances in Ophthalmology. By Sir Stewart Duke Elder, M.A., D.Sc., Ph.D., Ophthalmic Surgeon and Lecturer in Ophthalmology, St. George's Hospital, London. Third edition. Cloth. Price \$4. Pp 434 with 153 illustrations. Philadelphia. P. Blakiston's Son & Company 1934.

In the present edition the author follows the general outline of the previous work but omits the first four chapters of the second edition on the nature of light, physiologic optics, embryology and methods of diagnosis. He has divided his previous chapter on physiology into separate and more comprehensive ones on vascular circulation, intra-ocular fluids, intra-ocular pressure, the vitreous body and the effect of drugs on the eye, bringing these subjects down to date. The last mentioned chapter is an excellent review of the action of the drugs commonly used in study and therapy in ophthalmology. The second edition was chiefly concerned with glaucoma, cataract and neurology. In this edition the latter is omitted and the first two subjects are enlarged on. In the second part, on diseases of the eye, the author reviews intra-ocular infections, ocular pigment and intra-ocular tumors, disease of the conjunctiva,

cornea and retina, and sympathetic ophthalmia. In discussing sympathetic ophthalmitis he mentions but takes little stock in Meller's contention that the disease is due to the tubercle bacillus. The chapter on retinal detachment is especially good in that it reviews the best work on this subject, gives the technique of the various operations accompanied by the author's own illustrations, and compares the results of the various methods. The discussion of cataract has been enlarged to contain newer knowledge of the metabolism and chemistry of the lens, as well as the electrodiaphane method for extraction introduced by Lacarrere. He also gives Sinclair's tables showing the visual results and complications in a series of 257 intracapsular extractions. The book is well written and illustrated; is a handy reference volume, and may be highly recommended for the student and practitioner.

A Text Book of Pharmacology and Therapeutics or the Action of Drugs in Health and Disease. By Arthur R. Cushny. Tenth edition revised by C. W. Edmunds, A.B., M.D., Professor of Materia Medica and Therapeutics in the University of Michigan, Ann Arbor, Mich., and J. A. Gunn, M.A., M.D., D.Sc., Professor of Pharmacology in the University of Oxford, Oxford, England. Cloth. Price \$6.50. Pp 786 with 75 illustrations. Philadelphia. Lea & Febiger 1934.

This textbook has again been revised by the same pharmacologists who made the first revision following Dr. Cushny's death. They pay tribute to the original author with a biographic sketch, which replaces his preface to the eighth edition. The present edition brings the text into accord with the British Pharmacopoeia of 1932, just as the ninth edition complied with the Pharmacopoeia of the United States, tenth revision. This procedure results in the text being of use to both English and American students. There is a new section dealing with the liver and stomach preparations used in the treatment of primary anemias. The section on vitamins is elaborated. Carotene is included in the discussion of vitamin A and the division of vitamin B into B₁ and B₂ (G). There is additional material on iron and its compounds, more especially as to its administration. The section on bismuth is extended to include further material on its use in syphilis. There is a new section under hypnotics, which deals with the older and the newer barbiturates. The subject of digitals has been revised in the light of the latest developments in its chemistry. The paragraphs on therapeutic uses immediately follow those on pharmacologic action instead of the lists of preparations being interposed as in the previous editions. There are over forty additional pages and two additional illustrations. The book is an excellent, modern textbook and reference work on the subject of pharmacology and therapeutics.

Opuscula selecta Neerlandicorum de arte medica. Fasciculus duodecimus quem curatores miscellaneorum quae vocantur Nederlandsch Tijdschrift voor Geneeskunde collegium et ediderunt. Amstelodami Sumptibus Societatis Varli auctores de symphysiotomia. Cloth. Pp 383 with illustrations. Amsterdam 1934.

This volume reprints in Dutch thirteen articles by Dutch physicians on symphysiotomy, published originally between 1771 and 1831. There is an introduction of thirty-two pages, and occasional comments appear by Dr. F. M. G. de Feyfer, who has made a special study of symphysiotomy in Holland up to 1840. Some of the articles are illustrated and there are five portraits. The book will be of great interest to students of the history of obstetrics.

The Hospital Yearbook. A Reference Book on Planning Equipment Administration and Purchasing. Thirteenth edition. Cloth. Price \$2.50. Pp 543. Chicago. The Modern Hospital Publishing Company, Inc. 1934.

The planning and administration of a modern hospital involve more details than any one man can master alone; be he physician, architect, trustee or superintendent. The Hospital Yearbook presents a collection of information representing the contributions of a score or more of experienced hospital executives, architects and consultants. The first 200 pages consist mainly of concentrated check lists covering every conceivable detail in planning for ward patients and private patients, surgical facilities for the general hospital, the outpatient department, the maternity, children's, tuberculosis and psychopathic departments for the general hospital, contagious wards for the general hospital, laboratories, x-ray department, physical therapy facilities, hospital laundries, hospital kitchens, and the nurses' home. It is not assumed that any hospital

would include in its plans everything that is suggested. These lists are indispensable in the selection of proper equipment, devices, supplies, materials and layout. Following the planning section are articles on small hospitals, engineering, economics, contracting, modernizing, cost analysis, fire protection, air conditioning, equipment purchasing and supply lists. The administration section presents model articles of incorporation and by-laws, check lists for trustees, duties of the superintendent, major department heads and repair department. These are followed by condensed articles by qualified writers on noise, accidents, publicity, collections, accounting, costs, depreciation, insurance and numerous similar topics of everyday concern to the superintendent. The book is regarded as a valuable supplement to any textbook on hospital management and is a commendable start toward a compendium of standard reliable hospital information.

Endogene Faktoren in der Tumorgenese und der heutige Stand der Versuche einer biologischen Therapie. Von Professor Dr. G. Fichera, direttore generale dell'Istituto nazionale Vittorio Emanuele III per lo studio e la cura del cancro, Milano. Autorisierte Übersetzung aus dem italienischen Paper. Price 7.50 marks. Pp. 83 with 105 illustrations. Berlin: Julius Springer, 1934.

The basis of this monograph is the possibility that extracts of certain organs, particularly the spleen, lymph nodes and marrow, may be of benefit in the treatment of malignant tumors. The author believes that the clinical trial of such extracts is desirable. The experimental and other data on which the method is founded are presented.

Medicolegal

Workmen's Compensation Acts Alleged Refusal of Employee to Submit to Medical Treatment.—In the course of his employment, on December 23, Hail ran a file in his hand. A clerk of the employer, who had charge of the employer's first aid station, washed the wound, applied certain preparations, and rendered "medical attention" to the employee daily for the succeeding three days. Until January 2, the workman's wife bathed his hand every evening in hot water in which she put some sort of antiseptic. The hand seemed to be improving and, according to lay testimony, was healed from the outside. On January 2, however, there was a swelling and the workman went to a physician. On January 4, a fever developed and he was taken to a hospital, where he died January 7 from septicemia. His widow was awarded compensation by the workmen's compensation commission. The employer then appealed to the St. Louis circuit court, contending that the workman had unreasonably refused medical treatment. To sustain that contention, he relied on the testimony of the clerk in charge of the plant's first aid station and of the plant foreman that they had suggested to the workman on several occasions that he go to a physician, but that on the workman's assuring them that he did not believe the injury was serious enough to warrant that they refrained from insisting that he do so and at no time named any particular physician for him to see. Two medical witnesses, one called by the plaintiff and the other by the defendant, testified, in effect, that even if the workman had been treated by a physician from the inception of his injury, septicemia might still have developed. The court affirmed the award of the commission and the defendant appealed to the St. Louis court of appeals.

It cannot be said as a matter of law, said the court, that under the facts of this case the workman unreasonably refused to submit to medical treatment. It does not conclusively appear that he refused at all. While the defendant's witnesses testified that the workman refused to go to a physician, though repeatedly told to do so, they further testified that they merely suggested that he go to a physician or advised that he ought to do so. A mere negligent failure on the part of the workman to obtain or accept medical treatment, though advised or urged to do so, does not bar a recovery of compensation. To bar a recovery, an unreasonable refusal to submit to medical treatment must be shown and the burden of proving that refusal is on the employer. The court held that the commission was

warranted in holding that the employer had failed to offer the required proof. The award of compensation was accordingly affirmed.—*Hail v. Champion Shoe Machinery Co. (Mo.)*, 71 S. W. (2d) 146.

Malpractice Negligent Treatment of Fracture.—The plaintiff sustained a simple comminuted fracture of the middle third of his right femur. The defendant-physician, apparently without attempting to reduce the fracture by nonoperative procedures, made a 10 inch incision on the right thigh and attempted to place the broken ends of the bone in juxtaposition. Thereafter infection developed and it became necessary to amputate the leg just below the hip. The plaintiff sued the defendant for malpractice and obtained judgment in the trial court, from which the defendant appealed to the Supreme Court of Appeals of West Virginia.

The plaintiff contended that it was the duty of the defendant to follow a method of treatment established and approved by physicians and surgeons generally in the same community, or similar communities, and that the defendant did not do so. In *Broxton v. Hoffman*, 86 W. Va. 468, 103 S. E. 484, it was held, said the court, that if there are two or more approved methods of treatment of an injury a surgeon may adopt the one which, in his honest opinion, will be more efficacious and appropriate under all the circumstances, and in such case he is not liable for any injury resulting from an error in his judgment, if there is one. He is not bound at his peril to adopt the best method. In the present case the experts generally agreed that the injury could have been properly treated by the "closed" or nonoperative method. The trial court instructed the jury that it was the duty of a physician to adopt in the treatment of a case the method established and approved by physicians and surgeons generally in the community in which he performs the operation or gives the treatment and that, if they believed from the evidence that the defendant did not adopt an approved and established method of treatment of a fractured leg such as the plaintiff was suffering from at the time the treatment was administered, or if they believed from the evidence that the defendant was negligent or careless in the application of the treatment of the injury and did not use the degree of care employed by physicians and surgeons generally in the treatment as was used in the community in which he performed the operation or treatment at the time thereof, then their verdict should be for the plaintiff. This instruction, said the Supreme Court, correctly stated the law.

The fact that it became necessary, continued the court, to amputate the patient's leg did not of itself establish negligence, but it was a circumstance which the jury had the right to take into consideration in determining whether the defendant was guilty of negligence. Furthermore, according to the evidence, a roentgenogram should have been taken immediately following the operation to ascertain whether the bone was in place and without angulation. This was not done. According to the plaintiff's testimony, the defendant had neglected him for as much as five days at one time and eight days at another, during all of which time the plaintiff was undergoing much agony. While the defendant denied such neglect, the plaintiff was corroborated by another patient located in close proximity to him, and by one of the nurses. After reviewing the entire record, the Supreme Court was of the opinion that the defendant received a fair and impartial trial and that the record disclosed no reversible error. The judgment of the trial court, therefore, was affirmed.—*Marvell v. Howell (W. Va.)*, 174 S. E. 553.

Society Proceedings

COMING MEETINGS

American Orthopsychiatric Association, New York, Feb. 21-23. Miss Mary A. Clarke, 50 West 50th Street, New York, Secretary.
Annual Congress on Medical Education and Licensure, Chicago, Feb. 18-19. Dr. William D. Cutter, 535 North Dearborn Street, Chicago, Secretary.
Pacific Coast Surgical Association, Santa Barbara, Calif., Feb. 21-23. Dr. Edgar L. Gilcrest, 384 Post Street, San Francisco, Secretary.
Southeastern Surgical Congress, Jacksonville, Fla., March 11-13. Dr. Benjamin T. Beasley, 478 Peachtree Street, N.E., Atlanta, Ga., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk () are abstracted below.

American Journal of Anatomy, Philadelphia

55: 343 528 (Nov 15) 1934

- Some Features of Cleavage in Living Egg of the Rat Elizabeth MacDonald and J A Long San Francisco—p 343
Anterior Hypophysis of Rabbit During Estrus and Pseudopregnancy J M Wolfe Doris Phelps and R Cleveland Nashville Tenn—p 363
New Formation of Arteriovenous Anastomoses in Rabbit's Ear E R Clark and Eleanor Linton Clark Philadelphia—p 407
Genesis of Fossa of Allen and Associated Structures A W Meyer San Francisco—p 469
Incidence of Patent Foramen Ovale Cordis in Adult American Whites and American Negroes G A Seib St Louis—p 511

American Journal of Public Health, New York

24: 1197 1284 (Dec) 1934

- Previous History of Poliomyelitis in California J D Dunshee and I M Stevens San Francisco—p 1197
Poliomyelitis, 1934 J L Pomeroy and G H Roth Los Angeles—p 1201
Epidemiology of Poliomyelitis in California 1934 J P Leake E T Cedar, W P Dearing and A G Gilliam Washington D C, and H D Chope San Francisco—p 1204
The 1934 Epidemic of Poliomyelitis in Los Angeles Preliminary Report on Pathologic Changes in the Nervous System R Van Wart C Courville and E M Hall, Los Angeles—p 1207
Clinical Features of Poliomyelitis in Los Angeles A G Bower R W Neals Mary Bigler J Ewing and V Hauser Los Angeles—p 1210
The 1934 Epidemic of Poliomyelitis in Southern California G M Stevens Los Angeles—p 1213
*Use of Serum and Routine and Experimental Laboratory Findings in the 1934 Poliomyelitis Epidemic J F Kessel A S Hoyt and R T Fisk, Los Angeles—p 1215
Orthopedic Aspect of the Los Angeles County 1934 Poliomyelitis Epidemic T M Hart and J V Luck, Los Angeles—p 1224
Poliomyelitis in San Francisco E B Shaw and H E Thelander San Francisco—p 1229
Western Public Health Problems. J L Pomeroy Los Angeles—p 1234
Secondary Cases of Certain Communicable Diseases Among Nonimmune Family Contacts F L Kelly and Eleanor Reite Berkeley Calif—p 1240
Silicosis Study of One Hundred and Six Pottery Workers. P A Quarantane Los Angeles—p 1244
Salmon Inspection R W Clough and E D Clark Seattle—p 1252

The Los Angeles Poliomyelitis Epidemic—Kessel and his associates state that the mortality rate of the 1934 poliomyelitis epidemic in Los Angeles has been exceptionally low and the amount of residual paralysis less than usual. The proportion of adults infected has been higher than is common. An exceptionally high rate of communicability has been noted. This was especially apparent among hospital employees in the communicable disease unit of the Los Angeles County Hospital of whom 119 per cent developed poliomyelitis. Certain preliminary observations from the laboratory during this epidemic are as follows: Employees receiving convalescent pooled and normal pooled poliomyelitis serum as a prophylactic measure demonstrated no less degree of susceptibility than employees working under similar conditions who received no serum. There is slight evidence that those receiving prophylactic serum developed less severe symptoms than those who received no serum. Convalescent pooled serum was no more effective when given therapeutically than normal pooled serum. A small proportion of the patients reported serum reactions, ranging from a mild to a severe type of serum sickness. A high proportion of those who demonstrated positive serum symptoms responded to skin sensitivity tests with human serum. Spinal cell counts of poliomyelitis cases demonstrated that 27 per cent showed no white cells, 38 per cent from 1 to 9 cells and 35 per cent 10 or more cells. Of those showing more than 10 cells, 50 per

cent gave a positive colloidal benzoin reaction. Attempts to inoculate monkeys with virus from eleven necropsy cases have given positive results in five. The virus appears to possess an antigenic relationship to the M V strain, since monkeys that recovered from inoculation with the California strain are resistant to subsequent inoculation with the M V strain.

American Journal of Surgery, New York

20: 415 612 (Dec) 1934

- Studies on Thyroid Disorders. VII. Correct and Incorrect Use of Iodine in Treatment of Goiter E Coetsch Brooklyn—p 417
Upper Urinary Tract During Normal Pregnancy J S Lewis Jr and E C Baker Youngstown, Ohio—p 431
*Danger of Sudden Deflation of Acutely Distended Bowel in Late Low Intestinal Obstruction R Elman St Louis—p 438
*Gastric Acidity in Carcinoma of Stomach M W Comfort Rochester Minn and Frances R Vanzant Minneapolis—p 447
The Iodoideikon Liver Function Test as an Index of Postoperative Morbidity in Cholecystectomy C W Cutler Jr, New York—p 457
Unusual Complication with a Levine Tube P W Greeley Winnetka Ill—p 466
Subphrenic (Subdiaphragmatic) Abscess L M Bogart Flint Mich—p 467
Infusion Reactions with Especial Reference to Speed Shock A H Milbert New York—p 479
Bacterial Invasion of Blood Stream R Ottenberg New York—p 486
Surgical Conditions of Knee Joint M S Henderson Rochester Minn—p 499
*Air Cushion Reduction of Incomplete Vertebral Fracture Dislocations Associated with Spinal Cord Injuries B Stooly New York—p 513
Evipal Sodium Short Intravenous Anesthesia E M Livingston S Emy and H Lieber New York—p 516
Clinical Results from Use of New and Superior Antiseptic Solution W L Secor Kerrville-on the Guadalupe Texas—p 522
Ideals in Rhinoplastic Surgery W W Carter New York—p 524
Grafts and Transplants F Beekman New York—p 528

Danger of Sudden Deflation of Acutely Distended Intestine—Elman made a few clinical and experimental observations which suggest that serious symptoms and death may be caused by sudden decrease of the high intra-intestinal pressure present in the distended intestine in certain late cases of low intestinal obstruction. That the unfavorable result is directly connected with the coincident release of the intra-intestinal pressure seems to be suggested from the evidence. The lethal outcome that may occur after surgical deflation of a tense obstructed intestine must be due either to the operation itself (anesthesia, surgical shock) or to some untoward result of the procedure employed during the operation. The idea of Wilkie's that death is a circulatory one due to extensive loss of blood and fluid into the paralyzed dilated splanchnic capillaries is not supported by the clinical symptoms of these patients or by their failure to respond even when large amounts of blood and fluid are given. If one assumes that the fall of intra-intestinal pressure may actually be the cause of death, it is easy to explain the train of events on a mechanical basis. In a distended obstructed intestine, circulatory changes in the wall begin soon and in a few days may become quite marked and in fact lead to localized patches of gangrene showing through and often involving the muscularis of the wall opposite the mesentery where the circulation is the poorest. Even in the absence of visible gangrene there is ample evidence of edema, swelling and foci of necrosis and even actual loss of the mucosa in fatal cases examined at necropsy. The normal intestinal mucosa is a rather efficient barrier against the entrance of the many poisonous fecal elements that swarm in abundance in perfectly normal contents of the lower intestine. This barrier depends on the selective action of living intestinal epithelium. When these epithelial cells become damaged this power must be impaired and poisons and bacteria may traverse the barrier from the intestinal lumen into the circulation. It is not the mere presence of damaged mucosa that is important. Post-operative toxemia is probably due to the fact that, while intra-intestinal pressure is high enough to interfere with the blood flow through the intestinal wall, an efficient barrier is still present between the fecal content and the circulation, provided, that is that the pressure is not great enough to force passage through the entire intestinal wall into the peritoneal cavity. According to this idea, then, the intestinal distention for a time at least acts as a protection against absorption of toxins or bacteria. Now, whenever the intra-intestinal pressure falls

sufficiently, the blood flow through the intestinal wall begins again and there is nothing now to prevent intestinal toxins and bacteria from entering the dilated capillaries. The failure to demonstrate toxins or bacteria in the blood of patients or animals sick or dying of low intestinal obstruction does not necessarily invalidate the theory. This conception fits in with the unpredictable behavior of these cases clinically and experimentally. The element of intra-intestinal pressure in preventing or promoting a toxemia in late low intestinal obstruction by its effect on the barriers is one that merits greater study and consideration.

Gastric Acidity in Carcinoma of Stomach—Comfort and Vanzant studied the records of 619 men and 186 women with carcinoma of the stomach, in whom the nature of the disease was confirmed at operation or by subsequent observation and the results of gastric analysis were available. In cases of carcinoma of the stomach, the incidence of achlorhydria was about three times the normal and the mean free acidity was lowered about 14 points in men and 8 in women. Curiously, carcinoma seems to injure the acid-secreting mechanism of men more than it injures that of women. The range of acidity for men with carcinoma of the stomach was found to be from 0 to 90 units, which is only 10 points short of the range for normal men. On comparing percentage distribution curves of acidity of normal persons and of patients with carcinoma of the stomach it was seen that the difference comes in the upper part of the range beyond the point marking 20 units. In the group of patients with carcinoma of the stomach who had free acid, the total acidity was but slightly lower than normal. In this group the combined free acidity was slightly above normal. In the achlorhydric group the total acidity was slightly above normal. The incidence of achlorhydria increased with age among persons with carcinoma of the stomach just as it does among normal persons. The only difference was that the actual percentages at the different ages were greater. Among men with carcinoma of the stomach there was the normal falling off in free acidity with age but the curve was different from that of normal men. Gastric acidity was not influenced markedly by the degree of anemia, loss of weight, situation of the growth or the volume of gastric contents. Marked differences in gastric acidity were noted when the cases of carcinoma of the stomach were divided into three groups, according as they had either an ulcer-like, a pseudo-ulcer or a nonulcer type of history. In the ulcer-like group the incidence of achlorhydria and the range of free acidity were practically normal and mean free acidity was only 5 or 10 units below normal. The two distribution curves were almost identical. In the nonulcer group the incidence of achlorhydria was about four times normal. The range of free acidity was shortened by about 40 units, and mean free acidity was lowered by 20 units in the case of men and by 10 units in the case of women. In the pseudo-ulcer group the distribution curve representing acidity lay between the other two curves but somewhat nearer that of the group in which the history was not that of ulcer. The data suggest that in the nonulcer group the carcinoma often develops in an anacid stomach, and that in the ulcer-like group the lesion begins in a normally acid stomach.

Method for Reduction of Vertebral Fracture Dislocations—Stokey presents a method for the reduction of incomplete fracture dislocations that may be employed immediately after the injury, can be maintained as long as may be desired, and is available in any hospital having an air mattress. Reduction of the dislocation is accomplished without manipulation and usually no special skill is required. With slight modifications the principle of the method may be used for transporting patients with acute spinal cord injuries by substituting a stretcher for the bed and using an air mattress. The technique used is as follows: A fracture board is placed on the springs in the usual manner. The foot end of the bed is placed on low blocks elevated slightly in order to raise the relative position of the patient's head to his trunk. In order to have the head easily accessible, the foot end of the bed is made the head of the bed. Two ordinary mattresses are placed over the fracture board. A blanket is then rolled and placed on the ordinary mattresses at the level of the shoulders for fracture dislocations of the cervical vertebrae or at whatever level may be indicated

for fractures of other regions of the spine. An air mattress preferably 8 inches thick, is then placed on the bed over the blanket roll and a strip of adhesive tape, 8 inches wide if the fracture is in the cervical region or from 12 to 14 inches wide if the fracture is in the thoracic or the lumbar region, is applied to the mattress beginning at the line of the blanket roll. The mattress is covered with a soft woolen blanket or a sheet and the patient is placed on the bed. The adhesive strip is then drawn as tight as possible, as much force being used as is necessary to obtain the proper degree of angulation of the air mattress. It is then fastened to the bottom of the foot piece of the bed either directly or to a movable bar attached to the foot end a ratchet being used to tighten as needed. The air mattress must not leak and must be kept pumped up, and the adhesive strip must be tight at all times. A pillow is then rolled and placed beneath the patient's knees so as to flex the lower extremities slightly. A small folded blanket is placed beneath the calf muscles, reaching to within 4 inches of the insertion of the achilles tendon. The heels are thus kept off the bed by resting the calves on a wide surface and pressure sores of the heels are thus avoided. Any abnormal position of this sort is naturally uncomfortable and the author has found it advisable to relieve the patient's discomfort during the first few days by medication. If each of the details is carefully observed he believes that the foregoing method will be found satisfactory for the reduction of incomplete vertebral fracture dislocations, especially in the cervical region, and for the reduction of compression fractures of the whole spine.

Archives of Dermatology and Syphilology, Chicago

30 761 916 (Dec.) 1934

- The Roentgen Unit in Dermatology G M MacKee and A C Cipollaro New York—p 761
- Lupus Erythematosus Disseminatus Acutus Haemorrhagicus W T Garfield C W Steele and J D Houghton Boston—p 772
- *Origin and Nature of Pigmented Nevi (Schwannomas) S W Becker Chicago—p 779
- Granuloma Annulare Report of Unusual Case F H Grauer Ann Arbor Mich—p 785
- Lichen Nitidus Report of Generalized Case M S Wien and Minnie Oboler Perlstein Chicago—p 790
- Superficial Intra Oral Application of Roentgen Rays L Hollander and A Fisher Pittsburgh—p 793
- *Necrobiosis Lipoidica Diabeticorum E P Zeisler and M R Caro, Chicago—p 796
- *Hinton Test and Lumbar Puncture in Treated Primary and Secondary Syphilis W A Hinton Boston—p 813
- *Common Warts Effective Treatment H Sutherland Campbell Los Angeles—p 821
- Lymphogranuloma Inguinale I. Preservation of Frei Antigen by Drying Its Concentration in Fresh and in Dried Pus A W Grace with technical assistance of Florence H Suskind New York.—p 823
- Esthiomene Late Manifestation of Lymphopathia Venerea (Lymphogranulomatosis Inguinalis) M Dorne and S J Zakon, Chicago—p 831
- *Postencephalic Trophic Ulcer S S Greenbaum and B J Alpers Philadelphia—p 837
- Dermatomyiasis and the Soldier D J Wilson Omaha—p 841
- Use of Nitrites for Relief of Pruritus M Prinzmetal Boston—p 843
- High Pathogenicity of Recently Isolated Strain of *Spirochaeta Pallida*. C K Hu New York.—p 847

Origin and Nature of Pigmented Nevi—Becker states that the examination of several hundred pigmented nevi by modern histologic methods showed that they consisted of one or two types or a combination of the two. The first is the strictly cellular type, which results from the multiplication of the clear cells in the epidermis with or without penetration into the dermis, the second is the nerve type, which is deeper and the structures of which often simulate those of tactile corpuscles. The use of the term "schwannoma," as suggested by Masson, is not illogical, although more work must be done before the origin of clear cells and nevi in the sheath of Schwann can be proved. The terms nevus and nevoid are ambiguous and could be replaced by the term prenatal without losing any of their significance.

Lipoid Diabetic Necrobiosis—Zeisler and Caro report two cases of lipoid diabetic necrobiosis (Urbach-Oppenheim), with postmortem observations in one case. Lipoid diabetic necrobiosis is a rare disease of the lipoid and carbohydrate metabolism, characterized by yellow to buff-colored scleroderma-like plaques on the lower extremities. The histologic changes

are pathognomonic and consist primarily of vasculitis with perivascular lymphocytic infiltration and extensive necrobiotic areas in the corium containing swollen collagen fibers, which are infiltrated by droplets of lipoids of undetermined nature. The pathogenesis of the disease is explained by a deposition or imbibition in the necrobiotic intercellular connective tissue of the excess lipoids present in the blood, following changes in the cutaneous blood vessels caused by the diabetes. The lesions must be differentiated from xanthoma, amyloidosis, scleroderma and similar dermatoses. The disease is chronic and is resistant to treatment with insulin and to diets low in fat.

Hinton Test and Lumbar Puncture in Syphilis—Hinton made a study of 361 consecutive patients with primary and secondary syphilis to ascertain what effect the use of the Hinton blood test would have on the number of examinations of spinal fluid that are desirable as aids in determining the persistence of the infection within the first two years of the disease. In each case the diagnosis of syphilis was made on a combination of definite clinical and laboratory criteria. Seventy per cent of the cases of primary syphilis gave positive results in a dark field examination and all cases of secondary syphilis showed a positive reaction of the blood with a rash or other unmistakable signs of the secondary stage. Of the 361 patients, 153 were under observation and treatment for more than twelve months and had blood tests between the twelfth and eighteenth months. Of the remaining 208 patients, sixteen in the primary stage never had a positive reaction of the blood or later clinical signs of the disease. 182 patients were under observation or treatment for less than a year, and ten of those observed and treated for more than twelve months had no blood tests between the twelfth and eighteenth months. The observations of the 153 cases have pointed out that, with the aid of an unusually sensitive blood test for syphilis, lumbar punctures are not necessary during the first two years of the disease for the purpose of determining the persistence of the infection. That the infection may persist, in spite of even a negative reaction to the Hinton test has been indicated by serologic relapses in twelve cases. In none of six of these cases in which lumbar puncture was done did the examination of the spinal fluid help more than the Hinton test in determining this persistence.

Treatment for Common Warts—Sutherland-Campbell first used the following procedure on a patient who was given a maximum of roentgen and radium therapy for warts that involved the finger-tips of both hands, without effect. With a fine spark the verrucous surfaces were seared lightly. The patient returned at weekly intervals and the procedure was repeated. Involution and desquamation of the lesions occurred within six weeks. At this time the author attributed the reaction to (1) a result of the combined action of the treatment with rays of short wavelength and the superficial electrodesiccation or (2) spontaneous healing. Use of the procedure for twelve months has demonstrated to him that it is the method of choice and is the solution of what can be a vexing problem. The degree of pain experienced during treatment, except in rare instances is negligible and tolerated easily. In only one case has it been necessary for the author to use procaine hydrochloride. The method is superior to surgical removal or electrodesiccation proper. The method may be termed superficial fractional desiccation. In employing it the surface of the wart is cleansed. A moderate spark is used commencing inside the margin of the corneus collaret, the border of the wart is circled, and then only the surface of the wart proper is seared and carbonized. The procedure is repeated at biweekly intervals. There have been no recurrences following five or six treatments, which is the number given ordinarily. Only one patient with plantar warts has been subjected to this form of therapy, with the usual good result.

Postencephalitic Trophic Ulcer—Greenbaum and Alpers believe their case to be the first reported instance in America of trophic ulceration of the skin occurring during the chronic stages of epidemic encephalitis. Although the condition is benign it is diagnostically important. It is generally believed that trophic ulcers are the result of two factors—trauma, usually

in the form of pressure, and degenerative changes in the sensory and nutrient fibrillae of the affected nerves. The latter factor is, of course, essential and occurs in connection with a number of diseases of the central and peripheral nervous system, but trauma (mechanical or infectious, or both) is of undoubted etiologic importance. All the ulcers reported in the German literature occurred in practically the same location—the nasolabial groove. Itching at the site of the ulcer was a usual premonitory and accompanying symptom. The first case was reported by Hoffmann in 1926. In the same year Lammertman reported a case, in 1929 Petzal reported the third, and in the same year Schlitter reported the fourth case.

Archives of Otolaryngology, Chicago

20:765-884 (Dec.) 1934

- Agranulocytosis (Malignant Neutropenia) R. F. Ridpath, Philadelphia —p. 765
- Further Research on Experimental and Clinical Sinusitis O. Larsell and R. A. Fenton Portland Ore.—p. 782
- *Prenatal Medication as Possible Etiologic Factor of Deafness in the New Born H. M. Taylor, Jacksonville Fla.—p. 790
- Incidence of Allergy in Rhinologic Practice H. L. Baum Denver —p. 804
- *Sinus Headache Differentiated from Headaches of Other Origin C. C. Fox Philadelphia —p. 813
- Immunization of Upper Respiratory Tract. T. E. Walsh and P. R. Cannon Chicago —p. 820
- Peritonsillar Spaces Anatomic Study G. B. Wood, Philadelphia —p. 837
- Roentgenologic Examination of Maxillary Sinus Before and After Operation E. King Cincinnati —p. 842
- Sequels of Scarlet Fever Involving Temporal Bones, Paranasal Sinuses, Meninges and Lateral and Cavernous Sinuses, with New Bone Formation in Jugular Bulb A. J. Cone and D. Wolff, St. Louis —p. 849
- Transphenoidal Injection of Iodized Poppy Seed Oil into Hypophyseal Cyst Report of Case F. H. Linthicum Los Angeles —p. 861

Prenatal Medication as the Possible Etiology of Deafness—Taylor suggests that perhaps the reason why the otologist has practically ignored the subject of prenatal medication as a possible etiologic factor of deafness in the newborn is that a child must be $2\frac{1}{2}$ or 3 years old before a diagnosis of nerve deafness can be made. By that time the prenatal history has been dismissed. The history which the otologist usually endeavors to get consists principally of whether there has been a family history of deafness, consanguinity, hereditary syphilis or meningitis, and with these details the subject is generally closed. To some, however, the history of the drugs given the mother during pregnancy is of as much importance as whether the patient had a great-uncle or a second cousin who was deaf. If it were possible to ascertain the incidence of nerve deafness among the children registered in schools for the deaf in the United States and, by questioning the mothers, to gather information regarding their intake during pregnancy of drugs which may produce nerve deafness, the results might constitute a dramatic incident in the history of otology. The author states that certain drugs have a predilection for the auditory nerve. Idiosyncrasy for drugs may be an important factor in causing nerve deafness. Quinine takes precedence among the drugs causing nerve deafness and is frequently used during the term of pregnancy. Evidence has been presented that certain drugs which have a predilection for the auditory nerve readily pass through the placenta when administered to the pregnant mother and may be toxic to the fetus, a possibility which the otologist has virtually ignored. Prenatal medication as a possible etiologic factor of deafness in the new-born is of sufficient importance to warrant the cooperative research of the biochemist, the histopathologist, the obstetrician and the otologist.

Sinus Headache—Fox says that in acute sinusitis there are two general types of pain—the neuralgic and a constant type, more or less localized in the region of the diseased sinus. The neuralgic type of pain is invariably present during the morning and gradually disappears before early afternoon. This pain may be followed by a sensation of fullness and pressure in the sinus. The pain begins in the sinus but may be so severe as to involve adjacent nerves. The second type of pain in acute cases is constant discomfort in the region of the sinus. It is due to involvement of the mucous membrane or bony wall of the sinus. There is usually marked stagnation of secretions and the sinus is sensitive to palpation. The pain may be a dull ache or soreness becoming at times more intense.

In chronic sinusitis the headache is more diffuse and often indefinite. Early acute maxillary sinusitis usually causes the sensation of pressure, fullness and distention in the sinus. The pain may be a dull ache or may be neuralgic. In chronic maxillary sinusitis the patient may have no pain to warn him of infection. In fact pain is often not present in chronic cases. In acute frontal sinusitis, headache is the most constant symptom. Acute ethmoid sinusitis can cause pain that is difficult to distinguish from that due to frontal sinusitis. The pain may be a dull pressure or an intense headache. Involvement of the anterior cells causes dull pain between the eyes at the root of the nose. Burning in the eyes, lacrimation and increase of pain when the eyes are used for long periods are typical. The pain is steady, without severe exacerbations. When the posterior ethmoid cells are involved there is temporal, occipital or parietal headache, which is increased by using the eyes. Pain is most often present along the first, and at times the maxillary, division of the nerve, causing pain in the face, which may be confused with that of an antral lesion or tic douloureux. In acute sphenoid sinusitis the pain may be an intense sensation of pressure deep in the head, in the posterior half of the head or behind the eyeball over the vertex, just behind the mastoid process and even in the middle ear. The pain in chronic sphenoid sinusitis is unreliable. Most often it is a feeling of pressure and fullness deep in the head and occipital region, with sometimes stiffness of the neck. Pain in the vertex or temple is frequently present.

Arch of Physical Therapy, X-Ray, Radium, Chicago

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- Fortification of Milk with Vitamin D J H Shrader Baltimore—p 709
Physical Therapy from the Standpoint of the Internist T P Sprunt Baltimore—p 719
Physical Therapy in Preventive Medicine F T Woodbury Poughkeepsie N Y—p 723
Treatment of General Paresis by Electroparalysis R H Kuhns Elgin Ill—p 725
Value of Electrocardiograph in Cardiac Disease L E Cooley Dubuque Iowa—p 729
Treatment of Hemiplegia A A Martucci S B Hadden and B McGlone, Philadelphia—p 734

Colorado Medicine, Denver

31: 425 468 (Dec.) 1934

- Acute Conditions Simulating Surgical Abdomen W H Mast Gunnison—p 428
Role of Ophthalmoscope in General Practice R W Danielson Denver—p 433

Delaware State Medical Journal, Wilmington

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- Acquired External Fecal Fistulas Involving Anterior or Lateral Abdominal Wall A P Heimick Chicago—p 247
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Florida Medical Association Journal, Jacksonville

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- Surgical Treatment of Pulmonary Tuberculosis K A Morris Jacksonville—p 189
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The Mentally Ill Citizen His Care Especially as Applied to Florida Beverley R Tucker Richmond Va—p 197

Iowa State Medical Society Journal, Des Moines

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- Some Causes of Professional Unrest R G Leland Chicago—p 603
Value of Resection of Presacral Nerve W D Abbott Des Moines—p 607
Borderline Psychoses Problem in Differential Diagnosis W Malamud Iowa City—p 610
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Promotion of Immunization by the State Department of Health J H Kinnaman, Des Moines—p 618
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Johns Hopkins Hospital Bulletin, Baltimore

55: 295 360 (Nov.) 1934

- Studies on Physiology of Parathyroid Glands VII Some Responses of Normal Human Kidneys and Blood to Intravenous Parathyroid Extract R Ellsworth and J E Howard Baltimore—p 296
Calcium and Phosphorus Studies X Effect of Variation of Calcium Phosphorus and of Vitamin D in Diet on Iron Retention in Rats D H Shelling and H W Josephs Baltimore—p 309
Id XI Effect of Prophylactic and Curative Doses of Standardized Viosterol on Human Tissues Necropsy Report on Thirteen Cases Showing No Tissue Damage D H Shelling and Deborah A Jackson Baltimore—p 314
Mechanism of Anemia in Infancy Physiologic Anemia H W Josephs Baltimore—p 335
Lead Poisoning Report of Case in Child with Extensive Peripheral Neuritis T C Goodwin Baltimore—p 347

Journal of Bacteriology, Baltimore

28 433 540 (Nov.) 1934

- Enzymes of Bacteria and Bacterial Metabolism A I Virtanen Helsinki Finland—p 447
Present Status of Problem of Sugar Fermentation C Neuberg and Maria Kobel Berlin Dahlem Germany—p 461
Some Physiologic Characteristics of Propionic Acid Bacteria E R Hutchner Madison Wis—p 473
Capsules in Young Cultures of Streptococcus Haemolyticus C A Seastone Boston—p 481
Bacteriologic Changes in Acidophilus Milk at Room and Icebox Temperatures Lenore M Kopeloff J L Etchells and N Kopeloff New York—p 489
Lactobacillus Bifidus J E Weiss and L F Rettger New Haven Conn—p 501
Pleio-Antigenicity of a Variant of Proteus X19 H Welch Hartford Conn and A K Poole New Haven Conn—p 523

Journal of Experimental Medicine, New York

60: 661 806 (Dec.) 1934

- Hemorrhages in Skin Lesions of Guinea Pigs Following Intravascular Injection of Toxins (Shwartzman Phenomenon) J Freund New York—p 661
Hemorrhages in Tuberculous Guinea Pigs at Site of Injection of Irritants Following Intravascular Injections of Injurious Substances (Shwartzman Phenomenon) J Freund New York—p 669
Comparison of Hematocytologic Constitution of Male and Female Rabbits P D Rosahn Louise Pearce and C K Hu New York—p 687
Virus Induced Mammalian Growth with Characters of Tumor (the Shope Rabbit Papilloma) J Growth on Implantation Within Favorable Hosts P Rous and J W Beard New York—p 701
Id II Experimental Alterations of Growth on Skin Morphologic Considerations Phenomena of Retrogression J W Beard and P Rous New York—p 723
Id III Further Characters of Growth General Discussion P Rous and J W Beard New York—p 741
Ultrafiltration of Virus of Poxymyelitis M Theiler and J H Bauer New York—p 767
Problem of Significance of Inclusion Bodies Found in Salivary Glands of Infants and Occurrence of Inclusion Bodies in Submaxillary Glands of Hamsters White Mice and Wild Rats (Peiping) Ann G Kuttner and S H Wang Peiping China—p 773

Journal of Immunology, Baltimore

27 515 590 (Dec.) 1934

- Absorption of Tetanus Toxin by Brain Tissue of Animals of Various Ages Agnes R Beebe New Haven Conn—p 515
*Fatal Pseudo-Anaphylaxis by Intramuscular Injection of Benzene and Related Substances P E Steiner Chicago—p 525
Experimental Studies of Puerperal Infection IV Effect of Pregnancy on Hemolytic and Agglutinative Activity of Blood Serum C C Torrance Albany N Y—p 531
Immunization Against Typhoid Fever with Heterobacterigen C Suzuki and K Sugio Formosa Japan—p 539
Comparison of Agglutinogens in Rabbits with Those in Man W C Boyd and D Feldman Boston—p 547
Formaldehyde and Serum Proteins Their Immunologic Characteristics F L Horsfall Jr Boston—p 553
Formaldehyde Hypersensitiveness Experimental Study F L Horsfall Jr Boston—p 569

Pseudo-Anaphylaxis Following Injection of Benzene
—Steiner produced fatal pseudo-anaphylactic shock in guinea-pigs and other species by repeated intramuscular injection of benzene and other species by repeated intramuscular injection of benzene and related chemicals. Death was due to bronchospasm. Similar reactions were caused by the inhalation and the intravenous injection of benzene in animals who had had no previous experience with the drug. The spasm was not relieved by epinephrine or atropine. It appeared quickly and disappeared with equal rapidity after forced ventilation of the lungs. Repeated intramuscular injections were necessary not to cause a state of true allergy, but to produce an area of inflammation from which the benzene at subsequent injections

was absorbed in sufficient amounts to produce a bronchospasm. The author suggests that the bronchospastic action of benzene shown in these experiments on animals possibly applies to human bronchi and offers an alternative explanation for these acute deaths in man. In view of these results the use of intramuscular benzene injections in the treatment of bronchial asthma, as reported recently by Kairiukstis, should proceed with caution.

Journal of Lab and Clinical Medicine, St Louis

20 227 336 (Dec) 1934

- Effects of Hyperpyrexia Induced by Physical Means on Complement Fixing Antibodies. L. G. Hadjopoulos and W. Bierman. New York —p 227
- *Mercuric Chloride Poisoning Treated by Exsanguination Transfusion Case. E. H. Hashinger and J. F. Simon, Lawrence Kan —p 231
- Nodular Granulomatous Lesions of Liver Spleen and Lymph Nodes Probably an Atypical Form of Hodgkin's Disease. D. C. Beaver and A. M. Snell. Rochester, Minn —p 236
- Allergic Phases of Arthritis. G. T. Brown. Washington D. C. —p 247
- Phosphatase in Heterotopic Bone Formation Following Transplantation of Bladder Mucosa. E. M. Regen and W. E. Wilkins. Nashville Tenn —p 250
- Menstrual Influence on Blood Morphology. Note. A. W. Rowe and Mary C. Guagerty. Boston —p 253
- *Factors Influencing Sedimentation Rate of Erythrocytes. T. H. Cherry. New York —p 257
- Lipase and Esterase in Blood Serum. Their Diagnostic Value in Pancreatic Disease. M. W. Comfort and A. E. Osterberg. Rochester Minn —p 271
- Prognosis of Coronary Thrombosis Based on Nonprotein Nitrogen in Blood. C. L. Steinberg, Rochester N. Y. —p 279
- Modified Technique for Sternal Puncture and Its Value in Hematologic Diagnosis. C. Reich, New York —p 286
- Comments and Procedure on Thick Blood Film Technic. J. Benavides. Panama Republic of Panama —p 289
- Biologic Diagnosis of Teratoma Testis. S. E. Owen. Hines Ill —p 296
- Friend's Method for Estimation of Chlorides. Note. J. E. Hearn. New York —p 302
- Determination of Urine Chlorides with Mercuric Nitrate. C. E. Holdridge and J. W. Cavett. Minneapolis —p 303
- New Procedure for Introducing Solutions Directly in Small Intestine of Experimental Animals. S. Maddock. Boston —p 304
- Simplified Technique for Colorimetric Determination of Blood Cholesterol. R. S. Fidler, Columbus Ohio —p 307
- Protein Analyses in Cerebrospinal Fluid. Comparative Study of Methods. B. S. Walker and H. J. Bakst. Boston —p 312
- Further Observations on Colloidal Carbon Flocculation Test in Spinal Fluid. P. G. Schube, Boston —p 314
- *Micromethod for Determination of Blood Nonprotein Nitrogen. H. Irving and J. C. Forbes. Richmond Va —p 316
- New Method for Determination of Blood Cell Volume. S. J. Mason, Cincinnati —p 318
- Simple Apparatus for Keeping Citrated Blood Warm During Injection. L. Heddick, Whittier, Calif —p 321

Mercuric Chloride Poisoning Treated by Exsanguination-Transfusion.—Hashinger and Simon report a case of mercuric chloride poisoning in which they employed exsanguination-transfusion. It was done for two reasons. First, as shown by Rosenbloom and others the blood and other tissue juices contain the greater part of the absorbed mercury, so that replacing of the blood will remove the poison in the largest possible quantity. Second, if the blood is replaced in sufficient quantity, the nitrogenous products retained in the body will be diluted and kept at a sublethal level until the renal epithelium can regenerate. In addition to the bleeding followed by transfusions, the patient was given a small amount of sodium thiosulphate for its reported value in neutralizing available mercury. Sodium chloride was given to combat loss of chlorides by vomiting. When the patient was seen seven months after dismissal, examination showed the urine to be entirely negative. The systolic blood pressure was 140 and the diastolic 80 and chlorides 460. Clinically the patient was well.

Sedimentation Rate of Erythrocytes.—It appears to Cherry that changes in the blood sedimentation time are caused by disturbing the fine balance between the cellular and fluid elements in the circulation. Cell volume and the variations of fibrin, euglobulin and globulin in the plasma apparently influence the change of rate. These variations from normal occur in so many pathologic states, thus influencing the settling of the erythrocytes that it is impossible to affix definitely a standard sedimentation rate to any disease. To interpret this test for diagnostic purposes, the cell volume and nitrogen partitions must be determined if it is to be of any value. The sedimentation test alone is confusing. Of two persons having the same disease one will frequently show a sedimentation rate

in the fast group and the other in the slow group. As a prognostic aid it is of slight help. A very rapid sedimentation rate does not by any means indicate a poor outlook for recovery, it indicates that toxic absorption and tissue destruction are progressing so rapidly that production of biochemical changes in the blood stream is taking place, and this causes the imbalance of the sanguineous elements. The leukocyte count or filament/nonfilament study in conjunction with the clinical picture is of much greater aid than the sedimentation rate.

Micromethod for Determination of Nonprotein Nitrogen.—The procedure that Irving and Forbes use for the determination of blood nonprotein nitrogen is essentially the same as Folin and Wu's method, except that one-fifth the amount of each solution is used and the tubes are graduated at the 10 cc instead of the 50 cc. mark. The procedure is as follows: One cc of blood filtrate is transferred to a Pyrex test tube, 150 by 15 mm, graduated at 10 cc, 0.2 cc of Folin and Wu digestion mixture is added, and digestion is carefully carried out in the usual manner. Distilled water is then added to the 10 cc. mark the solution is mixed, and 35 cc. of Koch's Nessler solution is added. A standard is prepared at the same time, using 2 cc of an ammonium sulphate solution (1 cc = 0.02 mg normal), 0.2 cc of digestion mixture is added, diluted to 10 cc, and 35 cc of Nessler solution is added. The finger tip method is essentially the same as the foregoing. Two-tenths cc of blood is measured in a special pipet and added to 3.4 cc. of distilled water in a 15 cc. centrifuge tube, the pipet being rinsed out several times with the diluting fluid then 0.2 cc of a 10 per cent solution of sodium tungstate is added, followed by 0.2 cc of two-thirds normal sulphuric acid. After mixing and standing for several minutes, the tube is centrifuged at a moderately high rate of speed, then 2 cc of the supernatant fluid is carefully digested with 0.2 cc of digestion mixture and analyzed as described. If desired, the supernatant liquid may be filtered through a small filter paper after centrifuging, but this is as a rule unnecessary.

Journal of Nutrition, Philadelphia

8: 615 754 (Dec. 10) 1934

- New Toxicant Occurring Naturally in Certain Samples of Plant Food stuffs. III. Hemoglobin Levels Observed in White Rats Which Were Fed Toxic Wheat. K. W. Franke and V. R. Potter. Brookings S. D. —p 615
- Id. IV. Effect of Proteins on Yeast Fermentation. K. W. Franke and A. L. Moxon. Brookings S. D. —p 625
- Effect of Prunes and Water Extract of Prunes on Plasma Carbon Dioxide Combining Capacity and Composition of Urine When Included in Acid Neutral and Uncontrolled Diets. E. Mrak. C. Smith. J. Fessler. H. Lambert and T. Harper. Berkeley Calif —p 633
- Human Milk Studies. VII. Vitamin D Potency as Influenced by Supplementing Diet of Mother During Pregnancy and Lactation with Cow's Milk Fortified with Concentrate of Cod Liver Oil. (Test on Rachitic Infants and Rats). D. J. Barnes. Frances Cope. Helen A. Hunscher and Icie G. Macy, Detroit —p 647
- Inorganic Salts in Nutrition. IX. Correlation Between Suppressed Growth and Development of Polycythemia Induced by Feeding a Ration Poor in Salts. Pearl P. Swanson. Ames, Iowa and A. H. Smith. New Haven, Conn. —p 659
- Derivation of Factors for Computing Gaseous Exchange and Heat Production in Metabolism of Casein by Albino Rat. M. Kriss and R. C. Miller. State College Pa. —p 669
- Effect of Vitamin A Deficiency on Concentration of Blood Lipids of Albino Rats. Margaret Elizabeth Smith. Fayetteville Ark. —p 675
- Relation Between Antirachitic Factor and Weight of Gallbladder and Contents of Chicken. W. C. Russell. M. W. Taylor and D. F. Chichester. New Brunswick N. J. —p 689
- Basal Metabolism of European Women in South India and Effect of Change of Climate on European and South Indian Women. Eleanor D. Mason. Madras India —p 695
- Assimilation of Phosphorus from Di Calcium Phosphate Chemically Pure. Tri Calcium Phosphate, Chemically Pure, Bone Di Calcium Phosphate and Cooked Bonemeal. K. V. Rottensten and L. A. Maynard. Ithaca N. Y. —p 715
- Seasonal Variation in Antirachitic Effectiveness of Sunshine. II. J. Sloan. Ithaca N. Y. —p 731

Maine Medical Journal, Portland

25 241 254 (Dec) 1934

Progressive Health Work in Public Schools. H. H. Cleveland. Portland —p 242

Medicine, Baltimore

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The Etiology of Leprosy. E. B. McKinley. Washington D. C. —p 377

New England Journal of Medicine, Boston

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- One Stage Operation for Resection of Cecum and Proximal Colon S C Harvey New Haven Conn.—p 1039
 Amebiasis in Boston G C Shattuck Boston.—p 1044
 Displacement of Liver C W McClure and H A Osgood, Boston—p 1045
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 Contribution to Technic of Fat Grafts F J Cotton Boston.—p 1051

Philippine Islands Med Association Journal, Manila

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- Local Effects of Injection of Iodized Wightiana Ethyl Esters and Wightiana Oil Round Nerve Trunks J O Nolasco Culon.—p 421
 Diagnostic Significance of Shoulder Tip Reflex Pain A Liboro and J P Celis Manila.—p 434
 Medical Ethics and the Times Need for Reform J D Castillo and C Camomot Cebu Cebu.—p 441

Virginia Medical Monthly, Richmond

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- Medicine an Art and a Science R D Bates Newtown.—p 439
 Some Arterial Disorders of the Brain Complicating General Medical Diseases A G Brown Jr Richmond.—p 442
 Treatment of Common Types of Chronic Arthritis T P Sprunt Baltimore.—p 448
 Treatment of Pneumonia with Serums and Immunogens Case Reports M C Newton Narrans.—p 456
 Classification and Etiology of Heart Disease L E Stubbs Newport News.—p 458
 Symptoms and Signs of Cardiac Failure. P F Whitaker Kinston N C.—p 461
 Calcium Ortho-Iodoxybenzoate in Treatment of Arthritis T Wheeldon Richmond.—p 465

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- The General Practitioners Interest in Rectal Diseases H B Stone Baltimore.—p 503
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 Significance of Neisserian Smears from the Prostate and Seminal Vesicles Preliminary Report W M Bowman Petersburg.—p 519
 Tumor of the Kidney with Especial Reference to Too Frequent Disregard of Its Chief Clinical Manifestation J F Geisinger, Richmond.—p 522
 *Milk Sickness Ronda Horton Hardin Banner Elk N C.—p 528
 Clinic Obstetrics Review of Fifty Two Consecutive Cases R. B. Nicholls Norfolk.—p 531
 Accidental Pneumocranium J P Madigan Washington D C.—p 536
 Skin Eruption with Codeine Case Report. M H Harris West Point.—p 537
 Purulent Pericarditis Case Report. H Davis Roanoke.—p 539

Milk Sickness—Hardin has seen this disease for the last sixteen years and has treated more than 100 cases. Alcohol seems to have an affinity for the substance causing the disease and there seems to be nothing better as an antidote than alcohol pushed to the point of intoxication. She also finds that gastric lavage duodenal drainage, hypodermoclysis of physiologic solution of sodium chloride and dextrose work extremely well. A majority of patients treated without alcohol in some form or other usually die. The custom of the mountaineers treating it with brandy and honey cannot be dismissed lightly. No difference has been found in the effect of brandy and any other type of alcohol. In man, the principal symptoms are loss of appetite, constipation, pain and stiffness in the legs, languor, fatigue, nausea and vomiting (which may be continuous), the tongue is red the breath smells of acetone, the temperature is subnormal and the blood pressure is low. There is a lump or heaviness felt in the pit of the stomach, which is not relieved by vomiting and is felt until the patient is well. Overheating or violent exercise will bring about an acute stage of the disease, as it does in animals.

West Virginia Medical Journal, Charleston

30 529 576 (Dec) 1934

- The Problem of the Cross Eyed Child. L. C. Peter Philadelphia.—p 529
 Sane Hospitalization and Treatment of the Insane J E. Offner Weston.—p 534
 Review of Etiology and Pathology of Various Cardiac Conditions. C C Fenton Morgantown.—p 539
 Collapse Therapy in Treatment of Pulmonary Tuberculosis G L. Leslie, Howell Mich.—p 543
 Syphilitic Hemiplegia Report of Case. W D Fitzhugh and P R. Fox, McComas.—p 548
 Sinusitis and Its Complications with Few Related Dental Problems Sobiesca S Hall and H V Thomas Fairmount.—p 550
 Strophanthus E Podolski Brooklyn.—p 560

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2 891 928 (Nov 17) 1934

- Some Aspects of Pain M Critchley.—p 891
 Physical Efficiency After Operations for Hernia C M Page.—p 896
 *Prolapse Syndrome A C Palmer.—p 899
 Cyclopropane Anesthesia W S Sykes.—p 901

Prolapse Syndrome—Palmer combines the operative procedures of anterior colporrhaphy, vaginal hysterectomy, reconstruction of the hernia of the pouch of Douglas, posterior colporrhaphy and perineorrhaphy for the prolapse syndrome. The operative field is prepared and the perineum is incised back to the anal margin. The nymphae are sutured to the thighs, and traction sutures are inserted in the cervix. The area of vaginal mucosa to be removed is determined (1) of the anterior mucosa, a landmark suture is inserted to mark the upper end of the new anterior vaginal wall, and (2) of the posterior vaginal mucosa landmark sutures are inserted at the site of the upper end of the new posterior vaginal wall. The redundant tissue of the anterior and posterior mucosa and the uterus is removed in one technic. In reconstructing the pelvic diaphragm, the uterine stumps and ovario-pelvic stumps are fixed on either side to the upper margin of the new lateral vaginal walls. The cut edge of the peritoneum of the uterovesical pouch are joined to the anterior landmark sutures, thus forming the upper end of the new anterior vaginal wall. The anterior vaginal wall is reconstructed. The redundant peritoneum of the hernia of the pouch of Douglas is removed and the peritoneal stumps are sutured to the posterior landmark sutures, thus forming the upper end of the new posterior vaginal wall. The posterior vaginal mucosa and the perineal body are reconstructed. The author states that the operation requires an hour to an hour and fifteen minutes for its performance, without undue difficulty in the control of unexpected oozing. There is, as a rule, no appreciable shock, and the patients do not have a stormy postoperative period. In general they are sitting up the next day, ready to do justice to their dinner. Toward the end of a week there is usually some vaginal discharge, which clears up readily with douching. The length of stay in the hospital and the convalescent period are the same as that for simple repair operations.

Indian Medical Gazette, Calcutta

69 541 600 (Oct) 1934

- Latent Malarial Infection in Monkeys R Knowles and B M Das Gupta.—p 541
 Clinical Study of Climatic Bubo and Allied Conditions R V Rajam.—p 546
 Filarial Affections of the Male Genital Tracts. P N Ray.—p 554
 Streptococcal Septicemia and Filarial Orchitis M N De and K. D Chatterjee.—p 558
 *Concentration of Quinine in Blood After Intravenous and Intramuscular Injections R N Chopra A C Roy and B M Das Gupta.—p 560
 Quinine in Therapeutics of Malaria R A Murphy.—p 566
 Early Treatment of Malaria H Williamson and S Singh.—p 568
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 Intravenous Versus Intramuscular Quinine Notes D Manson.—p 571
 *Some Observations on Combined Method of Clot Culture and Widal Reaction and on Prognostic Significance of Small Flaking or O Agglutinins in Typhoid Fever D W Soman.—p 572
 Some Observations After Splenectomy in Rabbits R K. Pal, S Prasad and H N Banerjee.—p 577

Concentration of Quinine in Blood After Intravenous and Intramuscular Injections—The experiments of Chopra and his associates on monkeys show that, if allowance is made for small variations due to the constantly changing factors in the animal organism, the concentration of quinine in the blood after administration by the oral and parenteral routes runs almost parallel. In some cases the concentration obtained within the first few hours after oral administration was definitely smaller, but the concentration soon rose to practically the level of the parenteral routes. In ordinary cases no great advantage can be claimed for any particular method. The routes selected by the clinician should therefore be what suits the patient best. The clinical condition of the patient is the best guide in deciding what route should be adopted. The oral route is undoubtedly the method of choice in the vast majority of cases. The condition of the tongue is an excellent indication of the state of the

gastric mucosa, in ordinary attacks of malarial fever the tongue is moist and slightly furred and under these circumstances quinine is absorbed very well from the intestine. If the tongue is dry, red and cracked, quinine is absorbed badly and in such cases other means should be adopted. Quinine is generally absorbed readily from the intestine, even in cases of severe malaria complicated by dysentery, quinine has been shown to be absorbed. In those cases, however, in which there is nausea and vomiting, or when the bilious vomiting of malignant tertian infection is present, it is useless to give quinine orally and the parenteral routes should be adopted, the intravenous or the intramuscular route being selected according to the requirements of the patient. As soon as the condition of the gastro-intestinal tract improves, administration by the parenteral routes should be stopped and the drug should be given orally. In view of the possible injury to the blood vessels, muscles, nerves and so on by parenteral injections, this method should not be used for routine treatment of malaria but is especially indicated in acute cases of severe type for as long as the emergency lasts.

Prognostic Significance of Small Flaking or O Agglutinins in Typhoid—Soman states that somatic agglutinins play an important part in the immunology of enteric fevers, and particularly in typhoid. By estimation of the titer during the course of the infection, at critical junctures in the clinical prognosis it is possible to forecast with considerable accuracy the chances of life. It is essential to consider the results of the O Widal test and the clot culture together from the same sample in interpreting the significance of the presence or absence of O agglutinins. Their absence in the second week, combined with the presence of the causative organism in the blood, should arouse grave suspicion as regards the immunologic response of the patient. Absence of O agglutinins in the third week of typhoid with a negative clot culture may be looked on as a natural termination of events. Small flaking or O agglutinins play an inconspicuous part in the serodiagnosis of typhoid, especially in Bombay, and therefore it appears unnecessary to make use of the O agglutination test as a routine measure, provided the combined method of clot culture and H agglutination test is done from the same sample of blood. The incidence of inoculated cases also being small, as compared with other advanced countries, there is little chance of discrepancies in the Widal test by the method of Dreyer. Even in inoculated persons suffering from typhoid it is advisable to follow this combined method of clot culture and Widal test, as then the clot culture will settle the diagnosis irrespective of O and H agglutinins.

Journal of Pathology and Bacteriology, Edinburgh

39: 551-736 (Nov.) 1934

- Further Investigations on Gravis Mitis and Intermediate Types of *Corynebacterium Diphtheriae* Type Stability D T Robinson—p 551
- Some Effects of Adrenalectomy in Male Rats S L Simpson M Dennison and V Korenchewsky—p 569
- Hemangioblastoma of the Adrenal Gland T B Menon and D R Annamalai—p 591
- *Direct Demonstration of Anticancer Bodies in Serum of Animals Immune to Homologous Tumor T Lumsden T F Macrae and E Skipper—p 595
- *Further Investigations on Bactericidal Properties of Adrenal Extracts J Gordon and J C Knox—p 609
- Complete Male Pseudohermaphroditism with Intra Abdominal Teratoma Testis R Carmichael and C Oldfield—p 617
- Renal Neoplasms in Childhood G A McCurdy—p 623
- *Interrelations of *Corynebacterium Ovis* *Corynebacterium Diphtheriae* and Certain Diphtheroid Strains Derived from Human Nasopharynx, G F Petrie and D McClean—p 635
- Carbohydrate and Nucleoprotein Fractions Isolated from *Brucella* Group Lucy E. Topping—p 665
- Investigations into Nature of Gelatin Melting Enzymes Formed by Gas Gangrene Bacteria Importance of Degree of Acidity of Medium for Action of Enzymes L E Walbum and G C. Reymann—p 669
- *Method of Raising and Maintaining Virulence of Influenza Bacilli with Some Observations on Pathogenic Properties of Virulent Strains L. Hoyle—p 681
- Histologic Studies on Variability of Tubercle Bacillus W. Pagel—p 689

Anticancer Bodies in Animals Immune to Homologous Tumor—Lumsden and his associates investigation suggests that in addition to anticancer bodies there may be other factors underlying homologous immunity. They are convinced that the formation of antimalignant cell bodies is at least an essential factor, if not the only one, in tumor immunity. In each of

forty-one immunized rats a high titer of anticancer bodies was demonstrable in the serum at some period between the third and eighth days after the last immunizing inoculation. Since these anticancer bodies are absent from the serums of control normal and tumor rats, it is impossible to resist the inference that their presence is intimately connected with the mechanism of tumor immunity. Their presence and variation in degree in rats with regressing tumors and in rats immunized against normal tissues strengthen this conclusion. The authors' view is that it is the power to produce antibodies rather than their actual presence which is the essential factor in tumor immunity. The antibodies are formed when the immune animal has need of them, for example after an implantation of Jensen rat sarcoma. An immune rat that has not been injected with Jensen rat sarcoma for a period of many weeks has a low titer of antibodies. It is probable that a similar mechanism is the basis of natural tumor immunity. When the blood of an untreated rat of a breed known to be resistant to Jensen rat sarcoma is tested, anticancer bodies are usually not demonstrable. If fragments of a Jensen rat sarcoma are injected into such a rat a tumor appears, but after growing for from five to ten days regression takes place and conjointly anticancer bodies appear in the rat's serum. The significance of the secondary waves of high and low titer is not clear. Probably they depend on several factors, among which the varying amount and frequency of the withdrawals of blood for the tests may be important. Another variable is the proportion of young translucent to more granular and resistant forms of sarcoma cells in the tissue cultures used on a particular day. If many of the young translucent sarcoma cells are present, the titer of the serums tested on that day tends to appear high, since this type of cell is especially sensitive to anticancer bodies.

Bactericidal Properties of Adrenal Extracts—Gordon and Knox report that an aqueous extract prepared from the adrenal, and especially from the medulla, shows marked bactericidal action on a number of organisms if the extract is exposed to air. Solutions of epinephrine behave in almost the same way and there can be little doubt that partially oxidized epinephrine is the chief active constituent of the bactericidal extracts. Too prolonged exposure to air of either adrenal extracts or epinephrine solutions results in a gradual and almost complete loss of bactericidal power. Inactivation of both extracts and epinephrine solutions can also be effected by the addition of blood or serum, or by slow percolation through a layer of washed permutite. The most sensitive of the organisms tested were *Corynebacterium diphtheriae* (mitis, gravis and "intermediate") and *Vibrio cholerae*. Other sensitive organisms were *Bacillus anthracis*, *Staphylococcus aureus* and *albus*, *Corynebacterium Hofmanni*, *Bacillus paratyphosus* A and B, *Friedländeri*, *enteritidis* (Gaertner), *typhosus* and *dysenteriae* (Flexner). Rather less sensitive were *Bacillus coli* and *pyocyaneus*, and still less sensitive were *Bacillus subtilis* and *prodigiosus* and the streptococci. It is possible, as suggested by Raper, that some substance of the orthoquinone type is produced in the course of the atmospheric oxidation of epinephrine and that this substance is the active bactericidal agent. Morgan and Cooper have shown that several quinones are powerfully bactericidal.

Interrelations of *Corynebacterium Ovis*, *Diphtheriae* and Diphtheroid Strains Derived from Human Nasopharynx—Petrie and McClean state that there is no relationship between the specific toxins that are present in filtrates of broth cultures of *Corynebacterium ovis* and diphtheriae. An examination of the toxin-antitoxin relations of *Corynebacterium diphtheriae* Mairs aberrant strain of *Corynebacterium diphtheriae*, the group of aberrant diphtheroid strains described by Barratt, and *Corynebacterium ovis* has shown that these strains possess characters which link them together. The strain discovered by Mair occupies a key position in the group because it has an affinity not only to the typical *Corynebacterium diphtheriae* but to *Corynebacterium ovis* and the aberrant diphtheroid strains of Barratt.

Raising the Virulence of Influenza Bacilli—According to Hoyle the virulence of many strains of influenza bacilli can be raised and maintained indefinitely by intrapleural passage in rabbits. By the injection of cultures of influenza bacilli of

raised virulence intrapleurally in rabbits a bronchopneumonia can be produced consistently, the lesion having a close resemblance to that of human influenzal pneumonia. The results of intratracheal inoculation of influenza bacilli in rabbits and guinea-pigs would suggest that it is probably not possible to produce a spreading tracheal infection in these animals, and, although occasional animals so inoculated may die of septicemia or bronchopneumonia it is probable that severe traumatic damage to the lung is essential before such a result can occur. Rabbits and guinea-pigs develop readily a condition of hemorrhagic edema of the lungs as a result of the introduction of liquids intratracheally so that great caution is necessary in interpreting the significance of pulmonary lesions consequent on such inoculations.

Journal of Tropical Medicine and Hygiene, London

37 321-336 (Nov. 1) 1934

Acute Articular Rheumatism (Maladie de Bouillaud) Is It Really a Polymicrobial Syndrome? Role of Pneumococcus as Specific Agent
Scarlatinal Rheumatism Treatment of Focal Infection by N. Farah —p. 321

Hymenolepis Nana Infection Case A. J. Noronha —p. 325

37 337-352 (Nov. 15) 1934

Outbreak of Food Poisoning in Trinidad Due to Bacteria Aertrycke in Tinned Sardines J. L. Pawan and R. Scheult —p. 337

Pathogenesis of Ascariasis R. Girges —p. 340
Acute Articular Rheumatism (Maladie de Bouillaud) Is It Really a Polymicrobial Syndrome? Role of Pneumococcus as Specific Agent
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Lancet, London

2 1145-1206 (Nov. 24) 1934

Tremor Ataxy and Spasm W. Harris —p. 1145

Individual Variation in Response to Drugs A. J. Clark —p. 1149

Surgical Anatomy of Anal Canal with Especial Reference to Anorectal Fistulas E. T. C. Milligan and C. N. Morgan —p. 1150

Retroperitoneal Hernia Account of Two Cases A. E. Porritt —p. 1156

Combined Study of Basal Metabolism and Impedance Angle in Thyrotoxicosis and Myxedema J. D. Robertson and A. T. Wilson —p. 1158

Medical Press and Circular, London

189 453-474 (Nov. 21) 1934

Treatment of Athletic Injuries R. S. Woods —p. 456

Clinical Features of Hemochromatosis (Bronze Diabetes) J. H. Sheldon —p. 461

Availability of Food R. A. McCance —p. 463

Suicide and Euthanasia F. P. Weber —p. 466

Clinical Features of Hemochromatosis—Sheldon states that the diagnosis of a typical case of hemochromatosis should not give rise to difficulties once the classic triad of enlargement of the liver, pigmentation of the skin and diabetes is recognized. There will always be latent cases in which one or more of these may be absent, and it is then that difficulties may arise. The diagnosis is most difficult in cases that merely show an enlarged liver, without either pigmentation of the skin or diabetes. In such cases one should always look for the presence of the syndrome of sexual hypoplasia and for an abnormal bluish black pigmentation round the epiglottis and larynx. In addition the Rous test should be carried out and a biopsy of the skin performed in order to see whether there is a deposit of hemosiderin in the sweat glands and corium. The presence of the latter feature may be taken as pathognomonic. If in addition to the absence of one or more of the major features these subsidiary ones are all lacking it is unlikely that the case is one of hemochromatosis. The author presents an exception to this statement in a case in which pigmentation of the skin antedated all the other symptoms by a period of years. In such a case the presence of a metallic shade in the pigmentation is suggestive and, once the characteristic nuance has been seen it gives certainty. In such cases the final diagnosis can be substantiated only by the passage of time.

South African Medical Journal, Cape Town

8 781-820 (Nov. 10) 1934

Remarks on Treatment of Syphilis F. W. F. Purcell —p. 783

Brechi Presentations B. D. Knoblauch —p. 788

Deep X-Ray Therapy J. M. Grieve Jr. —p. 789

The Public Health Aspect of Typhoid Fever C. D. Laing —p. 793

Typhus-like Fevers in the Union of South Africa W. F. Rhodes —p. 797

Gynecologie et Obstetrique, Paris

30 305-400 (Oct.) 1934

*Does Elevated Value of Gonad Stimulating Factor in Urine of Pregnant Women Always Indicate Hydatiform Mole? Reeb, Nerson and Klein —p. 305

Technic of Implantation of Ureters in Large Intestine N. Markoff —p. 316

Study of Prognosis and Treatment of Frontal Presentation A. S. oval —p. 326

Torsion of Pedicle of Cystic Tumors of Ovary B. I. Seibile —p. 352

Gonad Stimulating Factor in Urine and Hydatiform Mole—Reeb and his collaborators believe that cases already reported prove that the value of the gonad stimulating factor in the urine of pregnant women is not necessarily always increased even in the presence of a living hydatiform mole. Whether the reverse is true—that it is possible to have an increased value of the gonad stimulating factor in the urine without the presence of a mole—is the subject of their report. Two cases are reported by them. In both pregnant women the uterus was too large to correspond with the last menstrual period, there were repeated hemorrhages for from eight to ten weeks, a negative roentgenogram in one case, the absence of albumin in the urine and toxic signs but there was a highly elevated value of the gonad stimulating factor in the urine. The strong presumptive evidence of hydatiform mole and the necessity of stopping the loss of blood gave sufficient indication for evacuation of the uterus. Actually no hydatiform mole was present but histologic examination of the placentas showed an exaggerated activity of the ectodermal covering of the villi of molar character in one case and a less marked but also abnormal condition in the other. The authors believe that this exuberance of the plasmods of the Langhans cells which is not normally seen in placentas of the fourth or fifth month probably explains the elevated values of the gonad stimulating factor in the urine.

Presse Medicale, Paris

42: 1809-1876 (Nov. 17) 1934 Partial Index

Scarring Syphilids and Gangrenous Syphilids G. Milan —p. 1816

Volkmann's Syndrome Treated by Arterectomy Histologic Study of Obliterated Humoral Artery P. Mathieu, P. Padovani, R. Letulle and P. Normand —p. 1819

Progressive Ossifying Myositis F. Masselot, A. Jaubert de Beaujeu and E. Bloch —p. 1823

*Researches on Dissociation of Tubercle Bacillus A. Saenz and L. Costil —p. 1827

Solitary Pediculated Adenoma of Liver C. Lenormant, I. Bertrand and J. Patel —p. 1829

Ollier's Chondrodysplasia A. Richard, P. Dupuis, C. Reederer and R. Froyez —p. 1833

Bundle of His Its Ventricular Connections E. Geraudel —p. 1854
Some Results of Arteriography in Arterial Diseases and Tumors N. J. Contades and J. Naulleau —p. 1866

Function of Spleen Its Diagnostic Importance. P. Émile-Weil and P. Isch Wall —p. 1874

Dissociation of Tubercle Bacillus—As a result of cultural and animal experiments Saenz and Costil conclude that stocks of tubercle bacilli of mammals may be easily dissociated into two types of colonies. The S variant is non tubercle forming and causes inflammatory lesions in the guinea-pig rabbit and hen which recover when small doses are given, while the R variant with the exception of BCG which never produces lesions of generalized tuberculosis is tubercle forming and produces generalized lesions. They succeeded in transforming the R variant of the avian bacillus into S and vice versa. Glycerinized potato for example, is favorable for the slow transformation of S into R. They conclude therefore that the attenuation of virulence of strains of avian bacilli long kept in the laboratories is due to the fact that the initial variant S which always predominates in freshly isolated cultures is replaced by the variant R which is much less pathogenic and whose morphologic characteristics approach that of the bacilli of mammals. The dissociation of human strains was more laborious and it was difficult to obtain several variants. The pigmentation of the chromogenic variant was less intense than that of the avian and was observed only in the colonies of the S variant. The authors believe that their observations on dissociation indicate that all types or varieties of tubercle bacilli are derived from a single primitive stock. The elements of this common specific stock in accomplishing their evolution in one or another sensitive animal give rise to the bacillary

elements of the S variant and terminate in greater and greater predominance of the elements of the R variant. It is by reason of this adaptation that the *typhi bacillus* represented essentially by the S variant, is the most primitive and least differentiated type. The bovine type comes next. The human type on the contrary, in which the R variant predominates, is the most narrowly adapted. These facts and conclusions, they believe, throw a new light on microbiologic and clinical facts heretofore difficult to explain.

Prensa Medica Argentina, Buenos Aires

21: 2049 2098 (Oct 31) 1934

- Intestinal Amebiasis. Clinical and Parasitologic Study of Twenty Seven Hundred Cases. M. R. Castex and D. Greenway.—p. 2049
Teaching of Medicine. B. A. Houssay.—p. 2070
Conservative Surgery in Gynecology. Indications and Results. C. R. Cirlo and E. G. Murray.—p. 2078
Temporary Sterilization by Biologic Method. M. Schteingart and A. G. Peralta Ramos.—p. 2087
Acute Encephalitis with Pyramidal Symptoms and Typical Mental Confusion. Case Ending on Recovery. J. M. Macera, J. Pereyra, Kafer and B. A. Messina.—p. 2089

Temporary Sterilization by Biologic Method—Schteingart and Peralta Ramos obtained satisfactory results in 80 per cent of their cases by the administration of four subcutaneous injections of dead spermatozoa of sheep given at intervals of two days. The first injection contains thirty million dead spermatozoa, the second twice as many as the first, the third twice as many as the second, and so on in multiple proportions. Neither local nor general reactions, worthy of consideration, are observable. The injections of large doses of spermatozoa do not alter the results. When the treatment is given for the first time it produces sterilization for from six to fifteen months, but the duration of sterility becomes shorter as the treatments go on. Conception is resumed under normal conditions whether the treatment has been given one or more times.

Semana Medica, Buenos Aires

41: 1553 1660 (Nov 22) 1934 Partial Index

- Dermoid Fistulas and Cysts of Coccygeal Region. R. C. Ferrari.—p. 1553
Salivary Crises in Tabes. Case. J. C. Montanaro and J. L. Hanón.—p. 1619
*Puberal Goiters. E. B. del Castillo and J. Argonz.—p. 1625
Red Myoma in Pregnancy. Case. J. Leon and D. E. Caravias.—p. 1636
Open Articular Fractures. Treatment with Early Suture Without Drainage. T. Gioia.—p. 1642

Goiters at Puberty—Del Castillo and Argonz say that different types of goiter (even those of the type of toxic adenoma) are observed at puberty. The prognosis of hyperthyroidism is more serious at puberty than if the condition appears during the adult age. The articles reported on the functional interrelationship between the anterior lobe of the hypophysis, the gonads and the thyroid are of importance. The origin of puberal colloid goiter may be traced to a scanty content of iodine in drinking water if the patients live in the mountains and to an excess if they live on the prairies. Puberal goiter should be classified, according to the variations of the basal metabolism in the following types: (1) goiter with normal basal metabolism (colloid type); (2) goiter with increased basal metabolism (type of toxic adenoma); and (3) goiter with decreased basal metabolism (type of thyroid insufficiency without myxedema).

Archiv für Gynäkologie, Berlin

168: 321 504 (Nov 23) 1934 Partial Index

- Treatment of Eclampsia. W. Stroganoff.—p. 321
Membranous Dysmenorrhea as an Incretory Disorder. A. Pohl.—p. 326
*Glycogen in Placenta. H. Guthmann and Leonie Bohme.—p. 336
Corpus Luteum Hormone and Its Demonstration in Pure Form. E. Fels.—p. 364
*Theory and Practice of Determination of Sex. P. H. Schumacher.—p. 393
Quantity Distribution and Significance of Placental Glycogen in Various Phases of Pregnancy. B. Szendi.—p. 409

Glycogen in Placenta—Guthmann and Bohme examined surgical specimens for the glycogen content of the fetal and maternal portions of the placenta during the different months of the gestation period. They found that the glycogen content in the maternal portion decreases as the pregnancy progresses while in the fetal portion the opposite is the case. With the

exception of the blood corpuscles, particularly the leukocytes and lymphocytes, glycogen is present in all the cells of the placenta, but there are sites of predilection. In the maternal portion the decidua and the adhering portions of the uterine mucous membrane contain the largest amounts of glycogen, while in the fetal portion the glycogen is present in large quantities in the layer of Langhans. The syncytium contains little glycogen, the stroma more. In the stroma there are two different types of deposits, those of the connective tissue and those of the lymph channels. In this manner the arrangement of the glycogen is linear in the villi. The placental vessels contain from the beginning, particularly in the muscle portions and the connective tissue portions, considerable amounts of glycogen, and they increase further with advancing pregnancy. A direct transfer of the glycogen in the maternal tissue to the fetal tissue was not demonstrable; thus the transfer may have taken place only by resynthesis.

Determination of Sex of Offspring—Schumacher evaluates the various theories of the determination of the sex of the offspring. He shows that the theory accepted by Hippocrates and Galen, namely that the products of the gonads of one side produce male and of those of the other side female offspring, have been disproved by the fact that in unilateral castration children of both sexes have been born. The dietetic hypotheses, according to which the diet of the mother exerts an influence on the sex of the offspring, could not be corroborated. The influence of the age of the parents on the sex of the offspring is, if present at all, so slight that it is of no practical significance. Siegel's theory that the fertilization of young ova produces girls and the fertilization of old ova boys, does not correspond to the present knowledge about the duration of the viability of the ovum and the sex determining factors of the spermatozoa. The influence exerted by the term of cohabitation on the incidence of male and female births is still in dispute. Modern hereditary science and zoology maintain that the sex of the fetus is determined by the spermatozoa, stating that there are male and female spermatozoa, but only one type of ova. The author investigated the observations of Unterberger (*Deutsche med. Wchnschr.* 56: 304 [Feb 21] 1930, abstr. *THE JOURNAL*, May 3, 1930, p. 1451), that alkalization of the vaginal secretion would produce male offspring. However his studies on human subjects or on animals did not corroborate Unterberger's work. Moreover, the author considers the use of this method inadvisable in human subjects, since the chemical alteration of the vaginal secretion may result in an impairment of the offspring. The attempt to modify the sex of the fetus by treating the mother with sex hormones has so far only theoretical interest. The author is conducting experiments for the clarification of this problem.

Archiv für Kinderheilkunde, Stuttgart

103: 193 256 (Nov 23) 1934 Partial Index

- Diastasis Recti Abdominis During Childhood. R. Fischl.—p. 193
Aspects of Aphthous Stomatitis. P. von Gara and W. Herte.—p. 204
*Hanganatzu-Deicher Reaction During Childhood. P. Dudás.—p. 214
*Focal Reactions in Diphtheria Allergy. J. Siegl.—p. 223
Erythema Nodosum and Scarlet Fever. D. von Moritz.—p. 227
Studies on Relief of Colon in Nurslings. K. Gefferth.—p. 231

Hanganatzu-Deicher Reaction During Childhood—Dudas points out that Hanganatzu and, independent of him, Deicher observed that, following the parenteral administration of heterogenic serum, human blood serum agglutinates certain heterogenic erythrocytes, particularly those of sheep, horses, hares and guinea-pigs. Especially noteworthy is the high agglutination titer toward the erythrocytes of sheep after the person has received horse serum parenterally. Other authors found that the Hanganatzu-Deicher reaction is strongly positive, particularly in monocytic angina. Dudás studied the Hanganatzu-Deicher reaction in nurslings and children. The test was made as follows: To 1 cc. of serum, inactivated by heating for fifteen minutes in a water bath at 56° C., 1 cc. of physiologic solution of sodium chloride is added. Then 1 cc. of this mixture is withdrawn and placed in another test tube, which contains already 1 cc. of physiologic solution of sodium chloride and the series is continued in this manner. Now 0.5 cc. of fluid is removed from each tube and is replaced by 0.5 cc. of a 5 per cent suspension of sheep corpuscles. Finally 1 cc. of physiologic solution of sodium chloride is put into each tube.

so that they all contain 2 cc. of fluid. After the contents have been mixed thoroughly the whole series is placed in the incubator for two hours and then for twenty-four hours in the icebox. The results are read on the following day. If the agglutination is visible with the naked eye the agglutination is marked ++, whereas microscopic agglutination is marked +. The reaction is considered positive if agglutination is perceptible in a dilution of 1:8 and higher. Cases in which only the dilutions of 1:4 and 1:8 disclosed agglutination were considered as borderline cases. The author found that, following the parenteral administration of serum and following serum disease, the Hanganatzu-Deicher reaction is positive. The reaction becomes positive from eight to ten days following the administration of serum and may remain positive for several months. During measles after smallpox vaccination and during the exanthem caused by the sodium salt of phenyl-ethylhydantoin, the Hanganatzu-Deicher reaction is positive. The parenteral administration of human blood influences the organism in the positive direction.

"Focal Reactions" in Diphtheria Allergy—Siegl maintains that it must be considered as proved that in the process of immunization against diphtheria there develops in addition to the diphtheria antitoxin, also an allergic alteration of the reaction capacity. The positive reactions that develop on the basis of such an allergic condition have, of course, no connection with a specific diphtheria allergy, however, in their appearance and course they greatly resemble those of specific origin, and consequently it is difficult to differentiate them. In a former report (*Arch. f. Kinderh.* 98:1 [No. 1-2] 1932) he described a method that permits a differentiation of such reactions. He describes here a new allergic phenomenon. He observed that if children who had been given injections with Lowenstein's prophylactic diphtheria ointment were given a toxoid injection there developed twenty-four hours after the injection not only a local reaction at the site of the injection and perhaps an increase in temperature but also a large maculopapular exanthem that covered only the region of the injection with the diphtheria ointment, whereas the other portions of the skin remained free from it. This localization proves the connection with the previous injections. The cutaneous reaction is of comparatively short duration, for after forty-eight hours it has either completely disappeared or only slight traces remain. The author considers the phenomenon a flare-up reaction due to the local immunologic processes produced by the toxoid in the prophylactic ointment. These focal changes are in the beginning invisible and become manifest as the result of the toxoid injection. The phenomenon was observed in three out of seventeen children who had been given a toxoid injection after injection with prophylactic diphtheria ointment. The author describes the histories of these children. The intervals between the last injection and the toxoid injection causing the reaction were two, eight and fourteen days. In one of the cases only one injection had been made. Another injection of toxoid eight days later, did not cause a new flare up reaction. The author emphasizes that the elicibility of a toxoid flare-up reaction has no connection with tuberculin susceptibility.

Archiv für Verdauungs-Krankheiten, Berlin

56:237-354 (Nov.) 1934 Partial Index

Quantitative Spectroscopic Method for Examination of Porphyrin. K. Lageder—p. 237

*Results of Protein Body Therapy in Gastric and Duodenal Ulcer. A. Engel—p. 256

*Diet Containing Flour of Soy Beans in Treatment of Suppurating Urinary Infections, Eczema and Diabetes. C. Becker—p. 260

Basal Metabolism and Specific Dynamic Action in Obesity. H. Rothchild—p. 279

Refractometric Studies on Bile. S. Cserna, K. Engel and T. Epstein—p. 307

Gastro-Intestinal Disturbances in Addison's Disease. K. Herman—p. 312

Protein Therapy in Gastric and Duodenal Ulcer—Engel describes his observations on protein therapy of gastric ulcer in seventy cases in which an ulcer had been demonstrated by roentgenoscopy, gastroscopy or clinical examination. Cases presenting adhesions, severe stenosis or nervous disturbances have been excluded from the protein therapy. The injections of the protein preparation were begun after dietetic treatment had failed. The injections were made intravenously beginning with

doses of from 0.2 to 0.4 cc. and gradually increasing to 1 or 2 cc. They were given at intervals of from three to four days. A series consisted of from four to eight or, rarely, twelve injections. In almost half of the cases a slight increase in temperature resulted from the injections. High fever, necessitating interruption of the injections, developed in two cases. Local reactions in the form of gastric pains and increased hemorrhages were not observed. In the majority of cases the gastric pains decreased after the first injections. At the same time the weight of the patients increased and in some cases the roentgenogram revealed improvement. Complete cure was effected in 19 per cent of the cases, great improvement, that is, complete freedom from symptoms, was observed in an additional 39 per cent of the cases, slight improvement was noted in 30 per cent of the cases, and in only 12 per cent was the protein therapy a complete failure. These results compare favorably with those of other therapeutic methods, and the author thinks that ulcers which do not yield to dietetic treatment should be subjected to protein therapy before surgical treatment is resorted to.

Soy Flour in Treatment of Urinary Infections, Eczema and Diabetes—In an analysis of various flours, Becker shows that soy flour differs from other flours in that it is rich in proteins and fats and almost free from starch. The carbohydrates of soy flour appear in the form of soluble saccharose, and the flour contains large amounts of lipoid (lecithin) and minerals. Because of this composition the soy flour has therapeutic value in urinary infections, eczema and diabetes. Its action is due to the large quantities of bases it provides for the organism, for the high mineral content of the soy bean increases the alkalinity of the urine within a short time to a pH of 8.4 and more. This alkalotic alteration is already effective in the internal metabolism and is not caused by ammonia cleavage of the urea in the urine by urease, a ferment of the soy bean. The large amount of minerals and a number of other substances contained in the soy bean effect in eczema a reduction in the inflammatory process and protect the overtaxed peripheral capillaries. Moreover by providing a high caloric food of plant origin and thus permitting the exclusion of animal foods, particularly milk, the allergic factor is largely excluded in the eczemas of nurslings and children. The anti-inflammatory action and the alkalinization of the urine, which in turn restricts the growth of colon bacilli, are the effective factors in pyuria. In diabetes the basic salts of the soy bean neutralize the excessive organic acids and thus reduce the acidosis. Bread prepared from soy flour is an adequate substitute for wheat bread in the diet of patients with diabetes mellitus. The use of this bread in the diet reduces glycosuria and also the blood sugar values.

Deutsche Zeitschrift für Chirurgie, Berlin

244:1-100 (Nov. 22) 1934

*Contribution to Knowledge of Exophthalmic Goiter. O. Voss—p. 1
Symptomatology and Pathology of Giant Cell Tumors of Tendon Sheaths.

W. Hetzar—p. 63

Contribution to Malignant Tumors of Thyroid. D. A. Mulvihill—p. 71

Genesis of Distant Thrombosis. K. Lenggenhager—p. 77

Symptomatology of Congenital Struma. L. von Unterrichter—p. 88

Exophthalmic Goiter—According to Voss, iodothyroglobulin is the specific secretion of the thyroid since it is the only substance so far isolated capable of producing all the symptoms caused by the administration of the thyroid substance itself. Thyroxine is only one of its main constituents. Thyroxine and di-iodothyrosin are the essential constituents of the thyroid secretion. They combine in the thyroid with an albumin to form iodothyroglobulin. Di-iodothyrosin exerts a depressive effect on the action of thyroxine. The author examined thyroid secretions from normal and diseased thyroids with the aid of a spectrograph to determine whether there exist differences in the light absorption, thus demonstrating structural changes in the molecule. Iodothyroglobulin obtained by the method of Oswald from normal thyroids from goitrous thyroids and from exophthalmic thyroids were submitted to spectrographic examination. No difference was noted in the light absorption by the iodothyroglobulin obtained from normal thyroids and from colloid goiters. The curve representing the light absorption of the secretion from exophthalmic thyroids was

different from that of normal thyroids and of colloid goiters. This suggests that the molecular structure of the iodothyroglobulin of an exophthalmic thyroid differs from that of the normal thyroid and from that of a colloid goiter. Ordinary hyperfunction of the thyroid is easily demonstrable both in clinical cases and in experiment. The question of whether ordinary hyperthyroidism can develop into a genuine exophthalmic goiter has not been answered. The present concept is that the difference in the two forms depends on the rate of evolution, in the course of which a mere hyperfunction passes into a state of dysfunction. Histologically pure hyperthyroidism is represented by a hypertrophy of all the anatomic elements of the gland, including the colloid. In exophthalmic goiter, on the other hand, the colloid is greatly diminished and the epithelium undergoes a characteristic hyperplasia. At present there exist many cases in which, owing to administration of iodine, the typical alterations in the colloid and in the epithelium cannot be demonstrated. The author admits that there are mixed cases in which both the histologic characters of hyperfunction and of exophthalmic goiter exist side by side. The clinical manifestations of hyperthyroidism may be duplicated by thyroid feedings. The symptoms common to the two are tremors, rise in basal metabolic rate, loss of weight, irregular heart action, hypertrophy and degeneration of the heart muscle. Exophthalmos is not present. The characteristic symptoms of exophthalmic goiter cannot be reproduced by thyroid feeding, this applies particularly to such symptoms as exophthalmos and increased vascularity of the gland as evidenced by bruit over the vessels of the gland. The onset is more acute and all the symptoms are more pronounced in exophthalmic goiter. The author found that, whereas chronaxy in normal people is twice as long in extensors as in the flexors, this relationship is disturbed in exophthalmic goiter. On the basis of his experiments the author differentiates between exophthalmic goiter and hyperthyroidism. He assumes that the first is caused by dysfunction of the thyroid while the second is caused by hyperfunction.

Frankfurter Zeitschrift für Pathologie, Munich

47 313-428 (Nov 22) 1934 Partial Index

- *Acute Miliary Tuberculosis Following Curettage in Tuberculous Endometritis W Bungele —p 313
- Nonpigmented Melanoma (Naevocytoblastoma) of Skin A Symeonidis —p 323
- Chronic Periarthritis Nodosa E E Bauke and H H Kahlfleisch —p 340
- Calcified Necrosis of Suprarenals R Goldstein —p 360
- *Primary Melanosarcoma of Brain Pigmented Nevi of Skin Extensive Neurofibromatosis of Cutaneous Nerves M Bjorneboe —p 363
- Typical Mixed Salivary Gland Tumor on Finger G Gachtgens —p 374
- *Examination of Urinary and Biliary Calculi in Ultraviolet Rays V Faber —p 421

Miliary Tuberculosis Following Curettage—Bungele describes a case of tuberculous endometritis that developed following an exploratory curettage. A woman, aged 28 had given birth to a living child in 1932. In August 1933 she had an inflammation of the ovaries and in December she complained of pains in the abdomen and of occasional hemorrhages. The family physician diagnosed a pregnancy in the fourth month. In January the woman had an abortion, but the physician was not consulted until two days later when she developed fever. The physician scraped the uterus with a dull curet, but the material obtained was not examined. Following this curettage the woman developed a parametritis and since this time her temperature was always increased. An exacerbation occurred at the end of February and the patient died several weeks later. Postmortem examination revealed a caseous tuberculosis of both uterine tubes, tuberculosis of the mucosa of the uterus, numerous tubercles in the intima of the small vessels of the endometrium, a few tubercles in the intima of the ovarian vein, acute miliary tuberculosis, tuberculous meningitis, miliary tuberculosis of the lungs and spleen, disseminated small-noduled tuberculosis of the peritoneum, multiple tubercles in the kidneys and the liver, and dilatation of the entire heart. The increase in temperature following curettage indicates the author says, that this intervention was made on a uterus already infected with tuberculosis and the curettage led to a massive invasion of the blood stream by tubercle bacilli. The author shows that the case corroborates the opinion expressed by Ribbert and Huebsch

mann, who stated that the vascular tubercle is insignificant in the hematogenic dissemination of tuberculosis. The lack of generalized infection of the organism with tuberculous virus in case of genital tuberculosis also seems to play an important part in the development of miliary tuberculosis. The author emphasizes that, if uterine tuberculosis is certain, curettage should never be resorted to.

Melanosarcoma of Brain, Pigmented Nevi of Skin, and Neurofibromatosis of Cutaneous Nerves—Bjorneboe says that the concurrence of these three disorders is rare. The patient, a man aged 37, died with symptoms that indicated a rapidly growing cerebral tumor. Postmortem examination revealed a melanosarcoma in the right cerebral hemisphere. On the face and the upper and lower extremities there were numerous brown spots, many of them with hair growth and only partly elevated above the level of the skin. The trunk and the upper extremities had a furlike hair growth, which was sharply and symmetrically defined on the chest. Over the gluteal muscles the skin showed changes indicative of elephantiasis. The skin showed two anomalies—nevi and neurofibromatosis—and the problem is whether these two conditions are related. The concurrence of extensive nevi of the skin and of the neurofibromatosis of the cutaneous nerves in the nevi has been described by Berblinger. The concurrence of Recklinghausen's disease and of cutaneous nevi has been reported repeatedly, particularly by Masson, who maintained that the cells of a nevus are connected with the cells of the Wagner-Meissner tactile bodies. He considers the piles of nevus cells as syncytia that are connected below with nerves and above with cells of the epidermis. These syncytial structures frequently assume forms that resemble the Wagner-Meissner bodies. Masson was able to detect neurofibrils only in the beginning portions of these syncytial structures, but he believed that they were of the same origin as the Wagner-Meissner and the Merkel-Ranvier cells. In attempting to apply this theory to this case, the author was unable to detect neurofibrils in the cutaneous preparations. However, threads were detected that were probably of a nervous nature but had undergone neurofibromatous changes, and it is significant that the threads were partly melanotic. This supports the opinion that the cells are ectodermal (capable of forming pigment). Moreover, this makes it appear likely that the pigmented cells that are located higher up in the cutis are of nervous origin. This one case does not permit a conclusion about the genesis of all nevi. Nevertheless it is a further corroboration of Masson's theory.

Examination of Urinary and Biliary Calculi by Ultraviolet Rays—Faber observed that urinary and biliary calculi show fluorescence in filtered ultraviolet rays. The urinary calculi showed on exposure to ultraviolet rays a greater number of layers and a more manifold coloration than they did in ordinary light. From the color of the fluorescence it may be concluded of what substances the calculus is composed. The fluorescence of urinary calculi is due to the substances that by adsorption are combined with the salts, which form the calculi. Since bile pigments interfere with fluorescence, it is impossible to deduce conclusions about the composition of biliary calculi from the nature of their fluorescence.

Klinische Wochenschrift, Berlin

13 1705 1736 (Dec 1) 1934 Partial Index

- Heat Economy and Endocrine System E Grafe —p 1705
- Cardiac Activity and Sympathetic Poisons Action of Intravenously Injected Epinephrine and Pilocarpine on Cardiac Action G W Parade and H R Foerster —p 1709
- *Does Elimination of Corpus Luteum Hormone in Urine Corroborate the Knaus-Ogino Theory of Periodic Fertility and Sterility in Women? E Glaeser and O Haempel —p 1711
- *Serologic Investigations in Multiple Sclerosis H Sachs and G Steiner —p 1714
- *Serum Coagulation Reaction of Weltmann in Pulmonary Tuberculosis Voigtlander —p 1718
- Auscultatory Gap I Pines and D Scherf —p 1721
- Specific Skin Reaction in Tularemia W A Fjodoroff and H Goldstern —p 1723

The Corpus Luteum Hormone and Periodic Sterility and Fertility—Glaser and Haempel describe a method that makes possible a quantitative determination of the corpus luteum hormone in the urine. The urine is subjected to electrolysis and heat concentration and the substance thus obtained

is tested on female minnows. It was determined that corpus luteum hormone (male hormone), perhaps augmented by hormone of the suprarenal cortex, is present in the urine of women in all stages of the cycle, and also in the urine of young girls and of women of the menopausal age. In young girls and in women of the menopausal age the elimination keeps within comparatively narrow limits, but in the latter certain fluctuations are noticeable which apparently correspond to the former cycle. In women of the propagative age the elimination of the female sex hormone is greatest at the time of ovulation, while the largest amounts of corpus luteum hormone (male) are eliminated during the period of menstruation. At this time the daily average is 3000 fish units. After that its excretion decreases apparently (slower in long cycles, faster in short cycles) until the time of ovulation and during the last days of the cycle it remains at a daily average of from 300 to 600 fish units. Thus it is impossible to consider the activity of the corpus luteum as restricted to certain periods. A superordinated organ, either the anterior lobe of the hypophysis or a nervous center or both regulate the elimination. At any rate the actions of the corpus luteum are rather complicated and cannot be reduced to as simple a system as that suggested by Knaus. The authors believe that the corpus luteum is probably the main cause of the partial failure of the theories of Knaus. They assert that in all stages of the cycle and in all ages the urine contains hormones which promote the growth of the ovipositor of female minnows; however the elimination is not sufficiently regular to be suitable for test purposes.

Serologic Investigations in Multiple Sclerosis.—Sachs and Steiner admit that the etiology of multiple sclerosis is not fully understood as yet. However since many investigators are of the opinion that it is the manifestation of an infectious process the authors felt justified in conducting a search for antibody-like factors in the serum of patients with multiple sclerosis. They employed a complement fixation test and used alcoholic extracts from diseased central organs (brain and spinal cord) as reagents. They gained the impression that the serum of patients with multiple sclerosis actually has a special reactivity to the extracts from brains with multiple sclerosis. They reproduce several tables of the results of their tests which indicate that there is a noticeable difference in the behavior of the multiple sclerosis serums and the control serums. Moreover in some patients with multiple sclerosis who had a positive reaction a remission in the disease process was followed by a change to a negative reaction. The positive reactions were most frequent during the acute stage of the disorder. In an evaluating summary of their studies the authors show that it is as yet impossible to give a definite estimate of the value of their serologic studies but their observations so far indicate the existence of a serologic change that is comparatively frequent in patients with multiple sclerosis.

Weltmann's Serum Coagulation Reaction in Tuberculosis.—Vogtlander points out that Weltmann's serum coagulation reaction is helpful in the diagnosis and prognosis of tuberculosis. This new reaction permits a decision as to whether the tuberculous processes in the organism are of the exudative or the fibrous type. He describes the technique of the Weltmann serum coagulation reaction and describes his own experiences with the method. Weltmann had found that a number of febrile processes are accompanied by a narrowing of the coagulation band that is by a deviation to the left. That the fever itself was not the cause of the deviation to the left was proved by the fact that in artificially induced fever the flocculation band was normal. Deviation to the left was observed in diseases of inflammatory character (exudation) such as pulmonary tuberculosis, pleurisy with effusion, the acute stage of articular rheumatism, suppurative processes and exudative malignant pulmonary tuberculosis. The coagulation band shows no deviation to the left without an inflammatory, that is an exudative process. The degree of deviation runs parallel with the severity of the process. As the inflammatory process improves the coagulation band returns to normal. A deviation to the right or a widening of the coagulation band was observed by Weltmann in diseases of the hepatic parenchyma, in cardiac decompensation with stasis and in fibrous forms of tuberculosis. The author performed the Weltmann serum coagulation test on 400 inmates of a sanatorium for tuberculous patients and found

that the coagulation shows a deviation to the right in fibrous and cirrhotic forms of tuberculosis. In inflammatory processes of pulmonary tuberculosis, in cavernous progressive conditions with exudative processes and in caseous pneumonic pulmonary tuberculosis, a deviation to the left is noticeable. Pulmonary disorders in which exudative and fibrous processes concur cannot always be clarified by Weltmann's reaction. In pleural exudates the coagulation band runs practically parallel to the course of the disorder. Since the Weltmann serum coagulation reaction does not always give reliable results it is advisable to combine it in doubtful cases with the determination of the sedimentation speed of the erythrocytes.

Medizinische Klinik, Berlin

30 1581 1616 (Nov. 30) 1934

Indications for Surgical and Orthopedic Treatment During Childhood. C. Springer—p. 1581

*Influence of Various Metal Compounds on Growth of Bacteria. W. Haase—p. 1565

Modern Vitamin Therapy During Childhood. H. Brugsch—p. 1587

Coronary Thrombosis. G. Lepehne—p. 1589

Drowning. Physiology, Treatment and Accident Evaluation. E. Sehr—p. 1591

Splenomegaly in Traumatic Thrombosis of Splenic Vein. J. Monauim and G. H. Bartsch—p. 1595

Alopecia Areata and Hormone Treatment. P. Janson—p. 1597

Influence of Metal Compounds on Growth of Bacteria.—Haase tested the foils of copper, brass, tin, aluminum and silver for their bactericidal action and compared it with that of two silver compounds, silver manganite and the silver salt of thiocellobiose. The tests were made with agar plates. The author points out that silver foil has been known as an effective bandage for wounds, but he found that its bactericidal power is rather slight. The foils of other metals exert hardly any bactericidal power on organisms on the agar plate. The silver compounds were found to be much more effective. The silver salt of thiocellobiose was tested with gauze saturated with a 10 per cent solution of the substance. This gauze proved to have great bactericidal power on the agar plate. The author states that the action of this gauze on wounds has not been thoroughly investigated as yet but since a 5 per cent solution of the silver salt of thiocellobiose has been used for injection without harmful effects it may be assumed that wounds will tolerate the gauze impregnated with the substance. In fact several applications revealed no changes in the course of the development of wounds. Silver manganite proved somewhat less effective on the agar plate than did the silver salt of thiocellobiose, however it was much more effective than the foils of pure metals. The author points out that silver manganite is introduced into bandage materials, catgut and silver foil and that in this form it finds wide application. It has no irritating effect on wounds and it has been used also in the form of powders and ointments. The author admits that the surface antiseptics of a wound is only a small part in the fight against infection.

Monatsschrift für Kinderheilkunde, Berlin

61 73 160 (Nov. 27) 1934 Partial Index

*Hormone Regulation of Chloride in Children. G. Török and L. Neufeld—p. 73

Action of Parenterally Administered Vitamin D in Rachitic Nurslings. S. Liebe—p. 88

*Fluctuations in Immunity in Infectious Diseases. G. Meyer zu Horste—p. 94

*Suitability of Roentgen Method for Diagnosis of Appendicitis. H. Kleinschmidt—p. 115

Peculiar Combination of Renal Dwarfism with Spastic Diplegia, Idiocy and Atrophy of Optic Nerve (Silberstein's Type). K. Wallis—p. 121

Tumors of Suprarenal Medulla During Childhood. F. Eckardt—p. 127

Hormone Regulation of Chloride in Children.—Török and Neufeld point out that the action exerted by the hormones of the hypophysis and the thyroid on the chloride-water exchange has been repeatedly investigated but that there are a number of other hormones the action of which on the chloride exchange has not been thoroughly studied as yet and so they tested a number of these. They made their studies on forty-one children from 5 to 12 years of age. During the first test period the children received at first a standard diet that provided from 5 to 8 Gm. of sodium chloride daily, and then they were put on a milk diet with a lower salt content. During

the second test period when the children received once more the standard diet they were given daily injections of hormone or glandular extracts. This period lasted generally eight days and after that the children were put once more on a milk diet. The amount of chloride excreted in the urine was determined daily by the method of Russznark. The first tests were made with the antidiuretic hormone fraction of the posterior lobe of the hypophysis. During the first part of the second test period, when the antidiuretic posterior hypophysial hormone was administered daily, the average daily chloride elimination was greater than during the first period, when a standard diet and no hormone extract, was given. At the time of the milk diet of the second period, an increased retention of chloride was demonstrable. The various sex hormones and extracts were tested on fifteen children. The sex hormone of the anterior hypophysis was tested in four children and the follicle hormone in three, the extract prepared from the entire ovary the corpus luteum hormone, and the estrus stimulating and inhibiting fractions of the corpus luteum hormone in one child each the testicular extract in three children, and the extract of the mammary gland in one child. These experiments revealed that with the exception of the corpus luteum hormone (entire), of the estrus inhibiting fraction of the corpus luteum and of the mammary hormone, the sex hormones and extracts cause an increased retention of chloride during the time of their administration but after the administration ceases the retained chloride is eliminated. The extract of the pineal body was tested in four children. In these tests no regularity was demonstrable. In experiments with extracts of the thymus and the spleen, an increased chloride elimination was noticeable after the administration of these extracts had ceased. While the thymus extract was given the chloride content of the urine was more or less reduced but while spleen extract was given this was not the case, and in one child the elimination was even increased. In the experiments with the tonsillar extract it was found that, although the chloride elimination in the urine was not reduced during the time of the injection of the extract, it increased after the cessation of the injections. The administration of liver extracts proved without influence on the chloride excretion. The same may be said about the extract of the suprarenal cortex and about insulin. Parathyroid extract produced a considerable chloride retention in two children, while in another child when a less concentrated parathyroid extract was used, this was not the case.

Fluctuations in Immunity in Infectious Diseases — Meyer zu Hörste points out that the resistance of the organism to infections is subject to considerable fluctuations. It happens, for instance, that the disease suddenly develops in physicians and nurses who for years have worked in a scarlet fever department. But not only the resistance to a certain pathogenic organism but also the so called natural immunity is subject to fluctuations. In the course of an infectious disease, it may happen that the defense mechanism fails suddenly. In this event a change must take place in the fluids and cells of the organism which cannot be determined by means of the ordinary methods of examination but may become manifest in the skin or in the visible mucous membranes. The author describes the case of a child, aged 13 months, who developed whooping cough. This became complicated by pneumonia and by cutaneous suppurations in the occiput. Suddenly the condition became more threatening a meningo-encephalitis and a severe occipital ulceration developed. The child died. This case illustrates the sudden loss of the natural immunity. When this took place, not only did the organism lose resistance to the whooping cough, but the disease processes of the skin likewise did not heal. The author thinks that when the infectious process spread to the central nervous system, the natural immunity failed completely. The development of a second infection, for instance the concurrence of diphtheria and measles, may lead to such a complete failure of the natural immunity. The author further reports the history of a child, who because the first vaccination against smallpox had not taken was revaccinated and this time the vaccinia presented the usual aspects. About the time when the formation of the immune bodies had already passed its peak, the child developed whooping cough which took an especially severe course. This second infectious disease influenced the immunization processes against vaccinia

so unfavorably that the immunity was practically lost again. The vaccination scar developed a new reaction. Later the immunity processes became active again and the child recovered. The author points out that in the Spanish literature the suggestion has been made to employ smallpox vaccination for the treatment of whooping cough, but that some Spanish authors have objected to this method. He thinks that his case, in which whooping cough and vaccinia accidentally concurred is an argument against that treatment because the severe course of the whooping cough was the result of the smallpox vaccination that had preceded it.

Roentgenoscopy in Diagnosis of Appendicitis — Klem-schmidt describes his experiences with roentgenoscopy of the appendix in a number of children. He reaches the conclusion that roentgenoscopy with the aid of contrast filling is not suited for the diagnosis of appendicitis. He found that the evacuation time differs widely even in normal appendices, and he thinks that it is largely determined by anatomic and physiologic peculiarities such as the length, position and lumen of the appendix, the intestinal activity and the mode of life. At any rate the isolated filling of the appendix may last 100 hours and even more when the organ is healthy so that a filling that lasts this length of time need not be indicative of a pathologic condition. If filling does not take place, an obstruction of the lumen of the appendix exists, which may be in the nature of mechanical factors (fecal concretion, fixation or bending), of inflammatory changes (swelling of the mucous membrane) or of severe contraction of the musculature of the antrum. A diseased appendix may prevent filling partly or completely or may cause an unusually prolonged filling. Differences in the duration of the filling of the cecum and the appendix are unsuited for the diagnosis of a disorder of the appendix. The author was unable to corroborate the statement that the evacuation time becomes normalized after the inflammation of the appendix has subsided.

Zentralblatt für Gynäkologie, Leipzig

68 2881 2944 (Dec 8) 1934

- Reactivation of Senile Human Ovaries L. Waldeyer —p 2882
*Cystic Tumor of Sublingual Gland and Pregnancy R. Lub —p 2891
Experience with Cancer Reaction According to Fuchs F. Friedl and E. Kulka —p 2896
Statistical Studies on Dependence of Female Fertility on Age H. Munzner and K. Loer —p 2900
Internal Endometriosis in Form of Unusually Large Solitary Chocolate Cyst M. Mátyás —p 2903
Marking of the New Born for Purpose of Preventing Mistakes in Identity F. Kovács —p 2908

Reactivation of Senile Human Ovaries —Waldeyer points out that Zondek and Aschheim and several other investigators succeeded in bringing about regular estrus in old animals by the administration of the hormone of the anterior hypophysis. Attempts were made by Tschertok and Penkow and by Westman to reactivate senile human ovaries by injecting urine or blood from pregnant women. In order to be able to determine the efficacy of the experiment they gave these injections to women of the menopausal age, who had to undergo operations on the genitalia. Tschertok and Penkow employed pregnancy urine and obtained negative results in all except one of the cases and in this one estrogenic substance had been administered in addition to the urine. Westman, who used pregnancy blood in two cases, observed what he considered a reactivation of the ovaries and he concludes from this that it is possible to reactivate the ovaries of women of the menopausal age by injecting the sex hormone of the anterior lobe of the hypophysis. The author thinks that a number of his observations can serve as controls of Westman's experiments, for he examined the ovaries of women of the menopausal age without previous injection of gonadotropic substances. Observations in seven cases convinced him that the development of a follicle to the stage of a young corpus luteum together with the corresponding changes in the uterine mucous membrane, can take place during the menopause, although no hormone has been administered. Moreover, he points out that Robert Meyer observed even a fully developed corpus luteum. The author concludes that he does not care to deny the possibility of a modification of the resting follicles in the ovaries of women of the menopausal age but he wants to point out that great precaution is necessary.

in the evaluation of experiments on the action of the gonadotropic hormone of the hypophysis on human ovaries

Tumor of Sublingual Gland and Pregnancy—Luh thinks that pathologic changes of a morphologic nature in the salivary glands, during or as the result of pregnancy, are rare. He admits that more than two decades ago certain relations were detected between changes in the salivary glands and the genital organs but a causal connection was not discovered. Even the ptyalism of pregnancy has as yet found no causal explanation. Madruzza made studies on pregnant rats and mice and found the interstitial tissues of the salivary glands unchanged but noted that the acini of the parotid and submaxillary glands were in a state of increased function, while those of the sublingual gland were at rest. The excessive enlargement or swelling of one or the other of the salivary glands during pregnancy is extremely rare and for this reason the author feels justified in reporting the case of a woman who gave birth to a normal girl and who had a tumor in the anterior portion of the neck. The growth reached from the region of the thyroid cartilage to the third rib and was oval. Palpation indicated that the growth was a slightly fluctuating cyst. A cone-like process about 10 cm in length branched off from the main tumor in the direction of the submaxillary angle. Pressure on the tumor resulted in a swelling of the branch directly below the submaxillary angle. The entire submental region was lowered in the form of a double chin. Inspection of the oral cavity disclosed a transparent, cystic growth in the region of the sublingual caruncle. There seemed to be no communication between the tumor in the neck and this cyst. The tumor of the neck remained unchanged during the period of expulsion of the fetus. Until the anamnesis was taken it seemed that there was no connection between the tumor and gestation. The woman stated that her first pregnancy terminated in the sixth month the fetus being dead. On the third day following the abortion a tumor developed in the mouth and became so large that she could be fed only fluids introduced by means of a tube. On the fifteenth day following the abortion the physician punctured this tumor and a watery fluid was discharged. The patient recovered completely the growth having entirely disappeared. At about the middle period of the second pregnancy, which was carried to term a tumor formed at the right submaxillary angle and the floor of the mouth felt somewhat elevated. During the puerperal period the tumor as well as the swelling of the floor of the mouth disappeared but later the woman noticed that during the menstrual periods the swellings returned in a milder form and then disappeared again. At the end of the third month of the third pregnancy she observed the reappearance of the swelling at the submaxillary angle and on the floor of the mouth and shortly after that the tumor formed in the anterior part of the neck. This anamnesis reveals the close connection between pregnancy and the development of the tumors. One month after the termination of the third pregnancy, the tumor was punctured. The contents a jelly-like substance about 90 Gm in weight, were examined. Shortly after that the cyst was likewise removed and examined. Although the examinations revealed neither a neoplasm nor an inflammatory tumor, it must nevertheless be assumed that the tumor developed on the basis of a chronic interstitial inflammation with subsequent retention of the secretion.

Klinicheskaya Meditsina, Moscow

12 1395 1520 (Nov. 10) 1934 Partial Index

- Use of Histamine in Therapy of Various Diseases. A. O. Frayfeld—p. 1418.
Atypical Forms of Ulcer Disease and Their Diagnosis. I. M. Flekel and B. M. Shtern.—p. 1427.
Pathogenesis and Basic Principles of Treatment of Peptic Ulcers. G. Ya. Gurevich.—p. 1434.
Roentgen Therapy of Ulcer of Stomach and Duodenum. L. L. Golst, G. Shal and N. P. Negovskiy.—p. 1442.
Id. L. F. Gorina, P. S. Fass and L. N. Fedorova.—p. 1453.
Significance of Immunity and Anaphylaxis in Chronic Infectious Colitis. L. B. Berlin, O. O. Schmidt and B. S. Levin.—p. 1460.
*Pathogenesis of Gout. I. A. Golyanitskiy.—p. 1477.

Pathogenesis of Gout—Golyanitskiy says the experimental production of gout has not been accomplished. Clinical observation still remains the main source of information in the malady. Visceral gout is frequently observed in chickens and

in hens. The essential pathologic characteristics of gout in birds and associated renal and hepatic lesions suggest a similarity with gout in man, although the process cannot be viewed as identical. Atmospheric conditions and temperature play an important part in the pathogenesis of gout, and dietetic regimen plays an even greater part. The significance of the various components of the diet, such as albumins, carbohydrates, fats and minerals, may be positive or negative depending on varying conditions. Deficiency in vitamins, minerals or ferments with the associated acidosis may act as the deciding factor. Prophylaxis of gout should be directed toward a favorable alteration of the enumerated factors and toward combating acidosis. The therapy should be many sided and, besides the diet, should utilize all the means of increasing the oxidating processes and of raising the alkali reserve.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

78 5805 5864 (Dec. 29) 1934

- Discussion of Hyperemesis of Pregnancy. C. J. H. de Geus.—p. 5812.
*Anatomopathology of Psittacosis in Man. B. J. Mansens.—p. 5818.
Hutchinson's Teeth in Upper Jaw and Pflüger's Molars in Lower Jaw. Case. T. E. de Jonge Cohen.—p. 5829.
Mesentery Fibroma. Case. J. Van Der Spek.—p. 5833.

Pathology of Psittacosis in Man—Mansens reviews the conditions that have been described in the organs of man in psittacosis and presents a new case of the disease with photomicrographs. The typical psittacotic lung is characterized by a lobular confluent pneumonia. The cut surface is gray or red, smooth and moist but not granular. There is a highly varying exudate, which may consist of a serous fluid, generally with little fibrin, many or few large mononuclear cells, and few leukocytes. Undoubtedly the large cells are partly desquamated cells of the alveolar lining and partly macrophages. The interstitium may be thickened. The pleurae may have a light fibrinous membrane, but most frequently they are smooth. The bronchi are often empty or contain only a serous exudate with little cells. The author attributes the predominance of leukocytes to secondary infections, which commonly occur. The liver and the kidney show epithelial degeneration. Sometimes focal necrosis is seen in the liver. The reticulo endothelial system of the spleen is swollen. The same may occur in the liver. In several organs hemorrhages may be observed. The author concludes that whereas the pathologic picture of psittacosis supports its diagnosis, it is not sufficiently specific to replace the clinical and epidemiologic picture.

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- *Number of Infections with Streptococcus Epidemicus Together with Biochemical and Serologic Investigations of Properties of This Microbe. T. Thyttta and S. D. Henriksen.—p. 1361.
Influence of Magnesium Salts on Development of Tar Tumors in Mice. L. Kreyberg and S. S. Nielsen.—p. 1389.
Did Sigurd Jorsalfar Allow Necropsy of One of His Men in Byzantium? F. Grøn.—p. 1405.
Features of Earlier History of Rickets. I. Reichborn Kjennerud.—p. 1419.
Isolated Traumatic Fracture of Symphysis. Two Cases. T. Lillejord.—p. 1436.
Pes Excavatus. E. Moen.—p. 1441.
Investigations on Occurrence of Microbes in Some Alcohol Specimens. K. Hansen and E. Blegen.—p. 1448.

Infections with Streptococcus Epidemicus—In twenty-two cases of infections due to Streptococcus epidemicus during the winter of 1933-1934 Thyttta and Henriksen found that the microbe was in all respects identical with the Streptococcus epidemicus described by Davis and Rosenow in 1912. Biochemically the strains were uniform, all were human strains. Serologically slight differences demonstrable only by absorption and agglutination appeared between the strains from Oslo Åker and the three Røros. The strains are all ascribed to the same source of infection, which, however, was not confirmed. Clinically the cases ranged from more or less severe inflammations of the skin to septic sore throat, erysipelas, bronchopneumonia and sepsis. Four cases were fatal. Comparison between these strains and the angina streptococcus from the epidemic of milk borne septic sore throat in Oslo in 1908 described by Ustvedt and investigated by Holth indicates that the microbes from 1908 and from 1934 are of the same type.

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TRAUMA AND THE NERVOUS SYSTEM

WITH SPECIAL REFERENCE TO HEAD INJURIES AND
A CLASSIFICATION OF POST-TRAUMATIC
SYNDROMES (ANALYSIS OF ONE
HUNDRED CASES)

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The subject of trauma and the nervous system, more particularly trauma to the head, has undergone considerable revision in recent years. More accurate investigation of the pathologic changes of concussion of the brain, increasingly objective clinical studies and the introduction of encephalography have enriched with facts a subject which hitherto was to a large extent in the realm of opinion. None the less there is still considerable dispute among competent neurologists as to what is and what is not objective evidence, and opinion, if not bias, still bridges gaps which should be filled in with facts.

The relation of trauma to the nervous system and its sequels is complicated not alone by difficulties of diagnosis but by medicolegal problems and by difficulties in medical and social management. The problem is further complicated by the fact that most human beings are easily suggestible and that trauma occasionally offers an escape from difficulties in life which are not always easy to face. Added to these are the modern industrial compensation provisions, the occasional bad management on the part of lawyers and physicians, and the general encouragement to litigation on the part of almost everybody. Finally, the frequent insistence on positive statements, which the neurologist cannot always make, and the conflicting opinion of experts taking sides in doubtful cases add extraneous difficulties to a question which is sufficiently complex in itself and which the neurologist can hope to solve only on its neurologic and psychiatric merits.

It is extremely difficult to dislodge erroneous views and old concepts made respectable by medical and lay tradition, thus, for example, the question of fracture of the skull. It is well known that a person may receive a severe blow to the skull and sustain no fracture and no injury to the brain, he may receive a comparatively light blow and sustain both fracture of the skull and injury to the brain, he may sustain a fracture and no brain damage, he may have no fracture and yet have severe injury of the brain. A person may

even receive no direct blow and still suffer grave cerebral injury. All these facts are well known to neurologists. They have insisted on the importance of injury to the brain, the meninges, the cerebral and meningeal vessels or the cerebral nerves, and on the significance of prolonged unconsciousness and not on whether there was or was not a fracture, yet most people still continue to stress and to attach undue significance and importance to the fracture itself.

As the subject of trauma and the nervous system is far too big for a brief paper, I shall devote the major part of this paper to a discussion of trauma to the head and to a classification of the syndromes which may subsequently develop. The discussion is based on the study of 100 consecutive, unselected cases of head injury culled from a general neurologic office practice. I believe that the importance of this series, even though the number is admittedly small, derives from the fact that it represents a cross-section of all types of cases seen after the acute stage was over and therefore permits some general conclusions. Before I proceed with the analysis of the cases and the classification of syndromes, however, it may be well to lay down a few general principles.

GENERAL CONSIDERATIONS¹

Traumatic cases may be divided into the following classes:

1. Cases in which injury to the nervous system is the direct and immediate result of an accident. Following a fall or direct or indirect blow to the head there may be unconsciousness, fracture of the skull, intracranial bleeding, severe injury to the brain and cerebral nerves, paralysis and other sequels. A similar accident may result in such conditions as a dislocation or fracture of the spine, crushing of the spinal cord, hemorrhage into the meninges or hematomyelia. Various forms of trauma, such as stab wounds and fracture of bones, may cause peripheral nerve injuries. Emergence from chambers filled with compressed air may give rise to the myelopathy known as caisson disease. Contact with high voltage current, if not immediately fatal, may lead to prolonged unconsciousness, convulsions, transient or permanent paralysis, and a host of mental and psychic sequelae. Cases falling into this group present no debatable points, certainly no doubt as to the causal relationship of the trauma to the clinical syndrome. There may arise the questions of responsibility and contributory negligence, both of which are obviously dependent on the veracity and competence of witnesses, but neither has anything to do with the purely medical aspects of the case.

Read before the Section on Nervous and Mental Diseases at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

¹ Some of these have been published previously in the author's *Textbook of Clinical Neurology*, Philadelphia, W. B. Saunders Company, 1931.

2 Cases in which the nervous system shows the effects of trauma several hours or a few days, sometimes a number of weeks, after the receipt of the injury. Meningeal hemorrhage may occur a day or two after a blow to the skull, apoplexy may follow several days after injury to the head, meningitis may set in days or weeks after fracture of the skull, abscess of the brain may manifest itself days, weeks or even months after a brain injury, a subdural hematoma may be diagnosed months after the receipt of a blow to the head. This group of cases presents no debatable points, though there is no unanimity of opinion on the question of apoplexy, particularly regarding the condition known as late apoplexy.

TABLE 1—Duration of Symptoms

Duration	Number of Cases
1 to 6 months	29
7 to 12 months	24
1 to 2 years	21
2 to 3 years	11
3 to 6 years	16

3 Cases showing no immediate effects of injury to the brain, but only well attested sequels. Convulsions, particularly focal epilepsy, may set in months or years after injury to the head and brain, optic atrophy or spinal cord degeneration may appear months after contact with electric currents, ulnar paralysis may result from late callus in fracture of the internal condyle months or years after the injury. An arteriovenous aneurysm may develop a very long time after fracture of the skull, while mental deterioration is known to occur in children who had brain injuries. There is no disagreement as to facts, but there may be some difference of opinion as to interpretation.

4 Cases in which disturbance of the brain follows immediately or within a reasonable period after an injury to the head, but the trauma alone is not responsible. Thus, a man with undetected incipient dementia paralytica may receive a blow to the head and the fulminating disease may rapidly develop, then gallop on to a fatal termination. An alcoholic person or one with cerebral arteriosclerosis may rapidly deteriorate after a blow to the head. A person may fall during a convul-

TABLE 2—Duration of Unconsciousness

State	Number of Cases
No unconsciousness	23
Momentary unconsciousness	12
Unconscious for from 5 to 15 minutes	16
Unconscious for from half an hour to several hours	22
Unconscious one day or longer	12

sion and receive a brain injury which aggravates the convulsive state and leads to deterioration. Such traumas may be said to aggravate or possibly precipitate but not to cause disease of the nervous system, and differences of opinion are justified regarding the group.

5 Cases in which there is the question of the relation of head trauma to infectious and other diseases of the nervous system. The relation of head trauma to such infections and diseases of the nervous system as encephalitis, meningococcal meningitis, brain tumor and paralysis agitans is highly debatable. Parker and Kernohan² have thoroughly disposed of the question of gliomas and head injury.

6 Cases with no early or late evidence of brain injury subsequently presenting subjective complaints. This most important group consists of patients who, following the receipt of an injury to the head, with or without unconsciousness, show few or no organic signs at the time of the accident and no evidence of brain injury subsequently yet present a host of subjective complaints, a number of essentially mental signs and symptoms which incapacitate the individuals. This is the most debated group of all, and it is the one that I would discuss at greater length.

ANALYSIS OF ONE HUNDRED CASES

The records under analysis are of those of patients referred to me by physicians and lawyers. Sixty-two³ were litigation cases, wherein a medicolegal opinion alone was requested, thirty-eight patients came for diagnosis and treatment. Thirty-one patients were females and sixty-nine were males. Practically every occupation and every walk of life was represented, the majority being employees. The youngest patient was 3 years old, the oldest was 69, the average age was 37, only four were below 10, seven were between 10 and 20, and eighty-nine were over 20. The duration of the symptoms from the date of the injury to the time the patients came under observation (table 1) ranged from one month to six years. In eighty-nine instances the symptoms dated back to the time of the injury, in only eleven cases was there a so-called incubation period.

TABLE 3—Types of Organic Signs

Organic Signs	Number of Cases
Hemiparesis or hemiplegia	7
Inequality of reflexes	6
Inequality of pupils	5
Ocular palsies	2
Sensory disturbances	8
Parkinson syndrome	1

ranging from one month to several months. That is, there was a period of well being after the accident, the patient returned to work and only after a period of time did incapacitating symptoms appear. All these patients had subjective complaints, all were litigation cases, and in all but two there was no history of unconsciousness. Table 2 shows the number of cases with and without unconsciousness and the duration when it was possible to determine it. This was not always easy in cases in which it was said to be momentary or to have lasted several minutes, but it probably is accurate. As will be seen, and this merely confirms the general experience, the number of patients who had prolonged unconsciousness, from one-half hour and longer, correlates very well with the number of cases of fracture of the skull, brain injury and concussion with encephalopathy. Also the number of cases with brief or no unconsciousness tallies with the number of those in which the diagnosis of hysteria or malingering was made. All patients with convulsions gave a history of prolonged unconsciousness after the accident.

Twenty-six patients showed major or minor evidence of organic involvement of the nervous system, in seventy-four the sequels were limited to mental symptoms. Tables 3 and 4 show the types of organic signs and sequels. In the one case in which a parkinsonian syndrome was found, the patient was overcome by smoke in addition to sustaining a fall and blow to the head which rendered him unconscious. An explanation

2. Parker H. L. and Kernohan J. W. The Relation of Injury and Glioma of the Brain. J. A. M. A. 97: 535-540 (Aug. 22) 1931.

3. As I am dealing with a group of 100 cases all figures refer both to the numbers and to the percentages.

for the apparent lack of correlation between the sequels and the organic signs may be found in the fact that some patients with no objective organic signs had such sequels as convulsions, conduct disorders or mental defects, while others with merely a few minor signs complained essentially of subjective disturbances. The latter, which will be discussed presently, refer to the symptoms which are generally classified as psychoneurotic, although in many instances they are based on definite pathologic changes of the brain.

The diagnoses (table 5) were based on a complete neurologic examination of every patient and on as thorough a psychiatric investigation as can be made in one or two hours. All patients had records of roentgen examination of the skull, a great many had records of lumbar punctures, a number had records of psychometric tests, and a few had reports of encephalographic studies. The one patient with traumatic psychosis was a man of 60, another patient who had a psychosis also had arteriosclerosis and the mental symptoms antedated the accident, hence the case was not diagnosed as traumatic psychosis.

Among the fourteen patients with fracture of the skull and brain injury were two who had meningeal hemorrhage, two had subdural hematomas and four had cerebral hemorrhage, that is, apoplectic rupture of an intracerebral vessel. There is no record in this series of patients with meningitis or abscess, for the good reason that I am dealing with chronic cases and not with acute brain injuries and because patients with those complications generally die. The patient whose only sign was loss of a sense of depth, of spatial orientation, very likely had a discrete hemorrhage into the left occipital lobe on the lateral side.

Although the single instance of traumatic psychosis in the series does not justify any conclusions, a few general remarks may not be out of place. The literature on the subject is neither very extensive nor convincing. Adolph Meyer⁴ wrote of mental disorders following trauma to the head many years ago, and quite recently Gordon⁵ made a study of the subject. The impression gained is that there is considerable variety

itself to whether trauma to the head can cause a manic depressive state, a schizophrenia, a paranoia or a melancholia. This is doubtful, but if trauma may precipitate a psychosis, the injury need not necessarily be to the head. Whether head trauma can precipitate dementia paralytica, alcoholic insanity or a psychosis based on cerebral arteriosclerosis is quite another question.

The incidence of convulsions following trauma to the head presents another debatable question. The present series is entirely too small to permit of generalizations. The fact that it occurred in eight of 100 cases of all kinds and out of twenty-six patients with evident organic brain injury is of significance but still does not justify conclusions. As a matter of fact, there is

TABLE 5—Diagnoses

Diagnosis	Number of Cases
Traumatic hysteria	37
Hysteria and malingering	2
Malingering	1
Hysteria and concussion	17
Traumatic neurosis	5
Traumatic encephalopathy	11
Concussion	8
Convulsive state	14
Fracture of the skull with brain injury	4
Fracture of the skull without brain injury	1
Traumatic psychosis	1

a wide divergence of opinion on the subject, and the results of statistical studies are so far apart that it is difficult to set up any criteria. Turner's⁶ figures are less than 5 per cent out of a total 18,000 cases of gunshot wounds of the head. The statistics of Muskens⁷ are difficult to evaluate and hence they are not reliable. Sargent's⁸ figures are not quite conclusive, Wagstaffe⁹ cites the incidence as only 2 per cent. Collier¹⁰ found an incidence of from 5 to 8 per cent, whereas Steinthal and Nagel¹¹ give an incidence of 29 per cent. Glaser and Shafer¹² cite sixteen cases and reckon the incidence at 6 per cent, but if one deducts the seven cases of hysterio-epilepsy, the percentage falls to 3.5. The point is that the cases studied are not comparable and the materials, no less than the observers, vary to such an extent that it is difficult to find a common basis for reckoning percentage incidence. One thing that all observers are agreed on is that there must be definite injury to the brain and that a time interval of not less than two months must elapse between the receipt of the injury and the onset of convulsions. Whether it is fair to stretch the interval to ten, fifteen and more years is a matter of opinion. Another debatable point is whether trauma to the head, not necessarily severe, can call forth convulsions in a "potential epileptic." The difficulty here is that no one can define the term potential epileptic patient.

CLINICAL CLASSIFICATION OF POST-TRAUMATIC SYNDROMES

If we do not consider the patients in this series who had objective signs of brain injury and those who gave definite evidence of brain damage or defect in the

TABLE 4—Sequels

Sequels	Number of Cases
Subjective complaints	74
Convulsions	8
Some degree of organic mental defect	11
Considerable mental deterioration	3
Conduct disorder	2
Psychosis	1
Loss of sense of depth (spatial disorder)	1

in the use of the term traumatic insanity. It seems to me that such symptoms as delirium, excitement and disorientation, whether brief or prolonged, occurring in the acute course of skull fractures and brain injuries, cannot be included in the psychoses under discussion, any more than the acute delirium of typhoid, for example. Nor, properly speaking, should aphasia, or mental deterioration with memory defect, sometimes seen in children and less frequently in adults, be included, for the reason that we are dealing with brain defects and not true psychoses. It is a moot point, too, whether the deterioration in epileptic patients is secondary to the convulsions or the trauma. The question really reduces

⁴ Meyer Adolph. The Anatomical Facts and Clinical Varieties of Traumatic Insanity. *Am J Insanity* 60: 373-441 (Jan.) 1904.
⁵ Gordon, Alfred. Delayed Mental Disorders Following Cranial Traumatism and Their Pathological Interpretation. *J Nerv. & Ment Dis* 77: 259-273 (March) 1933.

⁶ Turner, A. W. Epilepsy and Gunshot Wounds of the Head. *J Neurol. & Psychopath.* 3: 309 (Feb.) 1923.

⁷ Muskens, L. J. Epilepsy. Baltimore: William Wood and Company, 1928. pp. 275-370.

⁸ Sargent, P. Some Observations on Epilepsy. *Brain* 44: 312-328 (Nov.) 1921.

⁹ Wagstaffe, W. W. The Incidence of Traumatic Epilepsy After Gunshot Wounds of the Head. *Lancet* 2: 861 (Oct. 27) 1928.

¹⁰ Collier, J. Lumsden. Lectures on Epilepsy. *Lancet* 1: 587 (March 24) 642 (April 7) 1928.

¹¹ Steinthal, K. and Nagel, A. Die Leistungsfähigkeit im bürgerlichen Beruf nach Hirnverletzungen mit besonderer Berücksichtigung der traumatischen Epilepsie. *Beitr. z. klin. Chir.* 137: 361 1926.

¹² Glaser, M. A. and Shafer, E. P. Skull and Brain Trauma. *J. A. M. A.* 98: 27 (Jan. 23) 1932.

nature of convulsions, mental deterioration or other signs and symptoms, there remains a group of individuals who, following a blow to the head, complain of subjective disturbances which are difficult to evaluate. They are practically the same in all cases, no matter what the underlying basis or explanation. They consist essentially of headache, dizziness and impairment of memory or lack of power of concentration and fears and anxieties, vasomotor disturbances, tremors, impairment of vision, inability to work and a host of other complaints. The dizziness in most of the cases does not represent an obvious vestibular reaction, certainly it is not the true vertigo which is accompanied by nystagmus, past-pointing, falling, or nausea and vomiting. The tremors and other objective signs are found on close examination not to be organically determined, while the impairment of memory is found to consist of lack of attention rather than of a true defect. It is important to emphasize that in the vast majority of the cases it is impossible from the description of the symptomatology alone to make a differential diagnosis. It is imperative, therefore, to seek other criteria and other diagnostic aids and, if possible, to arrive at some common understanding.

To add to the difficulties, many clinicians use different terms for the same condition or the same term for different conditions. One finds the diagnosis of traumatic hysteria and traumatic neurosis used interchangeably and indiscriminately, and the diagnosis of concussion is capriciously applied to clinical syndromes which neither from the history nor from the symptomatology can be differentiated from the other two. The term traumatic encephalopathy, though pathologically correct, has added somewhat to the general uncertainty, and so has the lack of use or the indiscriminate use of the encephalogram. Not that the term as well as the diagnostic method is not extremely valuable, but they need more specific definition and particularly more definite correlation with other facts. I would therefore, without introducing new concepts, submit the following classification of the syndromes in cases of head injuries in which the symptomatology is essentially psychic or mental. The criteria are based on theoretical and clinical considerations and on the analysis of cases as seen by the neurologist and psychiatrist.

1 *Malingering*—True and unalloyed malingering is probably the least important and certainly the least common of the syndromes following head injury. Out of the hundred cases under analysis there was but one with outright simulation and only two patients who, in addition to their hysterical symptoms, gave some evidence of malingering. The rarity of the condition accords more or less with general experience, and it is well known that malingering is more common with regard to the psychoses than the neuroses. The statement as to the comparative rarity of flagrant malingering must be qualified, however, by the observation that in practically all post-traumatic syndromes there is the tendency to overvaluation of symptoms, to preoccupation with symptoms, to exaggeration of complaints and to a desire to shift responsibility from oneself onto others. Even patients with definite signs of brain injury are apt to show psychogenic coloration of symptoms. Up to a certain point all this may be regarded as almost normal, particularly if one takes into account the ready suggestibility of most people. The individual becomes a malingerer only when he consciously and purposely, in order to deceive, to evade responsibility or to derive gain feigns illness and voluntarily tries to reproduce

signs and symptoms which he really does not have or extravagantly exaggerates minor ones which he has. This is not the place to enter into a discussion of the diagnostic criteria of malingering. The diagnosis, while generally not difficult to make, sometimes is extremely so and often taxes the ingenuity of the most expert. Suffice it to say that, whereas in the neurotic the symptoms are unconsciously determined, in the malingerer they are always conscious impostures. Nor can the histrionic simulation occasionally seen in hysterics be classified as malingering, although the hysterical patient can also be a malingerer. Malingering invariably occurs when the trauma is slight and the initial symptoms minimal.

2 *Traumatic Hysteria*—This is the most common sequel of head trauma that is not accompanied by gross evidence of organic brain injury. The diagnosis was made outright in thirty-seven of the cases under analysis, in two others there arose the question of simulation in addition to the hysteria, and in seventeen others, in which the history of unconsciousness also justified the diagnosis of concussion, there was a definite hysterical superimposition. Altogether, this sequel was present in 56 per cent of the entire series, and, if the seventy-four patients with subjective complaints alone are considered, the percentage mounts to 75.

The diagnosis of traumatic hysteria must be based on one set of negative and one set of positive criteria. Patients falling in this group give either no history of unconsciousness or only a history of very brief loss of consciousness, show no clinical signs of brain injury, no evidence of fracture on the x-ray plate, no history of subarachnoid bleeding in cases in which a spinal tap was done, and, in cases in which grave doubts as to diagnosis justify an encephalogram, no evidence of a cerebral pathologic condition. Merely negative evidence, however, is not sufficient, and the diagnosis cannot be made by exclusion alone. There must also be positive evidence that the trauma called forth psychogenic symptoms, that there is a hysterical reaction in an individual who has an underlying neurotic personality make-up. The patient makes unconscious use of the trauma to solve personality difficulties. The accident brings to a head a series of inner and outer conflicts which the patient was unable to face squarely or to solve adequately. The trauma precipitates the neurosis, sets in motion the same mental mechanisms as in any other hysteria and serves as a convenient solution of industrial, social, marital, familial or psychosexual conflicts. It should be emphasized that the individual is not consciously aware of the mental mechanisms, when he is, one is not dealing with hysteria. Nor must the litigation motif be paramount. Not that litigation and compensation do not play some rôle, but when they play the chief rôle or become the sole cause for the perpetuation of symptoms one comes dangerously close to malingering. The trauma may therefore be regarded as a definite precipitating and, in this sense only, as a causative factor. It is interesting to note that compulsion and obsessional neuroses are never, or rarely ever, precipitated by head trauma.

3 *Concussion or Traumatic Encephalopathy*—This occurs in a fairly large percentage of patients suffering trauma to the head. In eleven cases in the series the diagnosis of encephalopathy was made outright and in seventeen a diagnosis of concussion plus hysteria was made, that is, a total of 28 per cent. In every case there was a history of more or less prolonged unconsciousness. The symptoms were entirely subjective in

all of them and in but few more were there even minimal clinical signs of organic disease of the nervous system

There is an increasing tendency to speak of concussion of the brain in terms of traumatic encephalopathy, in fact, the two terms are beginning to be used interchangeably. There is no doubt that the old definition of a molecular disturbance does not hold any longer. The presence of minute hemorrhages, glial changes, cell and fiber degeneration, disturbed dynamics of the cerebrospinal fluid within the skull, ventricular distortion and brain atrophy justifies the designation of traumatic encephalopathy. Martland's¹³ work on brain changes in prize fighters threw great light on the subject. The investigations of Foerster and Penfield¹⁴ and of Bielschowsky¹⁵ also added to the knowledge. More recently Rand and Courville¹⁶ have studied the effect of head trauma on the fiber system of the brain. The encephalographic studies of head injuries by Friedman¹⁷ and others have shown the extent of ventricular and brain changes in patients whose main complaints were of a subjective nature. Kennedy¹⁸ has laid down a few excellent criteria for the appraisal of the effects of head injuries. Without citing further references to the literature it may be emphasized that concussion is not a simple process and that it consists of fairly definite pathologic changes consequent on trauma to the head, which is accompanied by unconsciousness at the time of the accident. The diagnosis of concussion or encephalopathy is beginning to depend, therefore, more and more on other criteria than on those furnished by the symptomatology. In itself this differs in no wise from that of traumatic hysteria. One must rely chiefly on the history of prolonged unconsciousness, on the presence of "small signs" of neurologic involvement, on the absence of psychogenic causal factors, on the persistence and severity of symptoms, and on the evidence furnished by the encephalogram when other facts are not sufficient to establish a positive diagnosis.

4 *Traumatic Neurosis*—This is, in my opinion, a comparatively uncommon condition. I made the diagnosis in but five of the hundred cases of head injury. The correctness of the statement as to its infrequency obviously depends on the acceptance of certain criteria for diagnosis. If traumatic neurosis and traumatic hysteria are used synonymously and interchangeably, the terminology is not only confusing but rests on sheer caprice, in which case one of the terms should be discarded. If, on the other hand, one is dealing with two distinct neurologic entities, as I believe to be the case, then it becomes incumbent to delimit them and, if possible, to adhere to a more strict definition of each term.

The clinical syndrome of traumatic neurosis differs little from that of hysteria but is not dependent, as far as one can tell, on the unconscious use of the accident to solve difficulties that have nothing to do with the trauma. That is, one is not dealing with a patient who had a neurotic personality to begin with. As far as possible the existence of concussion or traumatic

encephalopathy must also be excluded. This leaves a small group of previously well adjusted individuals, who, following a serious threat to life, in which there was comparatively mild or even trifling injury to the head, beget a stubborn set of symptoms which are not amenable to suggestive therapy or other forms of psychotherapy. Their condition bears resemblance to some of the war neuroses of soldiers who had been through particularly harrowing experiences, which they subsequently relived in their dreams. To use a psychoanalytic explanation, there is narcissistic regression, but the ego instincts rather than the psychosexual instincts are affected. Traumatic neurosis might possibly be grouped with the true or actual neuroses, in which neurasthenia, anxiety neurosis and hypochondriasis are included, but the intrapsychic conflict with regard to the ego or self-preservation instincts, which is assumed to exist in traumatic neurosis, would argue against its inclusion. Whatever the explanation, the fact remains that there is a small group of patients, without demonstrable cerebral pathologic changes, in whom hysterical mechanisms cannot be demonstrated, in whom compensation or litigation does not play a predominant role, who are resistive to treatment and who find it difficult or impossible to return to their occupation at which they sustained the accident. It is to this group that the diagnosis of traumatic neurosis may be correctly applied.

CONCLUSIONS

There are so many pitfalls in the proper evaluation of signs and symptoms following trauma to the head that it is often difficult to arrive at a conclusion or to express an opinion with definite assurance. This holds true to some extent in cases showing definite evidence of brain injury, but it is particularly true of those manifesting subjective syndromes. It is agreed that trauma to the head is fraught with grave possibilities and serious consequences and that prolonged unconsciousness, even in the absence of skull fracture or objective signs of brain injury, may be followed by incapacitating sequels lasting months and years. However, it may be stated that, with few exceptions, signs of injury to the nervous system set in immediately or within a few hours, more rarely a few days, after the accident. Mental symptoms, particularly headache and dizziness, may set in later, and convulsions may appear months or years after the receipt of head trauma. Generally, the longer the interval the more difficult it is to establish a causal relationship between trauma and its alleged sequels. In rare instances the already existing pathologic changes of dementia paralytica, alcoholism and the convulsive state may be aggravated by trauma, but they may also be responsible both for the accident and for the injury. Though very difficult, it is essential in all cases to determine the exact amount of brain injury and the degree of psychic coloration of symptoms that is present in most instances. In doubtful cases, but not as a general routine, encephalography is of great diagnostic help. As this procedure is always unpleasant and occasionally not without dangers, it should be resorted to only as a last measure and with due discrimination.

Clinically it is not easy to differentiate the subjective complaints which follow in the wake of the vast majority of cases of trauma to the head, and it is often impossible to state from the symptomatology alone what the nature of the syndrome is. Every case, therefore, requires not only special evaluation of signs and symptoms but also personality studies. In view of

13 Martland H S. Punch Drunk. *J A M A* 91:1103 (Oct. 13) 1928.

14 Foerster, O and Penfield W. The Structural Basis of Traumatic Epilepsy and Results of Radical Operation. *Brain* 53:99 (July) 1930.

15 Bielschowsky P. Disturbances of the Spinal Fluid System in Head Trauma. *Ztschr f d ges. Neurol. u. Psychiat* 117:55 (Nov) 1928.

16 Rand C W and Courville, C. B. Histologic Changes in the Brain in Cases of Fatal Injury to the Head. *Arch Neurol & Psychiat* 31:527-555 (March) 1934.

17 Friedman, E. D. Head Injuries. Encephalographic Observation. *Arch. Neurol. & Psychiat.* 27:791-810 (April) 1932.

18 Kennedy, Foster. Head Injuries, Effects and Their Appraisal. *Arch Neurol & Psychiat* 27:811-814 (April) 1932.

the existing differences of opinion, of the lack of knowledge and agreement as to the nature of the underlying pathologic changes, and of the confusion in terminology, a tentative classification of post-traumatic syndromes is suggested and the criteria for their recognition are discussed. The syndromes are (1) malingering, (2) traumatic hysteria, (3) traumatic encephalopathy or concussion, and (4) traumatic neurosis.

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ABSTRACT OF DISCUSSION

DR. N. W. WINKELMAN, Philadelphia. As has been shown malingering is not common, and even hysteria is not as common as customarily thought. In a study of a large series of cases histologically I have been surprised to find changes in the brain that were indisputable. In many of these, hysteria had been considered as a diagnosis. One is surprised to see in a group of post-traumatic cases a unanimity of complaints, as though the patients had rehearsed the symptom complex with one another. That is a statement which has been made for many years, that patients no matter how ignorant after head trauma complain of a group of symptoms that conform to the general group. That in itself is a remarkable thing. It is not only the trauma it is the immediate handling of the trauma case sometimes that produces the after-results. When one says that a trauma is mild and that the patient was unconscious for five or ten minutes, I don't believe one is giving the entire story. I should like to know what the treatment of that patient has been. Edema following even a mild concussion may provoke an anoxic condition in the brain similar to anoxemia from any cause. So it is not only the trauma but the handling of a patient afterward that determines what will happen to that brain the most sensitive organ of the body, an organ that degenerates with a loss of blood supply in eight minutes and completely degenerates in less than fifteen something that physicians are sometimes a little lax about remembering. I have found in a study of many trauma cases months and years after, indisputable evidence that trauma to the brain has produced a change—I would not use the term molecular—that can be recognized a change that is capable of producing symptoms mental and neurologic. When clinical diagnoses keep pace with advances in the other phases of neurology, I believe that eventually neurologists will be able to pick out those cases which will show under the microscope changes that any one can recognize.

DR. GEORGE B. HASSIN, Chicago. Trauma is probably a more frequent cause of peripheral and central nerve disorders than such common factors as infection or intoxication. It should therefore be considered among possible causes of those individual pathologic conditions of the nervous system in which the etiology may be obscured by a forgotten injury. Falls, electrical shocks, blows, jarring of the body produced by sudden stoppage of a fast moving train or car and similar causes may bring forth a great variety of disorders of the nervous system conveniently classified as post-traumatic syndromes. One such classification has been offered by Dr. Wechsler. The majority of syndromes he mentioned used to be described as functional as traumatic neuroses. At present, they are practically all organic. That is to say they show under the microscope demonstrable changes in the nervous system, excepting the classic cases of hysteria and malingering. I should add to these two conditions so called compensation hysteria, which however, like malingering is not a morbid entity. In compensation hysteria an individual worries over a possible unfavorable outcome of his claims, while a malingerer consciously tries to deceive the examiner by exaggerated and unjustified complaints. Another important group of post-traumatic syndromes comprises mental disorders. In the majority of cases it is not possible to establish an organic basis for so-called traumatic psychoses but with the perfection of the methods of neuropsychiatric research it will probably be possible to prove that even psychoses may be caused by trauma.

DR. TEMPLE FAY, Philadelphia. Dr. Wechsler has presented a valuable summary and classification of post-traumatic syn-

dromes. The problem of brain trauma involves a surgical principle concerning repair of damaged tissue. A wound, chronic ulcer or bed sore presents the same problem. The surgical principle underlying repair and maintenance of living tissue, brain or otherwise, demands that the maximum amount of circulation, nutrition and oxygen must be made available and maintained at all times. Following a cerebral commotion there is anemia, edema and pressure. Nature attempts to induce a hyperemia so as to assure oxygenization and nutrition to the injured part. Pressure rises as a result of the increase in blood volume, and compression anemia follows because the skull cannot expand to permit this congestion at one point without the sacrifice of necessary circulating blood volume in another. The cranial total volume remains fixed. The addition of a new factor means the equal subtraction of another. The brain is an organ that happens to have a more complex expression of symptoms but, nevertheless, it is dependent on adequate oxygen and nutrition for its survival. One cannot get blood, oxygen and nutrition back into the cranial cavity unless one makes room for it. Decompression, spinal drainage and dehydration permit additional space temporarily for the return of a nutritional blood supply necessary to maintain the function of the organ and prevent the final symptoms of anemia and softening. In the last ten years, 837 cases of head injury have come under my observation. I attempt to maintain the initial surgical principle by continued dehydration so as to promote the maximum circulation to the brain at all times at the expense of the less important elements, primarily spinal fluid volume. I have found that many of the post-traumatic syndromes described appear and disappear as the tide of the blood (nutrition and oxygen) rises and falls. After spinal drainage (or an encephalogram), and continued fluid and dietary limitation, these patients are definitely improved. Ninety-two per cent of a recent series on this program have been free from post-traumatic symptoms and able to return to work in three months. In the last analysis the function of the brain as an organ depends on adequate nutrition, and many of these vague post-traumatic symptoms are due to a chronic cerebral anemia. I am convinced that these symptoms may be prevented or controlled if measures are employed to maintain an adequate blood supply during and after the phase of the injury. I have found that careful and continued "dehydration" is required to obtain this end.

DR. J. L. FETTERMAN, Cleveland. Practically all modern writers on the subject are in accord with the author and with Drs. Hassin and Winkelman, that an organic basis underlies the emotional symptoms following head injury. However, there are some dissenting views. Reichardt, for example, disagrees. In a thesis that most of the neuroses following trauma are conditioned by the factor of compensation, Reichardt includes even many who have suffered cranial injury. He excludes cases of severe cerebral trauma such as intracranial hemorrhage, contusion of the brain and subdural hematoma. He believes that the remainder, many of the concussion cases, are influenced in their emotional symptoms by the factor of insurance. He cites the experience that among the uninsured and in the preinsurance era patients who suffered concussion of the brain cleared up in a remarkably faster time than do those who are insured. Dr. Wechsler did not emphasize underlying motives as responsible for neuroses after trauma to regions other than the cranium. In the traumatic neuroses of industry, for example, there are patients whose symptoms can be interpreted only as an escape from duties that are disagreeable, dangerous or as revenge against an employer. This constitutes an occupational type. In civil life one encounters patients whose neuroses in their onset development or disappearance reflect a claim for compensation. This is an indemnity type. In my experience the attitude to industry or toward compensation may be the dominating factor behind the symptoms of the neurosis. With reference to head trauma in children, Beekman wrote that post-traumatic sequelae were decidedly less common than among adults. Does Dr. Wechsler explain this difference on an anatomic basis or does he subscribe to the view of Davis, who discussed Beekman's paper? Davis suggested that it wasn't so much a physical difference as a psychic one. Children are less subject to social and economic motives, less influenced by "gain from illness" than adults.

DR. GEORGE W. HALL, Chicago I have been interested in this subject for a long time. How many persons have not been knocked unconscious at one time or another? The difficulty in evaluating cases of trauma to the central nervous system is that these tabulations as expressed by the author come from a specialist who has seen only the severe cases after they have been milled over, so to speak by other physicians. Consequently many cases escape his notice entirely, even though the patient may have been rendered unconscious at some time. It is difficult to arrive at the proper conclusions from a statistical standpoint on which any classification can be made. There is no doubt in my mind that, as Dr. Wechsler says, in many cases the desire to escape from the difficulties of life is an important factor, if one can study these cases as they come. Another point I would like to make is that recently there has been entirely too much stress placed on the possible changes shown in an encephalogram. I know of a clinic in this country that desires to make encephalograms in every case of brain injury or injury to the skull which of course I think is a mistake. The relative importance of an encephalogram is not known as yet. There are very few men in this country who can read an encephalogram with the proper degree of accuracy. Consequently in my opinion the importance of an encephalogram is too strongly emphasized. It brings about the old statement that one should not allow the laboratory to make the diagnosis. Another point brought out by one of the discussers is that children do not suffer the after-effects of these injuries simply because (and this is based on Dr. Wechsler's statement) the child desires to go on and play; he does not want to quit, and consequently he makes a very good recovery, whereas the individual becomes, of course, more profoundly neurotic after the injury if there was a predisposition to neurosis. There can be no question that there is a connection sometimes between brain injury, especially a basal skull fracture, and the possibility of developing other diseases. Not so long ago I had the privilege of seeing a case of basal skull fracture in which meningitis developed within a period of three or four days. The meningococci were found and the serum was used. The patient made a complete recovery. I think that Dr. Wechsler's classification is a good one and his percentage is very encouraging, in view of the fact that he sees these cases after the average practicing physician has not been able to solve the problem.

DR. WALTER FREEMAN, Washington D. C. There is a tendency in some locations, Washington for one, toward a great increase in the number of claimed disabilities under workmen's compensation acts, and there has been a tendency on the part of some physicians to claim that the neurosis itself, in the absence of a traumatic encephalopathy, is a disabling disease. It seems to me that this is a very radical view and I should like to have Dr. Wechsler's reaction to it.

DR. MAX H. WEINBERG, Pittsburgh I agree with Dr. Wechsler. It is unfair to discuss his paper more or less critically, because he could not give his paper in its entirety. This is one of the saddest and most pressing problems that neurologists have to put up with. Opinions differ sharply about these patients, but is it a mistake to give them so much attention? The question Dr. Winkelman raised especially is interesting. It is significant how some of the most ignorant people give definite symptoms, as though they had read the books on the subject. There must be some reason for patients complaining of the same symptoms, such as dizziness especially on bending, severe headache, with exacerbations and loss of memory. It is this group that is most disputed. What are neurologists going to do about these cases? It is all well enough to postulate that as soon as the litigation is over everything is going to be lovely with the patient, but this is found not to be so. The dehydration treatment, in accordance with principles laid down by Dr. Fay, is particularly valuable in this type of case and prevents many such sequelae. Dr. Wechsler rightfully stressed that the results do not depend so much on the extent of injury or the amount of the force but that it is a question of what happens to the brain and, as it seems, a great deal does happen. There is no doubt however that the question of personal equation does come in, for one has dropped the term 'traumatic neurosis' altogether in the last three years. I refer to these cases, once they present this group of symptoms as head injury syndromes.

With careful scrutiny, one will always find some organic cerebral changes. I therefore wish to emphasize that these head injuries are very serious as far as efficiency is concerned. I should like to ask the program committee in the future, when arranging for this kind of paper, to make an exception in the case of the original discussor and extend his time so that all of us can arrive at a fairly definite conclusion about these cases.

DR. C. C. NASH, Dallas, Texas There is one question I should like to ask as a neurologic surgeon and not as a neuropsychiatrist. In testifying in court, how is one going to differentiate between traumatic hysteria and malingering? It is one thing for a medical organization to say that a man is a malingerer but to get on the witness stand and say that this man is a malingerer and that there is nothing the matter with him, as I have learned from sad experience, is something one had better not do unless one is absolutely sure of oneself. Recently I had a court experience in which a man claimed to be paralyzed from a stroke of apoplexy resulting from sunstroke. His left leg and left arm were supposed to be paralyzed, and he walked in on a pair of crutches dragging his foot. He walked on his crutches, supported his weight and had corns on the bases of his hands. The attorney asked me if I would say this man was a malingerer. I said 'No. I couldn't find anything the matter with him, that was all.' Needless to say, the jury didn't believe me. They gave him total disability. The compensation laws in Texas provide that the man must be able to be returned to the same or similar occupation in which he was engaged at the time of the injury. He might be the finest stenographer in the world and be able to do that kind of work, but if he worked as a day laborer at the time of his injury he has to be paid total disability if he cannot return to that kind of work.

DR. E. E. MAYER, Pittsburgh As well as Dr. Wechsler could be followed in the incomplete reading of his paper, I gather that he is dealing only with residual syndromes. Most of the discussion seems to me, therefore, inappropriate in that acute and chronic cases are not separated. My experience is that the acute syndromes directly following head trauma differ from the chronic forms. I cannot find in hysteria that is connected with head trauma anything that differs from hysteria without head trauma. I cannot reconcile myself, therefore, to Dr. Winkelman's argument that cases of hysteria present brain changes, even if no clinical symptoms of an organic nature are present. Wherein does the distinction lie between hysteria without concussion and hysteria with concussion? The unrehearsed likeness of the complaints is not a proof of a common pathologic background but only a proof of a similarity in human nature in its mental mechanisms. Hysterical symptoms are compromises serving to conceal the real sources of a psychic conflict whether they occur with trauma or without trauma of a physical kind. The seeming uniformity of the psychology of the neuroses in the traumatic group is, however, more apparent than real, and it is still necessary to study individual differences. There is a group in which organic injury occurs and yet is mistakenly considered to belong to the traumatic neuroses. Mild as well as fugitive and transitory disorders of taxis and praxis must persistently be looked for and often will be found if patients are under continuous scrutiny. A transitory diplopia, a fragmentary amnesia or an actual thalamic type of pain is not uncommon. Particularly with the patient who has vertigo and who is not neurotic, or the patient who complains of petit mal seizures, will a thorough study often reveal that the post-traumatic state is on an organic basis. And I need hardly remind this group that the pathologic condition is sometimes found to be on an arteriosclerotic basis and not actually but only seemingly through close association, a post-traumatic one. Classifications are largely personal, and if Dr. Wechsler gets satisfaction in his clinical work from the four-phase classification he has given it need not follow that it would serve as satisfactorily for others. Neurologists still differ too much in the meaning of their cases, largely because of incomplete grasp of basic physiologic principles in connection with the brain, to classify one from the other.

DR. I. S. WECHSLER, New York While I agree with Drs. Winkelman, Hassin and Fay about the pathologic changes in certain types of brain injuries, I am more concerned with the group the symptomatology of which is so uniform and the

classification so difficult. The very profusion of terms used by the discussers bespeaks our confusion. We speak of compensation neuroses, litigation neuroses, hysterical neuroses, traumatic neuroses, traumatic neurasthenia, concussion, encephalography, ego neuroses, malingering, and what not. The question is, Are the criteria I suggested acceptable? It is facetiously said that, when a brick falls on a man's head, the first question he asks on coming to is not what happened to his head but to whom the brick belongs. None the less I feel that outright malingering is not very common provided one adheres to a very strict definition. Compensation or litigation as the predominating motive comes very close to the malingering. In the second or traumatic hysteria group the patients utilize trauma as an unconscious excuse for the solution of personal problems. Hence the need of personality studies. In the traumatic neurosis group one deals with a different personality with a different ego reaction albeit an identical symptomatology. Finally there is the group of patients who undoubtedly have brain changes, however minute. I agree with Dr. Hall that the encephalogram should not be used indiscriminately. It is not always harmless and it always is unpleasant. The word "concussion" will have to be redefined or discarded when more is known about encephalopathy, it may be used as a substitute. The point is to agree on definitions and classifications, however tentative. As to trauma in children, I find that children either do very badly or very well. They recover better than adults or show more residual defects, especially retardations. To answer Dr. Nash, I agree that if a patient utilizes compensation and litigation to perpetuate the neurosis he is malingering. As the study refers to post-traumatic conditions, I purposely left out acute injuries. May I reiterate that in my experience traumatic psychosis is extremely rare. What I have in mind is a true post-traumatic organic psychosis due to actual injury of the brain and not an emotional or other psychosis precipitated by trauma.

INFECTIONS BY GAS-FORMING ANAEROBIC BACILLI

AN ANALYSIS

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The present state of our knowledge concerning infections caused by anaerobic gas-forming bacilli is one of confusion. This is no doubt due to the fact that any lesion characterized by the presence of gas in the tissues, together with large gram-positive bacilli, is considered to be gas gangrene. Apparently in most cases neither the history of the infection, the clinical course nor the kind of gram-positive bacteria present alters the diagnosis. The great number of unsound tests that are still being used to determine the presence of *Clostridium Welchii* (the Welch bacillus) is another factor that does little to aid in clarifying the present situation.

All bacilli that grow in the absence of oxygen and form spores are grouped in the genus *Clostridium*, of which at present about 100 members are classified. Nearly all these organisms form gas in certain situations, but this is not a great factor in their classification, since the aerobic colon group and the streptococci also form gas and frequently do so in infected tissue. Of the 100 species of anaerobic spore-forming bacilli, seventeen are pathogenic for some form of animal life, whereas only seven are in the true sense pathogenic for man. Of these seven, *Clostridium tetani* is probably the most important. It is the cause of tetanus and is familiar to all. *Clostridium botulinum* the agent responsible for food poisoning, since the advent of adequate methods of processing of canned foods, is no

longer an urgent problem and seldom is encountered. The remaining five species of pathogenic organisms constitute the group that is responsible for malignant wound infections attended by edema, necrosis, toxemia and collections of gas, such as were seen so frequently during the World War.

Clostridium Welchii is the most important member of this group of five organisms. At present it has eleven synonyms, the most frequently used of which are *Bacillus perfringens*, *B. Welchii* and the gas bacillus. This organism is a short, thick, capsule-bearing rod with truncated ends (square, with rounded corners), which produces a filtrate of highly varying toxicity and hemolytic action. It was found as the only organism in 14 per cent of gas gangrene in war wounds. Together with other anaerobes it was found in 65 per cent. This shows that it played the major role, i. e., 79 per cent, in causing the emphysematous or most virulent type of gas gangrene in the World War. The next most frequent invader and probably second to *Clostridium Welchii* in toxicity is *Vibrio septique*. There is still some uncertainty about the correct name for this organism. Bergey's classification considers *Vibrio septique* of Pasteur to be identical with the bacillus of malignant edema of Koch. The Standard Classified Nomenclature of Disease refers to them as different organisms and gives *Clostridium septicum* (*Vibrio septique*) as the cause of malignant edema. Bacteriologists, I think, will continue to consider *Clostridium oedematiens* malignant as identical with both organisms of the Franco-German argument and ascribe to it the cause of malignant edema. The remaining three organisms, namely, *Clostridium oedematiens* (*B. novyi*), *Clostridium histolyticum* and less frequently *Clostridium fallax* are not often found and their identification is of no great importance to the clinician.

Gas gangrene is a clinical entity first described by Maissoneuve in 1853. During the Crimean War (1854-1856) the first series of cases was collected. Little was known of the etiology until Welch in 1893 described the organism that causes it. The typical picture of true *Clostridium Welchii* infection varies in severity with the portal of entry and the virulence of the infecting organism. In the cases of puerperal sepsis reported by Toombs and Michelson,¹ the mortality rate was 95 per cent. They were fulminating infections characterized by jaundice in more than 50 per cent of the cases, marked leukocytosis, usually from 25,000 to 90,000, rapidly developing secondary anemia, low hemoglobin and high fever. About 50 per cent of these patients were dead in forty-eight hours, only a small percentage living past the fifth day. True *Clostridium Welchii* infections of the extremities give a similar but somewhat milder clinical picture. The death rate during the war was about 50 per cent, whereas the series of cases from medical literature that I studied and that occurred during civil life showed a death rate much higher.

The toxicity of various strains of the four types of *Clostridium Welchii* is variable, testing sometimes as low as 1. In this laboratory, efforts to verify the reports that there are nontoxic strains of this organism have been unsuccessful. All strains studied here that fulfilled the growth characteristics of *Clostridium Welchii* produced a filtrate that was hemolytic and toxic,

¹ Toombs P. W. and Michelson I. D. *Clostridium Welchii* Septicemia Complicating Prolonged Labor Due to Obstructing Myoma of the Uterus. *Am. J. Obst. & Gynec.* 15: 379 (March) 1928.

usually to a high degree, testing from 1 to 4 to 1 to 7² when fresh animal serum was added to the medium. Toxins were made by inoculating tubes of veal meat infusion medium, to which fresh animal serum had been added up to 10 per cent. The culture was passed through a Berkefeld candle after forty-eight hours, and the resulting filtrate was tested as described.

Medical literature, particularly in the last twenty years, contains many reports giving *Clostridium Welchii* as the etiologic agent in a wide variation of clinical conditions. Torrey and Kahn,³ on the basis of experimental anemia in rabbits, produced by intramarrow injections of *Clostridium Welchii* toxin, claimed some similarity to primary pernicious anemia in man. Gordon-Taylor and Whitby,⁴ after a study of fifty cases, concluded that *Clostridium Welchii* is usually associated with acute cholecystitis. They also found the organism in 13 per cent of all gallstones removed at operation. Jennings⁵ finds *Clostridium Welchii* in the lumen of the appendix in 90 per cent of cases. *Clostridium Welchii* was reported by several to cause the toxemia of intestinal obstruction. Most of the foregoing work has been disproved. Many of the single case reports are not reliable. Of the cases that I reviewed, about one third were probably not true *Clostridium Welchii* infections. Cramp⁶ in 1912 reviewed 187 cases occurring up to that time, including twenty-five of his own. Of these 187 cases, approximately 30 per cent, in the light of more recent knowledge, were not *Clostridium Welchii* infections.

The most recent attempt to establish *Clostridium Welchii* as the cause of a different pathologic state is that of Andrews, Rewbridge and Hrdina.⁷ These workers assert that the Welch bacillus is a normal inhabitant of the liver and muscles of normal healthy dogs and, in severe irritations of the peritoneum by sterile autolyzed liver suspensions or 10 per cent bile salt solutions, will migrate out, causing a bacterial peritonitis and death from *B. Welchii* toxemia. In 1931 Trusler and Reeves⁸ reported on the bacterial flora of the livers and muscles of normal dogs. Since 1931 the complete work of Andrews and his associates has been repeated in our laboratory and an extensive study of the problem made by means of a more strict bacteriologic technic. A report of this experimental work has been accepted for publication by the *Archives of Surgery*. We were unable to duplicate the results of the foregoing experimenters but found that while the tissues, notably liver, spleen and muscles, of apparently normal healthy dogs regularly contained bacteria, *Clostridium Welchii* was not found to be present. Ordinary surgical cleanliness is not sufficiently accurate for the needs of this work and we believe that the results obtained by previous workers were due to contamination in the collection of the sample to be cultured or to incomplete cultural study of the organisms found.

Most of the experimental evidence and clinical conclusions linking *Clostridium Welchii* with conditions other than true gas gangrene have been based on unsound tests for the presence of this organism. The work of Jennings and as recently as June and July 1934 cases reported by Orr,⁹ are based on finding *Clostridium Welchii* by inoculating a rabbit intravenously with suspected material and then incubating it, after killing it by a blow on the head. Large gram-positive organisms were then recovered from the tissues of the rabbit. The same or a similar result may be obtained by killing and incubating a rabbit without inoculation. In 1927 Nerb¹⁰ described a test whereby the presence of *Clostridium Welchii* could be detected as follows. Into the liver of a guinea-pig, 2 cc of suspected material was injected, care being taken to traumatize the liver somewhat in the process. The animal was then killed by a blow on the head and incubated. If, after three hours of incubation, large gram-positive gas-forming bacilli were found in the peritoneal fluid, *B. Welchii* was considered to be present. Unfortunately, if 2 cc of sterile saline solution is injected into the liver of a guinea-pig in the same manner, large gram-positive gas-forming bacilli are usually found in the peritoneal cavity after three hours' incubation. Both procedures described are obviously worthless and misleading. A great number of cases reported are based on direct smear which, in view of the morphologic similarity of these organisms, is utterly unreliable. Probably the most reliable single laboratory procedure is a capsule stain, since *Clostridium Welchii* is the only pathogenic anaerobic organism bearing a capsule. In our experience, reliable capsule stains are extremely difficult to make and this method of identification should be used only as an emergency measure and by technicians with considerable experience. Certainly before a case is reported or recorded in experimental work, strict anaerobic technic is necessary for positive identification.

If it is true that approximately one third of the infections reported as being due to *Clostridium Welchii* were incorrectly diagnosed as to etiology, the interesting question arises: What is the real cause of such infections? In this connection a review of various series of cases reported as being gas gangrene shows that they are divided about equally among the following causes:

- 1 Those cases following compound fractures with attendant contamination from soil or street dirt

- 2 Those due to gunshot wounds and crushing wounds of the extremities, wherein muscle is injured and contaminated by dirt or dirty clothing

- 3 Spontaneous gas infections without a history of contamination, arising after clean surgery and the parenteral administration of drugs and solutions

Not included in this division are the cases of puerperal sepsis caused by *Clostridium Welchii* that are due to attempts at criminal abortion or instrumentation, of which some 300 have been reported and doubtless many others unrecognized.

As previously mentioned, about 30 per cent of the 187 cases reported by Cramp would fall in group 3. Orr's cases referred to before were seven in number, four of the patients were over 50 years of age, two of the four had circulatory failure, and one had diabetes.

- 9 Orr, T. G. Gas Bacillus Infection of the Abdominal Wall. *J. A. M. A.* 102: 2081 (June 23) 1934. Gas Bacillus Infection Following Clean Amputations. *Am. J. Surg.* 25: 113 (July) 1934.

- 10 Nerb, Louis. A Method of Prompt Identification of *Bacillus Aerogenes-Capsulatus* (*B. Welchii*). *S. Clin. North America* 7: 1021 (Aug.) 1927.

² A test of 1 to 7 means that 1 cc. of the filtrate diluted to a total volume of 7 cc. with physiologic solution of sodium chloride will when 1 cc. of the diluted suspension is injected intramuscularly kill a 250 Gm. Pigeon within twenty-four hours.

³ Torrey, J. C. and Kahn, M. C. The Progressive Anemia Following a Single Intramarrow Injection of *B. Welchii* Toxins. *Am. J. Path.* 6: 117 (March) 1929.

⁴ Gordon-Taylor, Gand and Whitby, L. E. H. A Bacteriological Study of Fifty Cases of Cholecystectomy with Special Reference to Anaerobic Infections. *Brit. J. Surg.* 18: 78 (July) 1930.

⁵ Jennings, J. E. Relation of the Welch Bacillus to Appendicitis and Its Complications. *Ann. Surg.* 93: 828 (April) 1931.

⁶ Cramp, W. C. A Consideration of Gas Bacillus Infection with Special Reference to Treatment. *Ann. Surg.* 56: 544 1912.

⁷ Andrews, Edmund, Rewbridge, A. G. and Hrdina, Leo. Causation of *Bacillus Welchii* Infections in Dogs by Injection of Sterile Liver Extracts or Bile Salts. *Surg. Gynec. & Obst.* 53: 176 (Aug.) 1931.

⁸ Trusler, H. M. and Reeves, J. R. Significance of Anaerobic Organisms in Peritonitis Due to Liver Autolysis. *Arch. Surg.* 28: 479 (March) 1934.

Case 17042¹¹ from the Massachusetts General Hospital is a good example of group 3. Foreign literature especially contains numerous cases that fall in the third group. In 1931 a committee at the New York Hospital for Bone and Joint Diseases,¹² appointed to determine why gas infections appeared so frequently in amputation stumps after clean surgery, brought forth some interesting facts. The committee considered that all the gas infections were caused by *Clostridium Welchii* and then discovered that most of the infections appeared in arteriosclerotic individuals or patients past the age of 50, some of whom had thrombo-angitis obliterans. These infections were mild, and recovery was the rule when the patients were in fairly good physical condition. As stated before, all series of cases, except war wounds, that I studied contain approximately one third that arise in patients past 50 years of age, in diabetic patients, in arteriosclerotic patients, and in patients with thrombo-angitis obliterans or generalized circulatory failure. These infections may be spontaneous, follow amputations for dry or moist gangrene, and appear after the parenteral injection of drugs and solutions and after bruises in which the skin is not broken. The clinical picture, as compared with true *Clostridium Welchii* infections, is relatively mild, the temperature from 100 to 102 F., white blood cells from 10,000 to 15,000, no jaundice, and no hemolysis or secondary anemia. The infected part gives off a foul odor and contains foul smelling gas, the muscles are blackened or reduced to a thick black paste, the skin is bronzed or purple, and the hair does not pull out. The line of demarcation is usually prominent. In true *Clostridium Welchii* gas gangrene there is nearly always a history of trauma with contamination, it occurs in all ages, severe pain occurs at the site of the infections and the temperature rises rapidly to 103 or 104. The white blood count ranges from 25,000 to 90,000, red blood cells may fall to 1,000,000 in twenty-four hours as the result of hemolysis, and some degree of secondary anemia is always present. Jaundice or a greenish pallor is present in more than 50 per cent of the cases. The patient perspires freely and is very toxic. The infected area is indurated and crepitant, the skin is often reddened but not otherwise discolored, the hair pulls out easily, the infected muscles are red, the wound exudes a red, hemolyzed serum and a gas, which does not have a putrefactive odor. Lines of demarcation are not prominent since the gas infiltrates along the muscular planes at some distance from the site of infection.

I have recently seen the case of a boy who fell from a cherry tree and suffered a compound fracture of the humerus at the elbow joint, the proximal fragment being thrust into the soil. Open reduction was done and the wound closed tightly. Thirty-six hours later the muscles around the elbow were crepitant and forty-eight hours later the boy was extremely jaundiced and had a temperature of 104. *Clostridium Welchii* was recovered, with other organisms, from the wound and in apparently pure culture from the blood stream. Recovery followed amputation below the shoulder and the administration of 100,000 units of *Clostridium Welchii* antitoxin. Fortunately for the patient, the organism recovered was only mildly toxic, testing 1 to 2 in our hands.

The various pathogenic organisms that cause true gas gangrene are distinct species, belonging mostly to the sacrolytic group, they are similar in morphology to one another and to numerous species of putrefactive proteolytic bacilli, only a few of which have so far been classified. There are myriads of these putrefactive, gas-forming, anaerobic bacilli lying dormant in the soil, periodically growing on bits of decaying organic matter and thereby maintaining their numbers. These organisms constantly contaminate food and it has been shown experimentally that they utilize the tissues and organs of animals to continue their existence. Evidence has been and still is being accumulated in this laboratory to show that in the latter decades of a human existence the organs and muscles may become contaminated by these saprophytes and that under certain conditions they can begin the destruction of the tissues before death. We believe that the type of putrefactive gas gangrene appearing mysteriously in older people, and those suffering from diabetes, arteriosclerosis and circulatory failure, is caused by these saprophytic bacteria already present in the tissue injured or deprived of its blood supply. All that is necessary for their growth is death of tissue. In dogs known to harbor similar organisms in their tissues, putrefactive gaseous lesions may be produced by trauma to muscles or the injection of toxic substances. These infections readily respond to adequate drainage, resection of the dead muscle, and supportive care.

In human subjects, treatment should be directed toward improvement of circulation, control of diabetes and removal of dead muscle. Certainly radical amputations are not warranted and specific *Clostridium Welchii* antitoxin is useless. In true *Clostridium Welchii* gas gangrene, antitoxin seems to be most valuable as a prophylactic agent. When the infection is established, it becomes a therapeutic aid second only in value to its early prophylactic use and debridement.

SUMMARY

1 Approximately 30 per cent of cases reported and treated as *Clostridium Welchii* gas gangrene are caused by other anaerobic organisms.

2 This 30 per cent of cases should be classed as putrefactive gangrene and treated conservatively by systemic supportive treatment, debridement and irrigations. *Clostridium Welchii* antitoxin is not indicated and may be injurious.

3 Putrefactive gangrene is likely to appear in patients past the age of 50 years who are constitutionally below normal. Cases appear notably in patients with circulatory failure, arteriosclerosis, thrombo-angitis obliterans and diabetes mellitus.

4 The direct cause for putrefactive gaseous lesions in the muscles of patients whose condition has been described may be bruises, burns, simple fractures, parenteral administration of drugs and solutions, and circulatory failure.

5 Putrefactive gas-forming anaerobic soil bacteria contaminate food at all times. It seems apparent that bacteria of this type are frequently present in the organs and muscles of the aged individual.

6 Diagnosis of *Clostridium Welchii* infection cannot be based on direct smear, the rabbit inoculation test or Nerb's test.

7 Diagnosis, for clinical purposes, of the presence of *Clostridium Welchii* can be made in experienced hands by capsule stains. However the only positive

¹¹ Dwight R. W. A Lesson in Surgery plus Diabetes. New England J. Med. 204:172 (Jan. 22) 1931.

¹² Gas Bacillus Infections in Amputation Stumps. Report of Committee Hospital for Joint Diseases. J. Bone & Joint Surg. 13:577 (July) 1931.

identification is by the use of anaerobic cultural methods and related criteria

8 Patients suffering from wounds, particularly of muscle tissue, which have been contaminated with soil or street dirt, should be given gas gangrene antitoxin prophylactically and in addition should receive debridement and irrigations. If toxic symptoms develop, radical debridement, continuous irrigations and therapeutic serum are indicated without delay

FROST-BITES AMONG EMPLOYEES OF THE CITY OF NEW YORK

DURING THE WINTER OF 1933 1934

LEOPOLD BRAHDY, MD

NEW YORK

Among the regular and temporary employees of the Department of Sanitation, there were 388 cases of frost-bite between December 1933 and March 1934. One hundred and twenty-eight cases were mild, the men lost no time from work and required but one treatment. The data on these 128 cases were not available for inclusion in this study, which is limited to the 260 remaining cases.

One hundred and eighteen men had frost-bitten ears, of which four resulted in disfiguring scars, one had a frost-bitten nose, which left no noticeable scar, 113 had frost-bitten hands and fingers, twenty of whom have permanent defects varying from limitation of motion in one finger to almost complete loss of use of the hand. Of forty-two frost-bites of the feet there are four with similar variations of permanent defects. The classification of permanent defect does not include patients who complained of recurrent swelling of the affected part, tingling and sensitiveness to cold common complaints even among those who lost no time from work.

When an investigation into this condition was begun, it was supposed that the predisposing factors to injury by cold were high humidity, insufficient clothing, a long period of unemployment preceding the job as snow shoveler, previous indoor occupations, repeated freezing, age, physical fitness, preexisting disease and alcoholism. It was believed that slow thawing of the affected parts and early treatment might have avoided some of the poor end results. The data obtained indicated that these assumptions required modification.

The accompanying charts¹ show weather conditions in New York City from December 15 to March 15, the number of employees exposed and the number of frost-bite cases. The temperature and the wind velocity and the humidity on the graphs is the average of the first four hours of the usual working day. This period was taken because 75 per cent of the patients had symptoms after working four hours or less, 90 per cent had symptoms before the end of the working day, and the remaining 10 per cent did not have any symptoms except mild numbness till after they had gone home.

The single continuous line indicates the amount of snow on the ground in Central Park. On the city streets the snow remains much longer. A fair index of the amount of snow on the streets is the number of temporary snow shovelers employed. The double line indicates the total number of men employed in the

sanitation department. There are 14,000 regular employees, additional temporary employees for snow removal increased the number as shown on chart 1 to a maximum of 54,000.

Chart 1 shows that frost-bite occurred on January 29 although there was little snow removal going on. The seasoned worker is susceptible and the presence of snow is not the important factor. On the days when snow was falling (indicated by rise in cumulative snowfall) there were fewer frost-bites than one might expect from the temperature and wind.

On chart 2 the ratio of the number of frost-bites to 10,000 men exposed is shown. This brings out more clearly that at temperatures below 8 F, regardless of other conditions, an incidence of five or more frost-bites may be expected (chart 2, December 29, 30, February 8, 9, 10). When the temperature is between 8 and 14, the incidence of frost-bite is high only when there is a strong wind movement, the temperature may fall as low as 8 without causing many frost-bites (February 17). When the temperature reaches 24 frost-bites rarely occur, no matter how strong the wind.

On the days when a large number of frost-bites occur, the humidity was never high (maximum 60 on February 20, chart 2). There appears to be no close relationship between frost-bite and humidity.

The significance of wind is seen on comparing December 29 and 30. On these two days the temperature was about the same, on the 29th the wind movement was 13 miles per hour and on the 30th it dropped to 5 miles per hour. There was a sharp decrease in the incidence of frost-bite. On January 29 and February 3 and 10 the average temperature was the same (8 F) but on January 29 the wind movement was the highest of the winter (24 miles), while on February 3 it was 10 miles and on February 10 it was 14 miles per hour. The incidence of frost-bite on the windy day was nearly 8 for each 10,000 men exposed, while on the other two days it was less than 1. The humidity was about equal on the three days.

Most of these men were treated at the Department of Sanitation Clinic. The unexpected rush of cases did not permit general physical examination till some weeks after the onset, when all the milder cases had been closed. Among those with serious loss of part of the hands or feet, one had diabetes, one epilepsy, two myocarditis with circulatory insufficiency, one syphilitic endarteritis and one advanced arteriosclerosis. Moderate arteriosclerosis was not more frequent than usual in a similar group of laborers. Malnutrition evident on physical examination was found in two. All eight men, with underlying systemic conditions, were temporary employees.

RESULTS OF OBSERVATIONS

Duration and Repeated Exposure—A history of the symptoms of frost-bite in the affected part, either within a few days or in previous winters, was rarely obtained. Repeated freezing was not a factor in these cases. MacCallum² states that repeated exposure for short periods does not produce necrosis but, instead, hyperplasia with giant cell formation in the epidermis. This condition was not observed in any of our cases.

Workers who continued several hours after the first feeling of numbness had the worst frost-bites. The length of exposure after the first symptoms develop is more important than any other single factor.

From the Division of Workmen's Compensation Office of the Corporation Counsel of the City of New York.

¹ The graphs of weather conditions are based on the data in the Report of the New York Meteorological Observatory James H. Scarr, director United States Weather Bureau.

² MacCallum W. G. Text Book of Pathology ed 5 Philadelphia W. B. Saunders Company 1932 p 363.

Thawing—One patient with freezing feet went into a hot boiler room to get warm. He eventually lost two toes of his foot. This case, coming early in the series, gave us the impression that slow thawing was of the utmost importance. More careful investigation did not confirm this generally accepted idea. Many men with apparently severe frost-bites went into warm rooms without bad effect. In a large percentage of the serious cases the men were careful not to warm the freezing part rapidly, often going to extremes of caution in increasing the temperature slowly. A number of men rubbed the affected part with snow.

Age—All patients with serious underlying disease were over 45. Omitting these eight, the average age of men with serious frost-bites was but one year above the average of the group.

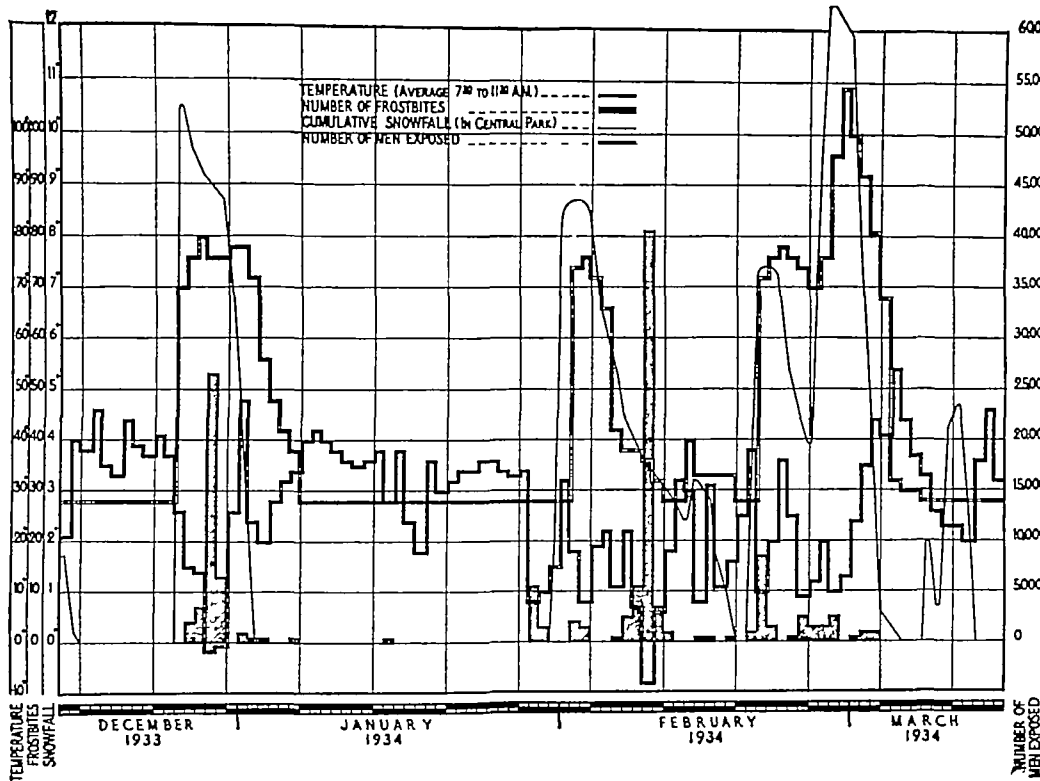


Chart 1—Temperature, number of men employed in the department of sanitation, cumulative snowfall on the ground in Central Park and the number of frost bites.

Clothing—With few exceptions, none of the patients gave a history of feeling cold in the body. Temporary employees in some cases wore clothing that was too heavy for working with comfort. They felt warm after shoveling an hour and rested a while. It seems possible that the rest period, though the body was warm, permits freezing of the extremities. Wet hands and feet occurred but not with sufficient frequency to be considered an important factor. One patient, with serious malnutrition, stated that he wore thin, old gloves. Such a history was unusual, most workers stating that their gloves gave as much protection as could be expected. The men do not seem to realize the need of woolen mittens. A common custom among workers is noteworthy. Many of them wore two pairs of socks or two pairs of gloves. This must result in some constriction of the feet and fingers and predisposes to frost-bite. With few exceptions, patients stated that they wore good shoes, but some wore shoes with soles too thin for this type of work.

Alcoholism—Direct questioning of individuals who had suffered from frost-bite would be unreliable on this subject and was done only when it seemed that the physician had their full confidence. From discussions with employees who did not sustain frost-bite, I had the impression that the consumption of alcohol during the working period and lunch time was very uncommon and not a factor in predisposing to frost-bite.

Coffee and Tobacco—The drinking of hot coffee in the course of the work and immediately after the end of work was common. When an employee went into a lunch room solely to warm up, he usually ordered a cup of coffee. Most men smoked as soon as they could get indoors.

The skin temperature of the fingers, toes and ears is lower than that of the body. It has been demonstrated

that caffeine³ and tobacco⁴ depress the temperature of the peripheral parts. Hot water, alcohol and acetylsalicylic acid, on the other hand, raise the peripheral temperature. Two cups of coffee (in a habitual coffee drinker) will lower the temperature of the fingers 2 degrees for several hours. A glass of hot water or 5 grains (0.3 Gm.) of acetylsalicylic acid will raise the peripheral temperature. The relation of tobacco and coffee to frost-bite deserves further investigation.

Nutrition—Undernourishment to a degree to be manifest on physical examination was

found in but two cases. Several temporary employees gave a history of daily food intake below normal in quality and quantity. Poor nutrition, even though not sufficient to show on physical examination, probably should be given some weight as a factor in producing frost-bite.

Previous Occupation—Except so far as it affects nutrition, long periods of unemployment does not make the individual more susceptible, nor does previous indoor occupation.

Pathology—A feeling of cold is a reaction of normal tissues. The sensation of cold is associated with increased circulation, evidenced by a healthy pink color. Numbness is the first symptom on prolonged exposure to cold and indicates that the sensory nerves are affected. All superficial sensation, pin prick, touch, heat and cold are diminished and later absent.

3 Bierman, William. Personal communication to the author.
4 Maddock, W. G. and Collier, F. A. Peripheral Vasoconstriction by Tobacco. Demonstrated by Skin Temperature Changes. Proc. Soc. Exper. Biol. & Med. 28: 487-488 (Jan.) 1932.

This anesthesia is the dangerous element in frost-bite, because on continued exposure the damage may increase without any other symptoms, until all the soft tissues and bone have been injured. The distal parts, the terminal phalanges, the ears and the nose tip are the parts first affected. I have never seen a middle phalanx or proximal part affected unless the more distal portions were much more seriously involved.

At the onset of the frost-bite there is a constriction of the blood vessels evidenced by pallor of the skin. In the early stages this disappears quickly if the part is warmed. In the later stages the skin remains white, later it becomes purplish or black and from twenty-four to forty-eight hours later blebs or chilblains form. Whether these pathologic effects are a direct result of the cold or due to vasoconstriction or a trophic nerve disturbance has been long debated. The fact that the most distal parts of the body, where the blood vessels are small, are the ones affected indicates that a change in the arterial supply is the important factor.

The changes in the skin are a useful but not always accurate measure of the damage to the deeper tissues. The motion of the joints may be re-restricted, but how much of this restriction is due to tendon injury and how much to injury of the joints it is impossible to state.

The bones are involved in severe cases. In the early stages, this condition is evidenced solely in roentgenograms by osteoporosis. Later, necrosis occurs with sinus formation. The discharge is slight, thin and gray. No pieces of bone are discharged and no sequestra are formed. There is no evidence of new bone formation. In late roentgenograms the joint spaces are narrowed or obliterated.

Histologic sections⁵ of fingers of three patients amputated more than four months after the frost-bite showed edema and round cell infiltration of the skin and subcutaneous tissue. The skin was atrophic and ulcers showed no epithelial reparative process. Small pieces of bone tissue looked amorphous, there was no evidence of new bone formation. In places there was granulation tissue or dense connective tissue repair. The new tissues were less vascular than usual. Some of the sections showed blood vessels with organized

thrombi. The interesting finding is the absence of epithelial or bone repair.

The clinical picture and what is known of the pathology point to an ischemia as the basis of the condition. From a therapeutic point of view, this must be considered the important factor. Even if some or all of the damage is due to the direct effect of freezing or to trophic changes, the only hope of restoration is the reestablishment of circulation as quickly as possible. It is axiomatic that whatever the cause of tissue injury, repair depends on early establishment of adequate blood supply.

Treatment—The treatment was that commonly used in frost-bite, namely, ointments for unbroken skin conditions, sterile dressings for blebs or ulcers. If bone

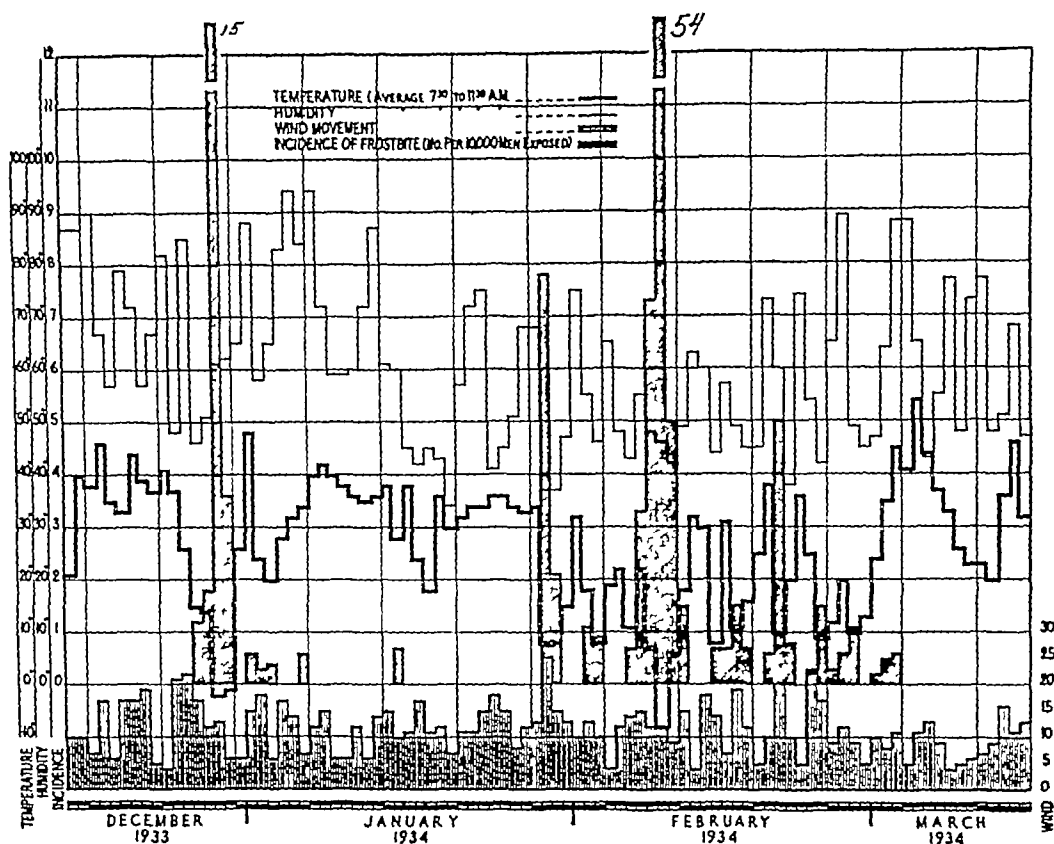


Chart 2—Temperature humidity wind movement and incidence of frost bite.

necrosis developed, the wound was cleansed and surgical dressings, wet or dry, were applied. Treatment was directed mainly to prevent infection and for that reason is important. Other than preventing complicating infections, it has no influence on the end result.

Secondary infections were treated with the usual surgical dressings. If the condition did not heal but bone necrosis continued for from three to five months amputation was used as a last resort. This is sound conservative therapy and until recently was the only method of treatment available.

Whether the treatment was begun early or late apparently did not influence the end result. In a few cases, if treatment had been requested earlier some days of disability might have been avoided by preventing infection of blisters, but none of these avoidable secondary infections developed to any serious condition.

Comment on Treatment It is possible that exposure in colder climates results in a different condition from

⁵ The sections were obtained through the courtesy of Dr. J. M. Hixson. They were made by Dr. A. M. Sala whose reports were freely used in this summary.

that seen in New York. Mummification or rapid gangrene is not seen, this no doubt requires other treatment. In our climate the custom of rubbing with snow must be condemned.⁶ In the Alps, snow is soft, dry and clean, on city streets it is gritty, moist and dirty. The first treatment should consist of the application of gentle warmth, best obtained by wrapping the whole hand or foot in wool and thus using local body heat.

Considering the pathology of frost-bite, it seems to be a condition that can be favorably influenced by physical therapeutic methods. Good results have been reported by a number of physicians.⁷ The recent reports of the use of apparatus for passive vascular exercise give the greatest promise.⁸ There is nothing to be lost and everything to be gained by skilful and early use of physical therapy. Indiscriminate application and early use of heat lamps or diathermy, however, is to be condemned. This treatment must be administered by one skilled in physical modalities.

If necrosis of the phalanges takes place, surgical intervention is necessary. Nothing can be gained by procrastination. The wound seldom heals and, if it does the skin becomes so adherent to the bone that amputation is necessary. If a partial amputation must be done the character of the stump is more important than the loss of another centimeter in the length of the finger. The surgeon should bear in mind that a completely immobile finger is a more serious handicap to a manual worker than an amputation of that finger. Consideration must be given to the functional end result rather than to the anatomic loss.

Roentgenograms—Roentgenography of the necrosing bone showed a picture different from septic osteomyelitis. Areas of sclerosis are unusual, indicating that new bone does not form readily.

Contracture of muscle tendons, both flexors and extensors, is the most common of permanent defects. In these cases, roentgenograms show a degree of osteoporosis far greater than in similar contractures due to infectious tenosynovitis, indicating that bone is always directly affected by frost-bite when there is tendon involvement.

Prevention—When work can be postponed, due consideration should be given to hazards of temperatures below 8 F or to temperatures between 8 and 14, when there is a very strong wind. Where the work permits, indoor rest periods of a half hour every two hours should be used. A worker who develops numbness and blanching of the extremities should discontinue work for the day. Attention should be given to clothing. It should be well fitting but not excessive. Gloves, socks and shoes are more important than body clothing to men who do hard labor. One good pair of well fitting gloves or preferably mittens will protect the hands better than a tight fitting double pair. Shoes that fit with one pair of socks may be too tight with two pairs. In preventing frost-bite, fit of gloves and foot wear is more important than thickness. Men with cardiovascular disease or diabetes should be excluded from outdoor work at low temperature.

Complications—It is surprising that rhinitis, tonsillitis or pneumonia were not reported as complicating

any of these frost-bites. No cases of aggravation of tuberculosis or other systemic diseases were found.

SUMMARY

Three hundred and eighty-eight cases of frost-bite occurred among employees of the Sanitation Department of the City of New York during the winter of 1933-1934. Analysis of the weather conditions during the days of exposure showed that temperatures below 14 F constitute an industrial hazard to outdoor workers, high winds add to the risk, humidity is not a factor. Older men are not more susceptible except as they have cardiovascular disease or diabetes. General nutrition and clothing are of importance, more important than any other factor is the length of exposure after the first symptoms appear. Improved methods of treatment should be sought especially in the field of physical therapy.

Municipal Building

CLINICAL MUTATIONS IN LYMPHOBLASTOMAS

UDO J. WILE, MD

AND

FRANK STILES JR., MD

Professor of Dermatology and Syphilology and Instructor in Dermatology and Syphilology, respectively, University of Michigan Medical School

ANN ARBOR, MICH

For years a group of diseases, now generally classed as lymphoblastomas, have been studied and interpreted as separate and distinct entities. This group comprises chiefly mycosis fungoides, Hodgkin's disease, lymphatic leukemia, lymphosarcoma and the subvarieties of these. Not only were these conditions considered quite separate one from another but there existed a wide difference of opinion regarding the interpretation of the clinical and pathologic changes in any one particular member of this group. To complicate an already chaotic state of affairs, cases appeared from time to time that possessed features of two or more of these diseases. Adding to this the widely varied and multiform lesions presented by any one condition made the confusion complete.

In recent years a semblance of order has emerged from the chaos with the growth of the view that these conditions are all genetically related neoplasms involving the lymphoid tissues. One of us¹ has repeatedly emphasized this view in various discussions of the lymphoblastomas and has pointed out that one variety may merge into another. There are those (Ewing,² Ormsby³) who believe that more is to be accomplished by separating these diseases into distinct entities. However, it seems that a clearer understanding may be had by recognizing the features that these conditions have in common and their possible relationships.⁴ It is to

Studies and Contributions of the Department of Dermatology and Syphilology, University of Michigan Medical School, service of Dr. Udo J. Wile.

Read before the Section on Dermatology and Syphilology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

¹ Wile, U. J. in discussion on Fraser¹⁵ and on Ormsby and Finnerud² and Lane and Greenwood.¹⁶

² Ewing, J. in discussion on Warthin.^{17b}

³ Ormsby, O. S. and Finnerud, C. W. Mycosis Fungoides. Arch. Dermat. & Syph. **27**: 631 (April) 1933.

⁴ Symmers, Douglas. The Relationship of the Toxic Lymphoid Hyperplasias to Lymphosarcoma and Allied Diseases. Arch. Int. Med. **21**: 237 (Feb.) 1918.

⁶ Macklin, A. H. The Treatment of Frost Bite. Lancet **1**: 884-885 (April 25) 1925.

⁷ Macklin, A. Courcoux, A. Treatment of Frost Bite by the Biokinetic Method of L. Jacquet. M. Press. **99**: 438-439 (May 5) 1915.

⁸ Herman, L. G. and Reid, M. R. The Pavaex (Passive Vascular Exercise) Treatment of Obstructive Arterial Diseases of the Extremities. J. Med. December 1933. Shipley, A. M. and Yeager, G. H. Passive Vascular Exercise in the Treatment of Peripheral Circulatory Disease, Surg. Gynec. & Obst. **59**: 480-485 (Sept.) 1934.

add further evidence to the view that the various members of the lymphoblastoma group are but different manifestations of an underlying lymphoblastomatous process that this paper is being presented.

The fact that granulomatous-appearing lesions occur in the skin during the course of these diseases has led to the view that the probable etiologic agent would be found to be infectious (Ormsby,³ Macleod,⁵ Ewing²)



Fig. 1—Patient when first seen in 1921 with infiltrated nodules and plaques characteristic of the prefungoid stage of mycosis fungoides

Support for this view was found in the fact that the histologic picture seen in the lesions showed a connective tissue proliferation with an accompanying infiltrate of lymphoid cells suggesting chronic infectious granuloma. A great amount of bacteriologic and immunologic investigation has been carried out in attempts to establish or rule out an infectious agent in Hodgkin's disease, leukemia and mycosis fungoides (Zinsser,⁶ Fox,⁷ Fraser⁸). Although Hodgkin's disease and leukemia are believed by some to be associated with tuberculosis, pneumonia and various acute infections (Reed,⁹ Longcope¹⁰ Ewing²), no definite etiologic organism has been established.

On the other hand Warthin¹¹ in a study of a vast amount of biopsy and autopsy material concludes that

⁵ Macleod J M H Diseases of the Skin London H K Lewis 1920

⁶ Zinsser Hans in discussion on Warthin^{11b} and reply to Ewing²

⁷ Fox Herbert American Association of Pathologists Scientific Proceedings Am J Path 3:544 (Sept.) 1927

⁸ Fraser J F The Pathology of Mycosis Fungoides J Cutan Dis 35:793 (Dec.) 1917

⁹ Reed Dorothy M On the Pathologic Changes in Hodgkin's Disease with Especial Reference to Its Relation to Tuberculosis Johns Hopkins Hosp Rep 10:133 1902

¹⁰ Longcope W T On the Pathologic Histology of Hodgkin's Disease with Report of Series of Cases Bull Ayer Clin Lab Pennsylvania Hosp 1:4 1903

¹¹ (a) Warthin A S Genetic Neoplastic Relationships of Hodgkin's Disease, Aleukemic and Leukemic Lymphoblastoma and Mycosis Fungoides Ann Surg 93:153 (Jan.) 1931 (b) Scientific proceedings of the twenty-seventh Annual Meeting of American Association of Pathologists and Bacteriologists Am J Path 3:552 (Sept.) 1927

these diseases are all related neoplasms. They show metastasis and infiltration. They run a similar course with remissions and recurrences. He states further that fever occurs only when there is absorption of necrotic material when there are no cures and no immune reactions and when there is a steady malignant progress to fatal termination.

The same histologic picture that is interpreted by some (Ormsby,³ Macleod⁵ and others) as inflammatory—namely connective tissue proliferation and an infiltrate of lymphoid cells—has been considered by an increasing number of observers as a neoplastic process.

Keim¹² writing from this clinic has pointed out that in all members of the group of clinical lymphoblastomas there is an infiltrate of abnormal cells of the lymphocyte series differing in individual cases in the degree of maturity of these cells. The connective tissue proliferation is to be looked on as a stroma reaction to the presence of the tumor cells such as is seen in other types of neoplasms. In the early slow-growing stages the connective tissue response is more marked giving the appearance of inflammatory tissue, while in the later stages when the tumor cells are rapidly proliferating the stroma is seen to be not so well developed.

Fraser¹³ and Keim¹² state that although the early lesions are inflammatory in their appearance, small groups of neoplastic cells may be found after careful search.

The view expressed by Keim from the clinical standpoint is also held by Warthin^{11a} from the pathologic point of view, namely that these diseases are all related and have in common a cell of the lymphocyte series as a type cell. The various types of lymphoblastoma differ

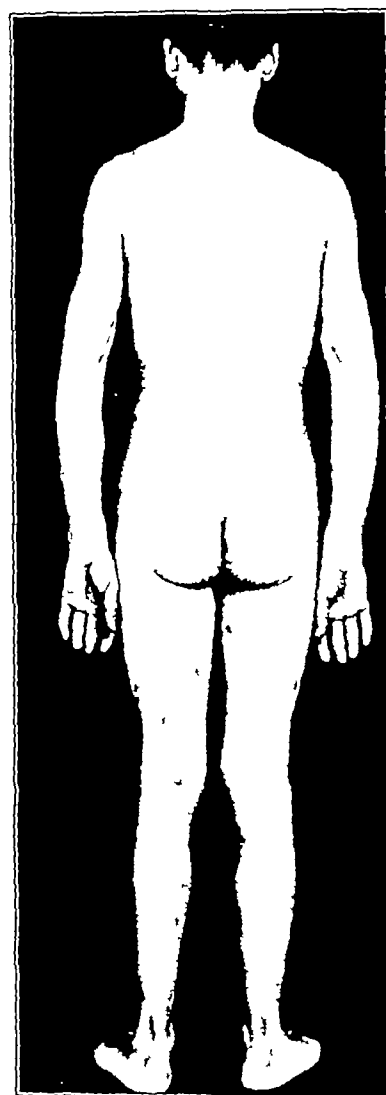


Fig. 2—Same patient as in figure 1 twelve years later. The prefungoid lesions had disappeared leaving only scaly and pigmented residua. One eroded nodule is seen on the posterior surface of the right thigh.

¹² Keim H L The Lymphoblastomas Their Interrelationships Arch Dermat & Syph 10:533 (April) 1929

¹³ Fraser J F The Interpretation of Mycosis Fungoides as a Variety of Lymphosarcoma Arch Dermat & Syph 11:425 (April) 1925

chiefly in the degree of differentiation shown by these cells. Keim¹² points out that, in his series of cases, the pathologic changes in the various clinical types of lymphoblastoma are interchangeable. Montgomery,¹⁴ in a study of the malignant erythrodermas, states that even though the histologic picture in early cases is typical of lymphoblastoma, it is impossible to prognosticate which type will eventually develop.

In a recent paper on mycosis fungoides Ormsby² outlines certain differential points by which the mem-

states that Hodgkin's disease represents a scirrhous form of lymphoblastoma and that leukemia is a lymphosarcoma with tumor cells proliferating in the blood stream.

Recognizing that the various types of lymphoblastoma are but different manifestations of the same malignant process makes possible an understanding of those cases in which features of two or more of the lymphoblastoma group are present, or in which mutations from one type to another occur. Conversely, the presence of two or more of these types in one case, or the presence of mutation from one type to another in one individual adds great emphasis to the view that they are simply different phases of the same process.

Cases that show transitions from one type to another are not rare in the literature. It has been pointed out that the proliferating tumor cells may eventually gain access to the blood stream and thus give an associated picture of lymphatic leukemia. Keim,¹² Symmers,¹⁷ Fraser,¹⁸ Lane,¹⁸ Pardee and Zeit,¹⁹ have recorded such cases. Symmers²⁰ believes that Hodgkin's disease is separate from the other members of the group but many cases of Hodgkin's disease are undistinguishable from mycosis fungoides. Fraser⁸ has reported cases of mycosis fungoides terminating in typical Hodgkin's disease. Cases of lymphatic leukemia and of mycosis fungoides terminating in lymphosarcoma have been recorded (Fraser¹³ Keim¹²).

The following case shows the definite mutation that occurs between types of lymphoblastoma.



Fig. 3—Section of the original lesion under low power showing marked acanthosis and bandlike infiltrate of cells compatible with diagnosis of granuloma fungoides.

bers of this group may be separated. He states that mycosis fungoides involves chiefly the skin with a mixed cell infiltrate, spares the mucous membranes and only later involves the lymph glands, and that lymphosarcoma usually involves the lymph glands and mucous membranes primarily and presents a fairly uniform type of cellular infiltrate. Leukemia appears primarily in the blood stream, only later involving other structures, and Hodgkin's disease involves chiefly the lymph glands with a mixed type of cells and connective tissue proliferation, later involving the skin and other structures.

These differential points, while serving to classify clinical types or stages of lymphoblastomatous development, actually point to the underlying pathologic unity of these conditions, since they all originate in lymphoid or in reticulo-endothelial tissue. Montgomery,¹⁴ Fraser,¹⁵ and others consider mycosis fungoides to be a neoplasm originating in the reticulo-endothelium of the skin. Lymphosarcoma presents a more highly differentiated type of cell originating in the lymph nodes. Mallory¹⁶

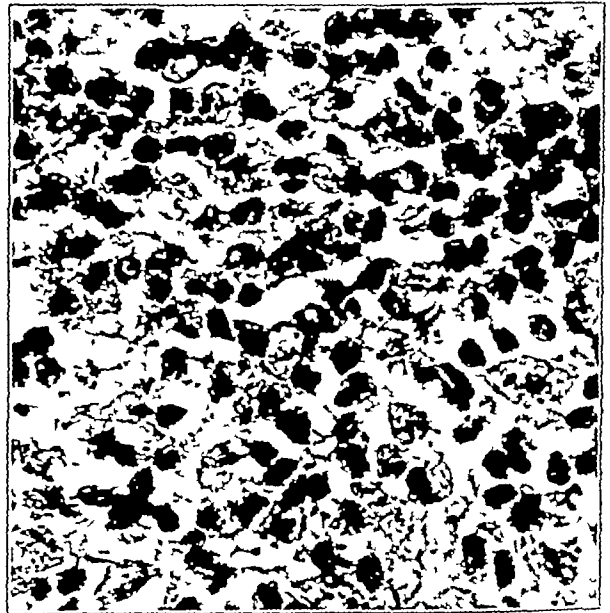


Fig. 4—Section under high power of enlarged lymph gland removed in 1933 showing characteristic picture of Hodgkin's disease with numerous eosinophils and Dorothy Reed type of giant cells.

REPORT OF CASE

History—F. S., an American merchant, aged 24, admitted in February, 1921, complained chiefly of a pruritic eruption over the body. There was no history of a similar complaint in other

14. Montgomery, Hamilton. *Exfoliative Dermatitis and Malignant Erythroderma*. Arch. Dermat. & Syph. 27: 253 (Feb.) 1933.
15. Fraser, J. F. *Mycosis Fungoides: Its Relation to Leukemia and Lymphosarcoma*. Arch. Dermat. & Syph. 12: 814-828 (Dec.) 1925.
16. Mallory, F. B. *Principles of Pathologic Histology*. Philadelphia, W. B. Saunders Company, 1914, pp. 326-332.

17. Symmers, Douglas. *J. Cutan. Dis.* 37: 1 (Jan.) 1919.
18. Lane, C. G., and Greenwood, A. M. *Lymphoblastoma (Mycosis Fungoides) and Hemorrhagic Sarcoma of Kaposi in the Same Person*. Arch. Dermat. & Syph. 27: 643 (April) 1933.
19. Pardee, L. C., and Zeit, F. R. *Mycosis Fungoides*. *J. Cutan. Dis.* 29: 7 (1911).
20. Symmers, Douglas. *Mycosis Fungoides as a Clinical and Pathologic Nonentity*. Arch. Dermat. & Syph. 25: 1 (Jan.) 1932. *Am. J. M. Sc.* 67: 157 (Feb.) 310 (March) 1924.

members of the family, there was no history of cancer, tuberculosis or syphilis in the family.

The patient had been married for one year. His wife was well and had not been pregnant.

The patient had had all the common childhood diseases with good recovery. He had had occasional sore throats but no other illnesses. He stated that he had never had any venereal diseases.

Five years prior to admission a patch the size of a dime (18 mm) appeared on the left flank. This gradually enlarged and spread to involve the entire trunk and extremities down to the elbows and knees. The pruritus had been most marked

in the areas with the resulting diminution of thickness of the lesions and a decrease in pruritus.

One year later the patient returned with a recent recurrence of the pruritus but otherwise much the same as before.

A year and a half ago (1933), the glands became enlarged particularly in the left axilla. He was examined in a Toledo hospital and was given roentgen therapy.

Biopsy of the skin at this time showed 'lymphoblastoma cutis with no heavier infiltration than in 1921 but with marked atrophy of the skin'.

Biopsy of a lymph node showed advanced Hodgkin's disease of the lymphoblastoma type. Numerous Dorothy Reed cells and many eosinophils.

Re-examination in 1933—The patient, now 37, was well developed and nourished and was not acutely ill. He presented a generalized eruption consisting of scaly papules and plaques that varied in size from pea sized to double palm size. These were slightly elevated and brick red fading off to a brownish color. The eruption was most marked around the flanks, in the groins, popliteal spaces and axillae and on the upper part of the chest, upper part of the back and the face. There were a few lesions in the posterior hair line of the scalp. Other areas of the body were involved but much more sparsely with much normal skin between the lesions. The lesions themselves were a brick red slightly elevated and covered with fine scales. The skin over these lesions was thin and wrinkled. Numerous small pea sized nodules that were slightly more elevated than the remainder of the skin and somewhat infiltrated on palpation occurred in the larger plaques, chiefly on the inner surface of the right thigh and on the medial surfaces of the forearms. These were slightly more erythematous than the surrounding tissue and were rather firm to palpation. One of these lesions on the posterior surface of the left thigh was eroded and covered with a serohemorrhagic crust. The palms and soles



Fig 5—Section of skin nodule under low power. Biopsy taken in 1934 showing loss of rete pegs and dense cellular infiltrate limited to the upper corium.

in the last two years during which time the eruption had become the most generalized. The condition had been treated locally in conjunction with mercury and arsenic by mouth.

Examination—The patient was well developed and nourished. The scalp was clean. The pupils were round and equal. They reacted to light and in accommodation. The extra-ocular movements were normal. The skin of the upper arms, thighs and trunk presented a profuse eruption made up of many types of lesions. There were various sized light brown pigmented macules and flat papules, some of which were scaly and still others deeply infiltrated forming small nodules and larger thick plaques. The color of all these lesions varied from a pale brown to a rather deep brownish purple. There were a number of scratched papules and linear excoriations. The outstanding characteristic was the polymorphous nondescript, markedly pruritic nature of this condition with the tendency to formation of infiltrated nodules and plaques.

The mucous membranes showed no eruption. The lymph glands were palpable as split pea to pea sized nodules but were not enlarged or tender. The long bones were normal. The spleen and liver were not palpable. The heart and lungs were normal. The deep tendon reflexes were present, equal and normal.

The diagnosis was the prefungoid stage of mycosis fungoides. Biopsy of the skin at this time showed well advanced lymphoblastoma cutis.

Course—During the next few weeks the patient received mild irradiation to the entire body and particularly to the thickened

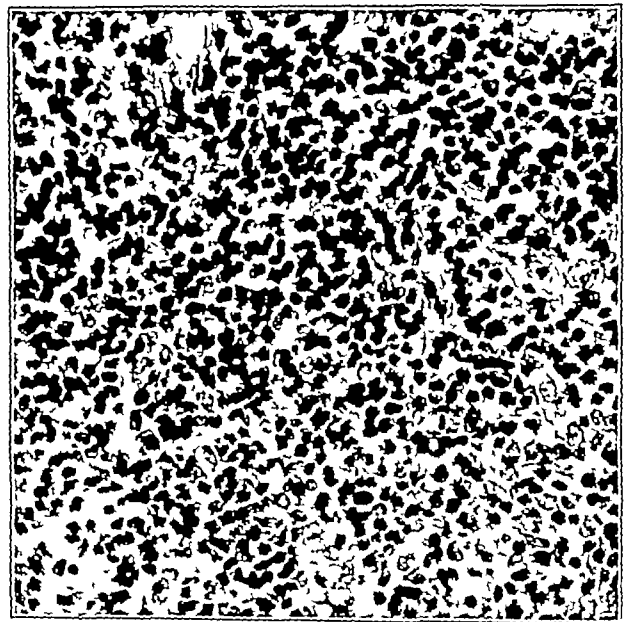


Fig 6—Section of the same nodule under medium high power showing characteristic changes of Hodgkin's disease with numerous eosinophils and the Dorothy Reed type of giant cells.

were not involved and most of the scalp was free. There were no lesions on the mucous membrane.

The lymph glands showed generalized enlargement varying from the size of a pea to that of a hickory nut. The largest glands being found in the left axilla forming a clump of glands approximately half the size of a fist, each gland being somewhat rubbery in consistency but more or less discrete. The glands in the inguinal region were about bean size.

The liver was slightly tender and the edge could be felt about one fingerbreadth below the right costal margin. The edge was soft. The spleen was not felt.

The bones and joints and tendon reflexes were normal. Roentgen studies revealed

1 Abnormal opacity of the second lumbar vertebra. We believe that lymphoblastomatous involvement is the most likely explanation.

2 No demonstrable abnormality in the long bones.

3 Old calcified tuberculous lesions in both apices and right base—the chest otherwise was normal.

4 A barium sulphate enema revealed a normal colon.

Results of the examination of the blood are given in the accompanying table.

Examination of the Blood

Date	Blood Studies			Differential						
	Red Blood Cells	Hemoglobin, per Cent	White Blood Cells	Polymorphonuclears per Cent	Polymorphonuclear Eosinophils	Lymphomononuclear Eosinophils	Small Lymphocytes	Large Lymphocytes	Monocytes	Lymphoblasts
11/28/33	4,300,000	79	11,000	78.5	1.0	0.5	2.5	5.0	5.5	
12/27/33	4,000,000	77	8,400	70.0	3.5		9.0	12.0	9.5	
2/6/34	3,970,000	72	4,000	61.5	6.0		5.5	13.0	13.5	0.5

Since the last examination the patient has received superficial roentgen irradiation to the skin and high voltage therapy to the entire glandular system with subsequent relief of the pruritus and a diminution of the size of the lymph glands. Within the last few months the patient has returned with several new nodules. Biopsy of one of these revealed a similar picture to that presented by the previous biopsies with the exception that there were numerous eosinophils and giant cells with hyperchromatic nuclei.

COMMENT

This case when first examined in 1921 presented the typical picture of the prefungoid stage of mycosis fungoides. The skin was chiefly involved, the mucous membranes, lymph glands and viscera being spared clinically. The skin presented pruritic, pigmented and dully erythematous plaques and nodules, which showed fine superficial scaling. The microscopic examination of the skin showed a mild acanthosis and parakeratosis in the epidermis. In the corium there was a papillary and subpapillary infiltration of lymphoid cells of a mixed type resting on a connective tissue reticulum. In all respects this case conformed to the picture of early mycosis fungoides.

Recently the lymph glands became enlarged and tender. There also appeared low back pain, which at first was interpreted as lumbosacral strain. Roentgen studies of the lumbar spine showed an increase in density in the second lumbar vertebra suggestive of a metastatic malignant growth. Microscopic examination of the lymph glands at this time revealed a rather marked fibrosis, numerous eosinophils and Dorothy Reed type of giant cells characteristic of Hodgkin's disease. The most recent biopsy of the skin showed numerous eosinophils and giant cells in addition to the mixed cell infiltrate previously described.

The case originally presented the features emphasized by Ormsby in the differentiation of mycosis fungoides from the other lymphoblastomas while at a later date it gave the characteristic changes of Hodgkin's disease. If one is to believe that the two conditions are distinct entities there are but two ways to explain this case: first, that it is a case of mycosis fungoides in a patient who has later developed Hodgkin's disease also; and second, that the disease was originally a case of

Hodgkin's disease which was at first misinterpreted as mycosis fungoides and only later recognized.

The first explanation seems a poor one, since it requires two diagnoses to explain a condition that has been continuous. In the light of the material pointed out in the early part of this paper, it must be observed also that the underlying pathologic processes have retained their essential features throughout, namely, the fibroblastic proliferation and infiltration of lymphoid cells. The microscopic picture in the skin itself did not vary in essential details.

The second explanation also seems inadequate since this case in the early part of its course possesses all the characteristics that identify the premycotic stage of mycosis fungoides as an entity.

A more logical explanation and one that is easier to understand is that this case presents a malignant disease of the lymphoid tissues, first involving the lymphoid structures in the skin and producing the picture that is recognized as mycosis fungoides, and later involving the lymph glands themselves producing the picture that dermatologists have learned to classify as Hodgkin's disease.

As pointed out previously in the slow growing types of lymphoblastoma there are apt to be more fibroblastic proliferations. Fibrosis in the lymph glands in Hodgkin's disease is one of the important diagnostic changes, and this is well marked in this particular case. It is interesting to note that this case has shown unusually slow progress, the known duration extending over a period of eighteen years. It is not improbable that the irradiation received by the patient has been influential in preventing the late picture of mycosis fungoides and may have been influential in the production of fibrosis, which constitutes an important part of the pathologic picture in Hodgkin's disease.

SUMMARY AND CONCLUSIONS

1 A case of unusual duration showed definitely a mutation from clinical mycosis fungoides to Hodgkin's disease.

2 Clinical mutations that occur between the various types of lymphoblastomas constitute strong evidence in favor of the view that lymphoblastomas are genetically related neoplasms involving the lymphoid tissues.

3 It is possible that irradiation may have influenced the course of the disease.

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APPENDIX—Since the writing of this paper, the patient developed an enormous increase in size of all his superficial lymph glands and died with a typical clinical picture of Hodgkin's disease.

ABSTRACT OF DISCUSSION

DR. HARTHER L. KEIM, Detroit: With the presentation of this case the authors have forged a link in the ever increasing lengthy chain tending to support the interrelationships between these various lymphoblastomas. The clinical evidence here presented with reference to the mutation of a case of granuloma fungoides into Hodgkin's disease seems to me almost incontrovertible. The evaluation and interpretation of the diseases of the hematopoietic system have been one of the major medical problems in recent years. Dermatologists are especially interested in the cutaneous aspects of four of these lymphoblastomas, namely, leukemia, granuloma fungoides, Hodgkin's disease and lymphosarcoma. Ten years ago in presenting a case of leukemia cutis before this section I made reference to the genetic relationships that existed between this group of clinically divergent dermatoses. It was suggested then that much could be gained by a proper classification of this group of widely

divergent clinical manifestations Five years later, twenty cases of lymphoblastoma with ten autopsy reports were recorded and their interrelations discussed In this group the striking similarity of the cutaneous microscopic picture was stressed and two consistent features were emphasized, namely the background of the connective tissue stroma varying in density, and the cellular infiltrate first occurring in the so called cutaneous lymph nodes, and later the infiltrate increasing being of the lymphocytic series to produce the characteristic fully developed bandlike infiltration as seen in all these lymphoblastomas in their later stages Discussion still exists as to the nature of these lymphoblastomas It has always seemed to me that they are not infectious but rather neoplastic in nature In support of that hypothesis four facts are of interest (1) This group of diseases is invariably fatal (2) they spread by infiltration (3) they are essentially destructive, (4) they have no protective function In short, they have the characteristics of neoplastic disease and none of the characteristics of infections It is simpler and more natural to correlate these diseases than to strain at the impractical and artificial task of attempting to separate them into clinical and anatomic entities

DR GEORGE M. MACKEE, New York The authors have added to existing knowledge a definite instance of mutation in that a case of mycosis fungoides showed Hodgkin's disease of the lymphatic glands Both the clinical and histologic features of lymphoblastomas are often confusing Occasionally these features are sufficiently definite for designation of one particular member of the group but not infrequently it is necessary to hedge and make a diagnosis of lymphoblastoma Occasionally one encounters an eruption that both clinically and histologically is definitely identified as an inflammation—psoriasis, eczema, parapsoriasis and the like Later it is proved to be mycosis fungoides In such instances was the case one of psoriasis that changed to mycosis fungoides or was it one of the prefungoid stage of mycosis fungoides indistinguishable from psoriasis? I favor the latter possibility This delves into the question of the actual identity of dermatologic entities which is none too secure

DR. MARION B. SULZBERGER, New York It might be worth while to call attention to a recent article from the Fischer-Wasels school which was mentioned in an editorial in *THE JOURNAL*. The authors found as a by-product of some experiments with indole poisoning in mice that they could create in the mice different types of disease of the lymphatic system I looked up the original publication The protocols were not detailed but the essential features seemed to be that a certain large dose of indole led to lymphadenoses and inflammatory changes in the lymphatic system and when the dose was decreased and given more continuously that is, when smaller doses were persisted with these lymphadenoses began to change into conditions that looked like malignancy Eventually it became possible to produce true lymphosarcomas which metastasized I believe such observations may be of great importance and that they may bear some relation to the transition between inflammatory and neoplastic changes such as we frequently see in dermatology and as brought out by Dr Keim and the authors

DR. WILLIAM H. GUY, Pittsburgh There is essential agreement that this is a group of malignant diseases that are genetically related and that the point to be raised is whether or not there is actual development of a separate disease ensuing on a primary disease of a different nature or whether it is a mutation from one form of the disease into another, in other words whether or not these diseases are related not only genetically by virtue of their origin in the reticulo-endothelial system or whether they are diseases of that system but of separate and distinct etiology An alternate explanation that has to be considered in mutation is the possibility as implied in Dr MacKee's discussion that long continued insult applied to the skin may be the determining factor that develops an entirely different clinical condition

DR. FRED D. WEIDMAN, Philadelphia I don't think there can be any question about the clinical mutations that are comprised in the lymphogranulomas a number of them are valid entities When one gets into the pathologic realm, the one of tissue

changes however I think that one can better understand the situation if one first thinks of the changes that take place in fibrous tissue which is only another chronic reactive tissue of the body just as reticulo-endothelial tissue is Think of the different sequences in the forms of fibrous tissue that may be seen in a nonspecific very chronic inflammatory disease A fresh scar looks different from an old scar Some scars are pigmented some are not Some are depressed Some are soft and pliable Yet all are comprised by the same kind of tissue Histologically there will be variations too, fibroblasts of young scars differ considerably but within limits, from old hyaline collagen bundles Turning next to the reticulo-endothelial system, I believe that there is a similar plasticity in the type of change that may take place Reticulo-endothelial means two kinds of cells concerned—those of the lymphocyte series and those of the reticular series meaning that the situation is more involved than for fibrous tissue The changes that take place in hyperplasias of the reticulo-endothelial system have not been worked out fully as have those in the changes that take place in the fibrous tissue In that light it can be understood how at one stage or another of a certain pathologic condition there would be purely a reticulosis I am about to report a case of aleukemic reticulosis which Dr Wayson sent me from Honolulu with massive infiltrations around the face which were at first regarded as leprosy At necropsy the bone marrow was found severely involved by a pure reticulosis I have recently studied some cases of Torula infection in which there were Hodgkin's-like changes and Dr Wile recently reported in New York a similar case In torulosis and yet other cases like the indole intoxication that Dr Sulzberger spoke of, there may be a definite etiologic starting point from which to begin in trying to test out whether different gradations in reaction of the reticulo-endothelial reaction may take place This parallelism with fibrous tissue reactions is something that I think ought to be kept more closely in mind as one studies these lymphogranulomas I believe that the concept of the lymphogranulomas is well founded as a group, that for the time being it is proper to recognize clinically the differences between granuloma fungoides and Hodgkin's disease They are convenient designations to employ in medical conversations, but when more is known about the details of the histologic or biologic changes of the reticulo-endothelial apparatus, it will be found that they are not etiologic entities

DR. FRANK STILES JR., Ann Arbor, Mich Cases of psoriasis have been reported, cases of parapsoriasis and other relatively benign dermatoses, which have changed into lymphoblastoma In fact, at the present time one or two cases have been observed in the University Clinic which are just on the fence so to speak they appear to be making this particular transition at this time As to Dr Sulzberger's point I have no experience with that particular portion of the question, and so I have nothing to add to his remarks Dr Keim covered most of the material which I planned to use in the closing talk and I just want to point out further that these mutations seem to be the important connecting link that ties this group together They are clinically individual diseases which change from one to another and which have a common denominator in an infiltrate composed of abnormal lymphocytes and when one type is seen going into another it lays great emphasis on the fact that they are probably very closely genetically related

Activation of Foods by Irradiation—Sunshine, like fish oil, is an old remedy for rickets Its importance, however was not fully appreciated until Hulschinsky (1919, 1920) by means of radiographs clearly demonstrated the healing action of sunlight and of the light from the quartz mercury arc Hess Pappenheimer and Weinstock (1922) determined that the effective wavelengths of light are the shorter ultraviolet waves of the solar spectrum or the still shorter waves of artificial sources Goldblatt and Soames (1923) discovered that the livers of irradiated rats when fed to nonirradiated rats, convey some of the virtue of irradiation to the animals which eat them This, in greatest brevity is the background for the discovery of the activation of foods and sterols by irradiation—Bills, C. E. Physiology of the Sterols, Including Vitamin D, *Physiol Rev* 15:1 (Jan) 1935

SIDEROFIBROSIS OF THE SPLEEN IN
SICKLE CELL ANEMIA

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The pathologic condition of the spleen in sickle cell anemia is characterized by a series of progressive changes from congestive enlargement to fibrotic atrophy. The gross and microscopic appearances of spleens examined at different intervals in this process are varied and apparently dissimilar. The descriptions of the thirty-three spleens available in the literature¹ are mostly in the form of single case reports by different authors and with few exceptions they are brief and lacking in essential details. It is difficult to obtain from these descriptions a clear concept of the sequence of events or a picture of the process as a whole. It is my purpose in this paper to describe the lesions of the spleen in sickle cell anemia, to trace the develop-



Fig 1—Early enlarged spleen in sickle cell anemia. Congested pulp and hemorrhage into trabeculae. Reduced one fifth from a photomicrograph with a magnification of 40 diameters.

ment of the process and to correlate the changes found with the clinical picture and with similar manifestations in other diseases.

The material on which the work is based consists of an analysis of the literature dealing specifically with the pathology of the spleen in sickle cell anemia and a study of nineteen spleens from patients with active sickle cell anemia. Four of these spleens were removed at autopsy at the Memphis General Hospital. The rest were obtained from other workers who, on request for material from their reported cases, kindly furnished blocks or sections. I am indebted to Drs. Sternberg,

Bothe, Waltz, E. C. Smith, Lash, Cooley, Bennett, Mathews and Corrigan for aid in the assembling of sufficient material to make possible the study of a consecutive series. Assistance in the interpretation of the microscopic examinations was given by Dr. R. E. Chung, instructor in pathology, and the photomicrographs were made by Mr. J. G. J. Perkins Jr., photographer, at the University of Tennessee Pathological Institute.

The earliest demonstrable lesion in the spleen in sickle cell anemia is congestion of the reticular spaces with sickled erythrocytes, and dilatation of the capillaries in the malpighian corpuscles. The spleen representative of this stage is enlarged, dark purple and soft. The surface is smooth, the capsule and trabeculae are thin and inconspicuous, and the splenic corpuscles are indistinct.

On microscopic examination the splenic cords are stuffed with entangled masses of greatly elongated, pointed curved and bizarre shaped erythrocytes, which render the nuclear structures and reticulum relatively inconspicuous. The sinusoids are for the most part compressed and empty. Brown and black pigment granules, giving a variable reaction for iron, are present in small quantities, free and within the cytoplasm of the pulp phagocytes and the endothelial cells of the sinusoids. The splenic corpuscles are small, their germinal centers absent or atrophic. There is intense congestion of the pulp at the margins of the corpuscles. In some cases, but not in all, the capillaries of the malpighian bodies are dilated, so that they appear as multiple small varices or as one or more great pools of blood lying within or at the edge of the lymphoid aggregates.²

In the areas of intense congestion in the region of the terminal arterioles hemorrhages occur. Sickled erythrocytes are found in the reticular spaces of the splenic corpuscles, around the central arterioles and in the peripheral trabeculae (fig. 1). As the perivascular hemorrhages organize, the vessel walls become greatly thickened and there are pigmentary changes and depositions of mineral salts. The lumens of the vessels become narrowed, owing to intimal hyperplasia and to subintimal hyalinization. In these narrowed terminal vessels in which there is stasis and around which there is an inflammatory reaction, thrombi readily form.

Infarcts are common. They are usually multiple and small, spherical or wedge shaped, dull gray and surrounded by congested pulp. Thrombi in the larger arterial branches are rare but massive infarctions do occur. On organization the areas of infarction are replaced by fibrous tissue, usually without calcification or extensive pigmentary changes.

The picture presented by the spleen during the stage of organization of hemorrhages is complicated, varied and colorful. The lesions do not all progress at the same rate. Congestion, hemorrhages, infarcts and organization may occur simultaneously. The spleen representative of the early stages of fibrosis is still enlarged but becomes progressively smaller. The surface is nodular, owing to depressed scars and elevations of the still congested areas. The organ is firm, and on sectioning the knife meets with resistance. The capsule is irregularly thickened and the trabeculae are prominent. The dark purple characteristic of the highly congested stage is now replaced by a lighter, more slate-

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Read before the Section on Pathology and Physiology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

1. Diggs, L. W. and Chung, R. E. (for bibliography relating to pathology of sickle cell anemia, complete to 1932). *South M. J.* 27: 839 (Oct.) 1934. Hargrove, M. D. and Mathews, W. R. *J. Lab. & Clin. Med.* 19: 126 (Nov.) 1933. Lash, A. F. *Am. J. Obst. & Gynec.* 27: 79 (Jan.) 1934. McClellan, R. H. and Entwistle, R. M. *J. Lab. & Clin. Med.* 19: 507 (Feb.) 1934. Corrigan, J. C. and Schiller, I. W. *New England J. Med.* 210: 410 (Feb. 22) 1934.

2. Jaffé, R. H. *Virchows Arch. f. path. Anat.* 265: 452 1927. Rich, A. R. *Bull. Johns Hopkins Hosp.* 43: 398 (Dec.) 1928.

like color with tints of brown and localized areas of gray. Scattered throughout are numerous yellowish brown nodules varying in size from barely visible flecks to masses from 1 to 2 mm in diameter. These nodules are hard, irregular in outline and firmly attached to the surrounding tissues and give the appearance of embedded granules of rust.

Microscopic examination of these yellow-brown nodules reveals localized units of connective tissue con-

and segmented arrangements, appear and mingle with the blue staining fibers or are continuous with them. As the process advances, the connective tissue becomes more dense and there is hyalinization. The erythrocytes disappear. Highly refractile masses of brown pigment with varying tints of yellow and green lie in the tissue spaces. These brown structures are often segmented and resemble bamboo sticks (fig 4). They may appear as irregular crystals or as cylinders having spherical knobs at their tips. They are often infiltrated with iron and calcium salts and consequently present varying combinations of color in the stained sections. Large roundish masses, ranging in color from greenish blue to black having lamellated, fissured or double contoured structures, are conspicuous (fig 4). Foreign body giant cells are numerous and may lie in proximity to or encircle any of these constituents.

The organization of the periarterial hemorrhages in the trabeculae is accompanied by tissue changes similar to those found in the splenic corpuscles, except that the pattern of the iron and calcium incrustations follows that of the elastic fibers of the trabeculae. One sees slightly wavy or straight spindles, parallel to one another and to the longitudinal axes of the blood vessels. These vary in number from a few strands to solid calcified bundles. At the point where the trabeculae join the siderotic nodules, the filaments appear as radiating splinters or surround the vessels in a distorted arrangement (fig 2). In the later stages the calcified structures bulge out into the narrowed lumens of the vessels or may completely block them.

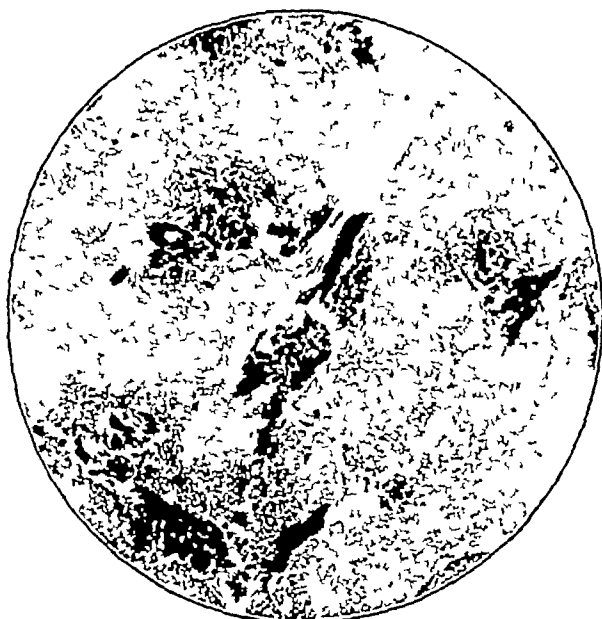


Fig 2—Beginning siderofibrotic nodules in the spleen in sickle cell anemia. Organization of hemorrhage in trabeculae and at sites of splenic corpuscles with pigmentary changes and iron and calcium incrustations. Reduced one fifth from a photomicrograph with a magnification of 40 diameters.

taining conspicuous hematoxylin staining masses and brilliant pigmentary deposits. These colorful units are usually in contact on one side with the trabeculae, with which they are continuous and from which they project out into the congested pulp (fig 2). In the early stages, nodules completely surrounded by pulp are occasionally seen. The shape of the nodules is extremely variable, and the irregular margins are poorly defined and merge in a nebulous manner with the zone of erythrocytes (fig 3).

The sequence of tissue changes taking place in the development of the full blown nodule is as follows. First there is proliferation of fibroblasts in the hemorrhagic area around the central arteriole. Leukocytes wander in and there are large quantities of yellow-brown granules. The pigment granules are phagocytized by the elongated fixed tissue cells and by the large mononuclears. The connective tissue cells and pigment laden phagocytes undergo degenerative changes. Delicate wavy and branching filaments taking a solid or granular hematoxylin stain and having the pattern of reticulum appear in and about the extravasated sickled erythrocytes. These filaments become thicker, often are segmented and in places form tangled masses. They lie as brushlike structures in the organizing hemorrhagic zone or encircle the vessels as a dense network (fig 2). These blue staining structures give the chemical reactions for calcium and iron and will be referred to as calcium and iron incrustations or depositions of mineral salts. Green filaments, likewise with branching

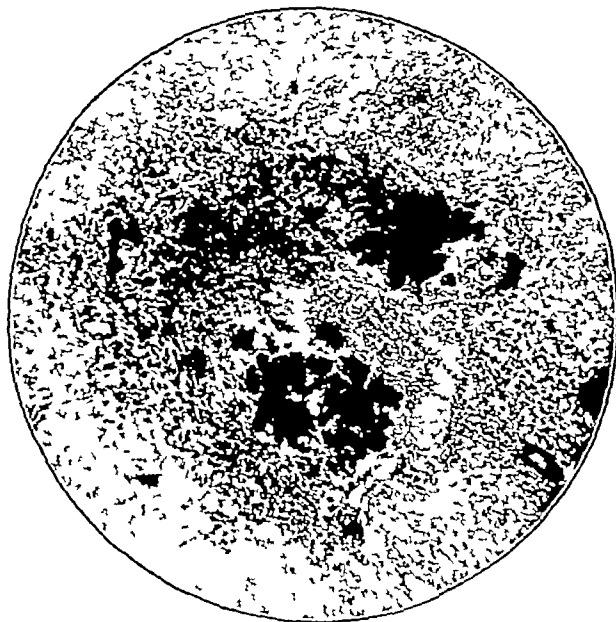


Fig 3—Siderofibrotic nodule. Reduced one fifth from a photomicrograph with a magnification of 450 diameters.

As the organization of the hemorrhages proceeds, at the sites of the malpighian bodies and in the trabeculae there is an increase in the pulp reticulum and a relative decrease in erythrocytes. Ultimately the pulp becomes completely replaced by fibrous tissue, and the pulp, the remains of the splenic corpuscles and the trabeculae become coalesced into a hyalinized connective tissue mass in which the pigment and calcium and iron incrustations are entrapped (fig 5).

The appearance of the spleen in the later stages of the siderotic nodule is that of a small hard, nodular organ of a dull gray. On section one sees wide whitish fibrous tissue strands flecked with yellow and brown. The residual pulp is partitioned off into localized units and varies in color depending on the degree of congestion, fibrosis and pigmentation.

Microscopically the picture is subject to wide variations in different spleens and in different portions of the same spleen. All small firm spleens in sickle cell anemia have in common a great increase in connective tissue, a relative decrease in pulp, an absence of typical splenic corpuscles, depositions of pigment, iron and calcium incrustations, obliterative vascular changes and periarterial fibrosis. The pulp, instead of being a mass of erythrocytes as in the early stages, is now a mass of reticulum between which the packed sickled cells lie in capillary-like spaces. In some spleens the sinusoids are greatly dilated and tortuous and their endothelial cells are hypertrophied. Pigment granules are conspicuous in the organizing lobules and there is phagocytosis of erythrocytes by macrophages. Giant cells and branching filaments are occasionally seen. Eosinophils, plasma cells and infiltrations of lymphocytes are found. The reticulum of the pulp is continuous with that of the trabeculae, and boundaries are indistinct. The whole picture is one of confusion and distortion of the anatomic pattern (fig. 5).

In the last stages the spleen is reduced to a small wrinkled mass often buried in adhesions. The capsule is greatly thickened and hyalinized. There is no pulp, and pigment is inconspicuous. Thick walled calcified blood vessels with narrowed lumens lie in a mass of disarranged degenerated connective tissue (fig. 6).

changes, siderotic nodules, fibrosis and atrophy, occur in other diseases. The peculiar deformity of the erythrocytes is the one feature that is specific for sickle cell anemia in all stages of the process and is not found in other conditions. It is the combination of sickle cells with the other lesions that makes the spleen in sickle cell anemia unique.

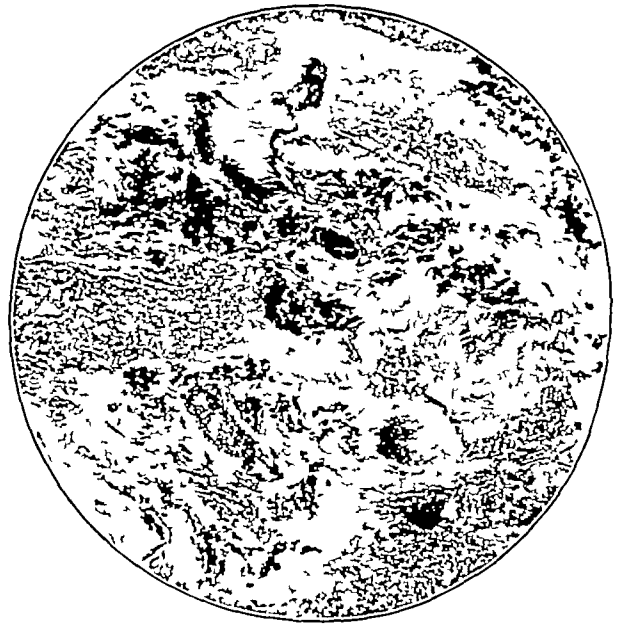


Fig. 5—Later siderofibrotic changes in the spleen in sickle cell anemia. Distortion of anatomic pattern, fibrous tissue replacement of the pulp, mineral salt deposits. Reduced from a photomicrograph with a magnification of 40 diameters.

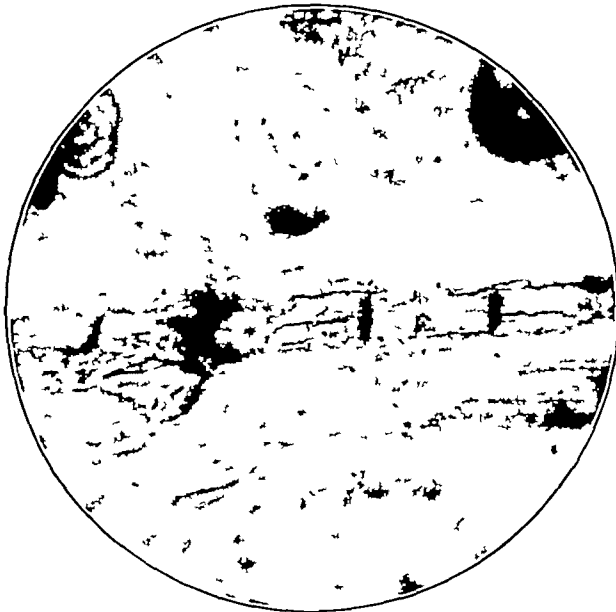


Fig. 4—Segmented and branching greenish brown structures and lamellated calcified masses in degenerative connective tissue in siderofibrotic nodule. Reduced from a photomicrograph with a magnification of 800 diameters.

There are few nuclei of any kind and little blood. Finally the last recognizable remnants of the spleen disappear and there is nothing left but narrowed splenic vessels terminating in scar tissue.

Many of the tissue changes just described, such as congestion of the pulp, hemorrhages, infarcts, vascular

The siderofibrotic lesions in sickle cell anemia are similar to the siderotic nodules or "Gandy-Gamna bodies" described in hemolytic jaundice, splenic anemia, splenomegaly associated with portal stasis and numerous other conditions. Bennett³ and Jaffe and Hill⁴ were the first to note the similarity of the splenic changes found in sickle cell anemia to those observed in other conditions.

One group of investigators has interpreted the branching and segmented filaments and refractile masses in the siderotic nodule as mycelial structures and has presented evidence supporting the concept of fungi as the etiologic agent in the production of the nodule and of certain forms of splenomegaly. The majority of workers discredit the mycotic theory and hold that the siderotic nodule is the result of the organization of hemorrhages in congested spleens and that the structures morphologically resembling fungi are pigment deposits and iron and calcium incrustations in degenerative connective tissue. The reader is referred to articles by Sprunt,⁵ Gamna,⁶ McNee,⁷ Abrikosoff,⁸ Gibson,⁹ McMichael,¹⁰ Reimann and

3 Bennett G. A. Splenic Atrophy with Calcium and Iron Incrustations (Nodular Splenic Atrophy). Arch. Path. 7: 71 (Jan.) 1929. Sick Cell Anemia, *ibid.* 7: 801 (May) 1929.

4 Jaffe R. H. and Hill L. R. Splenic Mycosis. Arch. Path. 6: 196 (Aug.) 1928.

5 Sprunt T. P. J. Exper. Med. 14: 59 1911.

6 Gamna C. Presse med. 36: 357 (March 21) 1928.

7 McNee J. W. Glasgow M. J. 111: 65 (Feb.) 193 (April) 288 (May) 1929.

8 Abrikosoff A. Virchows Arch. f. path. Anat. 272: 593 1929.

9 Gibson A. G. The Mycoses of the Spleen. New York: Macmillan Company, 1930.

10 McMichael J. Edinburgh M. J. 38: 1 (Jan.) 1931.

Kurotchkin¹¹ and Fasiani and Oselladore¹² for a summary of the voluminous and controversial literature dealing with the siderotic nodule, mycotic splenomegaly, splenic mycosis and the like. This series of spleens from sickle cell anemia patients afforded an excellent opportunity to observe the various stages of development of the siderotic nodule from its inception to its disappearance. Many structures were found bearing superficial resemblances to mycelial structures but our observations of the process as a whole lend no support to the mycotic theory and are definitely in agreement with the chemical or mechanical theory.

The size of the spleen decreases as the vascularity of the organ diminishes as the hemorrhages and infarcts become organized and as the residual pulp becomes replaced by fibrous tissue. There is no direct correlation between the size of the spleen and the age of the patient. In general, the largest spleens are found in infancy and in early childhood, and small spleens are the rule in older children and in adults but there are notable exceptions. Large congested spleens and small atrophic spleens have been found in infants and in adults, which indicates that the active disease may occur in varying age periods or that the rate of progression of the lesions is highly variable. The progressive decrease in size from a definitely palpable organ to one not palpable within a few years' time and a decrease in size following an acute febrile attack have been

to be expected cannot be made at the present time but as the evidence now stands, and in spite of enthusiastic early reports, there is no proof that splenectomy causes a sustained improvement in the anemia or alters in any way the clinical course of the disease. Patients with sickle cell anemia are had operative risks. If left alone, they will in effect "splenectomize" themselves without the benefit of surgery.

ABSTRACT OF DISCUSSION

DR. JOHN C. CORRIGAN, Boston. It appears reasonable to conclude that, in sickle cell anemia, fibrosis with atrophy represents the ultimate stage in the changes that occur in the spleen. At the Boston City Hospital, a Negress, aged 23 years who presented all the characteristic features of this disease including the so-called abdominal crises was found at necropsy, to have a spleen that could be identified by tracing the splenic artery. There was a progressive diminution in the size of the artery with thickening of the wall and narrowing of the lumen as it approached the hilus of the spleen. The organ was atrophic in appearance and weighed 0.87 Gm. When the spleen was sectioned many small foci of calcification were encountered. The surface had a small brownish gray appearance, and normal markings were absent. The capsule of the spleen was wrinkled. The parenchyma was composed of many trabeculae crowded together and a small amount of connective tissue. There were scattered areas of calcification in the capsule and trabeculae. The intima of the small arteries was thickened and their lumens were narrowed. No splenic pulp or malpighian corpuscles were present. It is interesting that this patient showed all the clinical manifestations attributed by some observers to splenic infarction. An explanation of the pains occurring in this disease has not yet been found. There is a group in which splenic infarction apparently accounts for the acute abdominal symptoms. The occurrence of abdominal pain in those with splenic atrophy to the degree described by Dr. Diggs and other writers on the subject makes it necessary to search for other explanations. The acute pains in this disease are not limited to the abdomen but may appear in the head, chest or extremities. We have a 27 year old Negress showing abdominal crises, who is also suffering from severe leg pains, followed by numbness and paresthesia in the legs for from three to ten days. This suggests involvement of the spinal cord. As far as I know, no specific changes in the spinal cord have been described. The pains encountered may be part of a thrombotic process of varying locations and degrees.

DR. CHARLES A. DOAN, Columbus, Ohio. I should like to ask Dr. Diggs whether he has observed the precipitation of an acute exacerbation of the anemia in patients with sickle cell disease following a major operation. A young adult female Negress was seen recently in our clinic complaining of typical gallbladder colic and on examination was found to have the characteristic blood changes of sickle cell anemia. An exploratory laparotomy was made by Dr. Curtis. The spleen could not be found at operation, but a gallbladder full of calculi was removed. Within forty-eight hours after the operation the patient developed an acute hemoclastic crisis with marked jaundice and died a few hours later with a high icteric index and a profound anemia. At autopsy a spleen weighing 10 Gm was found enmeshed in fibrous tissue adherent to the diaphragm, and on section the characteristic microscopic changes so thoroughly illustrated by Dr. Diggs were demonstrated. Such a sudden hemolytic exacerbation precipitated by operation, together with certain other features common to sickle cell anemia suggests an analogy to hemolytic jaundice. I am interested to know whether similar observations and similar deductions have been made in the study of the larger material available at Memphis.

DR. L. W. DIGGS, Memphis, Tenn. Knowledge concerning the operative risk of patients with sickle cell anemia is limited. Instances of unexpected deaths during febrile crises and following operative procedures have been observed in this series and are recorded in the literature.

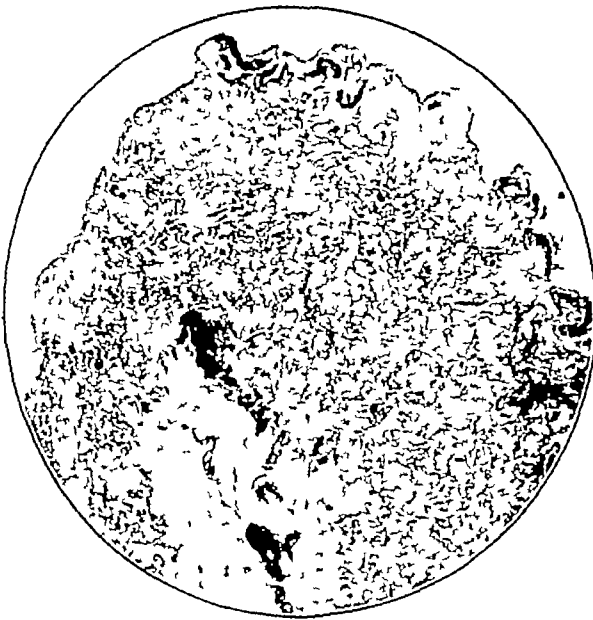


Fig. 6.—Section of a 2.4 Gm spleen in sickle cell anemia (Dr. Steinberg's case). Complete replacement of pulp massive fibrosis calcification. Reduced from a photomicrograph with a magnification of 40 diameters.

clinically observed. Complete clinical and autopsy records are not available from which conclusions may be drawn as to the relationship of the splenic lesion to the severity and duration of the anemia.

Splenic infarcts have been found in patients complaining of severe pain in the left upper quadrant.

Splenectomy is advocated by some and used as a means of treatment. Final judgment as to the benefits

¹¹ Reimann, H. A. and Kurotchkin, T. J. *Am. J. M. Sc.* 181: 107 (Jan.) 1931.

¹² Fasiani, G. M. and Oselladore. *Virchows Arch. f. path. Anat.* 284: 4/5 1932.

ADEQUATE CIRCULATION IN THE EXTREMITIES

ARTERIOGRAPHY AS A TEST FOR DETERMINING ITS
LIMITS PRELIMINARY REPORT BASED
ON THIRTY AMPUTATIONS

J ROSS VEAL, M.D.

WITH THE ASSISTANCE OF

ELIZABETH M McFETRIDGE, M.A.
NEW ORLEANS

In peripheral vascular disease there is, as Mont Reid pointed out in the brilliant address he delivered as the first recipient of the Rudolph Matas Vascular Surgery Award, a vast and as yet almost untouched field of preventive medicine, but that does not alter the fact that prevention is possible only before the catastrophe has happened, never after it has come to pass. In other words, when once gangrene, the terminal phenomenon of vascular disease, is fully established, there can be no talk of prevention and there should, indeed, be little talk of conservatism, for impending gangrene is one thing, but frank gangrene is another and a very different thing. Gangrene will undoubtedly in the future be less and less of a problem among intelligent private patients, among whom, for that matter, it is no very great problem now, but it will undoubtedly always be a serious problem among ignorant and indigent public charges, and a problem, unfortunately which admits of but one solution. Even the most capable of surgeons cannot save a limb that is beyond salvation when it is first seen, and there is no doubt that the surgeon who procrastinates in the presence of frank gangrene however worthy his motives may be, adds to its death rate just as inevitably as does the patient who delays in presenting himself for treatment until his disease is fully established, or who refuses surgery when it is offered to him.

The question, then, in many cases of peripheral vascular disease is not whether to amputate but where to amputate, and that is by no means as simple as it sounds. If amputation is done high, according to the old law of Heidenhain that at a high level the circulation is more likely to be efficient than at a lower level, the percentage of recurrent gangrene is unquestionably less but the mortality is inevitably greater, for in all amputations the mortality is directly proportionate to the nearness of amputation to the trunk. Even if one chooses to ignore the question of future economic usefulness, which is always decreased in high amputations because of the difficulty of fitting a satisfactory artificial limb, one dare not ignore the risk of a heavily increased mortality, and routine high amputation, therefore, is no solution of the problem.

It is quite true that in a large number of cases, perhaps in the majority of cases, the clinical picture is so clear cut that the level of safe amputation is evident and the problem solves itself. But in many cases the clinical evidence is not conclusive or may be grossly inaccurate, and it is this group which has given rise to the various tests which have been devised for determining in frank gangrene the level at which the circulation is adequate and amputation may safely be done. Many of these tests, for one reason or another, are unworthy of practical consideration, but a few, notably

the histamine reaction and the salt solution test, are enthusiastically advocated by some observers, while it is generally agreed that the use of the oscillometer gives a very high percentage of correct results. It is with some hesitancy, therefore, that we describe another test for determining the limits of adequate circulation in a diseased extremity, by direct visualization of the arterial supply, even though attempts along this line have been made for many years and have been unsatisfactory only because no agent was available that was at the same time safe and efficacious.

Some two years ago we began the study of the peripheral circulation in all types of peripheral vascular disease by means of arteriography with a stabilized solution of thorium dioxide, and to date we have used this method in more than 200 cases with increasingly satisfactory results from our own point of view and without immediate or remote harmful effects to the patient.

Our technic, which we have described in detail in previous communications,¹ we need mention only

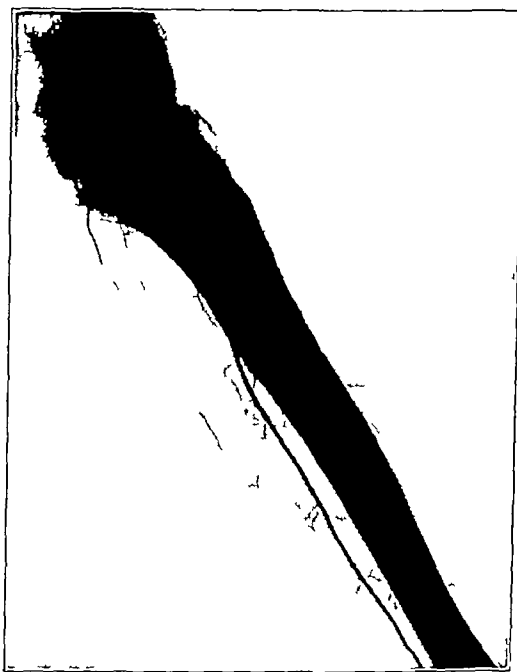


Fig 1—Diabetic gangrene of toes with obliteration of anterior tibial artery but adequate circulation in upper half of leg. Amputation at site of election with prompt healing.

briefly. The patient lies on the table with the involved limb rotated outward, the leg partially flexed on the thigh, and the knee flat against the x-ray plate. In this position it is possible to visualize on a 14 by 17 film the upper two thirds of the leg and the lower third of the thigh, which is usually all that is necessary. Under local analgesia the femoral artery is punctured in the femoral triangle, and by digital pressure, applied just proximal to the site of puncture, the artery is occluded until the thorium dioxide solution has been introduced, firm pressure being continued until the injection has been completed. At the end of three

From the Departments of Surgery of the Louisiana State University Medical Center and the New Orleans Charity Hospital.

1 Veal, J. R., and McFetridge, Elizabeth M. Surgery of Gangrene of Extremities with a Study of 171 Cases from the Records of the New Orleans Charity Hospital. Surg. Gynec. & Obst. to be published. Technical Considerations in Arteriography of Extremities with Thorotrast. Am. J. Roentgenol. 32: 64-71 (July) 1934. Arteriography in Gangrene of Extremities by Use of Thorium Dioxide (Thorotrast). Study Based on Twenty Seven Cases. Ann. Surg. to be published.

seconds, which allows sufficient time for the solution to be distributed throughout the larger trunks and the smaller branches of the arterial tree, the exposure is made by the technic advised by Dr. Amedee Granger of the Department of Radiology, who has cooperated with us throughout this study. 45 milliamperes, 90 kilovolts, 35 inches, one second. The average dose of thorium dioxide is 20 cc, 15 cc is often sufficient, and we have never found it necessary to use more than 30 cc. Even this maximum quantity, it should be noted, is several

of finer branches visualized is fewer than in the normal state. The lumens are markedly narrowed, and plaques of calcium are often seen in the vessel walls. The existence of a collateral circulation is direct evidence of disease, and its irregularity is characteristic.

From these criteria, which make the distinction between normal and diseased vessels, we have been able to set up other criteria to determine the limits of adequate circulation, which are based on the following considerations:

- 1 The presence of arterial occlusion
- 2 The size of the large arteries above and below the knee
- 3 The number of muscular and skin branches, their size and their distribution
- 4 The efficiency of the collateral circulation

All of these criteria are carefully weighed, both absolutely and in their relation to one another, and the mere existence of arterial occlusion is by no means taken to indicate that the circulation at that level is inadequate; an evaluation of other factors is necessary before the significance of the occlusion can be determined. Thus, to speak specifically, if there is complete occlusion of the tibial artery (figs 1 and 2), but if the arterial tree in the middle or upper third of the leg approaches the normal pattern in the number, size and distribution of the vessels, amputation can safely be done in the upper or even the middle third of the leg. If there is complete obliteration of the popliteal artery (fig 3),

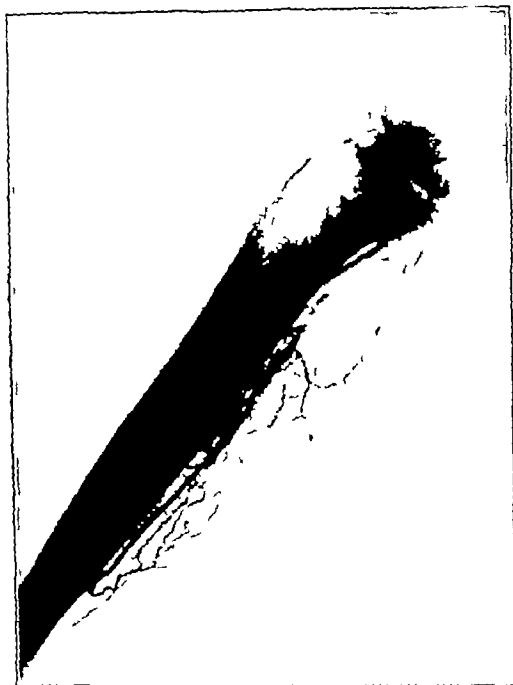


Fig 2—Arteriosclerotic gangrene of foot with partial obliteration of tibial arteries but adequate collateral circulation. Amputation at site of election with prompt healing.

times less than the dosage established as well within the limits of safety by investigators of unquestioned verity who have used this agent in visualization of the liver and spleen. The injection is painless and nonirritating, and we have never seen the slightest evidence of arteritis or thrombosis, or any other untoward effect.

Our cases are divided into three groups. The first group includes only presumably normal patients and furnishes our standards of comparison. The second group includes patients with arteriosclerotic disease whose circulation is still adequate, and the third group includes patients with frank gangrene. From the study of these groups of cases we have been able to devise certain criteria by which we can distinguish between normal and pathologic vascular states. In normal subjects the most striking characteristic of the injected vessels is the distinct and regular vascular pattern, which fades out gradually as the most delicate terminals are reached, and the orderly arrangement, so to speak, of the arterial supply, which extends to the ends of the toes. All the vessels, furthermore, are visualized, even the fine branches that arise directly from the large trunks. In diseased vessels, on the other hand, the main arterial supply is heavy, uneven, wavy and tortuous. The smaller vessels end abruptly rather than fade out, and the fine branches, which arise directly from the main trunks, are not visualized. The muscular branches are also very irregular, while the number

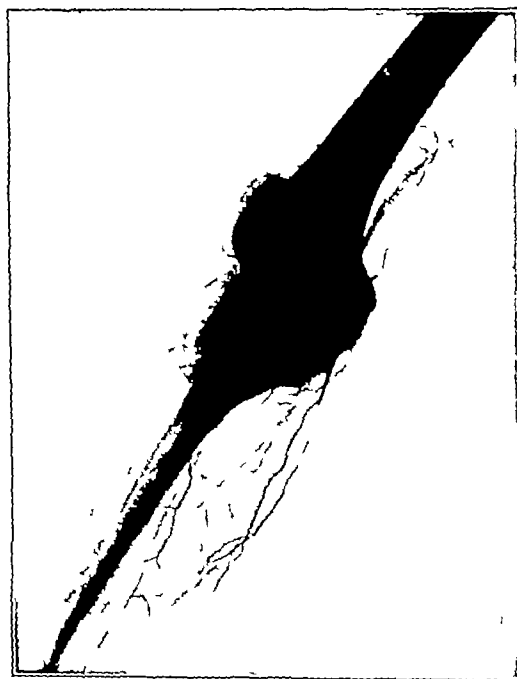


Fig 3—Arteriosclerotic disease with obliteration of popliteal artery but adequate collateral circulation.

but if the collateral circulation in the middle and upper thirds of the leg provides an adequate number of skin and muscle branches, amputation can still be safely done below the knee. On the other hand, even though the large trunks should be patent, if the skin and muscle branches are materially diminished in size and number (figs 4 and 5), the circulation is plainly inadequate and amputation must be done above the knee.

In the light of these criteria we have studied thirty consecutive cases of gangrene of the extremities as the

result of peripheral vascular disease, for which thirty-one amputations were done, twenty-three of which, including two on the toes, were below the knee. Four reamputations were required in this group.

CASE 1—A Negro woman, aged 60, had diabetic gangrene involving one third of the foot. Arteriography demonstrated obliteration of the popliteal artery at one point with marked narrowing of the remaining channel as well as of the whole



Fig 4—Arteriosclerotic gangrene of foot with marked sclerosis and narrowing of vessels and diminution in number of muscle and skin branches. Amputation at the lower third of the thigh with healing.

anterior tibial artery. The collateral circulation however was apparently abundant and well distributed, and amputation at the site of election was considered safe. Two days after operation reamputation was done for gas bacillus infection of the stump and the patient did not survive.

CASE 2—A Negro man, aged 40, had arteriosclerotic gangrene involving one third of the foot. Arteriography demonstrated the popliteal artery and the large branches to be patent and the lumens to be fairly large while the collateral circulation seemed adequate in both the distribution and the number of the branches. Amputation was done at the site of election and, as in the first case, reamputation was necessary for a gas bacillus infection of the stump. The patient died ten days later, from pneumonia.

CASE 3—A Negro woman, aged 60, had diabetic gangrene involving one half of the foot. Arteriography demonstrated the anterior tibial artery to be completely occluded, but the posterior tibial, although narrowed, was patent as was the popliteal artery. The collateral circulation appeared to be fairly adequate, and we advised amputation at the site of election, although we believed at the time that our advice was open to question. Events proved the soundness of our doubts, for reamputation was necessary five days after the original operation for recurrent gangrene of the stump. The patient survived.

CASE 4—A Negro woman, aged 63, had arteriosclerotic gangrene involving three toes. Arteriography demonstrated the popliteal and both tibial arteries to be patent, although somewhat narrowed. There was some reduction in the number of skin and muscle branches, and again we consider our advice to amputate at the site of election rather questionable. Five days after the first operation an infection, associated with marked crepitation of the tissues, was evident in the stump and reamputation was done on the clinical diagnosis of gas bacillus infection, which was not, however, confirmed by the laboratory. The patient survived.

Undoubtedly all these cases must be charged up against arteriography as a means of determining the limits of adequate circulation, though in the last two we realized, at the time we gave it, that our advice was open to question and the unsuccessful outcome should be attributed rather to our interpretation of the arteriographs than to any defect in the method itself. In the first two cases the gas bacillus infection may have been the result of an external contamination, but since this organism thrives best in poorly vascularized tissues there seems no doubt that we must again assume the responsibility for the mistakes.

Studying the thirty cases from the standpoint of the vascular disease, twenty-one exhibited arteriosclerotic gangrene, eight, in one of which bilateral amputation was necessary, exhibited diabetic gangrene, and one exhibited Buerger's disease. In the last case amputation was necessary at the lower third of the thigh, as it was in seven of the twenty-one cases of arteriosclerotic gangrene. In all the cases of diabetic gangrene, amputation was done at the site of election.

In one case the gangrene was confined to the heel and in nine others to the toes, in only one case in this group was amputation necessary above the knee, and in two cases amputation of a single toe was sufficient. In seven cases a third of the foot was involved, and in two of these amputation was necessary above the knee. In thirteen cases half or more of the foot was involved, and in five cases amputation was necessary above the knee, with three fatalities. In only one of

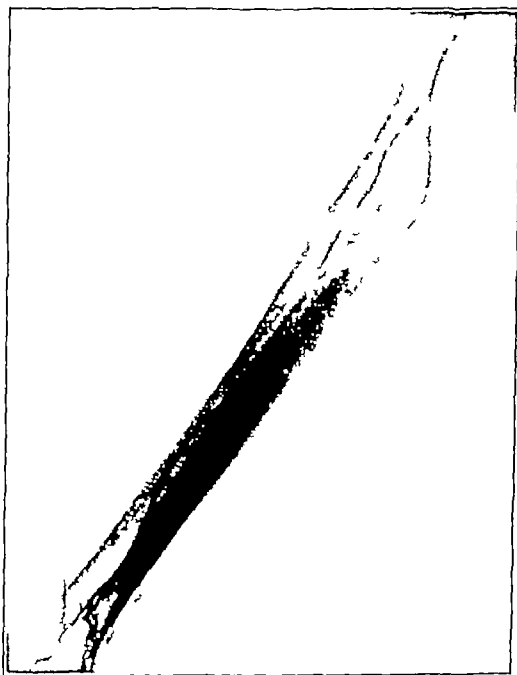


Fig 5—Arteriosclerotic gangrene of foot with narrowing of popliteal and tibial arteries and rather scanty muscular and skin branches. Amputation at lower third of thigh with prompt healing.

the eight cases, however, in which amputation was done at the site of election, was there a fatal outcome.

The mortality for the whole group of thirty cases is seven, 23.3 per cent, and while the series is too small for fair comparison with the series of 171 cases of gangrene we have recently reported, in which the mortality was 39.1 per cent, or with Eliason's series of 175 cases, in which the mortality was 41.8 per cent,

certainly the decrease in the death rate is striking enough to warrant comment. Analyzing the figures more critically, it is noteworthy that the mortality for the eight cases of amputation above the knee is 50 per cent (four cases) as compared with a mortality of only three cases 13 per cent, for the twenty-three amputations done below the knee, even when reamputations are included. Of the wisdom of performing amputation at the lowest possible level there can be no question from the standpoint of mortality. Elhason's mortality of 41.8 per cent is undoubtedly to be at least partially explained by the fact that he does the high amputation in more than three fourths of his cases while in our own series of 171 cases which is large enough to permit of fair comparisons, the mortality for amputation above the knee was 55 per cent, as compared with a mortality of 37 per cent for amputation at the site of election.

As a check on our arteriographs we have used the salt solution test (by the method of McClure and Aldrich) and the histamine reaction test (by the method of Lewis and de Takats) in fourteen cases six of which were cases of frank gangrene that required amputation. In both tests we used eight punctures, running from the middle third of the thigh to just above the ankle. In the histamine reaction test in all cases the first and second punctures indicated

adequate circulation, but in only two cases both without gangrene, did it indicate adequate circulation below the knee. Other observers claim with this test a high percentage of correct diagnoses but in our hands it was clearly open to very serious error. The salt solution test corresponded with our arteriographic studies in 80 per cent of the cases though in one instance it indicated adequate circulation below the knee when both arteriography and dissection after high amputation proved the blood supply to be wholly inadequate. This test, moreover, is valueless when the gangrene is accompanied, as it so frequently is, at least in this hospital by edema and inflammatory reaction. We have no hesitancy in saying therefore, that arteriography is a very much more reliable index of the limits of adequate circulation than is either the histamine reaction or the salt solution test, though we have not had, as yet, an opportunity to check it against oscillometric readings.

On the other hand we make very guarded claims for the worth of arteriography. We by no means claim that the marked reduction in mortality which this group of thirty cases shows, as compared to the mortality

we recently reported in a group of 171 cases of gangrene, 23.3 per cent against 39.1 per cent, is entirely, or even chiefly, due to its use. It is only fair to point out that the majority of these amputations were done in our own service in which it is the policy of the entire staff to surround with every possible protection the patient who has gangrene. We amputate without delay in the presence of frank gangrene, we prepare the patient carefully by the use of fluids by all routes, our postoperative care is equally meticulous, we check the cardiac and renal reserve in all cases, and we handle diabetic gangrene only with the close cooperation of a competent internist. But we do claim that the use of this test, in conjunction with other tests the worth of which has been established, and in conjunction with the proper preoperative and postoperative therapy will furnish one more safeguard for the patient with gangrene of the extremities. Furthermore, since the harmlessness of the stabilized solution of thorium dioxide has been established, and since the injection is only slightly more complicated than the taking of a simple roentgenogram, we can see no objection to the employment of the method at least in those clinics in which radiography of the extremities is part of the routine of the management of peripheral vascular disease.

Louisiana State University Medical Center

Clinical Notes, Suggestions and New Instruments

ENTRANCE OF IODIZED OIL INTO THE VENOUS CIRCULATORY SYSTEM DURING UTEROGRAPHY

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Intra-uterine injections of oily opaque substances for diagnostic and therapeutic purposes has become an ordinary everyday procedure in the hands of gynecologists. Very few untoward accidents or sequelae have been reported in the literature to date. The complications most frequently mentioned are peritoneal irritations, localized inflammatory processes, exacerbations of chronic or subacute inflammations in the pelvis and iodism due to the resorption of the customary iodine ingredient of the injected liquid.

The following is a report of an unusual accident occurring during an intra-uterine injection of iodized oil.

M. L., a woman aged 35, a Negress, was admitted to the Sterility Clinic of the Harlem Hospital, March 14, 1932. Her only complaint was her sterile marriage of six years duration. A laparotomy performed seven years before admission, revealed uterine myoma and left salpingitis with adhesions. Appendectomy, myomectomy and left salpingectomy were performed. She had periodic attacks of bronchial asthma. Her husband seemingly was healthy. She had never conceived. Menstruation, which had begun in her sixteenth year, was regular every twenty-eight days, of one or two days duration, scant in amount and not painful.

Gynecologic examination revealed normal external genitalia. The vagina was roomy, the cervix central and conical and the external os was pointed. The uterus was in anteversion-version, was freely movable, was rather small, was of normal consistency and was ovoid. The surface was even. The adnexa were normal. The vaginal secretion was normal. A cervical smear was negative for gonococci. The Wassermann reaction was negative. A condom specimen of the husband's semen examined four hours after coitus showed many motile spermatozoa.

The insufflation test performed March 14, revealed patency at 60 mm. pressure.

From the Gynecological Division of the Surgical Service of Harlem Hospital.



Fig. 6.—Recurrent gangrene of stump. Note narrowing of tibial arteries and diminution in number of muscular and skin branches.

In order to see graphically the effects of the previous operation on the uterus, a roentgenogram was taken, May 1, following the injection of 8 cc of iodized poppy-seed oil. The last menstruation occurred April 27-28. Subsequently the patient reported that instead of the customary staining for a day or so she bled for four days but had no other ill effects.

The immediate picture (fig 1) showed the cavity of the antelected uterus well filled, the right tube patent, the left tube missing. Free oil was in the abdominal cavity. Besides these normal observations the whole venous system of the uterus was filled with oil, a large quantity being found in the right vena ovarica. The twenty-four hour picture showed some remnants of iodized oil in the free abdominal cavity, the cavity of the uterus and the venous system not visualized (fig 2).

COMMENT

A similar case was reported in the literature recently by Kilroe and Hellman¹. In their case a nullipara was injected with iodized poppy-seed oil. An antelected uterus was visualized with both tubes patent. The venous system of the uterus was filled with oil and both venae ovaricae were visible. Exactly the same picture was obtained after a repeated oil injection ten days later. The venous system was filled with oil and the tubes were patent. No ill effects were reported after these injections.

Analyzing these almost identical reports one must emphasize that the iodized oil which escaped into the circulatory system was not injurious and did not cause any noticeable symptoms.

To determine the etiology of these accidents, the following possibilities should be considered:

- 1 Excessive pressure during the injection.
- 2 Pathologic permeability of the uterine vessels.
- 3 Injury to the uterine wall.

1 Excessive pressure. This possibility might be excluded on the ground that in both cases the tubes were found patent. Furthermore if excessive pressure alone should be sufficient to produce this occurrence it would be observed much more frequently particularly in cases in which there are closed tubes.

2 Pathologic permeability of the uterine vessels. Kilroe and Hellman are inclined to believe that in their case a pathologic permeability of the uterine vessels was present. They arrived at this conclusion because they obtained identical pictures following the second injection. In their case this explanation is very

suggestive owing to the fact that the uterine circulatory system was entered on two successive occasions. In an attempt to prove this explanation in the present case iodized oil was injected on four subsequent occasions after monthly intervals. On none of these occasions did the oil escape into the circulatory system. Kilroe and Hellman proceeded with their second injection after a ten days interval. In the present case the interval was of one month's duration. Ample time was allowed for the repair of any injured uterine mucosa.



Fig 1—Appearance immediately after injection of iodized oil. antelected uterus, right tube patent, left tube missing, free oil in the abdominal cavity, the whole venous system of the uterus filled with oil, large quantity in the right vena ovarica.

3 Injury to the uterine wall. This seems to be the cause in the present case. It is substantiated by the report of the patient that she had a vaginal bleeding of four days duration after the injection. It would seem that a simple injury produced by the injecting cannula to a normal uterine mucosa

would not be sufficient to facilitate such an occurrence. It probably would require the injury of a venous sinus. In the present case the previously performed myomectomy might have facilitated the injury of such a vessel. In the recent literature over twenty-five lethal cases have been reported following the injection of an oil into the uterine cavity to produce an abortion. Autopsy showed these deaths to be due to an oil embolus.

(Nieslony,² Brack,³ Haselhorst⁴). It must be emphasized again that the iodized oil was not injurious to the patients, whereas the abortion producing oils with their toxic ingredients caused death (Franken⁵).

SUMMARY

1 In a case in which iodized oil was injected into the uterus, the opaque substance filled the entire uterine venous system.

2 Injury to a pre-existing large sinus was the probable explanation for this rare occurrence.

3 The injected iodized oil is apparently not injurious, whereas medicated abortion producing oils have produced death following the same accident.

2715 Grand Concourse

COSTOVERTEBRAL DISLOCATION OF THE FIRST AND SECOND RIBS

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AND

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Dislocation of the ribs at the costovertebral articulation is so extremely rare that the present case seems to merit reporting.

Stewart and Warren¹ in 1929 described a case of dislocation of the first rib. They made an exhaustive study of the literature and found only thirteen cases, including their own in nearly two hundred years. These authors presented a brief summary of the reported cases. Since that time Brooksher² has reported another case, a dislocation of the twelfth rib. He also refers to Schertlein³ who reported an isolated case of costovertebral dislocation of the first rib. Schertlein states that there is but one recorded case in the German literature from 1909 to 1929 and cites Riedinger who in 1888 compiled nine cases from the literature of which only one case could be regarded as true luxation. Bohle⁴ has since reported two cases making in all a total of nineteen reported cases. Of these the luxations were three cases each of the first rib, twelfth rib and eleventh and twelfth ribs in combination, one case each of the sixth and seventh, eighth and ninth and tenth and eleventh ribs in combination, one case of the sixth, eleventh, fourth and seventh ribs, one case in which two of the sixth, seventh or eighth ribs were dislocated⁵ and two cases in which the dislocated rib was not specified.⁶

2 Nieslony, F. *Zentralbl. f. Gynak.* 56: 2193 (Sept. 3) 1932.

3 Brack, E. *Zentralbl. f. Gynak.* 56: 122 (Jan. 9) 1932.

4 Haselhorst. *Deutsche med. Wchnschr.* 1932 no. 4.

5 Franken, Herman. *Zentralbl. f. Gynak.* 56: 1282 (May 21) 1932.

1 Stewart, S. F. and Warren, J. W. *Luxation of the Costovertebral Joints.* J. A. M. A. 92: 605 (Feb. 23) 1929.

2 Brooksher, W. R. Jr. *Costovertebral Dislocation of the Twelfth Rib.* J. A. M. A. 100: 816 (March 18) 1933.

3 Schertlein, A. *Fortschr. a. d. Geb. d. Röntgenstrahlen* 39: 482 (March) 1929.

4 Bohle, W. *Arch. f. orthop. u. Unfallchir.* 27: 269-272 (May 23) 1929.

5 Boudet, M. *Société anatomique* 14: 104 (1839) (quoted by Stewart and Warren).

The case here presented is particularly interesting, as both the first and second ribs were dislocated at their costovertebral articulations, a condition not previously reported

REPORT OF CASE

R L, a white man, aged about 30 was admitted in an unconscious condition to the outpatient department of the Evanston Hospital Aug 10 1934 following an accident in which he and eight others were injured, when a truck which he was driving was struck by a train. Regaining consciousness soon after reaching the hospital, he complained of severe pain in the neck and abdomen. He was very nauseated and vomited several times. There was a laceration about 4 cm in length over the right frontoparietal region bleeding profusely, and marked swelling and ecchymosis around the eyes particularly the right. There was no bleeding or fluid discharge from the ears nose or throat. The neck was held rigid and there was a point of maximum tenderness at the left posterior aspect of the base of the neck near the point of articulation of the first rib with the vertebra. The examination of the thorax was negative. The abdomen was rigid particularly in the epigastrium. The extremities were negative except for several minor abrasions. The deep and superficial reflexes were present and no abnormal reflexes could be elicited.

A leukocyte count taken on admission was 21,000. The leukocyte count diminished until twelve hours later, when it was

The patient was treated conservatively for skull fracture with rest in bed and 50 per cent dextrose intravenously as indicated by his symptoms. Open reduction of the dislocated ribs was considered. Because of the head injury, however, any operative treatment that was not imperative was deemed inadvisable.

The patient was closely watched for any impairment of nerve or circulatory function of the upper extremity, but none was observed. The pain and stiffness of the neck gradually disappeared. The patient was discharged on the thirty-fifth day with no complaints. At this time he had full painless motion of the neck and there was no disturbance in function, nor any abnormalities in the left arm.

636 Church Street

POTT'S ABSCESS OF THE SPINE OPENING INTO THE BRONCHI

J M FRAWLEY M D AND JEROME W BODLANDER M D
FRESNO CALIF

Cases of Pott's disease of the spine with abscess opening into the bronchi are rare. The history of such a case is therefore reported.

REPORT OF CASE

A Mexican boy, aged 8 years, admitted to the General Hospital of Fresno County June 5, 1933, had had fever and cough for a period of three months. During the last two months the cough had become productive of blood and pus. Three days before admission a high fever had developed. The boy complained of pain in the chest and coughed up some blood. When admitted he was emaciated and appeared ill. The temperature was 103.4 F, the pulse rate 124 and the respiration 26 per minute. There was dullness in the right upper part of the chest and rales were present throughout the entire right lung. The heart was not enlarged and there were no murmurs or thrills. Nothing further was found on examination. The child's father had died of pulmonary tuberculosis.

The laboratory report showed the blood to contain 3,300,000 erythrocytes per cubic millimeter. The hemoglobin was 44 per cent. The white cells were 12,700, of which the polymorphonuclear leukocytes were 75 per cent, large lymphocytes 4 per cent and small lymphocytes 21 per cent. The bleeding time and the coagulation time were three minutes. The specific gravity of the urine was 1.104. It was alkaline and negative for sugar and albumin. Microscopically there were a few leukocytes. The sputum was negative for acid fast bacilli. Roentgenologic examination of the chest showed extensive infiltration in the right upper lobe. Through the entire length of the mediastinum there was a dense fusiform shadow which on fluoroscopy was seen to be posterior. A diagnosis of tuberculosis was made with mediastinitis to be considered. A Mantoux test with 1 mg of old tuberculin gave a 3 plus reaction in forty-eight hours.

The child was isolated and all the therapeutic measures for tuberculosis were instituted. Because of the sitting posture discussion arose as to the presence of spinal caries, and another roentgenologic examination was made. There was considerable rarefaction of the mid-dorsal vertebrae and of the intervertebral space between the eighth and ninth dorsal vertebrae. There was also an infiltration in the adjacent mediastinum. An additional diagnosis of tuberculosis of the dorsal spine was therefore made. After consultation with the surgical staff, it was decided to tap the mediastinum. This was done August 1, and 40 cc. of yellow pus was drawn off. Two days later 65 cc of pus was removed. Smears showed pus and many bacteria, no acid fast organisms were seen. Cultures grew as short chain streptococci and gram-positive bacilli. Guinea-pig inoculations were negative.

In view of the laboratory examination the diagnosis of tuberculous abscess was doubted and the patient was transferred to the surgical section. August 10 in an attempt to drain the abscess an incision was made in line with the ribs in the eighth intervertebral space just to the right of the spinal column. Muscles and fascial planes were separated and forceps inserted into the posterior mediastinum. No pus was obtained. Repeated probing of the posterior mediastinum showed no pus.



Upper dislocation of the first and second ribs on the left side

11,950. The erythrocyte count at that time was 3,800,000 hemoglobin 71 per cent. At no time was the urine examination abnormal.

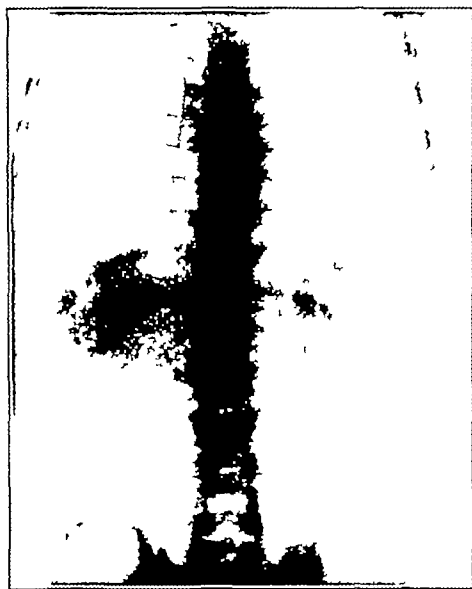
Because of the serious condition of the patient, no roentgenograms were taken on the night of admission. The indications for laparotomy for a ruptured internal viscus became less each hour. Owing to the patient's persistent complaint of pain in the neck and the possibility of a cervical dislocation or fracture, the head was placed in a halter and three pounds of traction applied to the neck.

A roentgen study of the neck was made on September 13. The roentgenologist Dr E R Crowder, made the following report: "After rather careful consideration I am quite inclined to believe that we are dealing with an upward dislocation of the head of the first and second ribs on the left side. This I realize is a very unusual type of injury and certainly not a very probable injury but I am not able to explain the asymmetry of these ribs in any other way. There is no x-ray evidence of injury to the bodies of any of the cervical vertebrae nor to the spinous processes." Subsequent roentgen examination revealed a fracture of the right frontal bone. With these observations the traction was removed and all active treatment to the neck discontinued.

The patient continued to have a septic temperature ranging from 97 F in the morning to 104.8 in the evening. His appetite was good however and his cheerfulness was remarkable. August 18 it was noticed that he was developing a dorsal kyphosis and was placed on a Bradford frame. He continued to rest comfortably and had no symptoms excepting cough and fever. September 29 a trocar was introduced into the posterior mediastinum and pus was again obtained. Through the trocar blowing sounds which synchronized with inspiration and expiration, could be heard, indicating that there was a bronchial fistula. No drainage was obtained by means of a rubber tube which was left in place. Postural drainage seemed to help more and was carried out several times daily. The drainage tube was consequently removed.

October 21 35 cc of pus was drawn from the mediastinal abscess and 15 cc of gentian violet injected into the abscess cavity. Almost immediately the patient had a violent fit of coughing and expectorated much of the dye and a quantity of pus.

November 2 he complained of severe pain around the heart. There was marked pulsation over the entire precordial area. The breath sounds were roughened throughout with coarse rales especially over the right lung. The abdomen contained



Appearance of chest showing dense fusiform shadow due to Pott's abscess of the posterior mediastinum communicating with the bronchus.

free fluid and there was tenderness over a palpable liver. The spleen was not palpable. November 4, pus was again obtained by aspiration and a catheter was left in the abscess cavity. About one week later the child coughed up a considerable quantity of pus. His pulse rate went to 144 per minute but was regular and fairly strong. December 9 a longer drain was inserted and irrigations with metaphen 1:4000 were begun three times daily. Two days later the child pulled the drain out. However, the opening was adequate and drainage moderate. He continued to cough and expectorate pus, he was dyspneic and cyanotic and his abdomen was greatly distended until he died, December 14, six months after admission.

At autopsy by Dr. C. A. Nixon both pleural cavities were seen to have extensive fibrotic adhesions. Both lungs showed disseminated tuberculosis throughout with a cavitation about 8 cm in diameter in the right apex and a fairly large area of caseous pneumonia in the left upper lobe. The mediastinum contained very little free pus but did show granulation of the tissues. There was erosion of the vertebral bodies which was so marked that they could be crumpled away with the finger.

COMMENT

Cases of Pott's abscess opening into the bronchial system are reported chiefly in the French literature. In 1928 a case was presented before the Societe de pediatrie de Paris by Mayet

and Genevrier.¹ Their report concerned a boy aged 16 years, who had had Pott's disease of the dorsolumbar spine for six years. After injection of a fistula with iodized oil the boy was seized with violent coughing. The iodized oil was seen on roentgenologic examination to have entered the right bronchus. Apparently some improvement followed this procedure.

Mayet and Genevrier referred to this condition as being extremely rare usually occurring as an accident preceding death. They cited fifteen cases, which were reviewed in the Cremieux thesis (Theses de Paris 1875) but stated that since then very little reference had been made in the literature to such a finding. In the discussion following the presentation of their case a similar incident was reported by Solon Veras who had seen a patient become suffocated and cough up fluid following an injection into a fistulous opening in a Pott's abscess. Lance in the same discussion, voiced the opinion that these cases were not so rare as appeared but were not recognized and might exist in a latent condition. He had once injected hydrogen dioxide into a small dorsal fistulous opening which had persisted for several years following dorsal Pott's disease. The patient had a violent fit of coughing with the expectoration of hydrogen dioxide foam. Lance believes that unless the abscess opens also into the pleural cavities the opening into the bronchus is not a serious menace to long life.

In the case here recorded the diagnosis of abscess opening into the bronchus was not established until the injection of the gentian violet which was followed by an attack of coughing and the appearance of the dye in the mouth.

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Special Articles

GLANDULAR PHYSIOLOGY AND THERAPY

GENERAL PHYSIOLOGY OF THE ANTERIOR HYPOPHYSIS

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NOTE.—These articles and those in THE JOURNAL last week are part of a series published under the auspices of the Council on Pharmacy and Chemistry. Other articles will appear in succeeding issues of THE JOURNAL.—ED

Although the general physiology of the anterior hypophysis is inseparable from its special physiology, a general discussion of the recent developments of our knowledge of pituitary physiology may be of value. Experimental and other work is increasingly showing the important position which this organ occupies among the endocrine glands. There appear to be but few body functions that it does not influence either directly or indirectly. Barger has spoken of it as "general headquarters" of the endocrine system, a characterization that aptly expresses its dominant position in this system.

Undoubtedly the large number of contributions that have been published on the anterior hypophysis within the last decade have not simplified but rather have made more complex our knowledge of its physiology. Thus in 1927 two hormones, a growth and a gonadotropic hormone had been demonstrated. The stimulating effects on the growth of normal rats, first shown by Evans and his collaborators,¹ and the pronounced restorative effects of anterior pituitary gland adminis-

¹ Mayet and Genevrier. Pott's Fistulized Abscess in the Bronchial Tubes. *Bull. Soc. de pediatrie Paris* 20:94-98 (Feb.) 1928.

From the Department of Anatomy, Columbia University College of Physicians and Surgeons.

¹ Evans, H. M., Meyer, K. and Simpson, M. E. The Growth and Gonad Stimulating Hormones of the Anterior Hypophysis. *Memoirs of the University of California* 2: 1933.

tration on growth in rats dwarfed by hypophysectomy,² promised much for the clinical treatment of pituitary dwarfism. The outspoken stimulation of the gonads of miniature normal rodents reported from this country and from Germany (Smith and Engle,³ Zondek⁴) and the reparative effects on the atrophied reproductive organs of hypophysectomized rats⁵ suggested the immutability of a successful clinical treatment of underfunction of the gonads. Indeed, the supra-ovulation obtained at that time³ indicated that such therapy might be too successful and might lead to the liberation of an undesired number of ova. Although the evidence at that time thus indicated that the anterior lobe elaborated two hormones, a growth and a gonadotropic hormone, other observations suggested that the problem might become more complex. Hypophysectomy was found to cause not only an arrest in growth and atrophy of the gonads but also involution of the thyroids and the adrenals in mammals.² It was not known at that time whether the stimulation of the thyroid and the adrenal was effected by the growth or by the gonadotropic hormone or by another pituitary hormone or hormones.

Although it was not demonstrated until this time that ablation of the anterior pituitary caused an involution of the adrenals and thyroids, it should not be overlooked that earlier work (Allen,⁶ Smith⁷) had revealed these responses in amphibia more than ten years previously, and although hyperplasia of the thyroid in birds⁸ and in mammals (Loeb,⁹ Aron,¹⁰ Watrin¹¹) was not described until 1929-1930, hyperplasia of the thyroid from pituitary administration had been secured in 1922,¹² which has not been exceeded in subsequent mammalian experiments. Attention might also be called to the fact that a chromatophore stimulant from the pituitary reported by Zondek¹³ in 1932 and named by him "intermedin" had been demonstrated in 1916 by both B. Allen and P. E. Smith and was subsequently extensively studied by them and other investigators. Indeed a monograph of this subject appeared in 1924.¹⁴ Thus the assumption that, because he applied a new name and emphasized the specific pigmentary reactions of a species of minnow, Zondek uncovered a new hormone is quite erroneous.

THE PITUITARY HORMONES

The growth hormone has continued to be intensively studied since its discovery in 1922 by Evans and Long.¹⁵ It has maintained its position as a separate principle, although preparations of it are usually not pure, physiologically. Consistent results have been reported on its injection into normal rats that had passed the period of maximum rate of growth. The female shows a better response than the male. Marked restorative effects in rats dwarfed by hypophysectomy have been reported from a number of laboratories. Some striking effects in normal dogs have been reported,¹⁶ whereas in other cases no effect was secured even with very prolonged treatment.¹ These different results appear to be due to a difference in the responsive capacity of the end organ (receptor tissues), a phase of hormone studies which is of great importance.

Treatment of a sufficient number of clinical cases has now been reported in which a growth stimulation has been secured to make it seem certain that injections of the growth hormone will be effective, in some cases at least.¹⁷ In these cases treatment was instituted much before the time at which the pubertal growth spurt would normally appear, so that a lack of due regard for this factor does not invalidate the results. Unfortunately, this cannot be said of the reports, which still frequently appear, on the stimulation of growth from the feeding of pituitary tablets. The relationship of the pituitary growth hormone to other endocrine glands, especially the thyroid, needs further investigation. It has been reported that the concurrent administration of growth hormone and thyroid gives greater skeletal growth in rats in which both the hypophysis and the thyroids have been ablated than does the administration of the same doses of the growth hormone alone.¹⁸

Although, as already mentioned, it was shown nearly two decades ago in amphibia that pituitary ablation resulted in an atrophic condition of the thyroids and the adrenal cortex and that anterior pituitary replacement therapy would restore these glands to a normal condition, these observations were not confirmed in mammals until 1927.⁵ It has since been shown that administration of anterior lobe causes an enlargement of the thyroid in normal doves and pigeons¹⁹ and a marked enlargement and hyperplasia of this gland together with exophthalmos in normal ducks²⁰ and normal mammals (Loeb and Bassett,⁹ Aron¹⁰ and others). Although the stimulation of the thyroid has not been maintained in chronic treatments, nevertheless these observations are proving of great value, not only in determining whether or not the thyrotropic principle is a separate hormone but also in studying the secretory process of the thyroid gland.

2 Smith, P. E. Hypophysectomy and a Replacement Therapy. *Am J Anat.* 45: 205 (March) 1930.

3 Smith, P. E. and Engle, E. T. Experimental Evidence Regarding the Role of the Anterior Pituitary in the Development and Regulation of the Genital System. *Am J Anat.* 40: 159 (Nov.) 1927.

4 Zondek, Bernhard. Ueber die Funktion des Ovariums. *Ztschr. f. Geburtsh. u. Gynak.* 80: 372 1926. Die Hormone des Ovariums und des Hypophysenvorderlappens. Berlin: Julius Springer 1931.

5 Smith, P. E. The Disabilities Caused by Hypophysectomy and Their Repair. *J. A. M. A.* 88: 158 (Jan. 15) 1927.

6 Allen, B. M. Effects of the Extirpation of the Anterior Lobe of the Hypophysis of Rana Pipiens. *Biol. Bull.* 32: 117 1917.

7 Smith, P. E. The Pigmentary Growth and Endocrine Disturbances Induced in the Anuran Tadpole by the Early Ablation of the Pars Basalis of the Hypophysis. *Am. Anat. Mem.* 1922: No. 11.

8 Schoekaert, J. À propos de la spécificité de l'action stimulante des extraits préhypophysaires sur la thyroïde. *Compt. rend. Soc. de biol.* 105: 223 (Oct. 34) 1930.

9 Loeb, Leo and Bassett, R. B. Effect of Hormones of Anterior Pituitary on Thyroid Gland in the Guinea Pig. *Proc. Soc. Exper. Biol. & Med.* 26: 860 (June) 1929.

10 Aron, M. L'hormone préhypophysaire excito-sécrétoire de la thyroïde. *Rev. franç. d'endocrinol.* 8: 472 (Dec.) 1930.

11 Watrin, J. L'hormone hypophysaire. *Rev. franç. d'endocrinol.* 8: 193 (June) 1930.

12 Smith, P. E. and Smith, I. P. The Repair and Activation of the Thyroid in the Hypophysectomized Tadpole by the Parenteral Administration of Fresh Anterior Lobe of the Bovine Hypophysis. *J. M. Research.* 43: 267 (June-July) 1922.

13 Zondek, Bernhard and Krohn, H. Hormon des Zwischenlappens der Hypophyse (Intermedin). *Klin. Wchnschr.* 11: 405 (March 5) 1932.

14 Hogben, L. T. The Pigmentary Effector System. Edinburgh 1924.

15 Evans, H. M. and Long, J. A. The Effect of Anterior Lobe Administered Intraperitoneally upon Growth, Maturity and Oestrus Cycles of the Rat. *Anat. Rec.* 21: 62 1921.

16 Putnam, T. J., Benedict, E. B., and Teel, H. M. Studies in Acromegaly. Experimental Canine Acromegaly Produced by Injection of Anterior Lobe Extract. *Arch. Surg.* 18: 1708 (April) 1929.

17 Engelbach, William and Schaefer, R. L. Endocrine Dwarfism. *Endocrinology* 18: 387 (May-June) 1934.

18 Smith, P. E. Increased Skeletal Effects in Anterior Pituitary Growth Hormone Injection by Administration of Thyroid in Hypophysectomized Thyroparathyroidectomized Rats. *Proc. Exper. Biol. & Med.* 30: 1252 (June) 1933.

19 Riddle, Oscar and Polhemus, I. Studies on the Physiology of Reproduction in Birds. *Am. J. Physiol.* 98: 121 (Aug.) 1931.

20 Schoekaert, J. A. Enlargement and Hyperplasia of the Thyroids in the Young Duck from the Injection of Anterior Pituitary. *Am. J. Anat.* 40: 379 (Jan.) 1932.

itself. Experimental work indicates that the thyrotropic principle is distinct from other pituitary principles. Among the methods of preparation of this principle, those of Janssen and Loeser²¹ and of Collip²² deserve special mention. The injection of certain pituitary extracts will also prevent atrophy of the adrenal glands after hypophysectomy in rats and will cause their enlargement in normal animals (guinea-pigs). The action of these extracts has been shown to be a direct one, it does not occur through the intermediation of the thyroid, since these preparations do not raise the basal metabolism or prevent thyroid atrophy in hypophysectomized rats.²³ Adrenal enlargement may also be induced indirectly through the stimulation of the thyroids, as shown by Loeser.²⁴ The adrenotropic hormone is ultrafilterable.²⁵

In 1928 and later, Stricker and Grueter,²⁶ and in 1930 Corner,²⁷ reported that lactation was induced by the administration of an anterior pituitary extract. This was not due to a contraction of smooth muscle of the gland, such as had been reported earlier from posterior lobe extracts. Following this basic discovery of Stricker and Grueter and of Corner, others have studied the reaction more in detail (Asdell,²⁸ Gardner and Turner,²⁹ Nelson and Pfiffner,³⁰ Riddle and his associates³¹ and others). Both Turner and Riddle have worked intensively on this principle, which they respectively have designated as galactin and prolactin. Prolactin or galactin does not cause the development of the mammary gland, this being induced by secretions of the ovary, but it does cause the onset and continuation of the secretory phase. That this is the pituitary galactogogue principle solely responsible for the initiation of lactation is made doubtful by the finding of Selye and his associates³² that lactation, though brief in duration, will take place at parturition in rats that have been hypophysectomized for some days. That the pituitary secretes a hormone either directly or indirectly essential for the continuance of lactation seems established.

One of the questions concerning pituitary physiology which appears to be nearing solution is that in regard to the number of gonad-stimulating hormones. The Wisconsin group (Hisaw and Fevold and their collaborators³³) in a long continued series of investigations

has presented increasingly convincing evidence that the anterior hypophysis secretes two gonadotropic hormones. Supporting evidence has recently also been published from other laboratories. In this work the female has been used largely and this has led to the designation of the two hormones as follicle-stimulating and luteinizing, respectively. These designations, although justifiable at the present state of knowledge, will undoubtedly prove unsatisfactory later, for it is highly probable that if the pituitary secretes two gonad stimulating fractions in the female, it does so also in the male. As in the female, there are in the male two types of gonad tissue. In the male, both these types atrophy after hypophysectomy. Evidence will be presented in a later section which shows that the two types of testicular tissue are stimulated by separate hormones. Although investigators have been slow, largely because of the absence of conclusive evidence in its support, to accept the hypothesis of two pituitary gonadotropic principles, the present evidence indicates that there are two such hormones.

The problem of the unity or duality of the pituitary gonad-stimulating hormones not only is of importance in studies on the physiology of the pituitary but its solution may also give information that will assist in solving the problem of the origin of the gonadotropic principles found in the blood and urine. It is now known that the gonadotropic principle present in the urine (or blood) during pregnancy is different from that present after ovariectomy (or the menopause). They elicit very different reactions when injected into normal rodents,³⁴ hypophysectomized female rats³⁵ or hypophysectomized male rats.³⁶ Pregnancy urine extracts do not cause follicular growth in normal monkeys³⁷ or hypophysectomized rats (Leonard and Smith,³⁸ Collip and his associates³⁹), whereas extracts of urine of women after ovariectomy or the menopause cause marked follicular growth in both these forms. The latter substance appears to give an almost pure gametokinetic action (follicular granulosa and seminiferous epithelium stimulation), whereas extracts of human pregnancy urine stimulate largely the connective tissue derivatives (theca and interstitial cells of the ovary and the interstitial cells of the testes). That pregnancy urine extracts also induce luteinization of the granulosa of the follicle and stimulate the seminiferous epithelium seems established from the work of Smith and Leonard,⁴⁰ although evidence on this point is not harmonious (Collip³⁹). Since extracts of urine of castrates give reactions which are nearly identical with

21 Janssen S and Loeser A. Die Wirkung des Hypophysenvorderlappens auf die Schilddrüse Arch f exper Path u Pharmacol. 1933; 517 1931

22 Collip J B. Some Recent Advances in the Physiology of the Anterior Pituitary J Mount Sinai Hosp 1:28 (May June) 1934

23 Collip J B, Anderson E M and Thomson D L. The Adrenotropic Hormone of the Anterior Pituitary Lobe Lancet 2:347 (Aug 12) 1933

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25 Anselmino K, J Hoffmann F and Herold L. Ueber das Corticotrope Hormone des Hypophysen Vorderlappen Klin Wchnschr 13 209 (Feb 10) 1934

26 Grueter F and Stricker P. Ueber die Wirkung eines Hypophysenvorderlappenhormones auf die Auslösung der Milchsekretion Klin Wchnschr 8 2322 (Dec. 10) 1929

27 Corner G. The Hormonal Control of Lactation, Am J Physiol 95:43 (Oct.) 1930

28 Asdell S. A. Recent Developments in the Field of Sex Hormones Cornell Vet 21 147 1931

29 Gardner W U and Turner C. W. The Function Assay and Preparation of Galactin a Lactation Stimulating Hormone of the Anterior Pituitary Missouri Agric. Sta Res Bull 196 1933

30 Nelson W O and Pfiffner J J. Studies on the Physiology of Lactation Anat. Rec. 51 51 (Nov 25) 1931

31 Riddle Oscar Bates R. W. and Dykshorn S. W. The Preparation Identification and Assay of Prolactin—a Hormone of the Anterior Pituitary Am J Physiol 105 191 (July) 1933

32 Selye Hans Collip J B and Thomson D L. Effect of Hypophysectomy upon Pregnancy and Lactation Proc. Soc. Exper Biol & Med. 30 589 (Feb.) 1933

33 Fevold H L, Hisaw F L, Hellbaum A and Hertz R. Sex Hormones of the Anterior Lobe of the Hypophysis Am. J Physiol 104 710 (June) 1933

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35 Leonard S. L. and Smith P. E. The Hypophyseal Like Qualities of the Gonadotropic Principle Found in the Urine of Certain Individuals Am J Physiol 108:22 (April) 1934

36 Smith P. E., Engle, E. T. and Tyndale H. H. Gametokinetic Action of Extracts of Follicle-Stimulating Urine Proc. Soc Exper Biol & Med 31:745 (March) 1934

37 Engle E. T. Biological Differences in Response of the Female Macacus Monkey to Extracts of the Anterior Pituitary and of Human Pregnancy Urine Am J Physiol 106 145 (Oct.) 1933

38 Leonard S. L. and Smith P. E. Responses of the Reproductive System of Hypophysectomized Rats to Injections of Pregnancy Urine Extracts II The Female Anat. Rec. 58:175 (Jan 25) 1934

39 Selye Hans Collip J B and Thomson D L. On the Effect of the Anterior Pituitary Like Hormone on the Ovary of Hypophysectomized Rat, Endocrinology 17:494 (Sept Oct.) 1933 Collip J B Selye Hans and Thomson D L. Beitrage zur Kenntnis der Physiologie des Gehirnanhangs Virchows Arch f path Anat. 290 23 1933

40 Smith P. E. and Leonard S. L. Responses of the Reproductive System of Hypophysectomized and Normal Rats to Injections of Pregnancy Urine Extracts I The Male Anat. Rec 58 145 (Jan 25) 1934

the purest follicle-stimulating pituitary extracts so far prepared, it seems justifiable to assume that this principle is of pituitary origin. Solution of the problem of whether or not pregnancy urine also contains a gonadotropic principle which is secreted by the anterior pituitary must await fractionation of this principle and comparison of the action of the fractions with physiologically pure gonadotropic extracts made from the pituitary. The problem of the origin of the urinary gonadotropic principles is thus closely related to the problem of the unity or duality of the pituitary gonad-stimulating hormones. This same dependence may be found in studies on the gonad-stimulating principle found in the urine of women (and probably of men also) during the sexually active period of life.

Mention should be made of three other responses that are elicited by injections of anterior pituitary extracts. One of these is the effect on the parathyroid. Little work has as yet been done on the parathyrotropic principle obtained from the pituitary. A pronounced hypertrophy has been reported from its injection.⁴¹ As in the case of the response of the thyroid to injections of the thyrotropic hormone, long continued injections do not maintain the hypertrophy of the parathyroids.

Another action of the pituitary is that on carbohydrate metabolism. In 1930 Houssay and Biasotti⁴² reported that symptoms of diabetes in dogs after pancreatectomy were either cured or alleviated by subsequent hypophysectomy, a finding also reported by Barnes and Regan.⁴³ These results thus extend the observation of Cushing and his associates⁴⁴ that hypophysectomy increased the sugar tolerance. The results are harmonious with and explainable by the discovery that hypophysectomy lowers the blood sugar (D'Amour and Keller,⁴⁵ White⁴⁶), an effect that has been designated as "hypoglycemia hypophysiopriva."⁴⁷ Hypophysectomy is known to increase insulin sensitivity. The further finding that prolonged injections of anterior pituitary extracts (growth hormone, Evans) produce glycosuria in normal dogs, a finding which was reported by Borchardt in 1908 in rabbits, is in agreement with these observations and with the frequent occurrence of glycosuria in acromegaly. Anselmino and Hoffmann⁴⁸ have described a pancreatropic hormone from the anterior pituitary which induces hypertrophy of the pancreatic islands and hypoglycemia.

A more obscure pituitary effect is that on fat metabolism, for which a separate hormone has also been postulated by Anselmino and Hoffmann.

From this brief summary it is evident that no less than six and possibly eight hormones have been extracted from the anterior pituitary. That this small gland which in man averages less than 0.5 Gm in weight, secretes this number of hormones as separate

entities throughout the entire secretory process taxes the imagination. Numerous contributions to the cytology of the normal gland and of cases of tumor formation show that there are but two secretory types of cells—the basophils and the acidophils. The third type, chromophobes, appears to be not an active secretory cell but a reserve type. This differentiation of two highly specialized secretory types of cells in the pituitary suggests perhaps the formation of a corresponding number of basic secretory products, which may be altered to give these specific responses. The chemical interrelationship of pituitary hormones holds an interest equal to that of their physiologic interrelationships.

The present anterior pituitary products are almost without exception extremely crude from a chemical point of view and usually are impure, physiologically. There will be no certainty until physiologically pure extracts are secured as to how much these impurities may modify the responses. The present purified products (for example, purified growth hormone) are purified only in contrast to the earlier souplike preparations. An instructive example of how impure products may lead to erroneous conclusions is afforded by physiologic work on pregnancy urine extracts. In nearly all earlier work with this material, injurious effects on the tubules of the testes were reported. The more concentrated and purified products now available, however, show that even with high dosages there is no injury but probably a stimulating effect on the tubules. To what extent further purification and fractionation of the material will further modify the reactions cannot now be predicted. The realization that conclusive determination of the responses elicited by the various hormones must await the securing of uncontaminated principles does not mean, however, that present studies with cruder products are valueless or should be discontinued. Such studies are essential to progress in purification, for in no other way can the chemist know whether his more or less mutilating procedures are destroying or modifying activity.

ANTIHORMONES

The failure of animals to continue to respond when chronic treatments with certain of the pituitary extracts are given has led to the formulation of a theory that antihormones are formed (Collip²²). A number of investigators have reported that thyroid stimulation is not maintained with continued administration of the thyrotropic hormone (Siebert and Smith,⁴⁹ Friedgood,⁵⁰ Collip²²). A maximum response varying from the fourth to the twelfth or fourteenth day is followed by a depression that may carry the basal metabolism below the normal level, a terminal effect clearly shown by Lee, Teel and Gagnon⁵¹ several years ago. As stated earlier in this paper, the parathyroid hypertrophy from administration of the parathyrotropic hormone also does not persist with continued treatment. There is also a regression in the response of the gonads to pregnancy urine extracts. Collip²² has presented growth curves of hypophysectomized rats showing an abrupt cessation in growth and a subsequent loss in weight after about thirty days with continued treatment with his preparation of the growth hormone. This

41 Anselmino K J and Hoffmann F and Herold L Ueber die Parathyreotropie Wirkung von Hypophysenvorderlappensextrakten *Klin Wchnschr* 13 45 (Jan 13) 1934
42 Houssay A B and Biasotti A. The Hypophysis Carbohydrate Metabolism and Diabetes *Endocrinology* 15: 511 (Nov Dec.) 1931
43 Barnes B O and Regan J F The Relation of the Anterior Pituitary to Carbohydrate Metabolism *Endocrinology* 17 522 (Sept Oct) 1933
44 Goetsch E, Cushing Harvey and Jacobson C. Carbohydrate Tolerance and the Posterior Lobe of the Hypophysis Cerebri, *Bull Johns Hopkins Hosp* 22: 165 1911
45 D'Amour M C and Keller A. D. Blood Sugar Studies Following Hypophysectomy and Experimental Lesions of the Hypothalamus *Proc Soc Exper Biol & Med* 30 1175 (June) 1933
46 White W E. The Effect of Hypophysectomy of the Rabbit *Proc Roy Soc. London* B 114: 64 (Nov 1) 1933
47 Maboney W. Hypoglycemia Hypophysiopriva *Am J Physiol* 109 4/5 (Sept) 1934
48 Anselmino K J and Hoffmann F. Die Pankreatropie substanz aus dem Hypophysenvorderlappen *J Klin Wchnschr* 12: 1435 (Sept 16) 1933. The work on the pituitary pancreas interrelationship has recently been extensively reviewed by Lucke *Ergebn d inn Med u Kinderh* 40 94 1934
49 Siebert W J and Smith R S. The Effect of Various Anterior Pituitary Preparations upon Basal Metabolism in Partially Thyroidectomized and Incompletely Thyroidectomized Guinea Pigs *Am J Physiol* 95 396 (Nov) 1930
50 Friedgood H B. Experimental Exophthalmos and Hyperthyroidism in Guinea Pigs *Bull Johns Hopkins Hosp* 54 48 (Jan) 1934
51 Lee M O, Teel H M and Gagnon Jules. Basal Metabolism in Giant Rats *Proc Soc Exper Biol & Med* 27 23 (Oct) 1929

cessation of response with continued injections of these extracts he attributes to the formation of antihormones. In support of his hypothesis he presents evidence showing the production of an antithyrotropic substance in the blood of the rabbit, goat and horse. He advances the interesting hypothesis that the production of antihormones may be responsible in certain cases for hypoglandular states. The hypothesis is attractive and has aroused considerable interest.

The evidence on the production of antihormones is not entirely harmonious in regard to the effects of prolonged treatments, especially with growth-stimulating pituitary extracts. In chronic treatments of hypophysectomized rats with growth hormone, prepared from pituitaries of the ox, Evans and his associates¹ report a continued gain in weight for the 120 days of treatment, although there was a slowing down in growth late in the experiment. They do not report, as do the Toronto investigators, a regression following the first month of treatment. I² showed that daily implants of rat pituitaries for seventy days in a young male hypophysectomized rat gave skeletal growth and an increase in weight throughout this period. The results both of Evans and his associates with growth hormone injections and of Smith with implants thus differ from those of Collip as regards the continuance of growth with prolonged treatment. The blood of diabetic patients even though they display some insulin resistance has no greater power to destroy insulin than has blood from normal individuals,⁵² so there is not an antihormone formed in these treatments. It is well known that thyroid administration is effective even when continued for many years.

Loeb⁵³ has reported that the increased mitosis and the hypertrophy which he found in the thyroid on administration of potassium iodide cease after a time, and the gland then returns to a normal condition even though treatments are continued, as is the case with the administration of anterior pituitary gland extracts. He suggests that one of the reasons for the return to normal conditions may be the increase in the amount of circulating thyroid hormone. He also suggests that the neutralizing substances may arise from a protein from which the thyrotropic hormone has not been separated. It may be significant that the hypophyseal extracts which have been used have been prepared from animals of one species—the ox—and that these extracts are not protein free. There is thus the possibility that the cessation of stimulation and subsequent regression is due to a linkage of the hormone to proteins with the consequent production of antibodies which might not be produced by crystalline hormones. No one has as yet reported whether the action of an extract from donors of one species, such as the hog, sheep or horse, would be prevented by the previous injection of a similar extract from another species. The hypothesis of antihormone production is interesting, but it must be attacked from many angles before the transitory effects from the injection of extracts can be definitely referred to a true antihormone production.

SPECIES AND SEX VARIABILITY

Studies on the pituitary have brought out that there is a species and sex variability in the pituitary content of at least certain of the pituitary hormones and also

that there is a species variability in response to these hormones. This variability is of importance both in the selection of donors of pituitary glands from which to prepare extracts and in the selection of recipients used in the testing of the extracts. The pituitaries of beef appear to be richer in growth hormone than those of sheep. The reverse is the case in the gonad-stimulating hormones as attested by the general use of sheep pituitaries in the preparation of gonadotropic preparations. The pituitaries of horses (in pregnancy at least¹) are richer in gonadotropic principle than those of sheep. The human pituitary is especially rich in the gonadotropic principle.⁵⁴ The pituitaries of fowls, on the other hand, are extremely low in content of gonad-stimulating hormone, as shown by the rabbit ovulation test.

A sex difference in the pituitary content of gonadotropic hormone has been found in adults of all species thus far tested, the pituitaries of males being more potent than those of females. Clark⁵⁵ has found that this does not hold for prepuberal ages in rats, in which the pituitary of females is more potent than that of males. Although no explanation is available for the species difference in pituitary potency, the sex difference, from the work of Clark, can be explained in part at least by the suppressing action of the gonad hormones on the pituitary, for in rats the hormone of the male gonad is secreted at an earlier age than is that of the female. When the secretion of these hormones is prevented by castration at birth, the pituitaries of the two sexes are equal in potency during the age periods covered by Clark's experiments (puberal and prepuberal ages). It would be of interest to determine whether sex differences in the pituitary content of gonad-stimulating hormone in the adult are entirely referable to a differential secretory rate of the gonads and a consequent differential suppression of the pituitary.

A species difference in sensitivity to injected extracts is established. Evans and his associates¹ have shown that, whereas one strain of dogs, the dachshund, gives a marked response to injections of growth hormone, another strain, the shepherd, fails to give any response whatever to comparable dosages. The refractoriness of the thyroid of rats as regards a structural response to thyrotropic hormone has been the cause of much lost labor in testing for this principle. The sensitivity of the thyroids of fowls, ducks, rabbits and guinea-pigs, on the other hand, make these forms of value in tests for this factor. The situation as regards the gonadotropic hormones is even more complex for there is both a quantitative and a qualitative difference in the responses of different species. Mice are much more sensitive to the follicle-stimulating fraction than are rats, whereas rats give a greater response to pregnancy urine extract than do mice, although they are much heavier. Qualitative differences in the response of different species to gonadotropic hormones may be very pronounced. The best example to my knowledge is the difference in response of rats or mice and of monkeys to injections of the gonadotropic principle in pregnancy urine. The ovaries of the former, as demonstrated by the usual Aschheim-Zondek test, show follicle growth as well as hemorrhagic follicles and corpora formation.

⁵² Black, P. T. The Inactivation of Insulin by Normal and Diabetic Blood. *Brit. J. Exper. Path.* **14**: 318 (Oct.) 1933.

⁵³ Loeb, Leo. Mechanisms in the Development of an Active Resistance to the Effects of Substances Stimulating the Thyroid Gland in the Guinea Pig. *Science* **80**: 252 (Sept. 14) 1934.

⁵⁴ Leonard, S. L. A Study of the Pituitary Factor Increasing the Ovarian Weights of Immature Rats When Injected in Combination with Pregnancy Urine. *Am. J. Physiol.* **108**: 331 (May) 1934.

⁵⁵ Clark, H. M. A Prepuberal Reversal of the Sex Differences in the Gonadotropic Hormone Content of the Pituitary Gland of the Rat. *Anat. Rec.* **61**: 193 (Jan.) 1935.

The ovaries of monkeys injected with this principle, on the other hand, show no follicle growth whatever.⁵⁷ There is a hyalination of the monkey ovaries, and, in contrast to the reaction in rats and mice, no stimulation of secretion of estrogenic substance occurs. The reason for the differences in ovarian responses is unknown. It may be due to the end organ (ovary) or to the amount of circulating pituitary hormone, the phenomenon of "activation"⁵⁸ or "augmentation" (Leonard,⁵⁴ Fevold, Hisaw and their associates⁵⁹) may play a part. Human ovaries, judging from the work of Geist,⁵⁸ appear to react as those of monkeys to injection of pregnancy urine extract. As shown in another section, the ovaries of all these species react in a nearly identical way to pituitary follicle-stimulating hormone.

It is evident that the response elicited by injections of the pituitary or any other hormone is dependent on at least two factors, namely, the stimulating capacity or potency of the dosage given and the responsive capacity of the receptor tissues or organs. A diminution or increase in either of these factors will alter the effect. In work on the pituitary gland the potency of extracts has been given a more prominent place than has the responsive capacity of the receptor, though current literature indicates that the importance of the latter is being realized more and more. General credence was earlier given to the view so ably sponsored by Keith and others that racial size, for instance, was referable to the secretory activity of the pituitary. It is not to be denied that the secretory rate of the endocrines may be influenced by heredity and even that this influence may be so profound as to cause an entire failure in the production of a secretion, as in the case of growth hormone in the dwarf mouse.⁶⁰ That this is not the main or even a significant cause of racial skeletal peculiarities, however, is being shown by the very instructive interbreeding of different strains of dogs⁶⁰ and by the work of the experimental embryologists on the experimental transplantation of limbs or organs (Harrison⁶¹ and others). In these experiments it has been shown that, under the same endocrine environment, limbs or other structures from two species of different sizes will respond differentially because of their inherited growth capacity.

The response is influenced not only by the genetic constitution but by other factors, prominent among which is the aging process. The importance of the latter is well exemplified by the ovary. It has been shown experimentally that prior to a certain age level the follicles are incapable of responding to injections of the follicle-stimulating hormone, although the follicles may be of considerable size.⁶² From conditions found in women it may be surmised that after a certain degree of aging the reproductive organs lose their

capacity to respond, for, after the menopause, follicle-stimulating hormone may be present in large amounts yet reproductive cycles cease.

It was stated at the beginning of this article that the problem of the physiology of the pituitary gland has become more complex rather than simplified by investigations reported in the last few years. The validity of this statement is attested by the fact that there are now an increased number of hormones the interrelationships of which functionally and chemically have hardly been explored at all and by the fact that there has been shown to be a differential capacity of response in various species and even in the same species at different age levels.

THE HYPOPHYSEAL GONADOTROPIC HORMONES

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The discovery in 1926-1927 that the anterior pituitary gland secreted a substance essential to the functioning of the gonads has been followed by many investigations, which have greatly extended the knowledge of the pituitary-gonad interrelationship.

I do not wish to give the impression that important work in this field had not been done prior to 1926-1927. The observations published here and abroad at that time were only a final demonstration of the important role played by the anterior hypophysis in reproduction. More than twenty years ago Cushing and his co-workers¹ and Aschner² had demonstrated that hypophysectomy caused an atrophy of the reproductive system. By partial gonadectomies, parabioses and the like it had also been shown that some extragonadal factor was essential to gonadal function. Evans and Long³ had secured excessive luteinization of the ovaries in normal rats by the injection of anterior lobe extracts. In 1927 restoration of gonadal function after hypophysectomy with hypophyseal implants⁴ and induction of precocious sexual maturity with the same treatment (Aschheim,⁵ Smith,⁶ Smith and Engle⁷) conclusively demonstrated that the anterior lobe maintained and controlled the activity of the ovaries and testes and through them influenced the other reproductive organs.

Although the extracts thus far prepared do not have the desired physiologic purity, evidence gained from their use in the laboratory strongly indicates that two types of preparations can be made. One of these in the terminology of the response in the female, gives follicular stimulation. The other fraction, the purification of which has not progressed as far as the purification of the follicle stimulator, gives luteinization. As regards the sexes, the former stimulates primarily the germ cell line (male germ cells, ova and granulosa)

56 Evans H. M., Meyer K. and Simpson M. E. Relation of Prolan to the Anterior Hypophyseal Hormones. *Am. J. Physiol.* 100: 141 (March) 1932.

57 Fevold, H. L., Hisaw F. L., Hellbaum A. and Hertz, R. Anterior Lobe or Anterior Lobelike Sex Hormone Combinations on Growth of Ovaries of Immature Rats. *Proc. Soc. Exper. Biol. & Med.* 30: 914 (April) 1933.

58 Geist S. H. Reaction of the Mature Human Ovary to Antuitrin S. *Am. J. Obst. & Gynec.* 26: 588 (Oct.) 1933.

59 Smith P. E. and MacDowell E. C. The Differential Effect of Hereditary Mouse Dwarfism on the Anterior Pituitary Hormones. *Anat. Rec.* 50: 85 (July 25) 1931.

60 Stockard C. R. Gene Constitution and Endocrine Quality in Determining Growth Reactions. *Proceedings of the National Academy of Science* 77: 518, 1933. Genetic Constitution and Endocrine Environment in Structural Expression. *Anat. Rec.* 55: 38 (supp. No. 4) 1933.

61 Harrison R. G. Harvey Lecture 1934 to be published.
62 Smith P. E., Engle E. T. and Tyndale H. H. Differential Ovarian Responses After Injections of Follicle Stimulating and Pregnancy Urine in Very Young Female Rats. *Proc. Soc. Exper. Biol. & Med.* 31: 744 (March) 1934.

1 Crosse S. J., Cushing Harvey and Homans J. Experimental Hypophysectomy. *Bull. Johns Hopkins Hosp.* 21: 127, 1910.

2 Aschner B. Ueber die Beziehungen zwischen Hypophyse und Genitale. *Arch. f. Gynak.* 97: 200, 1912.

3 Evans H. M. and Long J. A. Characteristic Effects upon Growth Oestrus and Ovulation Induced by the Intraperitoneal Administration of Fresh Anterior Hypophyseal Substance. *Proc. Nat. Acad. Sci.* 3: 38, 1922.

4 Smith P. E. The Disabilities Caused by Hypophysectomy and Their Repair. *J. A. M. A.* 88: 158 (Jan. 15) 1927.

5 Aschheim Selmar. Ueber die Funktion des Ovariums. *Zschr. f. Geburtsh. u. Gynak.* 80: 387, 1926.

6 Smith P. E. Hastening Development of Female Genital System by Daily Homoplastic Pituitary Transplants. *Proc. Soc. Exper. Biol. & Med.* 24: 131 (Nov.) 1926.

7 Smith P. E. and Engle E. T. Experimental Evidence Regarding the Role of the Anterior Pituitary in the Development and Regulation of the Genital System. *Am. J. Anat.* 40: 159 (Nov.) 1927.

and is therefore gametokinetic or gametogenic in its action. The latter, the luteinizer, theoretically should and actually appears to act predominantly on the connective tissue derivatives (the theca cells of the ovaries and the interstitial cells of the testis). In addition to this progress on the fractionation of the hypophyseal gonad-stimulating hormones, gonadotropic substances have been discovered in human blood and urine during pregnancy, after ovariectomy and the menopause, in certain tumors of the reproductive organs, and, in smaller amounts, in the blood and urine of men and women during the normal reproductive period. A gonadotropic substance is present in large amounts in the blood serum of mares during approximately the middle third of pregnancy and, in small quantities, in the blood of certain lower forms after castration. Although this paper deals primarily with the pituitary hormones, it will be advisable also to discuss briefly the action of the gonad-stimulating principles in the blood and urine. It seems clear that certain of the latter are actually secreted by the anterior lobe, and, although the origin of others is problematic, nevertheless a statement of their action is of value in a discussion of the gonadotropic hormones known to be of pituitary origin.

"FOLLICLE-STIMULATING" AND "LUTEINIZING" HORMONES OF THE HYPOPHYSIS

Work on the fractionation of the gonad-stimulating factor of the anterior pituitary has been vigorously carried on for a number of years by Fevold, Hisaw and their collaborators.⁸ More recently, Wallen-Lawrence⁹ and Evans and his co-workers¹⁰ have reported extracts secured by other methods of fractionation. Hisaw and Fevold have secured a fraction which in female hypophysectomized rats, in young rabbits, or, with limited treatment, in immature rats, gives pure follicle growth.¹¹ In the latter form, corpus luteum formation will take place after several days of treatment, a result undoubtedly due to the secretion of the animal's own pituitary gland. The effects from the injection of their follicle-stimulating fraction in hypophysectomized females are identical with those secured by the injection of extracts of the urine of postmenopause or ovariectomized women (Leonard and Smith¹²). In normal immature rats or mice this urinary principle gives also follicular growth (Hamburger¹³), which may be followed by corpus luteum formation. In immature monkeys both the anterior hypophyseal follicle-stimulating fraction and the extracts of urine of castration give pure follicular growth.¹⁴ Thus the principle in castrate or menopause urine seems to be identical with the follicle-stimulating fraction prepared from pituitary glands.¹⁵

8 Fevold H. L., Hisaw F. L., Hellbaum A. and Hertz, R. Sex Hormones of the Anterior Lobe of the Hypophysis. *Am. J. Physiol.* 104: 710 (June) 1933.

9 Wallen-Lawrence Z. Proof of the Existence of a Follicle Stimulating and a Luteinizing Hormone in the Anterior Lobe of the Pituitary Body. *J. Pharmacol. & Exper. Therap.* 51: 263 (July) 1934.

10 Evans H. M., Pencharz R. I. and Simpson, Miriam E. On a Selective Gametogenic Effect of Certain Hypophyseal Extracts. *Science* 80: 144 (Aug. 10) 1934.

11 Through the courtesy of Dr. Hisaw I have repeatedly injected this fraction into hypophysectomized rats with the effect stated above.

12 Leonard S. L. and Smith P. E. The Hypophyseal Like Qualities of the Gonadotropic Principle Found in the Urine of Certain Individuals. *Am. J. Physiol.* 108: 22 (April) 1934.

13 Hamburger C. Studies on Gonadotropic Hormones from the Hypophysis and Chorionic Tissue. *Acta path. et microbiol. Scandinav.* 1933 supp. 17 pp. 1-184.

14 Engle E. T. Unpublished experiments.

15 H. C. A. Lassen and E. Brandstrup (*Acta obst. et gynec. Scandinav.* 14: 89 1934) report that women castrated surgically or by x-rays excrete both a follicle stimulator (prolan A) and a luteinizer (prolan B) the proportions of which vary. In this work normal rodents were used in determining the proportions. Although hypophysectomized rats would seem to be a much more reliable test form nevertheless their observations are significant and call attention to the need of making further analyses.

The gonadotropic principle in pituitaries of horses that have long been castrated also consists largely or entirely of the follicle-stimulating fraction (Hellbaum¹⁶).

A noteworthy feature in treatments of rodents or monkeys with the follicle-stimulating fraction (from castrate urine and probably from the hypophysis also) is the absence of cyst formation in the ovaries, even with large doses (Smith and Engle¹⁷). The injection of unfractionated extracts of the hypophysis (from the sheep) or implants, on the other hand, cause frequently the formation of large cysts in these animals. From these experimental results the clinical use of a purified follicle-stimulating extract will presumably be attended with much less danger of cyst production than will use of unfractionated gonadotropic hypophyseal extracts.

The action of the castrate-urine follicle-stimulating principle in hypophysectomized males is of great interest. The seminiferous epithelium of the atrophied testes of such animals shows a profound response, spermatids and even spermatozoa being produced with a slight or no response of the interstitial tissue, as revealed both by structural studies and by a failure of the accessory reproductive organs to hypertrophy (Smith and Engle¹⁸). Evans and Simpson¹⁰ have recently reported a similar effect from a principle secured by fractionating the hypophysis. Their extract thus also acts as does the principle in castrate urine.

The evidence therefore rather convincingly shows that a fraction can be extracted from the anterior lobe which appears to be physiologically identical with that in castrate urine and which stimulates in both sexes predominately the germ cells (and tissues having the same origin, as the granulosa of the ovarian follicle). This principle therefore could well be designated as a gametokinetic principle.

The present status of a "luteinizing" gonadotropic hormone as I see it is not as definite as that of the gametokinetic fraction.

Fevold and his associates⁸ and Wallen-Lawrence⁹ have reported a fraction from the anterior lobe which, when injected alone, will cause but a slight or no increase in ovarian weight and will produce no luteinization unless large follicles are present. If injected with a "follicle-stimulating" fraction, the follicles that have been stimulated to growth by the latter will then become luteinized. In my opinion, adequate tests have not been reported with this material in hypophysectomized animals in which any confusion due to the secretion of the animal's own hypophysis is eliminated.

In many respects the gonadotropic principle in human pregnancy urine meets most of the requirements that it seems justifiable to postulate for a "luteinizing" principle. This is stated without prejudicing the question of the site of formation of this principle, conclusive data on which are not yet available. Extracts of pregnancy urine, as has been repeatedly demonstrated, will not cause follicle growth when injected into hypophysectomized rats (Selye and his collaborators,¹⁹ Leonard and Smith,²⁰ and others). It produces a

16 Hellbaum A. A. Gonadotropic Activity of the Pituitaries of Horses. *Proc. Soc. Exper. Biol. & Med.* 30: 641 (Feb.) 1933.

17 Smith, P. E. and Engle, E. T. Gonad Stimulating Hormones from the Pituitary and from Human Urine. *J. Pediatr.* 5: 163 (Aug.) 1934.

18 Smith and Engle¹⁷. Smith P. E., Engle E. T. and Tyndale H. H. Gametokinetic Action of Extracts of Follicle-Stimulating Urine. *Proc. Soc. Exper. Biol. & Med.* 31: 745 (March) 1934.

19 Selye Hans, Collip J. P. and Thomson D. L. On the Effect of the Anterior Pituitary Like Hormone on the Ovary of Hypophysectomized Rats. *Endocrinology* 17: 494 (Sept. Oct.) 1933.

20 Leonard S. L. and Smith P. E. Responses of the Reproductive System of Hypophysectomized Rats to Injections of Pregnancy Urine Extracts. *The Female Anat. Rec.* 68: 175 (Jan. 25) 1934.

pronounced luteoid change of the theca cells of the follicle and, according to the results of Leonard and Smith, true corpus luteum formation also if follicles of a size sufficient to be acted on are present. When injected subsequent to the follicle stimulation fraction in hypophysectomized female rats it produces luteinization and "augmentation" (see next section). In males, whether normal or hypophysectomized, it produces an extensive interstitial tissue hypertrophy. However, it also stimulates the seminiferous epithelium (Smith and Leonard²¹), an effect which, although repeatedly denied by Collip,²² has been confirmed recently by Evans and his associates²³ and which is supported also by the work of Brosius and Schaefer²⁴ in cases of aspermia in man. This action on the seminiferous epithelium may be due to a gametokinetic fraction in pregnancy urine, the action of which is masked in hypophysectomized females by the "luteinizing" fraction. In monkeys in which it seems difficult to secure luteinization the pregnancy urine extracts alone hyalinize the ovary, and such appears to be the case also in women (Geist²⁵). In combinations with hypophyseal gonadotropic extracts it may cause luteinization in monkeys (Engle²⁶), Westman²⁷ reports corpus luteum formation in a woman after the menopause who was given a transfusion of blood from a pregnant woman.

OTHER SUGGESTED PRINCIPLES OF THE ANTERIOR PITUITARY

Mention should be made of two other gonadotropic hormones that some work has suggested.

"Ovulation Hormone"—Mention of the possibility of an ovulation hormone appears not infrequently in the literature, though in my opinion the evidence does not indicate the formation of such a hormone. Although in some nonspontaneously ovulating forms (rabbit, ferret) ovulation can be induced during their extensive periods by injection of most anterior lobe extracts, in other forms the induction of ovulation is accomplished with difficulty. In hypophysectomized rats many follicles can be brought to a mature size only to regress and be replaced by others by the daily administration of a gametokinetic (follicle-stimulating) pituitary extract. Ovulation will not take place apparently until a luteinizing extract is injected. Many failures have resulted in experimental attempts to secure ovulation in monkeys whose follicles have been matured by the injection of a follicle-stimulating extract. Recently this has been achieved by Hisaw and his group, by correctly balancing the amounts of follicle-stimulating and luteinizing extracts that were injected²⁸. An excessive number of eggs were secured. Ovulation appears not to be due to a specific principle but to the

concurrent action of these two fractions at a correct stage of follicular development²⁹.

"Synergistic" Principle—It has been demonstrated that the concurrent administration of a low dosage of gonad-stimulating fraction and of a pregnancy urine extract gives an ovarian response in rats much greater than would be predicted from the sum of the responses of the two substances acting alone. This has been characterized as "activation" by Evans and as "augmentation" by Hisaw and his co-workers. Its explanation has caused the introduction into the literature by Evans and his associates of the term "synergistic principle" in a way which indicates that it is considered as a separate hormone (Evans and his associates³⁰). It has been demonstrated that "augmentation" with pregnancy urine extracts and anterior pituitary extracts takes place only when the latter contains a gonad-stimulating principle³¹. It will also take place when two pituitary gonadotropic principles, one causing predominantly luteinization and the other follicle growth, are concurrently injected. The assumption of a separate "synergistic" principle to explain the augmented response seems unnecessary. It seems to be adequately explained by the assumption that the follicle will pass through full development to corpus luteum formation only when acted on by a "luteinizer" in addition to a "follicle stimulator". The former, when acting alone, may give no increase in ovarian weight but, when introduced in the presence of follicles stimulated by the latter, it will cause luteinization, and apparent augmentation will result. Because "augmentation" will occur in the rat, it should not be inferred that it will occur in all other forms.

Pregnancy Mare Serum—Although but a limited space was allocated for this review of the gonadotropic hormones, the review would seem to be incomplete without at least a short discussion of the gonad-stimulating substance discovered by Cole and Hart³² in the serum of pregnant mares during the midperiod of pregnancy. This substance is present in large amounts in the serum. No structural description of the effects of the injection of this have been published, though Evans and his co-workers³³ have reported enormous enlargement of the ovaries from its injection in hypophysectomized female rats. It is pertinent to state that the size of the response is no criterion of the effectiveness of a gonadotropic substance in restoring ovarian function. A normal sized gland that is structurally normal is the desideratum. They have reported that it restores the function of the testes after hypophysectomy. This I can confirm. Both the seminiferous tubules and the

21 Smith P. E. and Leonard S. L. Responses of the Reproductive System of Hypophysectomized and Normal Rats to Injections of Pregnancy Urine Extracts. I. The Male. *Anat. Rec.* 58:145 (Jan. 25) 1934.

22 Collip J. P. Some Recent Advances in the Physiology of the Anterior Pituitary. *J. Mount Sinai Hosp.* 1:28 1934.

23 Evans, H. M., Pencharz, R. I. and Simpson Miriam E. Maintenance and Repair of the Reproductive System of Hypophysectomized Male Rats by Hypophyseal Synergist, Pregnancy Prolan and Combinations Thereof. *Endocrinology* 18:607 (Sept. Oct.) 1934.

24 Brosius W. L. and Schaefer, R. L. Spermatogenesis Following Therapy with the Gonad Stimulating Extract from the Urine of Pregnancy. *J. A. M. A.* 101:1227 (Oct. 14) 1933.

25 Geist S. H. Reaction of the Mature Human Ovary to Antuitrin S. *Am. J. Obst. & Gynec.* 26:588 (Oct.) 1933.

26 Engle E. T. Luteinization of the Ovary of the Monkey by Means of Combined Use of Anterior Pituitary Extract and an Extract of Pregnancy Urine. *Endocrinology* 18:513 (July Aug.) 1934.

27 Westman A. Reaktivierung von senilen menschlichen Ovarien. *Zentralbl. f. Gynak.* 58:1090 (May 12) 1934.

28 Personal communication to the author.

29 It is probably premature and therefore unwise to attempt to correlate these results with the normal cycle. It is tempting to hypothesize on the subject however. If, in the normal cycle the follicle-stimulating hormone causes the growth of the follicle, this then being followed by the secretion of the luteinizing hormone which acts in the second part of the cycle, the extra-ovarian factor causing ovulation may well be the balanced action of these two principles in the mid interval (ovulatory) period.

30 Evans H. M., Simpson, Miriam E., and Austin, P. R. Further Studies on the Hypophyseal Substance Giving Increased Gonadotropic Effects when Combined with Prolan. *J. Exper. Med.* 58:545 (Nov.) 1933. Evans H. M., Pencharz, R. I. and Simpson Miriam E. The Repair of the Reproductive System of Hypophysectomized Female Rats by Combinations of a Hypophyseal Extract (Synergist) with Pregnancy Prolan. *Endocrinology* 18:601 (Sept. Oct.) 1934.

31 The theory of 'augmentation' has been critically discussed with the introduction of new pertinent data by Leonard (A Study of the Pituitary Factor Increasing the Ovarian Weights of Immature Rats when Injected in Combination with Pregnancy Urine, *Am. J. Physiol.* 108:331 (May) 1934). Fevold and Hisaw (Interactions of Gonad Stimulating Hormones in Ovarian Development, *ibid.* 109:655 (Oct.) 1934) and Hamburger³².

32 Cole, H. H., and Hart G. H. The Potency of Blood Serum of Mares in Progressive Stages of Pregnancy in Effecting the Sexual Maturity of the Immature Rat. *Am. J. Physiol.* 93:57 (May) 1930.

33 Evans H. M., Meyer, K. and Simpson M. E. The Growth and Gonad Stimulating Hormones of the Anterior Hypophysis. *Memoirs of the University of California* 2 1933.

interstitial tissue are stimulated and complete restoration of function results. In hypophysectomized (or normal females) it gives both follicular growth and luteinization, thereby explaining the enormous ovaries that can be secured from its administration. These results in both males and females thus indicate that the pregnant mare serum contains some principle in addition to a follicle stimulator. Recent results of Cole and Hart³⁴ have led them to believe that there are two principles in the serum.

CONCLUSIONS

Work on the gonadotropic substance from the hypophysis and from other sources (from castrate and menopause urine) strongly indicates that the principle commonly designated as the gonad-stimulating principle is composed of two principles. One of these, a gametokinetic (follicle stimulating) principle, has been secured in a fair degree of physiologic purity by fractionation of the anterior hypophysis, and it is also present with little or no contamination with other hormones in the blood and urine after the menopause and ovariectomy. Work with the other principle is somewhat less satisfactory. It appears that the other factor, which may at this time be designated as a "luteinizer," causes luteinization of the ovary. It presumably acts also on the interstitial tissue of the testes. The present indications are that in the therapy of hypogonadism due to a hypophyseal deficiency the administration of one or the other or a proper mixture of these two factors will be required to induce normal gonadal function.

INTERRELATIONSHIPS AMONG URINARY, PITUITARY AND PLACENTAL GONADOTROPIC FACTORS

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The discussion in this article will be confined to the known estrogenic and gonadotropic factors of the pituitary, placenta and urine. A great mass of factual evidence bearing on these active principles has been accumulating within the past few years and indeed is still being added to rapidly month by month. Proved facts must be accepted, but an adequate and totally satisfactory correlation of these facts is quite impossible at this time. I can hope only to present a point of view that seems the most satisfactory explanation of the known facts.

ACTIVE PRINCIPLES

There is a group of estrogenic substances which may be subdivided into those active in castrates and those active only in animals with intact gonads (gonadotropic substances¹). The latter group may be subdivided into two: those of pituitary origin and those of placental origin. Some or all of these are found to occur in pregnancy blood and urine, the placenta, the ovary and the pituitary. In addition to these, there is in the female the luteal hormone—a product of the ovary, and

in the male, the testis hormone, presumably a product of the interstitial cells of the testis. Some conception of the state of confusion in which earlier workers found themselves may be had from the following example. A relatively crude extract of human placenta made by extraction of the fresh material with 50 per cent acetone was found to produce estrus both in castrate rats and in immature rats if administered either by feeding or by injection. The original extract was divided into ether soluble and ether insoluble fractions. The former was effective in the production of estrus either by feeding or by injection, as was the original extract. The ether insoluble fraction, however, had the same properties. It was found that the ether insoluble fraction was more active estrogenically in the intact immature animal than in the adult castrate. The ether insoluble fraction was again divided into two fractions by precipitation with alcohol. Again, both the alcohol soluble and the alcohol insoluble fraction produced estrus when injected into immature rats. The former was effective when fed, but the latter was inert when orally administered. The former was active in large doses in castrates, and the latter was completely ineffective in the absence of the ovaries.

From work of this sort—so confusing at first—with pregnancy urine, blood, placenta and anterior lobe pituitary tissue, carried out by many workers in different laboratories, there emerged facts that allow of classification of the estrogenic substances just mentioned.

ESTROGENIC SUBSTANCES WITHOUT GONADOTROPIC EFFECT

Although different forms of estrogenic substance have been obtained in crystalline form (Thayer, Levin and Doisy,^{1a} Butenandt,² Marrian³ and Browne⁴), it is a fact of special significance that the bulk of estrogenic substance in fresh urine occurs in some organic combination, as yet unknown. The estrogenic factor of the placenta also occurs in combination with some organic substance which is particularly resistant to hydrolysis; it is possible to prepare potent, orally active, estrogenic extracts in which the active principles are alcohol soluble but ether insoluble. The active principle in the water soluble, ether insoluble complex can be split off, for the most part, by acid hydrolysis, and then it will pass readily into an organic solvent such as ether, from which it can be purified. Since the ovary contains only a very small amount of estrogenic principle and as placenta, pregnancy blood and urine are rich in estrogenic material, it has been accepted by most workers that the estrus-inducing factor excreted during pregnancy is of placental origin. Although no positive morphologic effect has been produced on the ovary with purified estrogenic preparations (except by administration of large doses over long periods), it is possible that the ovary may have some action on the placental product in the way of converting it into a more active form (Browne⁴ and Collip, Browne and Thomson⁵).

1a Thayer S. A. Levin L. and Doisy E. A. The Preparation of Theelin. *J. Biol. Chem.* **91**: 655-665 (May) 1931. Theelin. Some Physical and Chemical Properties. *ibid.* **91**: 791-801 (May) 1931.

2 Butenandt A. Ueber die Reindarstellung des Follikelhormons aus Schwangerenurin, *Ztschr. f. physiol. Chem.* **191**: 127-139, 1930. Ueber physikalische und chemische Eigenschaften des kristallisierten Follikelhormons. *ibid.* **191**: 140-156, 1930.

3 Marrian G. F. Chemistry of Oestrin. An Improved Method of Preparation and Isolation of Active Crystalline Material. *Biochem. J.* **24**: 435-445, 1930.

4 Browne J. S. L. The Chemical and Physiological Properties of Crystalline Oestrogenic Hormones. *Canad. J. Research* **8**: 180-197 (Feb) 1933.

5 Collip J. B. Browne J. S. L. and Thomson D. L. The Chemical Nature of Emmenin. *Endocrinology* **18**: 71-74 (Jan-Feb) 1934.

34 Cole H. H. and Hart G. H. Concerning Gonadotropic Substances in Mare Serum. *Proc. Soc. Exper. Biol. & Med.* **32**: 370 (Nov.) 1934.

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1 It is necessary that a clear distinction be made between those substances which produce estrus directly (in the absence of the ovaries) which in this series of articles are grouped under the generic title estrogenic substance, and the gonadotropic principles which produce estrus indirectly by stimulating the production of estrogenic substance by the ovary.—Ed.

GONADOTROPIC PRINCIPLES

There have to be considered here

1 The maturity hormone complex of the anterior lobe

2 The anterior pituitary-like gonadotropic hormone of placenta, pregnancy blood and urine

3 An anterior lobe product found in the urine in certain menopausal cases in the urine of castrates, and occasionally in normal urine

Since the discovery of the gonad-stimulating factor called "prolan" in pregnancy urine by Aschheim and Zondek,⁶ there has been much discussion as to whether this substance is, first, identical with the anterior lobe product and, secondly, if identical, whether the hormone found in the placenta, blood and urine is produced by the anterior pituitary or is produced also by the placenta. It is not within the scope of this review to discuss at length the various points of view relating to these questions, which have been put forward from time to time by various workers in this field. The results of a long series of experiments on the response of hypophysectomized rats to the anterior pituitary-like gonadotropic factor has established quite conclusively that this substance cannot replace the gonadotropic substance of the anterior pituitary. The ovarian response of hypophysectomized rats treated with the pituitary-like factor together with a small amount of anterior lobe extract was the same as that with anterior pituitary maturity substance alone, when administered in adequate dosage.⁸ The recent experiments conducted in our laboratory⁹ showing that animals resistant to the pituitary-like principle would respond to anterior pituitary gonadotropic extract and that animals resistant to anterior pituitary gonadotropic principle would respond to the pituitary-like factor have given good ground for the view that the latter is not identical with a constituent of pituitary tissue. Since there is ample evidence to show that the maturity hormone of the anterior pituitary is bipartite, it becomes necessary to contrast the action of the placental hormone, which I believe to be a single entity, with each part of the pituitary maturity complex. This, at the present time, can be done only by indirect methods, but such a study shows that the physiologic effects of the pituitary-like hormone and the luteinizing fraction of the anterior pituitary are very similar, whereas there is no such close relationship between the follicle stimulating fraction of the pituitary and the hypophyseal-like principle.

THE INFLUENCE OF THE GONADOTROPIC HORMONES ON THE OVARY

Differentiation among the various gonadotropic principles obtained from the pituitary gland, the placenta and the urine is not very easy at present. It seems

to be well established, however, that the gonadotropic extracts obtainable from the hypophysis have a different physiologic effect from those obtained from pregnancy urine. While the gonadotropic hormone extracted from pituitary tissue produces follicle maturation and corpus luteum formation in the hypophysectomized rat, the anterior pituitary-like hormone extracted from pregnancy urine or human placental tissue produces no follicle maturation and no corpora lutea in the absence of the hypophysis (Collip, Selye and Thomson¹⁰). These experiments have been confirmed by several investigators, and although Leonard and Smith¹¹ reported that in some cases small corpora lutea were observed, they agree with us in that the main action of the pituitary-like fraction in the hypophysectomized female is not the luteinization of the granulosa cells but the transformation of theca cells into so-called theca-lutein cells. Further experiments will have to establish whether the occasional luteinization of an immature follicle by the hypophyseal-like gonadotropic fraction, as observed in Smith's laboratory, is really due to this principle itself or to some accompanying substance.

Similarly, in the male hypophysectomized rat, the only effect of the pituitary-like principle that we could observe was an increase in the size and number of interstitial cells, the seminal epithelium has not been affected.¹² While Smith and Leonard¹³ and also Evans and his collaborators¹⁴ confirmed our statements concerning the increase in interstitial tissue after the administration of the anterior pituitary-like gonadotropic factor in the hypophysectomized rat, their results differ from ours in that they state that administration of the latter leads to sperm cell formation after hypophysectomy.

From all these experiments it is seen that, while the anterior pituitary-like factor acts first of all on the interstitial cells of both ovary and testis, it has only a limited effect, if any, on the seminal epithelium and on the maturing follicle. The gonadotropic hormone obtained from the pituitary itself acts first of all on the follicle leading to maturation and on the seminal epithelium.

The anterior pituitary-like factor, however, as more recent experiments have shown, is not the only gonadotropic substance obtainable from human urine. It has been proved by Zondek¹⁵ and confirmed by numerous other investigators¹⁶ that the urine of castrates and of women in the menopause may contain the gonadotropic principle which Zondek calls "prolan A" and which has the property of stimulating the growth of the graafian follicle without ever transforming it into

10 Collip, J. B., Selye, Hans and Thomson, D. L. Gonad Stimulating Hormones in Hypophysectomized Animals. *Nature* London **131** 56 (Jan. 14) 1933.

11 Leonard, S. L. and Smith, P. E. Effects of Injecting Pregnancy Urine Extracts in Hypophysectomized Rats. II. The Female. *Proc. Soc. Exper. Biol. & Med.* **30** 1248-1249 (June) 1933.

12 Collip, J. B., Selye, Hans and Thomson, D. L. Beiträge zur Kenntnis der Physiologie des Gehirnanhangs. *Virehows Arch. f. path. Anat.* **280** 23-46 1933.

13 Smith, P. E. and Leonard, S. L. Effect of Injecting Pregnancy Urine Extracts in Hypophysectomized Rats. I. The Male. *Proc. Soc. Exper. Biol. & Med.* **30** 1246-1247 (June) 1933.

14 Evans, H. M., Simpson, M. E. and Austin, P. R. Recognition and Comparison of Prolan and Prolan Like Substances. *J. Exper. Med.* **58** 561 (Nov.) 1933.

15 Zondek, Bernhard. Die Hormone des Ovariums und des Hypophysenvorderlappens. Berlin: Julius Springer 1931.

16 Jeffcoate, T. A. A. Occurrence of Pituitary Hormones in Urine in Conditions Associated with Pregnancy. *Lancet* **1**: 663 (March 26) 1932. Brühl, R. Weitere Untersuchungen über die Ausscheidung von Hypophysenvorderlappenhormon im Urin, *Ztschr. f. Geburtsh. u. Gynak.* **101** 403 1932.

6 Zondek, Bernhard. Die Schwangerschaftsdiagnose aus dem Harn durch Nachweis des Hypophysenvorderlappenhormons. *Klin. Wchnschr.* **7** 1404 (July 22) 1928. Aschheim, Selmar. Die Schwangerschaftsdiagnose aus dem Harn durch Nachweis des Hypophysenvorderlappenhormons, *ibid.* **7** 1453 (July 29) 1928.

7 Selye, Hans, Collip, J. B. and Thomson, D. L. Effect of Anterior Pituitary-like Hormone on the Ovary of the Hypophysectomized Mouse. *Proc. Soc. Exper. Biol. & Med.* **31**: 264-265 (Nov.) 1933.

8 Collip, J. B., Selye, Hans, Thomson, D. L. and Williamson, J. E. Replacement of Gonadotropic Action of Pituitary in the Hypophysectomized Rat. *Proc. Soc. Exper. Biol. & Med.* **30** 665-667 (Feb.) 1933.

9 Selye, Hans, Collip, J. B., and Thomson, D. L. Loss of Sensitivity to the Anterior Pituitary Like Hormone of Pregnancy Urine. *Proc. Soc. Exper. Biol. Med.* **31** 487-488 (Jan.) 1934. Loss of Sensitivity to the Gonadotropic Hormone of the Hypophysis. *ibid.* **31**: 566 (Feb.) 1934.

Selye, Hans, Bachman, C., Thompson, D. L. and Collip, J. B. Further Studies on Loss of Sensitivity to Anterior Pituitary Like Hormone of Pregnancy Urine. *ibid.* **31** 1113-1115 (June) 1934.

a corpus luteum. He also postulates the presence of another gonadotropic factor, "prolan B," which does not stimulate the growth of the follicle at all but transforms granulosa cells into corpus luteum cells. Both these substances would be present in pregnancy urine, while the urine of castrates would contain only "prolan A." Although no gonadotropic hormones can be demonstrated with direct methods in the placenta of rodents, there is some evidence for the presence of a factor, in the pregnant rat and mouse, that inhibits the involution of the corpus luteum of gestation even after the hypophysis is removed.¹⁷ Even the mere mechanical distention of the uterus retards the involution of the pregnancy corpora.¹⁸

The differentiation of these gonadotropic principles is extremely difficult because the pituitary of the experimental animal secretes other hormones, which also influence the ovary. It is absolutely essential, therefore, to use hypophysectomized animals for this type of study.

Experiments on hypophysectomized rats have shown that extracts prepared from castrate urine will lead to follicle maturation in the female and to proliferation of the seminal epithelium and sperm cell production in the male (Leonard and Smith¹⁹). These extracts have no marked effect on the interstitial cells of the ovary or testis.

I should like to outline our conclusions regarding the mechanism of action and the nature of these hormones on the basis of the observations that one may consider as being really well established at the present time. In order to eliminate repetition, I shall not review here the literature concerning the physiology of the gonadotropic hormones, since this will be done by Smith in another paper of this series. The reader is referred to this article, where he will find accounts of the valuable contributions of Lipschutz, Hisaw, Swezy and their collaborators.

The development of the graafian follicle and its transformation into a corpus luteum may be divided into three different periods.^{10a} The first stages of development are found in the ovary of rats between the first and the eighteenth day of life. At this period the granulosa cells do not respond to any known gonadotropic hormone, and the only effect that one can see after the administration of the anterior pituitary-like gonadotropic factor is the transformation of theca cells into theca-lutein cells,²⁰ while the pituitary gonad stimulating principle does not seem to have any effect at all. The nonresponsiveness of such immature ovaries to gonadotropic hormones lies in the ovary itself and not in its hormone environment, because these ovaries will not form mature follicles and corpora lutea even if they are transplanted into adult female castrates.

The second stages of development are found in the ovaries of rats after the eighteenth day of life, and in the ovaries of hypophysectomized animals. Up to this stage of maturation no pituitary hormones are needed. The experiments of Swezy²¹ have shown that ovogenesis is not impaired after hypophysectomy, and since mitotic figures have frequently been found in the granulosa of hypophysectomized rats I feel that the maturation of the granulosa must also be independent of the pituitary hormones up to a certain stage in the development of the follicle. In this second stage the follicle is able to respond to the pituitary follicle-stimulating hormone but not to the anterior pituitary-like gonadotropic factor. If the latter is administered to hypophysectomized animals, only thecal luteinization will take place. If it is administered to the immature animal (around the eighteenth day of age) the follicles of which are also in this stage of development, the same preparation will produce follicle maturation with the subsequent luteinization of the granulosa only because the experimental animal's own pituitary is able to participate in the stimulation of the ovary.²²

The third stages of development are found in the ovaries of animals in full estrus or of hypophysectomized animals after administration of follicle stimulating hormone as obtained from castrate urine or pituitary tissue. This is the stage of full follicular development. At this time, and only at this time, the pituitary-like gonadotropic principle has a direct effect on the granulosa cells, which it is able to transform into corpus luteum cells.

This explains why the hypophyseal-like factor may lead to the formation of a true corpus luteum if injected into a rabbit immediately after hypophysectomy, since in this species fully mature follicles are almost continuously present in the ovary. It further explains why the injection of this substance into guinea-pigs does not lead to the formation of corpora lutea except in the presence of large follicles. Since this species responds to the pituitary-like principle in a manner similar to that of the hypophysectomized rat or rabbit, one may assume that the hypophysis of the guinea-pig does not participate with the injected anterior pituitary-like substance in follicular stimulation. This interpretation would also make Engle's²³ experiments on monkeys more comprehensible. The monkey seems to react very much like the guinea-pig in that here again the pituitary-like factor produces luteinization only after the follicle has responded to hypophyseal stimulation.

It seems necessary at the present time to postulate two hypophyseal gonadotropic hormones, one follicle stimulating and one that luteinizes the theca and the mature granulosa while it has no effect on the immature granulosa cells. The so-called prolan A of menopausal urine appears to consist chiefly of the former, or at least to resemble it closely, whereas the placental hormone of pregnancy urine ("prolan A" plus "prolan B" of Zondek's original terminology) is more comparable, in its biologic relations to the luteinizing fraction.

17 Selye Hans Collip J B and Thomson D L. Effect of Hypophysectomy upon Pregnancy and Lactation in Mice, *Proc Soc. Exper Biol & Med* **31** 82-83 (Oct.) 1933. Studies on the Effect of Pregnancy on the Ovary *Anat. Rec* **58**: 139 143 (Jan 25) 1934. Effect of Hypophysectomy upon Pregnancy and Lactation *Proc Soc Exper Biol & Med* **30**: 589 590 (Feb.) 1933.

18 Selye Hans Influence of the Uterus on Ovary and Mammary Gland *Proc. Soc. Exper Biol & Med* **31**: 488-490 (Jan.) 1934.

19 Leonard S L and Smith P E. Ovarian Response of Hypophysectomized Rats to Urinary Follicle Stimulating Principle, *Proc Soc Exper Biol. & Med* **31** 283 284 (Nov.) 1933.

19a The effect of age on the response to gonadotropic hormone is discussed more fully in a paper to be published by Selye Hans Collip J B and Thomson D L.

20 Selye Hans and Collip J B. Production of Exclusively Thecal Luteinization and Continuous Oestrus with Anterior Pituitary Like Hormone *Proc Soc Exper Biol & Med* **30**: 647 649 (Feb.) 1933. Selye Hans Collip J B and Thomson D L. Further Studies on Production of Thecal Luteinization by Means of A P L. *ibid* **30** 780 783 (March) 1933.

21 Swezy Olive. Ovogenesis and Its Relation to the Hypophysis *Lancaster Pa. Science Press* 1933.

22 Selye Hans Collip J B and Thomson D L. On the Effect of the Anterior Pituitary Like Hormone on the Ovary of the Hypophysectomized Rat, *Endocrinology* **17** 494-500 (Sept Oct.) 1933. Selye Hans Effect of Hypophysectomy on the Ovary of Immature Rats *Proc. Soc Exper Biol & Med* **31**: 262 264 (Nov.) 1933.

23 Engle E T. Luteinization of the Ovary of the Monkey by Means of Combined Use of Anterior Pituitary Extract and an Extract of Pregnancy Urine, *Endocrinology* **18**: 513 520 (July Aug.) 1934.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

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NOTE.—In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The series of articles will be continued from time to time in these columns.—ED

THERAPY OF VARICOSE VEINS AND ULCERS

If there is a retrograde blood current in the varicose veins when the patient is in the upright posture, the tissues whose blood should be drained by these veins are supplied by venous instead of arterial blood. Even if the current is not actually retrograde, it becomes so sluggish as to amount to almost the same thing. This accounts for the difficulty of healing varicose ulcer and varicose eczema until the venous stagnation or reversal in capillary flow, as the case may be, has been corrected. This may be done by one of four methods or a combination of these: (1) rest and elevation, (2) supporting bandages, (3) sclerosing injections, (4) surgical ligation of the long saphenous vein.

REST AND ELEVATION

Prolonged bed treatment with elevation of the affected limb to 45 degrees or higher so as to reestablish the centripetal direction of the blood current in the varicose veins is no longer practiced, for the results of this treatment were merely temporary and, as soon as the patient became ambulatory, the ulcers or dermatitis returned.

A person afflicted with varicose veins should keep the legs elevated whenever possible and avoid prolonged standing, which is much worse than is walking, as the pumping action of the muscles favors return flow in the deep veins.

If the patient will not or cannot employ any other treatment, it is quite advantageous for him to sleep with the feet raised about 7 inches above the level of the pelvis (the elevation produced by means of a skeleton wooden wedge placed under the mattress or, more simply, by raising the foot end of the bed). If there is a tendency to edema at bedtime, a mid-day siesta in the same posture should be insisted on.

SUPPORTING BANDAGES

Supporting bandages act chiefly by making the valves of the damaged veins more nearly adequate.

(a) *Elastic Stockings*—The constant wearing, when the patient is up and about, of an elastic stocking or, what is less expensive, a "crape" bandage, is a necessary prophylactic to trouble for all those afflicted with or prone to the development of varicose veins, for example, in pregnancy. The bandage should be applied each morning before rising, even before the leg is put out of bed and while the affected limb still has the advantage of the overnight relief of fluid stagnation, and it should not be taken off until the patient goes to bed for the night. It must be worn regularly. These bandages should extend from the metatarsal region to at least half way up the thigh, leaving the front of the

knee free. It should be made in two parts, one reaching from the toes to just below the knee, the other from the knee to the middle of the thigh. A one-piece stocking is liable to interfere with the movements of the limb and to constrict the circulation about the knee. An intrinsic disadvantage of the elastic stocking, even if it fits well at first, is that it soon becomes worthless either from loss of elasticity or from change in the size or shape of the limb.

(b) *The Elastic Crape Roller Bandage*—This bandage, 4 inches wide (e.g., the "Ace"), has the advantage not only of being less expensive but also of always fitting if properly applied and being washable without losing elasticity, provided the cotton fibers when wet are not stretched, as by wringing or by hanging up to dry.

(c) *Elastic Adhesive Bandage*—This application has revolutionized the treatment of varicose ulcer. The principle underlying this method, enunciated by A. Dickson Wright in 1930, is to apply elastic adhesive plaster strapping with sufficient tension to abolish the circulation in the varicose veins. The patient is kept ambulant and the ulcer is dressed in nothing but its own discharge. If the ulcer is large and the edema considerable, longitudinal strips of adhesive plaster are placed on both sides up the leg to prevent the cutting of grooves in the edematous leg and to keep the bandage from slipping out of position on the surface of the ulcer, which is too moist for the bandage to adhere to. This precaution is not necessary when the ulcer is small or the edema moderate. The elastic adhesive plaster (such as "elastoplast") is wound as firmly and evenly as possible, overlapping each turn of the bandage one half of its width by the ensuing turn. When the edema is great, it may be necessary to use all one's strength in applying the plaster, for looseness of the bandage is the chief cause of failure, and the bandage becomes loose as the edema diminishes. Later applications require less pressure. The patient takes his baths with the plaster in position. He is instructed to wipe off or wash off any discharge that may appear on the surface and to protect the stockings by putting an absorbent gauze dressing over the bandage. The bandage is changed when it has become loose, which may be twice weekly. Later it may be left on for eight days or longer. The bandage is removed, like a cast, by cutting up one side.

Incorporating in the elastic compression bandage a rubber sponge about an inch larger than the ulcerated area (which is first covered with moist sterile dressing so as to favor drainage, the moist sterile dressing being covered with dry sterile dressing, and this with the rubber sponge) has been likened by McPheeters to bringing a "rubber heart" to the aid of the healing, provided the patient walks enough. (McPheeters uses a 4 inch crape ["Ace"] bandage and changes the dressing every other day.) If the ulcer is large and as soon as a healthy granulating surface has been secured, seed implants (see Ulcer Therapy) should be inserted in the granulations and the elastic pressure applied over the grafts, the taking of which it favors. Sclerosing injections may be employed prior to the application of the elastic adhesive bandage and each time it is changed, thereby not only expediting the healing of the ulcer but also preventing its recurrence.

(d) *"Unna's Boot"*—This is especially indicated by varicose eczema, but it is also suitable for chronic leg ulcer, provided there is no edema of the leg. Thus it

is an excellent succedaneum to the elastic adhesive bandage when the tendency to edema has been overcome

For success with this treatment it is essential that the ulcer be free from gross infection (see Ulcer Therapy) and that the circumference of the limb should have been reduced as much as possible. If there is much edema of the leg a day or two in bed with elevation of the limb is necessary. If there is but little edema, the boot should be applied before the patient has been allowed to get out of bed in the morning and after five or ten minutes of extreme elevation of the part. The leg should have been rendered scrupulously clean and be shaved if it is hairy.

Dr Leroy H Sloan describes a technic of applying Unna's boot that, as compared with the method ordinarily advised, is time and trouble saving. A sufficient quantity of the Soft Zinc Glycerogelatin (N F) for use in winter, or of the Firm Zinc Glycerogelatin (N F) for use during the summer, is melted, just before it is needed by the application of the least amount of heat necessary. Starch bandages about $2\frac{1}{2}$ inches wide, such as the ophthalmologist employs to cover the eye following operative procedures, are put directly into the melted gelatin preparation, pushed down deep into it and kept there until the bandage is soaked thoroughly. The bandage is then wrapped on the limb just like an ordinary bandage excepting that it is not reversed at any point. Over the last layer of the starch-gelatin paste bandage an ordinary gauze bandage is placed.

The indications for removing the "boot" are soiling and not fitting any longer. Profuse exudate from an ulcer may make it necessary to change the boot twice a week. To cut a "window" over the discharging ulcer is not permissible. Usually the boot may be allowed to remain for several weeks and sometimes even for months. This treatment should not be discontinued soon after healing has occurred for fear of recurrence of the ulcer or the dermatitis, and the boot should be promptly reapplied at the first sign of the reappearance of the lesion.

Definitely to free the patient from the likelihood of these recurrences, the destruction of varicose veins becomes necessary and sclerosing injections have made it possible to do this, in the majority of cases, without the necessity of hospitalization.

3 Sclerosing Injections—Before destroying varicose veins, it is important for the physician to ascertain that they are superfluous. A person whose deep veins are thrombosed requires the superficial venous circulation, even if it is varicose, to carry the blood away from the limb. A history of previous phlebitis of the leg suggests deep vein thrombosis as a probability which can be converted into a certainty by the Perthes test. By means of a flannel bandage one occludes the superficial veins and has the patient walk for an hour and return. Pain, discoloration and swelling of the foot indicate that the case is not suitable for any form of vein destruction and that the best that can be done for the patient is to employ, along with rest and elevation, one of the supporting bandages applied as tightly as is comfortable.

No one, of course, would undertake injection treatment of veins in the presence of fresh phlebitis. It is

also important to recognize residual infection in veins before undertaking the injection treatment, as this would activate it into an acute phlebitis (q v). In addition to a history of preceding phlebitis, tender thickened veins and palpable phleboliths as well as a rise in the temperature of the skin overlying such veins should suggest application of one of three provocative procedures (Geza de Takats, 1932). 1 Roentgen irradiation with 150 roentgens applied with 140 kilovolts, 0.25 mm of copper and 1 mm of aluminum to both legs, which is followed by rise in skin temperature if infection is present. 2 Diathermy applied for five minutes over the suspected area, which gives a rise in skin temperature the next day, as compared with the other leg also treated. 3 Puncture of the veins without injection. If such infection is present, foreign protein therapy and a supporting bandage, together with removal of foci of infection may render the provocative tests negative several months later, whereupon injection treatment may be employed.

The presence of infection anywhere else in the system such as acute catarrh of the upper respiratory tract, and septic tonsils or teeth, contraindicates these sclerosing injections. So does advanced age or the presence of severe systemic disease, such as diabetes mellitus, nephritis or obstructive heart or lung disease.

PRESCRIPTION 1—Quinine and Urethane Solution

R Quinine hydrochloride	0.4 Gm.
Ethyl carbamate	0.2 Gm.
Distilled water	3.0 cc.
Sterilize by boiling and dispense in ampule. Inject 2 cc. at an average	

PRESCRIPTION 2—Concentrated Salt Solution

R Sodium chloride	2.0 Gm.
Distilled water	10.0 cc.
Sterilize by boiling and dispense in ampule. Inject from 5 to 10 cc according to the size of the varix.	

Bernstein's classification of the Trendelenburg tests and their correlation with pathologic conditions may be of value in developing the indications for and the prognosis of the injection treatment. In performing the Trendelenburg test, the veins of the leg are emptied by elevating the limb and by gently stroking the veins toward the femoral ring. The hand then makes pressure at the fossa ovalis and the patient is asked to stand. Normal filling from the periphery distends the veins moderately in about a minute even while the pressure is applied. The presence of valvular insufficiency in the long saphenous vein causes, on removal of the hand, the nonsupported column of blood to fill all the varices rapidly from above downward. This is spoken of as the "Trendelenburg positive" (T+) reaction. If incompetent valves are present in the veins connecting the deep and superficial venous system, rapid filling (within ten to twenty seconds) of the varices occurs even while pressure is being maintained over the fossa valves. This is the "Trendelenburg negative" (T-) reaction. A combination of the two conditions might be spoken of as a "double Trendelenburg" (T±). If there are no valvular defects but merely sacculated veins, Bernstein calls this condition a "Trendelenburg nil" (T0). It is in the last mentioned that best and promptest results are secured from the injection treatment. A positive Trendelenburg reaction indicates ligation of the long saphenous vein before injections are started, otherwise recanalization of the thrombus

is likely to occur within a few months. Such ligation is also indicated when there is a double Trendelenburg reaction. But in this case as well as when there is a Trendelenburg negative reaction a great many injections will be required and these may not have a lasting effect.

Among the numerous competing injection fluids, the solution of Quinine and Urethane (prescription 1) is the outstanding one. It is only when the patient has an idiosyncrasy against quinine or the varices are extremely large that from 5 to 10 cc of a concentrated solution of Sodium Chloride (prescription 2) is employed. This solution has the disadvantage of causing a severe cramp in the muscles of the leg.

During the performance of the injection it is perhaps most convenient to have the patient stand on a bench about 18 inches above the floor. After proper cleansing, the injection is made, beginning generally with the lowest varicosity and working upward. An exception to this rule occurs in cases of ulcer in which the varices above the knee—but not much higher than a hand's breadth above—are injected until the ulcer has been healed. Then injections should be employed to obliterate the varicosities in the leg, otherwise the ulceration is liable to recur.

The vein does not need to be emptied prior to injection. There is no necessity for any apparatus to segregate a portion of the vein. All the equipment required is a syringe and a 22 to 26 gage needle with a short bevel. A sterile gauze pad held in place by adhesive plaster is the final dressing. Should paravenous injection occur, the syringe should be disconnected at once from the needle and the tissue blown up through the needle with sterile fluid, preferably 1 per cent solution of procaine in 5 to 10 cc amounts, which it is always well to have at hand when one gives these injections.

4 Surgery—Surgical procedures are at present confined to the ligation of the long saphenous veins in those cases in which its valves are incompetent, and this is best done before the injection treatment is commenced to prevent recanalization of the thrombus.

Operation as suggested by Nelson J. Howard is done as follows. If the saphenous vein is not visible in the upper part of the thigh, it is traced by palpation of the impulse transmitted on percussion. Under scrupulous asepsis and local infiltration anesthesia, the internal saphenous vein is exposed by a transverse incision at the junction of the upper and middle thirds of the thigh. Without unnecessary trauma, the vein is freed from surrounding areolar tissue. Medium silk ligatures are applied 1 inch apart. After they are tied, the ligatures are left long to serve as traction sutures after the vein has been cut between them. To make certain that the ligature may not blow off under exertion, the proximal stump is then transfixed and tied distally to the ligature, trauma of the proximal stump from forceps and other causes being carefully avoided. Then holding the distal stump of the vein taut by means of the long ligature, one injects in a centrifugal direction from 10 to 20 cc of 20 per cent solution of Sodium Chloride. After this the vein is again tied to prevent escape of the hypertonic solution. The wound is flushed with physiologic solution of Sodium Chloride and closed with interrupted sutures, and a sterile dressing is applied. The patient may go home and work even on

the day of the operation but should return for frequent postoperative inspection of the wound. Skin sutures are removed in a week.

5 Causal Therapy—It is, of course, understood that any discoverable etiologic factor for the varicosities is to be corrected. This applies most especially to constipation and to pelvic tumors. Rest, elevation, and supporting bandages (indications 1 and 2) should be resorted to as a routine during pregnancy to protect women as far as possible against these blemishes. Persons with a tendency to varicosities of the legs must be enjoined against wearing garters or clothing that constricts the abdomen. Excessive fatigue and especially prolonged standing must be avoided. If standing is unavoidable, one should practice as often as possible (from ten to fifteen times daily) deep breathing and foot rolling as well as leg and thigh flexion and extension exercises (such as in bicycling). The presence of a low metabolic rate, suggesting a tendency to myxedema, should be met by thyroid administration. A reducing diet might be required in an obese individual, dietary control and, if necessary, insulin in the diabetic patient, or hematonic therapy in the anemic person.

6 Systemic Therapy—Even though true syphilitic or mycotic ulcers have an essentially different pathology and symptomatology, it is decidedly possible for syphilitic infection or mycotic invasion to delay the healing of leg ulcers or make it impossible, just as vein flow reversal or stagnation may make a syphilitic or mycotic ulcer incurable, unless the varicosities are properly dealt with. Hence the therapy of syphilis (q v) or of the mycoses (q v) needs to be associated when there is coincidence of these conditions.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION
OF THE FOLLOWING REPORTS HOWARD A. CARTER, Secretary

SONOTONE HEARING AID ACCEPTABLE

This device is manufactured by the Sonotone Corporation of New York City. The outfit consists of a transmitter, booster, ear or bone conduction receiver, and a battery. The principle of operation of the Sonotone does not differ greatly from a simple telephone hook-up. The sound waves are picked up by the microphone, amplified by the booster, and transmitted to the hearing organs of the ear by the bone conduction unit, the oscillator, or through air by the air conduction unit, the earpiece.

In the earpiece type, sound waves are converted by the transmitter into the varying electrical currents drawn from the battery and are conveyed to the earpiece, where they create more or less powerful vibrations of the diaphragm in the earpiece, these mechanical vibrations are then reconverted into sound waves. When the earpiece is placed in or on the outer ear, an air cushion is created between the earpiece and the membrana tympani or drum membrane, chiefly in the canal of the outer ear. The reconverted sound waves of the earpiece are conveyed through this air cushion to the drum membrane and there are again converted into mechanical vibrations, which then are conveyed from the drum membrane to the chain of auditory organs of the middle and subsequently of the inner ear.

In the bone conduction hearing aid, sound waves are converted by the transmitter into electromechanical vibrations, which also bring about variations of electric current drawn from the battery, and these varying electric currents are con-

veyed to the oscillator, where they create relatively greater varying mechanical vibrations. The oscillator, quite unlike the earpiece, does not reconvert these mechanical vibrations into sound waves. Instead, it conveys these mechanical vibrations, as such, to the bones of the head and from there directly to the auditory organs.

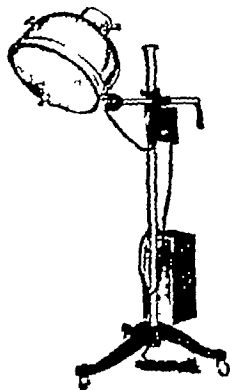
One unit was tried out in actual service under the supervision of the consultant of the Council and was found to give satisfactory service. The especially designed dry cell batteries appeared to hold up well, indicating that the current demand was not great. Both the air conduction and bone conduction instruments gave satisfaction, and the selection of the method depends on the conditions of the case. It was found that under some circumstances certain deafened individuals were able to hear better by air conduction, while others heard better by the bone conduction. The selection of the method is left to the discretion of the physician.

The company recommends the use of the special batteries. The reason for this is that the dry cells are manufactured for heavy duty and are different in construction from the ordinary flashlight batteries. Flashlight batteries are designed for long shelf life at the expense of other valuable features. It follows, therefore, that the hearing-aid batteries should give good service if they are not permitted to stand on the shelf more than six months.

In view of the results of the investigation the Sonotone Hearing Aid is included in the Council's list of accepted devices.

ALOE DOUBLE THERAPY LAMP ACCEPTABLE

The A. S. Aloe Company, St. Louis, is the manufacturer of this therapeutic lamp. The unit is mounted on a stand and may be conveniently moved about, and the reflector mounted on a cross arm, is adjustable to any position. The arc is protected by a screen. This unit is called a double therapy carbon arc ultraviolet lamp, because it is possible to make use of the various kinds of carbon for example the A Sunshine Carbon, the C therapeutic carbons and the K carbons. The physician may select the carbon that gives the radiation which he desires.



Aloe Double Therapy
Lamp

It combines in one unit a carbon arc and a ring type infra-red generator. The unit consists principally of a resistance unit, a single carbon arc automatic in adjustment, and a 1,000 watt infra-red generator. The carbons are 8 mm by 6 inches and the lamp draws 15 amperes across the arc.

The mechanism of the unit is so arranged that either the carbon arc or the infra-red burner may be used independently of the other or the two units may be used simultaneously. The lamp may be used with direct or alternating current without further adjustment.

At a distance of 24 inches the carbon arc will produce a "mild sunburn" reaction in three minutes, using a therapeutic C carbon, or within forty-five seconds at a distance of 10 inches, "with visible reddening of the skin several hours later and subsequent granular exfoliation."

The carbon holders are operated entirely outside the bowl of the lamp, thus facilitating their replacement while the lamp is in operation. An automatic blowout prevents the destruction of carbon holders.

The 14 inch polished aluminum hood is universally adjustable to any required position and is provided with a heavy and rigid protective screen. The base is so designed that the extended weight of the bowl cannot tip the lamp over.

This lamp was investigated for the Council and the claims made for it were substantiated. The Double Therapy Lamp, therefore, is included in the Council's list of accepted devices.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary

DIPHTHERIA TOXOID (See New and Nonofficial Remedies, 1934, p 390)

The National Drug Co., Philadelphia

Diphtheria Toxoid—(See New and Nonofficial Remedies 1934 p 392)

For determining sensitivity to diphtheria toxoid the product is supplied in the form of a 1:20 dilution. The test dose is 0.1 cc injected intradermally. Supplied in packages of five and fifty tests.

DIPHTHERIA IMMUNITY TEST (SCHICK TEST) (See New and Nonofficial Remedies, 1934, p 404)

Lederle Laboratories, Inc., Pearl River, N Y

Diphtheria Toxin for Schick Test in Peptone Solution—(See New and Nonofficial Remedies, 1934 p 405)—Also marketed in packages of one vial containing diluted diphtheria toxin sufficient for fifty tests.

STAPHYLOCOCCUS TOXOID—*Staphylococcus* Ana toxin—Univalent or polyvalent, potent hemolytic and dermonecrotic toxins of *Staphylococcus pyogenes-aureus* altered by the formaldehyde-detoxifying process of Burnet (modified from Ramon). Antigenicity is maintained but toxicity is greatly diminished.

Actions, Uses and Dosage—*Staphylococcus* toxoid has been reported a valuable agent in the prophylaxis and therapy of various staphylococcal pyoderms and localized pyogenic processes due to *Staphylococcus aureus* (boil, carbuncle, furunculosis, acne, and so on). The toxoid is said to be effective in producing active immunity to the dermonecrotic and hemolytic elements of the toxins of *Staphylococcus aureus* and *albus*, irrespective of the individual strain of the infecting organism. The toxoid induces the production of quantitative amounts of staphylococcus antitoxin in the blood serum of immunized persons. Treatment consists in the subcutaneous or intramuscular injection at two to seven day intervals of an amount of toxoid representing the following dermonecrotizing units of toxin (a dermonecrotizing unit is the least amount of toxin which on intradermal injection will produce an erythema with central necrosis at least 5 by 5 mm in diameter).

First injection	20 units
Second injection	40 units
Third injection	60 units
Fourth injection	80 units
Fifth injection	100 units
Sixth injection	200 units
Seventh injection	400 units
Eighth injection	600 units
Ninth injection	800 units
Tenth injection	1,000 units

Following the completion of the tenth injection subsequent treatment, if necessary, may be maintained at that dosage or increased as the progress of the individual case may indicate.

Lederle Laboratories, Inc., Pearl River, N Y

Staphylococcus Toxoid Lederle—Prepared by treating a *staphylococcus* toxin filtrate with 0.3 per cent solution of formaldehyde and storing at 37-38 degrees C until 0.1 cc injected intradermally into previously tested rabbits produces no evidence of necrosis. The product is then diluted with 0.25 per cent peptone solution so that two strengths are obtained. Dilution No 1 containing in each cubic centimeter the toxoid obtained from 100 necrotizing doses of toxin and Dilution No 2 containing in each cubic centimeter the toxoid obtained from 1,000 necrotizing doses of toxin. The material is then preserved with merthiolate 1:10,000. The usual sterility tests prescribed by the National Institute of Health are made. Safety tests are made by injecting 1 cc doses into each of two mice. The potency of the original toxin is tested by making serial dilutions and injecting 0.1 cc of each dilution intracutaneously into susceptible rabbits in order to determine the maximum dilution which will cause necrosis. The least amount of toxin which produces an area of erythema with a central necrosis at least 5 mm in diameter is taken as one necrotizing dose of toxin.

Staphylococcus Toxoid Lederle is marketed in packages of one 5 cc vial each cubic centimeter containing the toxoid derived from 100 necrotizing doses of toxin and in packages of one 5 cc vial each cubic centimeter containing the toxoid derived from 1,000 necrotizing doses of toxin.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING
GENERAL DECISION AND REPORT RAYMOND HERTWIG Secretary

FORTIFICATION OF FOODS OTHER THAN DIETARY STAPLES WITH VITAMIN D

There is no convincing evidence from the standpoint of public health of a need for the fortification of foods with vitamin D other than such staple products as milk, cereals and bread, which form the basis of the customary diet of the public throughout the year. It is nutritionally unreasonable to add vitamin D to foods consumed mostly in the summer when sunshine is sufficient for producing this vitamin in the body, or to foods consumed irregularly, especially in the fall winter and spring months. An important prerequisite in the choice of food for incorporating vitamin D is that it be consumed regularly and in considerable quantity in the usual diet throughout the year.

Examples of foods not warranting fortification with vitamin D are sausage and ice cream and such accessories as chewing gum

NOT ACCEPTABLE

PONY BRAND ARTICHOKE CREAM PULP

The Bottled Pure Juice Company, Campbell, Calif., submitted to the Committee on Foods a cooked, pulped, strained artichoke with added citric acid and salt, called "Pony Brand Artichoke Cream Pulp."

Manufacture—Fresh artichoke free of outer leaves, leaf tips and stems, is washed, boiled until tender, pressed to remove excess water, pulped, strained, admixed with a small quantity of citric acid and salt, heated, canned and processed

Analysis (submitted by manufacturer) —	per cent
Moisture	87.1
Total ash	1.6
Sodium chloride	0.5
Fat (ether extract)	0.7
Protein (N X 6.25)	2.4
Reducing sugars as dextrose before inversion	3.7
Reducing sugars as dextrose after inversion	6.3
Crude fiber	1.0
Carbohydrates other than crude fiber (by difference)	6.3
Titratable acidity as citric acid	0.9

Calories—0.4 per gram 11 per ounce

Discussion of Product, Name and Label—The label bears the statements

"Artichoke Cream Pulp This Artichoke Pulp contains no starch nor sugar and consequently is very beneficial to all those with delicate stomachs, those suffering with diabetes and while it is highly nutritive is not fattening"

It is apparently the intention of the company to exploit the article as a "special purpose food," as shown by the label statement 'it is very beneficial to all those with delicate stomachs, those suffering with diabetes is not fattening' The product is essentially useless as a "special purpose food" or for the stated uses. It is no more suitable for the low carbohydrate diet than any canned '5 per cent vegetable'. It has no special value for "those with delicate stomachs, those suffering with diabetes" or the obese. The claim implies medicinal properties not possessed. Contrary to the label statement, the product contains a substantial amount of sugar.

The name and label do not correctly or appropriately inform of the nature of the food. The citric acid and salt ingredients should be declared along with the name 'Cream Pulp'. Part of the name incorrectly suggests the presence of cream, a constituent of milk. A proper name for the product is 'Pulped, Strained Artichoke (Added citric acid and salt)'.

Because of its uselessness as a special purpose food and of the deceptive name and label statements this product, therefore cannot be listed as an accepted food of this Committee.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION. RAYMOND HERTWIG Secretary



STOKELY'S FOR BABY SPECIALLY PREPARED STRAINED CEREAL WITH ADDED WHOLE MILK, SOY BEAN FLOUR, TRI-CALCIUM PHOSPHATE AND YEAST, SEA- SONED ONLY WITH SALT

Manufacturer—Stokely Brothers & Company, Inc., Indianapolis

Description—Cooked sieved blend of farina, rolled oats, wheat germ, barley flour, whole milk, soy bean flour, yellow corn meal, salt, tri-calcium phosphate and brewers' yeast

Manufacture—The ingredients in formula proportions are cooked in milk to 88 C, sieved through a monel screen, canned in enamel lined cans, and processed under pressure at 116 C for ninety-five minutes

Analysis (submitted by manufacturer) —	per cent
Moisture	86.8
Total solids	13.2
Ash	1.2
Sodium chloride	0.5
Fat (ether extract)	1.1
Protein (N X 6.25)	2.6
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	8.0
Calcium (Ca)	0.26
Copper (Cu)	0.0001
Iron (Fe)	0.002
Manganese (Mn)	0.0003
Phosphorus (P)	0.25

Calories—0.5 per gram 14 per ounce

Vitamins—The manufacturing equipment and procedure by excluding air are protective of the vitamin content

Claims of Manufacturer—This strained cereal cooked in milk is especially prepared for infant feeding, children, convalescents and special diets. Packed in enamel lined cans. Requires only warming for serving.

IRRADIATED VITAMIN D PASTEURIZED MILK

Distributors—Brighton Place Dairy Company, Inc., General Ice Cream Corporation (New Haven Dairy Division), New Haven, Conn.

Description—Bottled pasteurized vitamin D milk irradiated with ultraviolet rays

Preparation—The milk complies with legal requirements and is pasteurized by the standard holding method. For description of irradiation, see THE JOURNAL Oct. 7 1933, page 1155. The type of equipment used is the Hanovia-National Milk Irradiator.

Vitamins—Clinical investigation shows this milk to be a reliable antirachitic agent if the proper amount is used. Contains 135 U S P X (Revised, 1934) vitamin D units per quart.

Claims of Distributors—Irradiated antirachitic pasteurized milk having otherwise the flavor and food values of usual pasteurized milk.

FREEPORT TIP-TOP BREAD, SLICED

Manufacturer—Freeport Baking Company, Freeport, Ill.

Description—Sliced white bread made by the sponge dough method (method described in THE JOURNAL, March 5, 1932 p 817), prepared from flour, water, sucrose, shortening, powdered skim milk (sweetened condensed whole milk used in winter), yeast, sodium chloride, malt extract, gelatinized white corn flour, soya bean flour and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate.

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SATURDAY, FEBRUARY 16, 1935

EFFECT OF DIET IN EXPERIMENTAL AMEBIASIS

The extreme variability in the clinical and pathologic manifestations of intestinal amebiasis has long been puzzling. Many plausible theories have been adduced to explain, for instance, why one person may harbor *Endamoeba histolytica* in the intestinal tract for years, without apparent clinical symptoms and without serious damage to the body tissues, while another may have the mucosa of the colon practically denuded in the space of a few days from the ravages of this protozoon. The alternating periods of clinical quiescence and exacerbation in many patients also confuse the problem. Orthodox immunology appears to offer little in the way of a solution.

Those with wide experience in the treatment of amebiasis, especially in the tropics, find that diet plays a large part in the severity of infection with *Endamoeba histolytica*, persons who have been on a restricted diet, particularly one high in carbohydrate, often have a more virulent infection than those on a full diet or on one low in carbohydrate. But the reasons presented in explanation of this phenomenon have been merely conjectural.

Recently, Faust¹ and Kagy² and their co-workers³ of Tulane University have reported the results of a series of studies on the effect of diet on experimental amebiasis in dogs, these promise to be of the utmost importance in contributing to the understanding of this difficult problem and in improving the methods of treatment of the disease in man. The New Orleans investigators have determined the effects of raw liver, liver extract, other liver fractions, cod liver oil, desiccated hog stomach and canned salmon when added to

the diet of dogs infected by intracecal inoculation⁴ of *Endamoeba histolytica*. Dogs so inoculated develop severe acute amebic enteritis with extensive ulceration of the colon, ordinarily only the trophozoite stage of the parasite can be recovered from the stool.

Feeding raw liver or liver extract in adequate amounts to such dogs causes rapid and definite clinical improvement and healing of the intestinal lesions. The stool tends to become dehydrated and formed, the amebas encyst and may disappear from the feces altogether. Although ordinarily only the active form of the ameba is found in the wall of the intestine, encysted organisms may be seen behind healed surface lesions after liver feeding. The mechanism whereby raw liver or liver extract changes the course of intestinal amebiasis is not known. In part the effect appears to be related to the tendency toward dehydration of the feces, but, as Faust and Kagy² point out, there are undoubtedly other factors involved in this process. Raw liver or liver extract is not amebicidal but amebostatic, in some of the animals under therapy with raw liver, complete eradication of *Endamoeba histolytica* has been noted but this does not occur uniformly. Faust and his co-workers³ found that greater and more rapid improvement took place when the raw liver was finely chopped than when it was ingested whole. Still more rapid improvement occurred if both the liquid and solid fractions of finely chopped liver were introduced intracecally. The active material is apparently destroyed by heating in an autoclave at 17 pounds pressure for twenty minutes, rapid exacerbation of the condition occurred following oral or intracecal administration of liver so treated. Also, after heating at 70 C for thirty minutes to coagulate proteins, the washed solid material was ineffective on oral administration but the liquid fraction produced healing. Cod liver oil also has been found to have a beneficial effect¹.

In contrast to the ameliorative effect of most of the liver products, the oral or intracecal administration of desiccated stomach or the feeding of canned pink salmon caused rapid and severe exacerbation of the disease. However if the desiccated hog stomach was previously subjected to the heat of an autoclave at 17 pounds pressure for twenty minutes, oral or intracecal administration resulted in improvement rather than exacerbation. Or when whole salmon was given intracecally instead of orally, improvement also occurred, but peptic or tryptic digests of the salmon injected into the cecum resulted in serious aggravation of the enteritis.

While the explanation of these important investigations of Faust and his collaborators is not yet clear, their observations are of the greatest importance to an understanding of the processes involved in amebiasis and promise to be of inestimable value in the prevention and treatment of this disease.

¹ Faust E. C. Experimental Amebiasis in Dogs. *Am J Trop Med* 12: 17 (Jan.) 1932.

² Kagy E. S. and Faust E. C. Effect of Feeding Raw Liver to Dogs Infected with *Endamoeba histolytica*. *Proc. Soc. Exper. Biol. & Med.* 28: 252 (Dec.) 1930. Faust E. C. and Kagy E. S. Studies on the Effect of Feeding Ventriculin, Liver Extract and Raw Liver to Dogs Experimentally Infected with *Endamoeba histolytica*. *Am. J. Trop. Med.* 14: 235 (May) 1934.

³ Faust, E. C. Scott L. C. and Schwartzwelder J. C. Influence of Certain Foodstuffs on Lesions of *Endamoeba histolytica* Infection. *Proc. Soc. Exper. Biol. & Med.* 32: 540 (Dec.) 1934.

⁴ Faust E. C. and Kagy E. S. Studies on the Pathology of Amebic Enteritis in Dogs. *Am J Trop Med* 14: 221 (May) 1934.

THE ANEMIA OF PREMATURE INFANTS

The investigations that have been conducted in the modern "renaissance of hematology," particularly those dealing with the anemias of infancy, have yielded information of interest. The fact has been well established that the hemoglobin level of normal, full-term infants, which is extraordinarily high at birth (from 18 to 20 Gm per hundred cubic centimeters), decreases progressively after birth to a moderately anemic level of approximately 10 Gm per hundred cubic centimeters of blood and thereafter increases slowly during the years of childhood and adolescence to an adult level. Similar but more definite changes occur in the blood of premature infants. The early fall in the hemoglobin level is more rapid and more pronounced than in full-term infants. Indeed it appears that the greater the degree of prematurity, the lower the hemoglobin level reached, values as low as 7 Gm per hundred cubic centimeters being occasionally found. Anemias of this degree must be regarded as pathologic. While it is probable that a low percentage of hemoglobin in itself is not harmful, it may well be indicative of a condition that renders the infant more likely to succumb to infections and other disease processes. Therefore knowledge of the cause and hence of the rational therapy of the anemia of prematurity is of prime importance.

According to current opinion,¹ three main mechanisms may be concerned in the development of the anemia of prematurity: (a) Deficient antenatal storage of iron or perhaps copper or some other essential hematogenic material, in the premature infant this factor might conceivably be exaggerated by the shortened period available for the storage of blood-forming substances; (b) Deficient blood formation due to marrow hypoplasia; (c) Increased blood destruction.

Recent investigations² have yielded further information indicating that a deficient storage of iron, copper and probably other essential material is not primarily responsible for the early anemia of premature infants. Hemoglobin, erythrocytes and reticulocytes were followed in groups of infants of varying degrees of prematurity for as long as three or four months. At different stages of the experiment, iron, copper or liver was administered and the hematologic effects were noted. Iron given during the period of from six to ten weeks after birth had no effect on the proportion of reticulocytes or on the hemoglobin and erythrocyte levels. The usual decrease in these values was unaffected. After the early period of nonreactivity there followed a short "transition" period in which iron elicited a delayed response. After the third month, iron therapy produced a prompt reticulocyte rise and

the usual subsequent increase in pigment and erythrocytes. Similar results were obtained with liver given at the different periods. Copper, in the few cases studied, appeared to have no demonstrable effect.

As a deficient supply of iron, copper and the hematogenic material in liver is apparently not involved in the etiology of the early anemia of prematurity, the other suggested factors become of added interest. There is some evidence that hypoplasia of the erythroid element of the bone marrow, in a strict anatomic sense, is not responsible for the anemia. The fact that, in the investigation cited, a continued reticulosis was observed during the period of the development of the anemia is not indicative of an inactive marrow. On the other hand, certain experiments indicate that increased blood destruction may be responsible for the rapid fall in hemoglobin. The high concentration of bilirubin in the serum of premature infants during the first few weeks after birth and the slightly low osmotic resistance of the erythrocytes are examples of the evidence in favor of this point of view. The present available information, however, does not permit a final statement concerning the relative importance of a lack of blood formation and increased blood destruction. It is possible that both are involved. Further studies of these two factors, as well as others such as growth and hydration effects, should yield information of value in the final elucidation of the cause and proper therapy of the anemia of premature infants.

HOSPITAL MORBIDITY STATISTICS

The need for morbidity statistics approaching in volume and accuracy those for births and deaths is obvious. The practicability of available methods of accomplishing this object has not yet been widely disseminated. Bolduan¹ has recently revived a suggestion made by him in 1913 showing how the vast mass of hospital morbidity may be employed for statistical study with relative ease.

The method that he proposes can be used no matter what system of nomenclature is employed in such hospitals, as he points out, however, the Standard Classified Nomenclature with the ingenious numerical designations devised by Logie would seem to offer a particularly opportune time for such a statistical inquiry. The basis for the system proposed is the "discharge certificate." These certificates would be supplied to all cooperating hospitals, and for each patient discharged a certificate properly filled out would be sent to a central recording bureau. The certificate contains space in sufficiently condensed form for ordinary data concerning sex, age, race, nationality, social condition, occupation and residence, together with a few comments on the patient's admission, stay in and discharge from the hospital, the disease and its complications. The

1 Mackay H M M Factors Causing Variation in the Hemoglobin Level with Age in the First Year of Life Arch Dis Childhood 8 251 (June) 1933 Parsons L G and Hawksley J C Studies in the Anemias of Infancy and Early Childhood III ibid 8 117 (April) 1933 Davidson L S P and Leitch I The Nutritional Anemias of Man and Animals Nutrition Abstr & Rev 3:901 (April) 1934
2 Josephs H W The Anemia of Prematurity Am J Dis Child 48 1237 (Dec.) 1934

1 Bolduan C F Hospital Morbidity Statistics Department of Health of the City of New York, No 5 April 1913 second printing 1934

amount of clerical work in filling these certificates would not be large

At the central recording bureau each certificate should be looked over by a trained physician registrar, who would indicate on each certificate the correct designation under the standard nomenclature. The tabulating clerk may then transfer, by means of punch holes, all the information on each certificate to a correspondingly numbered tabulating card. In this way tables of almost infinite variety may be prepared from the information received.

The value of the resulting data would be manifest in numerous ways. Thus, for example, a tabulation of the cases of inguinal hernia might reveal that in one hospital the average length of stay was twelve days, in another this might be eighteen days. If the results obtained were equally good, a change in methods at the second hospital might enable the latter to reduce its hospital stay for cases of this type. Such analysis might also reveal that there were more patients of a certain type in one hospital than in others, and this in turn might indicate facilities that are not readily available in the other hospitals. Important correlations of certain diseases with race, sex, occupation or other factors might also be revealed.

The expense of such an undertaking, according to Bolduan, is composed of two factors: the preparation of tables, and their analysis and publication. After such work had been organized and running for some time, he estimates that the preparation of tables concerning 200,000 cases would probably not exceed \$12,000 per annum, and the printing of an annual report would probably be less than the present total cost of the individual hospital reports. The participating hospitals would have practically no additional expense.

NARCOTIC FARMS—A PUBLIC POLICY

Elsewhere in this issue (on page 574) appear the regulations governing the admission of persons to the federal narcotic farms, the first of which is being established at Lexington, Ky. Addiction to habit-forming drugs is widespread throughout the United States. All classes and groups of the general population are affected by such addiction in one way or another. The geographic distribution of these people corresponds relatively to the geographic distribution and density of the population, occupation, age periods of life, nativity, sex, color, and marital or educational status are not exempting factors. Thus, addiction to narcotic drugs resembles an endemic disease, for it is through and on the people. Based on knowledge available, it is estimated that there are about 100,000 drug addicts in the United States.

Perhaps there is no condition in which man is placed that is fully comparable with that of opium addiction, in which food, shelter, raiment, and all those things

"by which men live" are cheerfully abandoned for the drug of choice. Contact and association with others who are addicted to the use of such drugs stand out as the more prominent and frequent immediate causes of addiction. The removal of addicts from American communities is therefore a step in the direction of preventing further addiction.

The authorization and establishment of facilities for the confinement and treatment of persons addicted to habit-forming drugs bears a direct relationship to policies respecting enforcement of antinarcotic laws and the protection of the American community. Problems in penal and correctional procedure, the uses of narcotic drugs in medical practice, research and the quest for more accurate and fundamental knowledge concerning the nature of drug addiction and related phenomena will be studied to better advantage under the conditions prevailing when the new government institutions begin to function. Moreover, these farms are a response to the instinctive demands ever present in the American people that the sick and afflicted shall be set in the way of strength and hope.

Current Comment

SPECIAL RADIO PROGRAM

Under Association News in this issue, on page 568, is another announcement of a special broadcast by the American Medical Association, which has been arranged through the courtesy of the National Broadcasting Company over a coast to coast network. It is announced also in the advertising section. Physicians are requested to call the attention of their patients to this broadcast and also to emphasize that copies of the speeches will be available after the broadcast to all listeners who send a request to the station to which they are listening, to the National Broadcasting Company at either New York or Chicago, or to the American Medical Association. After the broadcast, physicians are requested to express their opinion of the broadcast direct to Mr. Franklin Dunham, National Broadcasting Company, Radio City, New York.

TORNADOES

The excessive heat and scarcity of rain for month after month during 1934 were such absorbing features of the weather that the small number of tornadoes escaped public attention. The United States witnessed during this unusual season only seventy-six tornadoes, while during the season of 1933 its territory was invaded by 260 tornadoes, and in 1932 by 152. In the last fifteen years, only 1919 had as few tornadoes as did 1934. Perhaps the excessive number of lives lost on account of the heat in 1934 was saved by the scarcity of tornadoes. The sixty-five twisters of 1919 killed 205 people, while the seventy-six of 1934 killed only thirty-two. According to the U. S. weather

bureau,¹ the tornado belt consists of Arkansas, Missouri, Iowa, Illinois, and much of Kansas and Nebraska. Other parts of the country may be visited by them, as were New Orleans, Cleveland and Indianapolis recently. Past performance is no index as to where and when the next one will strike. In 1934 the worst tornado occurred at Maryville, Mo. and in 1933 at Nashville. The worst tornado of 1929 hit Minneapolis. In one day, May 1, 1930, there were thirty-two tornadoes in six different states. A toll in human life is often taken by storms accompanied by less violent winds. Indeed, comparatively mild weather in circuitous and indirect ways probably affects the health of more people than do the few violent storms. Unfortunately, but little significant work has yet been done in this interesting field of research.

Medical Economics

NEW DEVELOPMENTS IN BRITISH PLANS

In an address before the Annual Conference of Secretaries of Constituent State Medical Associations in September 1934, Dr. R. G. Leland¹ said in discussing a recent report of a committee of the British Medical Association:

The previous paragraph indicates that the choice is now between the extension, development and adjustment of the national insurance system to meet the larger problems of medical service and a salaried state service. Concerning the latter the report says: "There can be no doubt that the great majority of the profession is strongly opposed to this. It would seem to be a fair interpretation of the entire report to say that, because the present system of National Health Insurance has become an accepted and valued part of the national life, now only two alternatives are left for the British Medical Association to consider. One of these is the salaried state service and the other an effort to patch up and coordinate the present system of national health insurance with other forms of medical service."

Events in the brief time since this address was delivered indicate that the predicted action is already in sight in spite of the fact "that a great majority of the profession is strongly opposed to this." A cabled report says that several thousand British physicians have formed a trade union and joined the Trade Union Council (corresponding to the A. F. of L. in the United States). This action is taken in order to be prepared for what is now felt to be the early introduction of a universal system of state medicine with salaried physicians.

Alan Moncrieff,² London correspondent of the *South African Medical Journal*, gives further information of the progress of this development.

Placebo prescribing is well recognized as a fault of our present panel insurance system, and there are other faults (as well as many virtues) which are less obvious. It is interesting to note, therefore, that at the recent Conference of the Labor Party at Southport, time was found between discussion on foreign policy and home affairs to receive a report on a proposed State Health Service which is not based as many such schemes have in the past been based upon the national health insurance service. In effect the panel system would be abolished and all benefits except cash benefits taken away. The medical service would be supplied by the local municipal authorities to all under a £500 income basis, and such service would be available both in the homes and in hospitals for all voluntary hospitals and institutions would be taken over by agreement by the various municipal bodies. The medical services provided would center round well equipped clinics where all the latest methods of diagnosis and treatment would be available. Panel appointments would gradually be transferred into nonsalable positions in the public health services which would eventually be on a whole time basis. Much of this may sound utopian at present, but there is a lot of good sense in the suggestions and it is important that the profession should be fully aware of the possible developments they may expect under the next Labor Government.

COMPULSORY HEALTH INSURANCE

The Committee on Public Relations of the Medical Society of the State of Pennsylvania, of which Dr. William H. Mayer of Pittsburgh is chairman, has prepared the following release, which has been sent to more than 2,000 industries in that state:

There are concerted efforts on foot to socialize the practice of medicine. Should these succeed, general socialization will be under way.

"The Columbia Broadcasting System is broadcasting each week, on Monday evening over sixty one stations, discussions dealing with socialization of medicine, which are predominantly propaganda in favor of this socializing effort."

"The American Association for Social Security, Inc., Abraham Epstein of New York City, executive secretary, has prepared a proposed health insurance bill for introduction into the 1935 state legislatures."

"This proposed law shall establish a state health insurance bureau and commission and build up a state health insurance fund from three sources: 1.5 per cent employers' payrolls paid by the employer, 3 per cent of the wages of employees (deducted by employers and transmitted to the state fund), and 1.5 per cent of the total payroll of employers appropriated from tax funds."

"Their model bill also proposes to combine cash benefits with medical, hospital and dental care. This means that the employer will pay his large share directly and bear his burden as an already heavy taxpayer."

"The business interests of Europe have already suffered as a result of this scheme, which in England in 1933 cost through parliamentary grants \$24,000,000 and in Germany gave clerical employment to 34,300 persons."

"Business men and industrialists should not willingly promote socialization of business and industry in America. If the practice of medicine is socialized, the entering legislative wedge will have been gained."

"Will you not therefore first urge your legislative representatives to discourage the disrupting activities of the 'American Association for Social Security' which is promoting these socialization schemes through active lobbies, second, use your influence with the Columbia Broadcasting Company to prevent the propaganda for the creation of an expensive bureaucracy ultimately destructive of good medical service."

"The Medical Society of the State of Pennsylvania through its Public Relations Committee will be glad to correspond with you further."

Association News

THE ATLANTIC CITY SESSION

Applications for Space in Scientific Exhibit to Close February 25

Attention is called to the fact that applications for space in the Scientific Exhibit at the Atlantic City Session will close on February 25, after which time all applications received will be put on the waiting list.

The Committee on Scientific Exhibit requires that all applicants fill out the regular application blank. Blanks may be obtained from the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago.

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next three broadcasts will be delivered by Dr. W. W. Bauer. The titles will be as follows:

February 21	Heart Muscles
February 28	Protecting the Heart
March 7	Headache

¹ U. S. Dept. of Agriculture, Clip Sheet 866, released Feb. 3, 1935.
² Leland, R. G., Health Insurance in England and Medical Society Plans in the United States, A. M. A. Bull. 29:126 (Oct.) 1934.
³ London Letter, South African M. J. 8:860 (Nov. 24) 1934.

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next three broadcasts will be as follows:

February 19 Health Lessons from George Washington W. W. Bauer M.D.

February 26 Health and Education Morris Fishbein M.D.

March 5 Surgery in Diabetics Leland S. McKittrick M.D. who will speak from the National Broadcasting Company's studios in Boston by special arrangement.

Special Coast to Coast Broadcast

The American Medical Association will broadcast on a special program arranged through the courtesy of the National Broadcasting Company over a network of stations, beginning at 6 p. m., eastern standard time, Monday, February 18. The program will include music and three speakers from among physicians in attendance at the Annual Congress on Medical Education and Medical Licensure meeting in Chicago on that day. The speakers will be introduced by Dr. Morris Fishbein. The speakers and their topics are as follows:

Advancement of Medical Education Walter L. Bierring M.D.

The Prolongation of Life Ray Lyman Wilbur M.D.

The Battle Against Tuberculosis Kendall Emerson M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

One State Board Examination a Year—In the future, only one examination will be held a year for license to practice medicine in Alabama, in accordance with a decision of the state medical board January 5. Formerly, two examinations were held, one in January and one in July, under the new ruling the only examination will begin the last Tuesday in June. Applicants who have been licensed by other states with which Alabama reciprocates may file their applications with the secretary of the board at any time.

ARKANSAS

Bill Introduced—H. 218, to amend the medical practice act proposes to authorize the boards of medical examiners, in their discretion, to license without examination diplomates of the National Board of Medical Examiners.

Society News—Speakers before the Fourth Councilor District Medical Society at Monticello Dec. 3, 1934, included Drs. Henry T. Smith, McGehee on "Relation of the Physician to Public Health," and William R. Brooksher, Fort Smith "Cooperation of the Physician with Organized Medicine."—At a meeting of the Independence County Medical Society at Batesville, Dec. 10, 1934, Drs. Jesse D. Riley, State Sanatorium, discussed problems of tuberculosis, Van D. McAdams, Cord, burns, and Frank A. Gray, Batesville, pneumonia.

CALIFORNIA

Bills Introduced—S. 98 proposes to make it unlawful, except for licensed physicians and for persons licensed specifically by the state board of health so to do to perform diagnostic tests on cultures or material from persons suffering from infectious or contagious diseases. S. 309 proposes that any person convicted of distributing unlawfully narcotic drugs, who is himself not a narcotic addict, may be punished in addition to the other penalties provided by the act, by from one to twenty lashes at a whipping post. S. 391 proposes to establish a system of compulsory and voluntary health insurance. The bill was introduced only by title however, and the remainder of the bill is to be inserted by the committee on public health and quarantine, to which this bill has been referred. S. 392 proposes to make it unlawful to conduct a clinical laboratory unless it be under the immediate direction of a licensed clinical laboratory technologist licensed by the state board of health.

The state board of health is to license as a clinical laboratory technologist any licensed practitioner of the healing art who has specialized in general clinical laboratory work, such as bacteriology, serology, biochemistry and parasitology, and other allied subjects for at least three years. It is also to license (1) any other person who for more than eight years has been engaged continuously and actively in the work and direction of a clinical laboratory and (2) any other person who can qualify by written and practical examinations to be given by the board. The provisions of the bill, however, are not to apply to any licensed physician maintaining a laboratory in his own office for use in his own practice. S. 413 prohibits the employment of pharmacists and pharmacy clerks for more than an average of six hours a day, for more than seventy-two hours in any two consecutive weeks, or for more than twelve days in any two consecutive weeks. A. 416, to amend the workmen's compensation act proposes to permit chiropractors to render the "medical" care to injured workmen for which the act makes the employer liable. A. 551 to amend the laws regulating the operation of maternity hospitals, proposes to make it unlawful for any such hospital to offer, as an inducement to a woman to enter therein, to dispose of her child or children for adoption. A. 603, to amend the law relating to county hospitals, proposes to require the admittance of any expectant mother, unable to pay for the necessary care, to any county hospital regardless of her length of residence in the county. A. 761, to amend the retail sales tax act of 1933, proposes to exempt from its provisions the gross receipts from the sale of medicine and medical supplies. A. 890, to amend the provisions of the medical practice act with respect to chiropody, proposes (1) to make the words "chiropody" and "podiatry" synonymous and (2) to define "mechanical treatment," which chiropodists are authorized to employ, as the employment of appliances to the plantar or lateral surfaces of the foot or feet, or of pads or the use of adhesive tape strappings, or any forcible means for the correction or treatment of any deformity of the foot or feet but does not permit the treatment of fractures of the bones of the foot or feet or the application of splints or casts provided, however, that the manufacture, the recommendation or the sale of corrective shoes or appliances for the human feet shall not be considered as mechanical treatment. A. 1037 proposes to make it unlawful for any person to own, possess or operate any x-ray device or x-ray laboratory unless such device or such laboratory is operated under the direct supervision of a person licensed by the state board of health. Apparently only licentiates of the board of medical examiners licensed osteopaths and licensed dentists are to be eligible for licensure by the board of health. Such practitioners are to be permitted to possess and use such devices "as are incident to the treatment of patients by means other than x-ray or \ ray devices."

COLORADO

Special Meeting of House of Delegates—Members of the Colorado State Medical Society were cautioned against advocating policies of legislation not officially sanctioned by the committee on public policy in a resolution adopted at a special meeting of the house of delegates, January 16. The meeting was devoted to a consideration of legislation as it affected the medical profession.

Resolution About Sewage Disposal Plants—The Crowley County Medical Society unanimously adopted a resolution, Dec. 8, 1934, which recommended the construction of sewage disposal plants in communities that dump their sewage into streams used for irrigation. The resolution pointed out that Colorado is rapidly losing its reputation as a health center because of the prevalence of intestinal diseases attributed to the irrigation of vegetables with sewage water.

CONNECTICUT

Bills Introduced—H. 543 proposes to authorize the governor to appoint a commission of five members to investigate the subject of health insurance and to report its findings to the next session of the general assembly. H. 631, to amend the medical practice act, proposes that the Connecticut Medical Society and the Connecticut Homeopathic Medical Society shall file annually with the governor the name of one physician whom each society recommends for membership on the medical examining board (thus denying this privilege, which the law now accords to the Connecticut Eclectic Medical Society). H. 1064 to amend the workmen's compensation act, proposes to permit chiropractors to render the medical care to an injured employee for which an employer must pay.

DELAWARE

Bill Introduced—S 37 proposes to make it the duty of physicians, midwives or other persons in attendance at childbirth to use either a 1 per cent solution of silver nitrate, a 10 per cent solution of argyrol, or a 1 per cent solution of protargol, or their therapeutic equivalent, as a prophylactic against inflammation of the eyes of the new born, and to make a record of the prophylactic used and to endorse the details thereof on every birth certificate

DISTRICT OF COLUMBIA

Dr Ruhland Appointed Health Officer—Dr George C. Ruhland, health commissioner of Syracuse, N. Y., has accepted appointment as health commissioner of the District of Columbia, succeeding Dr William C. Fowler, retired. The appointment was confirmed, February 7. Dr Ruhland graduated in 1904 from the Wisconsin College of Physicians and Surgeons. In 1924 he resigned as health commissioner of Milwaukee to accept the Syracuse appointment.

Medical Bills in Congress—S 1737 introduced by Senator Frazier, North Dakota, proposes to prohibit experiments and operations on living dogs in the District of Columbia for any purpose other than the healing or curing of the dog. S 31 and H R 4996 have been reported to the Senate and House respectively, providing for the issuance of a license to practice the healing art in the District of Columbia to Dr Chester C. Groff (S Rept 75, H Rept 87). H R 3451, introduced (by request) by Representative Norton, New Jersey, proposes to amend the law of the District of Columbia relating to lunacy proceedings.

GEORGIA

Bills Introduced—H 230 proposes to amend those provisions of the medical practice act which require an applicant for a license to be a graduate of a legally incorporated medical college in good standing with the board by permitting graduates of one of the two colleges of medicine now existing in the state of Georgia" also to qualify. H 291 proposes to permit hospitals, without complying with the insurance laws of the state, to "offer to the public hospitalization in consideration of a stipulated amount of money collected weekly or monthly in advance." H 331 proposes to grant to hospitals, treating persons injured through the fault of others, liens on all rights of action, claims, judgments, compromises or settlements accruing to the injured persons because of their injuries.

IDAHO

Bills Introduced—H 70 proposes to repeal the laws regulating the possession and distribution of narcotic drugs and to enact what the draftsman of this bill cites as the 'uniform narcotic drug act.' The bill, however, differs from the model uniform narcotic drug act in some important particulars. It omits the provisions in the model bill intended to limit the gross quantity of a habit-forming drug a person can buy in exempt preparations within a period of forty-eight hours. H 72, to supplement the pharmacy practice act, proposes a list of drugs, which it denominates as poisons. The bill proposes to make it unlawful for any one to sell any drug so listed without first ascertaining that the purchaser is aware of the poisonous character of the drug and that it is desired for a lawful purpose, without labeling on the container the word "poison" and the name and place of business of the dispenser. It proposes also to make the sale of such a drug unlawful to a minor under 16 years of age without the written order of an adult, and, in the case of certain drugs, to require that the vendor record in a book kept for that purpose the name of the drug sold, the intended use thereof, the date of delivery, the name and address of the purchaser and the name of the dispenser. The provisions of the bill, however, are not to apply to drugs dispensed in accordance with written prescriptions of licensed physicians, dentists or veterinarians.

ILLINOIS

Bill Introduced—H 191 proposes to require a male applicant for a license to wed to present a certificate from a licensed physician that the applicant is free from venereal disease.

Another Credit Bureau—The Medical Credit Bureau was recently organized by the Peoria City Medical Society to furnish members with the financial rating of patients. Under the plan, 'all worthy individuals will receive medical care as heretofore, but the person or persons having the means but not the desire to remunerate the physicians for services rendered

will be asked to receive medical care and attention from the proper municipal, state or federal agencies created for that purpose."

Chicago

Dr Flexner to Give Pasteur Lecture—Dr Simon Flexner of the Rockefeller Institute for Medical Research, New York, will present the thirteenth Pasteur Lecture of the Institute of Medicine of Chicago at the Chicago Woman's Club, April 26. His subject will be 'Virus Diseases of the Central Nervous System: Their Extent and Mode of Infection.'

Symposium on Tuberculosis—The Chicago Medical Society will devote its meeting, February 20 to a symposium on tuberculosis. The following physicians will participate:

Jay Arthur Myers, professor of medicine and preventive medicine and public health, University of Minnesota Medical School, Minneapolis.
Tuberculosis Among Nurses and Physicians.
Kendall Emerson, managing director, National Tuberculosis Association, New York.
Public Campaign Against Tuberculosis.
Harry J. Corper, director, research laboratories, National Jewish Hospital, Denver.
Recent Research on Tuberculosis.
Benjamin Goldberg, associate professor of medicine, University of Illinois College of Medicine, Champaign and Collapse Therapy.

Conference on Occupational Disease—The Illinois Manufacturers' Association sponsored a technical discussion on occupational disease from the medical point of view at the Congress Hotel, January 31. The speakers included the following:

Dr Leroy U. Gardner, director, Saranac Laboratory, Saranac Lake, N. Y.
Pathology of Silicosis.
Donald E. Cummings, assistant director of the laboratory, Etiology, Clinical Findings and Prevention of Silicosis.
Homer L. Sampson, Sc.D., director, x-ray laboratory, Trudeau Sanatorium, Saranac Lake.
Roentgen Findings.

A conference was held in the evening, at which speakers were:

F. Robertson Jones, New York, general manager, Association of Casualty and Surety Executives.
Problems of Compensation in Occupational Diseases.
Peter J. Angsten, chairman, Illinois Industrial Commission.
Occupational Diseases and the Industrial Commission.
Dr Clarence O. Sappington, consulting industrial hygienist.
Some Medicolegal Phases of Occupational Diseases.

IOWA

Bill Introduced—H 78 proposes that before any applicant for a license to practice medicine, osteopathy, osteopodiatry and surgery, or chiropractic may be examined by his professional board, he must pass an examination to be given by an impartial basic science examining board in anatomy, physiology, chemistry, pathology, bacteriology and hygiene. This board is to consist of five members of the faculties of the state university, the State College of Agriculture and Mechanic Arts, the Iowa State Teachers College and any other university or college accredited by the Iowa State Board of Educational Examiners. All members of the board must be learned in the basic sciences, and no member may be licensed to practice any of the healing arts.

KANSAS

University News—A graduate of the University of Kansas who wishes to remain anonymous has contributed \$60,000 to be used for a children's clinic. Members of the faculty are now working on plans for the new structure.

Bills Introduced—H 275 proposes to authorize Fort Hays Kansas State College to provide local and traveling clinics and adequate psychologic clinical facilities for unusual or abnormal children of school age. H 301 authorizes the formation of community hospital districts and the erection of community hospitals. In the management of such hospitals, no discrimination is to be made against practitioners of any school of medicine or healing recognized by the laws of Kansas and all such legal practitioners are to have equal privileges in treating patients in said hospitals.

Society News—Drs Horace W. Carle and Charles Greenberg, St. Joseph, Mo., presented papers on "Hypoglycemia" and "Transurethral Prostatectomy," respectively, before the Atchison County Medical Society, Dec 4, 1934, in Atchison.

—Dr Harry W. King, Kansas City, addressed the Wyandotte County Medical Society, January 23, on 'Carcinoma of the Sigmoid Colon' and Dr John H. Ogilvie, Kansas City, Mo., presented a case of 'Traumatic Suppurative Lymphadenitis of the Left Inguinal Region with Sinus Formation to the Left Sacro-Iliac Joint.'—At a meeting of the Rush-Ness County Medical Society, recently Dr Vern L. Pauley, Wichita, discussed transurethral prostatic resection, and Dr Clyde D. Blake, Hays, the function of the state medical society.—Dr Noble P. Sherwood, Lawrence, addressed the Shawnee County Medical Society at Topeka, January 7, on 'Hypersensitivity and Immunity to Tuberculosis.'

MAINE

Bills Introduced—S 241, to amend the medical practice act, proposes to add to the grounds for which a physician's license may be revoked (1) conviction of any crime involving moral turpitude or of any crime in the practice of his profession, (2) immoral or dishonorable conduct or fraudulent or unprofessional conduct in the practice of his profession, (3) habitual intemperance in the use of liquor or narcotics, (4) use of deceptive misleading, extravagant, improbable or unethical advertising. S 198 proposes to repeal the laws regulating the possession and distribution of narcotic drugs and to enact what apparently is the uniform narcotic drug act.

MARYLAND

Bill Introduced—H 70 proposes to repeal the laws regulating the possession and distribution of narcotic drugs and to enact what the draftsman of this bill cites as the 'uniform narcotic drug act.' The bill, however, differs from the model uniform narcotic drug act in some important particulars. It omits the provisions in the model bill intended to limit the gross quantity of a habit-forming drug a person can buy in exempt preparations within a period of forty-eight hours.

MASSACHUSETTS

Bill Introduced—H 1267 proposes to grant liens to physicians and hospitals, treating persons injured through the negligence of others, on all claims, rights of action, judgments, compromises or settlements accruing to the injured persons by reason of their injuries.

Portrait of Dr. Warren—A portrait of Dr. John Warren, the first professor appointed in Harvard Medical School Boston, was recently presented to the school in memory of Dr. Henry Lyman, who died June 15, 1934. The presentation was made by Major Gen. Robert U. Patterson, surgeon general U. S. Army, and was accepted by the dean, Dr. David L. Edsall. The portrait, which hangs in the school library, was given by the officers of the former U. S. Army Base Hospital number 5, with which Dr. Lyman served during the World War. Dr. Lyman graduated from Harvard in 1912. Interested particularly in biologic chemistry, he was connected for many years with the Collis P. Huntington Memorial Hospital. With the rank of major he commanded base hospital number 5 part of the time, it was stated, when that unit was in active service as part of the American Expeditionary Forces.

MINNESOTA

Personal—Dr. Benjamin F. Smith, superintendent of the Willmar State Asylum since 1927, was appointed to take charge of the Rochester State Hospital by the Minnesota Board of Control effective January 1, he succeeds the late Dr. Arthur F. Kilbourne.

Dr. Cutler Gives Judd Lecture—Dr. Elliott C. Cutler, Moseley professor of surgery, Harvard University Medical School, will give the second lecture in the annual Judd Lecture-ship in Surgery at the University of Minnesota, Minneapolis, February 19. His subject will be "Total Thyroidectomy for Heart Disease." Dr. Edward Starr Judd, Rochester, who endowed this lecture, graduated from Minnesota in 1902.

The Jackson Lecture—Dr. Logan Clendening, professor of clinical medicine, University of Kansas, will deliver the second Clarence Martin Jackson lecture of the University of Minnesota School of Medicine February 20. His subject will be "The Human Side of Medicine." The lecture was established by Xi chapter of Phi Beta Pi Medical Fraternity in honor of Dr. Jackson, professor of anatomy at Minnesota. The first lecture was given by Dr. Walter L. Bierring, Des Moines, Iowa, President, American Medical Association, on "The Temporal Sequence of Medical Events."

MISSISSIPPI

Premedical Work Required for License—The Mississippi State Board of Health passed a regulation, Dec. 31, 1934, requiring that all applicants who are accepted for examination for medical license in Mississippi must have completed two years' premedical work before entering the study of medicine.

Society News—At the fourth quarterly meeting of the Northeast Mississippi Thirteen Counties Medical Society at Tupelo, Dec. 18, 1934, the speakers were Drs. Douglas D. Baugh, Houston, on "The Recognition of the More Common Mental Disorders," George A. Hendon, Louisville, Ky., "Treatment of Peptic Ulcer by Venoclysis," Felix J. Underwood, Jackson, executive officer, state board of health, "Our Mutual

Interest," and Albert G. Leroy, Booneville, "Eclampsia"—Dr. Douglas D. Baugh, Houston, discussed leukemia before the Pontotoc County Medical Society, Dec. 4, 1934.

MISSOURI

Election of Board Officers—Dr. Timothy S. Bourke, Kansas City, was elected president of the Missouri State Board of Health in Jefferson City, January 21, succeeding Dr. Emmett P. North, St. Louis. Dr. William T. Elam, St. Joseph, was elected vice president, succeeding Dr. Peter T. Bohan, Kansas City, and Dr. Elmer T. McGaugh, Jefferson City, was reelected secretary.

Society News—The department of obstetrics and gynecology of St. Louis University School of Medicine presented the following program before the St. Louis Medical Society, January 22. Drs. Laurence M. Riordan and William D. Collier spoke on "Differential Diagnosis of Right Sided Abdominal Pain" and "Pathology of Myxomatous Placenta," respectively. Case reports were presented by Drs. Paul R. Fletcher on "Hydrocephalic Fetus, with Remarks on Treatment," Percy H. Swahlen, "Myxomatous Placenta," and William H. Vogt, "Advanced Extra-Uterine Pregnancy."

Director of Child Guidance Clinic Appointed—The appointment of Dr. Edmond F. Sassin, assistant in neurology and psychiatry, St. Louis University School of Medicine, St. Louis, as director of the Psychiatric Child Guidance Clinic at St. Louis has been announced. Dr. William L. Nelson, the former director, has held the position since the clinic was founded eleven years ago. It was reported that the change is a part of reorganization plans now under way in the department of public welfare. These plans call for the erection of a psychiatric hospital, of which it is hoped the clinic will eventually be made a unit. Dr. Sassin graduated from St. Louis University School of Medicine in 1927.

MONTANA

Bills Introduced—S 53 to amend the law prohibiting the production, distribution or possession of marijuana, proposes to make a violation of the act a felony punishable by imprisonment in the penitentiary for from one to five years and/or a fine of from \$500 to \$1,000. H 120, to enact a new osteopathic practice act, proposes to define osteopathy as "that system of the healing art or school of medicine which in its theory places chief emphasis as health factors upon the structural integrity and natural immunity of the body and in its practice upon the adjustment of structural irregularities and the normalization of functional activity through manipulation." The bill proposes to authorize the osteopathic examining board to license as an osteopathic surgeon any osteopath who has completed two years of at least nine months each of postgraduate instruction in surgery in a recognized and regularly conducted college, or who presents evidence of having completed a one year postgraduate course of at least nine months in surgery in a recognized college, or an internship in a hospital under such college supervision and a one year course of training of at least nine months as a surgical assistant in a hospital having at least twenty-five beds and equipped for major surgical work. This bill omits the specific prohibition contained in the present law against osteopaths prescribing or using drugs and in its stead purports to authorize an osteopath "to practice his profession as taught in recognized and regularly conducted colleges of osteopathy." Osteopaths who are licensed to practice surgery by the osteopathic board are specifically granted unlimited surgical rights.

NEBRASKA

Bill Introduced—H 263 proposes to make it the duty of every physician to respond to any call to assist in the delivery of a child, when he is the nearest available practitioner. Any practitioner violating the provisions of this bill is to be punishable by a fine of from \$25 to \$200.

NEW HAMPSHIRE

Bills Introduced—H 150 proposes a new workmen's compensation act. Compensation is to be granted for injury or death caused by accident arising out of and in the course of the employment but not for disease or death from disease, unless it is the direct result of an accident, except anthrax, lead poisoning, silicosis or disease due to inhalation of poisonous gases or fumes. During the first four weeks of the injured worker's disability, the employer is to furnish reasonable medical, surgical and hospital services and supplies and other necessary remedial care. In the discretion of the industrial accident board the employer may be required to furnish

such care for a longer period H 275, to amend the pharmacy practice act, proposes (1) to prohibit persons, other than physicians and registered pharmacists, from selling or otherwise distributing articles, substances and compounds commonly used or capable of being used as contraceptives or abortifacients and (2) to make the act applicable to the sale of proprietary medicines containing barbitol or other compounds of the barbituric acid series

NEW JERSEY

Bills Introduced—S 140 proposes to authorize the municipalities that do not maintain municipal hospitals to appropriate not exceeding 01 per cent of the total assessed valuation of real and personal property of such municipality to any hospital located in such municipality, which treats indigent residents without cost A 89 authorizes the state department of health to care for, treat, isolate and maintain indigent disease carriers

Society News—Dr Rosco G Leland, Chicago, director, Bureau of Medical Economics, American Medical Association addressed the Essex County Medical Society Newark, January 10, on "Compulsory Health Insurance as It Affects Members of the Medical Profession"—Dr Harlow Brooks, New York, addressed the Bergen County Medical Society, Hackensack, January 8, on "Diseases of the Liver," and Dr Arcangelo Liva, "Oculist versus Optometrist"—Dr Nathan B Van Etten, New York, made an address before the Hudson County Medical Society, Jersey City, January 2, entitled 'How Shall the Sick Be Adequately Served and How Shall the Servants of the Sick Be Adequately Paid?'—A symposium on rheumatic fever was presented before the Camden County Medical Society Camden, January 8, by Drs Harold K Eynon William T Read Jr, B Franklin Buzby, Harold D Barnshaw and Ernest Reed Hirst—Dr Lewis K Ferguson, Philadelphia, addressed the Gloucester County Medical Society, Pitman, Nov 15, 1934, on varicose veins

NEW YORK

Botulism from Imported Canned Sprats—Three cases of botulism with one death were recently reported from Westchester County The three victims had eaten a can of imported Kiel sprats although they noticed that the can was bulging before it was opened, that gas escaped and that the fish tasted sour One man ate for supper twelve fish, another six and a woman three The illness began the next morning, the man who had eaten most became rapidly worse and died the following morning Necropsy confirmed the diagnosis Botulinus serum was obtained from the state laboratory in New York for the other two patients The man who had eaten six fish was desperately ill for a time it was said, but was improving at the time the report was published The woman never showed serious symptoms The spoiled fish was traced to a pedler who said that he had bought fifteen cans from an importer and sold some to other pedlers A technical charge of homicide was placed against him by the county medical examiner Federal officials embargoed the stock of the importer and the New York City Department of Health was reported to be investigating one pedler known to be operating in the city

Bills Introduced—S 474 and S 718 propose a system of compulsory and voluntary health insurance The benefits proposed consist of cash and all forms of medical and dental services Persons employed at 'other than manual labor receiving wages in excess of \$250 monthly,' farm laborers and persons employed by an employer having less than three employees in personal or domestic services, are excluded from the compulsory insurance of the bill but are entitled to participate in its voluntary insurance S 505 proposes to create in the department of mental hygiene a board of psychiatric examiners to license as qualified psychiatrists all applicants who (1) have been licensed to practice medicine for at least five years and have had five years experience in actual practice, and (2) have had three years' full time practice in the care and treatment of persons suffering from mental diseases or mental defects in certain approved institutions or have devoted five years to a practice confined wholly or substantially to the care and treatment of persons suffering from nervous or mental defects S 589 proposes to create in the education department a state board of electrologists and to regulate the practice of electrolysis Electrolysis is defined by the bill as "the method used for the permanent removal of superfluous hair by means of a controlled electric current introduced into the hair follicle by way of a fine metallic needle which is directed into the hair papilla where a chemical decomposition takes place destroying the life of the hair forever" Licenses are to be issued after examination, to persons who are high school graduates and

have completed a course of training of not less than six months in schools of electrolysis approved by the board A 644, to amend the workmen's compensation act, proposes to make compensable all occupational diseases arising out of and in the course of any employment covered by the act A 765 proposes to make it unlawful for any person not a licensed physician or surgeon, to broadcast any surgical or medical advice

New York City

Annual Art Exhibit—The New York Physicians' Art Club will hold its eighth annual exhibition at the New York Academy of Medicine during the two weeks beginning March 30 Members who pay no dues but a fee for their exhibits, are principally New Yorkers, but any physician may send original art work to the exhibit, it is announced Officers are Drs Howard Lihenthal, president, Winifred Morgan Hartshorn treasurer, and Louis C Schroeder, secretary All communications should be addressed to Dr Schroeder at 50 East Seventy-Second Street.

Council to Coordinate Hospitals—The Hospital Council of New York, representing the five county medical societies, philanthropic and welfare agencies and the city government, was organized by Mayor La Guardia at a meeting, January 18, at the city hall With the increased overcrowding in city institutions and decreased support for private hospitals, the hospital problem has grown acute It will be the council's task to define the city's needs, to explain the situation to the public in the hope of calling out latent resources of private philanthropy and of combining private and public resources in the most effective manner, the mayor said Those who attended the meeting were

New York Academy of Medicine Drs John A Hartwell and Bernard Sachs

Medical Society of the County of Queens, Drs Charles F Miller Corona and Howard W Neil Jamaica

Medical Society of the County of New York Dr Franklin Welker

Medical Society of the County of Kings, Drs John S Read and Alec N Thomson Brooklyn

Richmond County Medical Society Drs Arthur S Driscoll and William C Buntin Staten Island

Bronx County Medical Society Drs Milton J Goodfriend and David J Kaliski

Federation for Support of Jewish Philanthropic Societies, Solomon Lowenstein and Frederick M Stein

Brooklyn Federation of Jewish Charities Joseph J Schwartz and Joseph J Baker

Controller of the City of New York Frank J Taylor and G Harry Lynn

Health Department Drs John L. Rice and Herbert R Edwards

Catholic Charities of New York Rev Joseph S O Connell

Catholic Charities of Brooklyn, Mgr Jerome Reddy and Father Brophy

United Hospital Fund David H McAlpin Pyle and Homer Wickenden

Welfare Council, Charles C Burlingham, Miss Jane Hoey and Robert P Lane

Commissioner of Hospitals Dr Sigismund S Goldwater

NORTH CAROLINA

Bills Introduced—S 80 proposes to make it the duty of the parents or guardians of all children born in the state to have them immunized between the ages of 6 and 12 months with diphtheria toxoid H 148 proposes to grant to physicians and hospitals, treating persons injured through the negligence of others, liens on all sums recovered as damages by the injured persons by reason of their injuries

NORTH DAKOTA

Bill Introduced—S 75 proposes to grant to hospitals, supported in whole or in part by private charities and treating persons injured through the negligence of others, liens on all rights of action, claims, judgments, compromises or settlements accruing to the injured persons because of their injuries

OHIO

Society News—Drs Walter M Simpson and Arthur M Culler addressed the Montgomery County Medical Society, Dayton January 4 on 'Progress in Artificial Fever Therapy, Research' and 'Artificial Fever Therapy of Ocular Syphilis,' respectively—Dr Dean D Lewis, Baltimore, addressed the Cincinnati Academy of Medicine January 7, on "Cystic Mastitis Its Cause and Treatment."

Founder's Day Clinics—Ohio State University College of Medicine, Columbus, will present its annual Founder's Day Clinics, March 1-2 Dr Russell H Oppenheimer, dean of Emory University School of Medicine, Atlanta will address the alumni on 'The Doctor's Place in Modern Economic and Social Life,' Saturday morning, March 2 There will be clinics at Children's St Francis and University hospitals and tours of the medical buildings of the university Special fea-

tures will be a session devoted to normal and pathologic reactions of the glands of internal secretion and a symposium on cardiology. In the evening March 1, Dr Edward D Churchill, John Homans professor of surgery, Harvard University Medical School, Boston, will deliver the Alpha Omega Alpha address, on "Lobectomy and Total Pneumonectomy." Dr Russell G Means is chairman of the committee in charge of the reunion. Class luncheons will be held at noon Saturday and fraternity banquets Saturday evening.

OREGON

Bills Introduced.—H 180 proposes to limit the distribution of appliances, drugs or medicinal preparations intended or having special utility for the prevention of conception and/or venereal diseases, to licensed physicians and to persons licensed to do so by the state board of pharmacy. H 208 proposes to prohibit the distribution of amytal, luminal, veronal, barbital, acid diethylbarbituric, or any preparation or compound containing any of the foregoing substances, except on the prescription of a licensed physician, dentist or veterinary surgeon.

Bills Passed.—H 107 has passed the house, proposing to repeal the laws regulating the possession and distribution of narcotic drugs and to enact what the draftsman of the bill cites as the "uniform narcotic drug act." This bill, however, differs from the model uniform narcotic drug act in some important particulars. It omits the provisions in the model bill intended to limit the gross quantity of a habit-forming drug a person can buy in exempt preparations within a period of forty-eight hours. S 82, to enact a new pharmacy practice act, has passed the senate. In its present form, this bill seems to prohibit physicians from dispensing drugs, merely permitting them to administer drugs and medicines personally in order to supply the immediate needs of their patients.

PENNSYLVANIA

Hospital Appointments.—Dr Enoch H Adams, Berwick, has been appointed surgeon in chief to the Center County Hospital, Bellefonte. —Dr William F Herbst has been chosen chief of the medical department of Allentown Hospital to succeed the late Dr Joseph M Weaver. —Dr Joseph F Connor, Meadville, who was recently appointed chief surgeon of the Erie Railroad, has also been made chief surgeon of Spencer Hospital, Meadville.

Bills Introduced.—H 404, to amend the workmen's compensation act, proposes to make compensable any occupational disease acquired in any employment covered by the act. H 417, to amend the workmen's compensation act, proposes to require an employer within thirty days after the beginning of the disability of an employee due to an occupational disease contracted in the course of the employment to report the case to the department of labor and industry. S 78, to amend the workmen's compensation act, proposes to make compensable certain occupational diseases, including poisoning by lead, mercury, phosphorus, arsenic, methanol, carbon bisulphide, naphtha, manganese dioxide, brass, zinc, benzol and nitro- and amido-derivatives of benzol, also compressed air illness, radium or x-ray burns, chrome ulceration, cancer or ulcers resulting from tar, pitch, bitumen, mineral oil or paraffin, and infection or inflammation of the skin resulting from contact with oils, cutting compounds, lubricants, dusts, liquids, fumes, gases or vapors, also anthrax, silicosis and chronic miners' asthma. S 83 and H 413, to amend the workmen's compensation act, propose that the bills of physicians or hospitals, for which the employer is liable under the act, be presented to a referee designated by the workmen's compensation board of the bureau of workmen's compensation of the department of labor and industry. This referee is to award remuneration so far as possible in accordance with a table agreed on by the Medical Society of the State of Pennsylvania and by the Pennsylvania State Hospital Association and approved by the board. H 297 proposes to create a board of chiropody examiners and to regulate the practice of chiropody. H 379, to amend the workmen's compensation act, proposes to extend from thirty days to six months the period following an industrial injury during which the employer must provide medical treatment to an injured employee. The present law limits the employer's liability for such services to \$100. The proposed liability under this bill is unlimited.

Philadelphia

Graduate Seminars.—The group of graduate seminars sponsored by the Philadelphia County Medical Society for February is concerned with recent developments in the biology of growth and development and indications for their use in man. John S Nicholas, Ph.D., associate professor of comparative anatomy

on the Bronson Foundation, Yale University, New Haven, Conn., delivered the first lecture, February 1, on "The Contributions of Experimental Embryology to Problems of Mamalian Growth and Development." Others to follow are

Conway Zirkle, Ph.D., associate professor of botany, University of Pennsylvania, Genetics—Mechanisms of Inheritance—the Hereditary Basis of Diseases—Artificial Control of Inheritance.
Ezra Allen, Ph.D., New York, The Nature and Functional Basis of Sex—Experimental Effects of Sex Development and Reversal in Animals as Possible Explanation of Certain Human Sex Problems.
Dr Stanley P. Reimann, Lankenau Hospital Research Institute, Application of Some Newly Discovered Effects in Malformation and Tumor Formation in Man and Their Relations to the Subjects Previously Discussed.

Society News.—The College of Physicians of Philadelphia held a dinner, Dec 15, 1934, celebrating the twenty fifth anniversary of the occupancy of the college building. Dr William J Taylor was toastmaster, and speakers were Drs Edward B Krumbhaar, David Riesman, George E de Schweinitz and Alfred Stengel. The college recently adopted a resolution urging the transfer of the Philadelphia Hospital for Mental Diseases at Byberry to the state in order to relieve overcrowding. —Speakers at a meeting of the Philadelphia Academy of Surgery, January 14, were Drs J Stewart Rodman and William G Leaman Jr, on "Surgical Risks with Special Reference to the Cardiovascular System." John Enan, "Evaluation of Metabolic Diseases as Surgical Risks", Joshua E Sweet, New York, "How Does a General Surgical Procedure Affect the Physiology of the Lung?" and Leonard G Rowntree, "Evaluation of the Renal Factor in Surgical Risks." —Dr John M Fisher has been elected president of the Physicians' Aid Association of the Philadelphia County Medical Society, and Dr Francis Heed Adler, secretary.

RHODE ISLAND

Society News.—Dr George Blumer, New Haven, Conn., addressed the Providence Medical Association, Dec. 3, 1934, on "Importance of Observation and Induction in Diagnosis, with Some Remarks on Errors in Diagnosis." —Among others, Dr Harmon P B Jordan and W Henry Rivard, Ph.D., dean of Rhode Island College of Pharmacy, Providence, addressed the quarterly meeting of the Rhode Island Medical Society, Dec. 6, 1934 on "Current Trends in Pharmaceutical Education." —Drs Meyer Saklad and Eric P Stone, Providence, addressed the Washington County Medical Society, January 9, on advances in anesthesia and on birth control, respectively.

Bills Introduced.—S 52 proposes to grant to physicians nurses and hospitals, treating persons injured through the negligence of others, liens on all judgments, settlements or compromises accruing to the injured persons because of their injuries. H 587 proposes to make it the duty of any person in possession of land on which he believes cannabis sativa to be growing to notify the state narcotic board forthwith of that fact. The narcotic board is then to inspect this property and to destroy any cannabis plants that may be found there. The narcotic board is further to be authorized to make surveys to ascertain the extent to which cannabis sativa or cannabis americana is prevalent in the state.

SOUTH DAKOTA

Immunization Campaign.—Eighteen hundred children were immunized against diphtheria in a campaign initiated and carried out by physicians of Sioux Falls recently. The campaign ran two and a half weeks. Treatments were given in the physicians' offices, free to those who could not pay and at fees ranging from 50 cents to \$4 for those who could. Liberal publicity was obtained for the project through cooperation of civic clubs, schools, churches, radio, newspapers and theaters.

Sioux Valley Meeting.—The annual session of the Sioux Valley Medical Association was held in Sioux Falls, January 22-23, at the Cataract Hotel. Speakers included

Dr Oliver S Ormsby, Chicago, Some Mycotic Infections of the Skin and Contact Dermatitis.
Dr Frederick A Williams, Rochester, Minn, Factors Concerned in the Diagnosis of Heart Disease.
Dr Ralph Hess, Kunstadter, Chicago, Diagnosis and Treatment of Endocrine Disorders of Children.
Dr Herman L Kretschmer, Chicago, Present Day Views on Treatment of Prostatic Obstruction.
Dr Louis A Buie, Rochester, Minn, Proctologic Problems of the Surgeon and the General Practitioner.
Dr Wallace H Cole, St. Paul, Principles in the Modern Treatment of Fractures and Their Development and Historical Survey.
Dr Edward W Rowe, Lincoln, Neb, Principles of Irradiation.
Dr Joseph C Ohlmschacher, Vermillion, Pathology of Cancer.

This society includes physicians of the territory adjacent to the intersection of the states of Iowa, South Dakota, Minnesota and Nebraska.

TENNESSEE

Bill Introduced—H 408 proposes to require each coroner to appoint as a deputy a licensed physician whose duty it shall be to ascertain the cause of death of persons who die without medical attention

TEXAS

Bill Introduced—H 334 proposes to require every insurance company doing business in the state to pay a tax of 0.5 per cent of its gross receipts, to be placed in a fund to be known as "the rural and county health fund"

Texas Forty-Fifth in Health Appropriations—The Texas State Medical Association is cooperating with the state board of health in a campaign for increased appropriations by the legislature for public health work in Texas. The campaign was opened at a meeting in Dallas under the auspices of the state board of health, of which Dr Charles M Rosser, Dallas, is chairman, to awaken public concern and focus opinion on the state's health problems. Dr Samuel E Thompson Kerrville, president of the state medical association, made an address on "The Responsibility of the Medical Profession to Public Health", Dr Holman Taylor, Fort Worth, association secretary, on the interdependent relation of the medical profession and the public, Dr John W Brown, Austin, state health officer, emergency issues confronting public health in Texas, and Dr Knox E Miller of the U S Public Health Service, the health situation in Texas. Similar meetings have been held in various districts throughout the state in an effort to bring this situation to the attention of the public and thereby to the legislature. It was said that Texas is forty-fifth among the states in its appropriations for public health.

UTAH

Bill Introduced—H 82 proposes to forbid any hospital exempted from taxation from discriminating against practitioners of any school of medicine recognized by the laws of the state and to require such hospitals to grant all such practitioners equal rights in treating patients therein. Patients in such hospitals are to have the absolute right to employ at their own expense physicians of their own choice.

WASHINGTON

Bill Introduced—H 178 proposes to repeal the basic science act and to enact in its stead an emasculated basic science bill. The examining committee in the basic sciences is to consist of one nonsectarian practitioner, one osteopath, one osteopathic surgeon, one chiropractor, and one other practitioner of a system of drugless healing. The questions to be propounded in examinations and the grading of each applicant's answers must be approved by a majority of the committee. The bill proposes also to lower the passing grade from 75 per cent to 60 per cent.

WEST VIRGINIA

Hospital Contract Practice Condemned—The council of the West Virginia Medical Association at a special meeting, January 17, adopted a resolution forbidding any of its members to practice "under the terms of or in connection with any hospital list contract which provides for the care or treatment of industrial injuries" or to be on the staff of or in any way connected with any hospital which is a party to any such list contract. The ruling is to take effect April 17 and after that date the council is to ascertain whether any members are engaging in this kind of practice and recommend to the county societies concerned that these men's membership be terminated immediately. If the county society does not comply with this ruling the charter of the society is to be withdrawn. The council explained that it is believed that physicians wish to abolish this type of practice but that it is difficult for any individual or group to avoid it if others are still engaging in it.

WISCONSIN

Bill Introduced—A 88 proposes to make it unlawful for any representative of a relief agency, any employer or his agent or any insurance company or its agent, to influence or to attempt to influence a sick or injured person to engage any particular physician or surgeon or to change to a suggested physician or surgeon.

Personal—Dr Charles O Lindberg, Edwardsburg, Mich., has been chosen head of the medical staff of the Community Hospital at Grantsburg. Dr George B Durand, Waupun, was guest of honor at a farewell dinner given recently by Waupun physicians. He has retired from practice in Waupun and plans to leave the city, newspapers reported.

Appointments to State Board—Governor Schmiedeman announced five appointments to the state board of medical examiners, Dec 21, 1934, as follows:

Dr John R Venning, Fort Atkinson, to succeed the late Dr Archibald D Galloway Barron.
Dr Alvin G Koehler, Oshkosh, to succeed Dr Wilbur N Linn Oshkosh.
Dr Charles W Giesen, Superior, to succeed Dr Thomas J Sheehy, Tomah.
Edward C Murphy, D O Eau Claire, to succeed himself.
Dr Bartholomew L McGonigle, Ableman, to succeed Dr Adam J Gates Tigerton.

GENERAL

Changes in Status of Licensure—The State Board of Medical Examiners of Oklahoma has reported the following action:

License of Dr Jasper C Holland, Grove, suspended for five years for violation of the federal narcotic laws Dec 11, 1934.

The Kansas Medical Board reports the following action:

Dr John F Northrup, Topoka, license revoked Dec 11 1934 for conviction on a felony charge.

The Maine State Board of Registration in Medicine reports the following:

Dr Joseph Abbott Nile, Rumford, Maine, license revoked Nov 13, 1934, he was convicted under the Harrison Narcotic Act for the illegal dispensing of morphine and sending it through the mails.

The Massachusetts Board of Registration in Medicine reports the following:

Dr Sarah Margaret Brown, Boston, license revoked Dec 20, 1934 for deceit in the care of a patient.

Dr Rafael Reyes Garcia, Springfield, license revoked Dec 20 1934, for deceit in the care of a patient.

News of Epidemics—Retreat Mental Hospital, Retreat, Pa., reported 200 cases of grip among its 900 inmates. The Luzerne County Prison was quarantined because of several cases, newspapers reported January 6—Scarlet fever, which has been epidemic in Milwaukee for many months, caused one parochial school to close in January. The number of cases in the city February 1 was 1,361.—The state health department of Washington reported 249 cases of smallpox in the state from January 1 to 22, Bremerton papers reported 100 cases in and near that city. A large number of cases were also said to have occurred in the vicinity of St Anthony, Idaho.—Illinois is reported to be having the most severe measles epidemic since 1926, the state health officer said January 20 that 1,307 cases were reported in the preceding five days.—A severe respiratory infection is epidemic among Indians on the Navajo reservation about Ganado, Ariz., *Southwestern Medicine* reports. The eighty bed hospital at Ganado Mission is reported to have had 125 patients.—Schools were closed in Tresckow, Carbon County, Pa., January 27, because of an outbreak of cerebro-spinal meningitis.

Medical Bills in Congress—*Bills Introduced* S 1615, introduced by Senator Hatch, New Mexico, proposes to prohibit the shipment and transportation in interstate or foreign commerce of cannabis and its derivatives and compounds. S 1737, introduced by Senator Frazier, North Dakota, proposes to prohibit experiments and operations on living dogs in the District of Columbia for any purpose other than the healing or curing of the dog. H R 4462, introduced by Representative Thomason, Texas, proposes that for the purposes of promotion, longevity pay and retirement there shall be credited to officers of the Veterinary Corps, and former officers of the Veterinary Corps now on the retired list, all full time service rendered by them as veterinarians in the Quartermaster Department, Cavalry or Field Artillery. H R 5279, introduced by Representative Underwood, Ohio, proposes to adjust and equalize benefits for veterans and widows and dependents of veterans. H R 5289, introduced by Representative Gearhart, California, proposes to erect a Veterans' Hospital in California. H R 5371, introduced by Representative Hoepfel, California, proposes to grant hospital treatment and domiciliary care in veterans' hospitals to the retired personnel of the armed services of the United States. H R 5386, introduced by Representative Robison, Kentucky, proposes to provide payment of pensions for disability or death incurred in the regular military or naval service. H R 5549, introduced by Representative Dunn, Pennsylvania, proposes to provide "for workers' health insurance."

CORRECTION

Incubation Period in Tetanus—In Miller and Rogers' article on tetanus in *THE JOURNAL*, January 19, page 188, column 2, it is stated that a short incubation period tends to be a good omen. This is erroneous. A short incubation period offers a bad prognosis, and a long incubation period a good prognosis.

Government Services

OPENING OF THE FEDERAL NARCOTIC FARM, LEXINGTON, KENTUCKY

The first United States Narcotic Farm, near Lexington, Ky., will open for the reception of admissions on or about May 1. It will accommodate a maximum of 1,000 persons and is designed to accommodate males only. Its object and purposes are to rehabilitate, restore to health and train to be self-supporting and self-reliant those who are admitted thereto. The control management and discipline are to be maintained for the safe keeping of the individual and the protection of the community. Experiments are to be carried on to determine the best methods of treatment and research in this field, and the results disseminated to the medical profession and the general public to the end that states may make some provision for establishing a similar policy for helping to solve the problem of drug addiction. The function of the institution at Lexington therefore assumes the character of a treatment and research center and of an educational and rehabilitation center with certain custodial features superimposed.

Heretofore as far as public policies are concerned drug addiction has been regarded solely as a penal and correctional problem without cognizance being taken of its medical, sociological or economic significance. The institution is to be administered by the United States Public Health Service. As a matter of convenience to Fellows of the American Medical Association, there is herewith printed the regulations governing admissions to that institution.

REGULATIONS GOVERNING THE ADMISSION OF PERSONS TO A UNITED STATES NARCOTIC FARM EFFECTIVE APRIL 1 1935

ARTICLE I—*Admissions*—1 No person shall be eligible for treatment or confinement in a United States narcotic farm unless he be an addict as hereafter defined and then only (1) if such person has been sentenced to confinement upon conviction of an offense against the United States including convictions by general courts-martial or by consular courts, (2) if such person is completing a sentence of confinement at a narcotic farm and applied in accordance with the requirements of these regulations for further custodial care and treatment beyond the expiration of sentence, (3) if such person is placed on probation by any court of the United States or other Federal authority which has imposed as one of the conditions of such probation that he will submit himself for treatment until discharged as cured or, (4) if such person, being not an unconvicted alien voluntarily signs an application requesting custodial care and treatment in accordance with the requirements of these regulations. Upon admission to a narcotic farm as provided by these regulations such four classes of addicts will be designated and hereafter referred to in these regulations as prisoners, ex-prisoners, probationers, and voluntary patients respectively collectively, they will be designated and hereinafter referred to as "addicts," inmates," patients or beneficiaries.

2 The term addict wherever used in these regulations means any person who habitually uses a habit-forming narcotic drug so as to endanger the public morals, health, safety, or welfare, or who is or has been so far addicted to the use of habit-forming narcotic drugs as to have lost the power of self control with reference to his addiction.

3 The terms habit-forming narcotic drug" or "narcotic" wherever used in these regulations mean opium and coca leaves and the innumerable alkaloids derived therefrom, the best known of these alkaloids being morphine, heroin and codeine obtained from opium and cocaine derived from the coca plant, all compounds salts preparations or other derivatives obtained either from the raw material or from the various alkaloids, Indian hemp and its various derivatives compounds and preparations, and peyote in its various forms.

4 A prisoner shall be admitted to a narcotic farm for treatment and confinement therein, upon presentation to the medical officer in charge of such farm of a copy of the sentence and/or commitment, or other certificate showing the conviction, sentence of confinement and commitment of the prisoner, accompanied by an order by the authority vested with the power to designate the place of confinement of the prisoner or of the authorized representative of such authority designating such narcotic farm as the place of confinement and certifying that such convicted person is an addict. Such documents shall be supplemented by the certificate, or a copy thereof, to be exe-

cuted by the prosecuting officer after conviction and sentence on a form prescribed by the Surgeon General, stating his belief that the convicted person is an addict, his reasons for such belief, and all pertinent facts bearing on such addiction, together with the nature of the offense.

5 A prisoner, at the expiration of his sentence at a narcotic farm, may be considered for continued treatment therein as an "ex-prisoner" upon submitting application to the Surgeon General on a form prescribed therefor. Such application must contain an agreement to submit to custodial care and treatment for the maximum time estimated by the Surgeon General as necessary to effect a cure or until he ceases to be an addict and be accompanied by a certificate from the medical officer in charge stating that at least one month prior to the expiration of sentence the prisoner has been examined, that he is still an addict that he may by further treatment in a narcotic farm be cured of his addiction, and estimating the maximum time necessary to accomplish such cure. No prisoner shall be continued for treatment beyond the expiration of his sentence except upon receipt of the Surgeon General's written approval of the application, and then only for such period of time as has been estimated as necessary to accomplish a cure.

6 A probationer shall be admitted to a narcotic farm for treatment upon presentation to the medical officer in charge of an authenticated copy of the order entered by any court of the United States or other Federal authority having power to suspend the imposition or execution of sentence and place a defendant on probation under any existing law, showing that such convicted person has been placed on probation and that the court or other Federal authority has imposed as one of the conditions of such probation that such person shall be admitted and submit himself for treatment at a narcotic farm until discharged therefrom as cured of his addiction, such document shall be supplemented by a certificate executed after conviction by the prosecuting officer or probation officer on a form prescribed by the Surgeon General, such certificate stating the respective officer's belief that the convicted person is an addict, his reasons for such belief and all pertinent facts bearing upon such addiction, together with the nature of the offense.

7 Any addict, except one who is an unconvicted alien, may be considered for admission to a narcotic farm for treatment and confinement therein as a voluntary patient upon filing application with the Surgeon General on a prescribed form. Such applicant must agree to submit to custodial care and treatment for the maximum time estimated by the Surgeon General as necessary to effect a cure or until he ceases to be an addict. Unless he be a beneficiary of the United States Public Health Service as provided by law and regulation, such applicant must agree, if so required by the Secretary of the Treasury, to reimburse the Government for his subsistence, care and treatment and accompany his application by a recognizance, stipulation, bond, or undertaking in form and amount to be approved by the Secretary of the Treasury guaranteeing the cost of his subsistence care and treatment. Such application must be accompanied also by a medical certificate executed on a prescribed form by a qualified physician designated by the Surgeon General. Such certificate must state whether the applicant is an addict, whether the designated physician believes that the applicant may by treatment in a narcotic farm be cured of his addiction, the estimated time necessary to effect a cure, and any further information bearing on the addiction, habits, or character of the applicant that may be pertinent. No such addict may be admitted unless the application is approved by the Surgeon General and unless suitable accommodations are available after all eligible addicts convicted of offenses against the United States have been admitted.

8 The medical officer in charge shall not admit nor accept responsibility for any addict applying or presented for admission to a narcotic farm when in doubt as to the eligibility of such addict or as to the sufficiency of the documentary evidence presented to establish eligibility. In such cases he shall report the salient facts together with any recommendation he may desire to make to the Surgeon General for decision. Persons otherwise eligible may be refused admission when accommodations are not available or when appropriations are insufficient for their transportation, maintenance and care.

9 The actual and necessary expenses incident to the transfer to a narcotic farm of prisoners or probationers, including the actual and necessary round trip expenses of custodial officers required in the transfer of prisoners, shall be chargeable to the appropriation for the maintenance of such farm when authorized by the Surgeon General. No payment shall be made from such appropriation for any of the expenses of transporting to a narcotic farm ex-prisoners or voluntary patients.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan 19, 1935

Socialist Politicians and Misleading Propaganda

The attempt of a woman's organization, "The Maternal Mortality Committee," to represent maternal mortality as connected with malnutrition due to unemployment was reported in *THE JOURNAL*, Dec. 8, 1934 page 1787. The members of the committee passed a resolution stating that they were deeply impressed by the reports of malnutrition among married women in areas of prolonged unemployment and they sent a deputation to the minister of health. He replied that there was no evidence showing a close relation between malnutrition and the maternal mortality rate. Of the deaths examined at least one half occurred among well-to-do people, and it was significant that the maternal death rate for 1933 in such a depressed area as Durham was no higher than in the relatively prosperous county of Middlesex. Nevertheless the conditions in the depressed area were such as to give rise to anxiety and the position was receiving the close attention of the administration. Local authorities had been urged to make full use of their powers, in appropriate cases to supply milk and other foods to expectant and nursing mothers. Attention was being directed to improving the antenatal service insuring the availability of a trained midwife able for all confinements the provision of maternity beds for complicated cases and patients with unsuitable home conditions, facilities for isolation of septic cases, and providing the services of a consultant in difficult cases.

It has been shown by the report of the chief medical officer of the ministry of health that the general health of the population is well maintained in spite of economic difficulties. Indeed he stated that the nutrition of the English people is better today than it has been at any period of which there are records. The infant mortality rate for the quarter ended last September was the lowest ever recorded, being 45 per thousand live births and 7 below the average of the ten preceding third quarters of the year. Yet socialist politicians are constantly representing the people as suffering in health because the government or local authorities do not give more away. The fact is that the unemployed in this country are better off than those in full work in many European countries. But however much the state does in the way of relief, socialist politicians clamor for more and use misleading propaganda.

Transportation of Patients with Fracture of the Spine

In 1931 Mr R. Watson Jones of Liverpool introduced the manipulative reduction of crush fractures of the spine so common in automobile accidents. He pointed out that the kyphotic deformity is one of acute flexion at the site of injury. Therefore reduction can be effected only by the opposite movement. If a patient with crush fracture of the vertebra within a few days of the injury, lies prone with hyperextended spine supported only by his arms at the side of his head and by the front of his thighs and legs leaving the trunk entirely unsupported the body weight alone is sufficient to restore the vertebra that has been crushed into a wedge. Plaster is then applied in this position. This teaching affects first aid treatment. If the patient is put on a stretcher in the usual position on his back this tends to increase the deformity while if he is placed prone the deformity will be reduced. Hence ambulance men have been taught to put the patient in the prone position on the stretcher. However, this practice is not universally accepted, as the following shows.

At the annual meeting of the British Orthopaedic Society, Mr T. P. McMurray of Liverpool said that in fractures of the spine the advantage of face down transportation was that the postural movement necessary for reduction was instituted at once, so that the risk of injury to the cord was minimized. The disadvantages were that patients suffered from shock and that lying on the face embarrassed respiration. There might be fractures of several ribs with danger of visceral injury. He upheld the practice of transporting the patients on their backs. First aid workers could not be expected to diagnose fractures of the spine, and the practice of turning patients over was dangerous. Mr McMurray's recommendation was supported by one surgeon but was opposed by all the others, including Mr Watson Jones who said that ambulance men were already taught to turn these patients over but on their backs, and to lift them by a method that inevitably produced hyperflexion. If a patient with a fracture dislocation was carried in this manner, severance of the cord was inevitable. The association of rib and spinal fractures was so rare as to be negligible and in any event the ribs were more likely to be fractured in front than behind. Professor Haughton of Dublin said that the diagnosis should not give rise to difficulty. If after a severe injury a conscious patient complained of pain in the back and inability to move one or both legs, he should be lifted and carried face downward. Mr H. O. Clarke of Manchester said that there could be no doubt that ordinary face-up lifting was capable of producing paraplegia.

A New Method of Taking Impressions of Finger Prints

Detective Inspector Webber has discovered a new method of taking impressions of finger prints, which has the advantage of dispensing with the camera. The present system is to smear a powder, which brings up the print and this is then photographed. The new powder is merely smeared over the object where a trace of finger print can be detected. Copies are then taken direct on a sensitized paper record. The police authorities are sanguine that the powder will be effective in taking finger prints from dark and dull backgrounds and that a sharp black and white print will be obtainable from even a dull and rough wall. The powder has not yet been officially adopted for general use by the police but there is reason to believe that the final experiments will be successful and that its use will be approved. So far the powder is said to be an unqualified success. Its composition has not been stated.

The War on Locusts in South Africa

South Africa is engaged in the greatest war on locusts in its history. Almost the whole of the union and the neighboring territories are threatened by locusts of one variety or another. Indeed, the only area that is not threatened at present is the coastal belt of the Cape Province. During the last two months an intensive campaign against the hoppers of the brown locust is coming to a successful close. Sixty-two districts, comprising an area of 230,000 square miles, are affected. If South Africa had to fight only the brown locust she would have little to fear but three other varieties are infesting parts of the union. The desert locust has appeared in the Northwest Cape and in the Western Free State and also in Southwest Africa. A campaign will eventually be required against the hoppers of the next generation. The tropical migratory locust is on the increase in the Ceres and Clanwilliam districts of the cape and is causing grave anxiety for the grain producing districts. But it is the red locust that is the greatest danger. Its infestation has been heavy and widespread throughout the year, chiefly in Natal and Zululand and northern Transvaal. Great swarms are converging on the union from the north of which the advanced guard has penetrated deep into the cape district.

Since the locusts first appeared late in 1933, an energetic campaign has been continuously waged against them, which cost \$2,500,000 to the end of June. Success has been only partial and the swarms in the country seriously threaten the closely cultivated sugar districts near the coast. Closeness of cultivation is one of the main obstacles to success. In less settled areas the farmers have been able to protect their crops by mobilizing their employees and other natives, who make a prodigious noise and so prevent the swarm from settling on cultivated ground. When they afterward settle in the open country they are sprayed with a solution of sodium arsenite, of which the government has distributed thousands of tons. But in coastal Natal nearly the whole country is under cultivation and the swarm can only be driven from one field to another.

The employment of sodium arsenite on the swarms that have settled in a cane field is usually effective but causes great damage to the crop. Another method is to singe the insects at night when settled with improvised flame throwers. Some mitigation is hoped for from the larvae of *Stomorphina lunata*, which is said to be breeding rapidly and destroying the locust eggs. The government maintains two airplanes near the Portuguese border, which dust any swarms of locust with sodium arsenite after they have settled. It has proved almost impossible to deal here with swarms from the ground, as the country is exceedingly malarious.

Functional Paralysis Following Injury—Damages Awarded

An unusual case in which a man suffered no physical disability after an automobile accident and yet was awarded damages has occupied a London court. Last August he was struck by a car, which mounted the pavement. He was only slightly bruised and walked home. Fourteen weeks ago he had to go to the hospital and now he could walk a few steps only with difficulty. A physician from the hospital said that he and other physicians were satisfied that the man was not malingering. He was suffering from traumatic neurasthenia. Dr. Henry H. Kessner of Newark, N. J., now lecturing in this country, said that after fifteen years of specialization in industrial accident cases in America he was satisfied that the man had no physical disability. It was all a matter of thought. The man had been told that he was in very bad condition and so believed he was. The judge in awarding \$1,750 damages said that if the motorist had struck a man of particularly nervous temperament, that was his ill luck.

The Prognosis in Coronary Occlusion

At the Royal Society of Medicine an important discussion on the prognosis in coronary occlusion was opened by Prof. John Hay of Liverpool. He said that the initial mortality was heavy and quoted the figures of Carey Coombs, who in a total of 144 cases reported forty-nine deaths in or soon after the initial attack. Of the survivors, thirty-two died within twelve months. It could be said that they would all sooner or later die a cardiac death. They could be divided into two groups, the first of which consisted of those in whom cardiac disability was shown by an increasing tendency to dyspnea and a gradual drift toward failure of the congestive type. Pain was not the dominant feature in these patients. This group also included those whose cardiac reserve was further hampered by auricular fibrillation, which might have originated in the attack of occlusion or have begun later and become permanent. The prognosis in this group was bad from the start. Their future was a matter of months. The second group consisted of those who made a satisfactory recovery and could lead reasonably useful lives, though rarely entirely free from some form of cardiac distress. But they learned to live within their limita-

tions and sometimes showed surprising longevity. They eventually succumbed to some kind of cardiac difficulty and seldom from some intercurrent disease. The life of this group could be measured by years. If the first critical stage was weathered, their expectation was from two to five or more years. John Hunter was a classic example. His first attack of coronary thrombosis occurred at the age of 45, twenty years before his death. Three years later he had a second attack, and during the last few years of his life he was liable to attacks of effort angina. Yet he continued to live at high pressure. Professor Hay had one patient who died at 70, fourteen years after his first attack. He was liable to slight angina of effort. In cases of coronary occlusion two facts stood out: (1) the frequency of sudden death, presumably by a terminal thrombosis, (2) the significance of a progressive tendency to dyspnea and congestive heart failure. The younger patients were more apt to recover and their expectation of life was a little longer.

PARIS

(From Our Regular Correspondent)

Jan. 3, 1935

Protection of Civilians During Gas Attacks

A sixteen page pamphlet has just been issued by the police department of Paris stating in detail the precautions to be taken by the civilian population during air raids. A large number of illustrations show the character of the shelters that should be sought, which can be rendered as nearly impermeable to penetration by poison gas as it is possible at the present time to imagine. All those who can leave their homes are told to go to the countryside immediately, in order to avoid crowding of the roads leading from the city. If possible, a cellar should be prepared which has very thick walls and into which has been placed water, canned foods and surgical dressings. A cellar 90 feet square can be utilized for only five hours by four persons. All windows in rooms should be tightly closed and a gas mask adjusted immediately if no cellar is available. Civilians are warned not to become panic stricken and are reminded that an active anti-air raid force has been organized. The recent experiences in anti-gas attack maneuvers in England and France have shown that, in spite of ample warning, large cities like Paris and London cannot be fully protected because weather conditions may be such that an enemy plane containing explosive, incendiary or gas shells can escape the vigilance of the defending forces and launch toxic gas or explosives before being stopped. Circulars similar to the Parisian have been published in Russia, Germany and Italy. In Russia, over ten million people, under government supervision, are calling attention to the dangers to civilians and instruction in regard to defense against air raids is compulsory in the public schools. In Germany, this passive defense is well organized and repeated drills are given as to how to behave during gas attacks and every one is advised to be provided with masks. In Italy, all public buildings must contain gas-proof cellars and an effort is being made to build tunnels for civilians. In spite of the Paris police department pamphlet, few citizens have taken the question of gas attacks seriously, having full confidence in the ability of the well organized defensive forces to check any such raids.

Recently the sirens that will give warning of impending raids have been sounded as a trial measure, in all parts of the French capital. To people living as far removed from any potential air-raiding enemy as those in the United States, such elaborate precautions seem unnecessarily alarming, but with the various reminders to civilians that modern warfare is no longer confined to the regions where the opposing armies are in contact do not seem superfluous.

Bladder Function After Spinal Cord Injuries

Since the World War there has been a discussion as to whether voluntary micturition was ever possible after a complete transverse division of the sacrolumbar segments of the spinal cord. Basing their opinion on the experiments of Goltz and Ewald and of Müller, physiologists and neurologists maintain that there is some prospect of voluntary micturition returning. Goltz and Ewald in 1896 observed such a result several weeks after removal of the sacrolumbar and a part of the dorsal portions of the cord in dogs. They believed that nerve centers of sympathetic origin, located in the bladder wall could take over the work of the spinal centers. Müller in 1918 after removal of the sacrolumbar portion of the cord or of the conus terminalis alone in the dog, noted spontaneous expulsion of urine after twenty-five days of retention. This investigator maintained that the centers which controlled the detrusor action were not located in the spinal cord but in the sympathetic ganglions of the pelvis and that these centers continue to function even after division of the cord. This view has been abandoned almost universally and there exists but little doubt that the centers for voluntary micturition are in the spinal cord the transverse division of which always results in retention.

Roussy and Rossi in 1910 found that after removal of the conus terminalis or of the cauda equina in dogs and monkeys the paralysis of the detrusor and abolition of the reflex evacuation of the bladder was permanent (six months) and that there was no reason to assume the existence of extramedullary centers, hence the existence of automatic micturition seemed doubtful.

An important paper on this subject was presented at the Dec 4, 1934 meeting of the Academy of Medicine by Hermann, Morin and Vial. They were able to keep alive for six months a dog whose spinal cord had been removed as high as the level of the first dorsal vertebra. Retention of urine occurred as soon as the cord was destroyed, and the bladder contained at times as much as 900 cc of urine. The bladder emptied itself by the familiar phenomenon of overflow but it was necessary to augment this mode of spontaneous emptying by pressure over the bladder in order to avoid complications. During the first weeks after cord destruction, one could feel the bladder wall contract and expel some urine, but not sufficiently to empty the bladder completely. This occurred also when a thermometer was inserted into the rectum or when the animal's position was changed. One could, of course, think of the possibility of centers of automatic micturition as held by Goltz, Ewald and Müller, but such spontaneous evacuation was only transitory. Hermann and his co-workers explain such a temporary emptying as being due to a hyperexcitability of the detrusor following cord destruction, because it became more and more difficult to empty the bladder by external pressure, until the retention became complete and has remained so. These experiments confirm those of Roussy and Rossi and are opposed to those of the other investigators.

As there is much difference of opinion on the part of neurologists and surgeons concerning the treatment of retention following spinal cord injury, these experiments are of great interest. They show that there is no prospect of a return of spontaneous micturition, even after a long period of observation.

Epileptiform Seizures During Pneumothorax Insufflations

Reflex cardiac and respiratory symptoms following thoracentesis for pleural effusions have been known for some time. Secousse of Bordeaux calls attention to convulsive seizures that have been observed during introduction of air for the purpose of establishing a pneumothorax in tuberculosis. Such reflex irritation of the nervous system occurs especially in cases in which the pleura is very thick as the result of inflammatory

changes. The epileptiform seizures are at first limited to the face or to one extremity and then become generalized. There is also a paralytic form of reflex, preceded by convulsions, but the monoplegia or hemiplegia is of short duration, from a few hours to a few days. One ought to give sedatives before attempting a pneumothorax in nervous individuals, avoid multiple punctures always have a preliminary roentgenogram of the chest and not begin the insufflations until the oscillations of the manometer have ceased and one is certain that the pleural cavity is empty. When epileptiform symptoms appear morphine with caffeine or epinephrine should be given immediately.

Appointments

Prof R. Debre, professor of bacteriology at the Medical School of Paris has just been elected a fellow of the Academy of Medicine, one of the highest honors that can be bestowed on a physician by his colleagues.

Prof F. Bezançon, an authority on pulmonary tuberculosis, has been selected to be professor in that subject, a position which had been occupied by the late Prof. Leon Bernard.

BERLIN

(From Our Regular Correspondent)

Dec 10, 1934

Investigation of Arsenic Poisoning in Wine-Growing Regions

Arsenic poisoning after the drinking of wine was reported in THE JOURNAL, July 23, 1932, page 319. A systematic study of this problem, however, seems to have been conducted only recently, even though chronic arsenic poisoning of this origin has been observed for years in the wine-growing regions of Baden. Because some of the cases were considered occupational diseases the federal ministry of the interior appointed a committee of experts under the directorship of Professor Uhlenhuth to make an investigation. The disorder is surprisingly frequent in the wine-growing region of the Kaiserstuhl. The investigation considered the manner in which the arsenical spraying preparations are employed in the vineyards, the familial hypersensitivity and also other factors among which probably the excessive consumption of the wine with its damaging effect on the liver, plays the most important part. The patients are usually strong drinkers and many of them have cirrhosis of the liver. According to the lecture by Uhlenhuth before the medical society in Freiburg it has to be determined whether the arsenical dusting substances should be entirely prohibited, and whether it would be possible to use other preparations that are free from arsenic (for instance, pyrethrum or nicotine).

Half of the fifty patients were observed by Professor Ziegler in the polyclinic. The arsenic content of the parasitocides amounts to from 4.3 to 7.3 per cent. The most severe symptoms of poisoning occur almost exclusively in dry, volcanic regions. The disorder attacks men almost exclusively. The 'house drink,' which is consumed in large quantities, is obtained by hard pressing of the grape husks. It contains arsenic and is a contributory factor but rarely the only cause. The acute symptoms seem as a rule to disappear within a few days. In some cases, signs of chronic arsenic impairment develop after work is resumed with the parasitocides. These are not simply superficial irritations but a vital universal damaging of the tissues, resulting from the absorption of arsenic. The respiratory tract apparently is the most important resorption surface. During this stage the most noticeable symptoms are those of the skin, characterized by hyperkeratoses on the inner and outer surfaces of the hands, the soles of the feet and the toes. Later there usually appears a small-flecked melanosis of the skin and other well known changes. That the nervous system is involved is indicated by abnormal moods, depression, disturbances in

the memory and polyneuritis, usually of the sensory type, and particularly a hypersensitivity to cold. There are disturbances in the sympathetic and endocrine systems indicated by loss of tonus, disturbances in the vasomotor regulations, impotence, hyperglycemia and true diabetic glycosurias. In case of cirrhosis of the liver, it is possible that both alcohol and arsenic impair the hepatic parenchyma and that these two damaging factors promote each other. The same applies to hemochromatosis. The course of the disease differs in the individual cases. Complete cures have been observed after elimination of the causal factors. Generally the disease takes an unfavorable course and may be drawn out over a number of years. The mortality so far has amounted to 16 per cent. Limitation of working capacity is considerable, even in mild cases. The treatment should begin even in acute cases by administering absorptive substances. In chronic cases the intravenous administration of from 10 to 20 cc. of a 5 per cent solution of sodium thiosulphate is advisable. Later, liver preparations, borax baths and sulphur-salicylic ointment may be applied. The protective measures are of especial importance.

Chemical studies are being made, particularly on the amount of arsenic in the "house drink." As was to be expected, considerable quantities of arsenic were detected in the hair of the patients.

Methods for the Improvement of Spinal Anesthesia

Professor Kirschner, ordinarius for surgery in Heidelberg, has studied methods for the improvement of spinal anesthesia for a number of years. Heretofore, spinal anesthesia has had the disadvantage of the uncertainty of the onset of the anesthesia, particularly in case of operations in the upper portion of the abdomen, also of disturbances caused by a reduction in the blood pressure, in which case the blood vessels of the region became paralyzed, and finally of the indefinite limitation of the effects toward the head with impairment sometimes of the respiratory center.

Kirschner now uses an anesthetic solution, which, owing to the addition of alcohol, is lighter than the cerebrospinal fluid and has a specific gravity of 0.986. Following withdrawal of cerebrospinal fluid, the vertebral canal is partially refilled with the anesthetic solution while the head is lowered. The height of the anesthesia may be determined by quickly testing the sensitivity. The upper limit may be determined exactly, it should never go higher than the mamilla. When the anesthesia subsides, feeling returns first in the legs. The blood pressure is as a rule not at all reduced. The quantity of the anesthetic is small, for instance, 2 cc. of a 0.5 per cent solution of nupercaine. In extremely excitable patients, from 0.2 to 0.3 mg. of scopolamine is administered intravenously. The postoperative pain usually is still dulled on the following day. Eventually the after-pain takes the form of a headache, but this is usually not severe and the remedy is the intravenous injection of a 20 per cent solution of dextrose. This anesthesia has thus far been tried in 2,000 cases. It has only a slight influence on the organism as a whole. Icterus and diabetes are not contraindications. It is unnecessary to hurry the course of the operation. Disadvantages of the method are that the operation requires from twenty to thirty minutes of preparation and that the operation must be performed in the Trendelenburg position.

Advertising Remedies at Public Lectures

Several months ago the ministry of the interior directed that it should be determined in each case whether there is reason for the prevention of a lecture in which are discussed certain curative methods or procedures, "without confusing the population and without advertising definite remedies." The regulation that lectures of this type should not be prohibited seems to have been abused. While definite remedies are not advertised

in the lecture itself, following the lecture the persons who attended and whose addresses were taken on entering the lecture hall are solicited by agents of the firm that makes the remedies or apparatus. Such a procedure evades the regulations and cannot be tolerated. The minister admits that there may be some need for reliable apparatus for the preparation of water that contains radium emanations for drinking or bathing, as well as radium cushions or compresses, but it cannot be admitted that such products should receive especial recommendation in public lectures. Moreover, the representatives of firms who produce such radioactive apparatus are not suited to enlighten the people in matters of health. In this connection it may be mentioned that recently the "biochemical society" (this misleading name has nothing in common with biochemistry as a physiologic science) of Berlin put posters on numerous houses informing the public that it would give "information and consultation in all types of illness." The federal minister of the interior considered such advertisement for a "natural method of healing" as undesirable and prohibited the performance.

The Germans Spend Millions for Alcoholic Beverages

The expenditures for alcohol in Germany during the year 1933-1934 amounted to 3,042 million RM. The acreage of viticulture, which had gradually decreased since 1911, has again increased in the last two years. The wine consumption amounts to about 4 liters per capita, the average cost of which may be estimated as 4.40 RM. The efforts to create a greater market for the German wines have been unsuccessful as a result of the simultaneous advance in prices. An essential detriment for greater wine consumption is the preference for beer, for which the competition was eased by special tax reductions. That the population expended 546 million RM for distilled liquors during the year 1933-1934 (April 1 to March 31) is to be considered with grave concern. Per capita, the inhabitants of Germany consume 0.814 liter of alcohol, or 2.32 liters of drinkable liquor with 35 per cent of alcohol by volume. This represents an expenditure of 8.57 RM per capita. The expenditure for beer during the same period with a total consumption of approximately 34 million hectoliters, amounted to 2,206 million RM, that is, a per capita expenditure of 33.8 RM for 51.8 liters each.

MEXICO

(From Our Regular Correspondent)

Dec. 29, 1934

The Want of Special Regulations Concerning the Practice of Medicine

The present constitution of Mexico was promulgated in 1917. There is a statement in article 4 that the practice of certain professions will be governed by special regulations concerned with the designation of the schools and authorities which are empowered to give diplomas and licenses to practice. Seventeen years has passed and the special regulations are not, as yet, in effect. Because of the propaganda made by the homeopaths, especially through the newspapers, some physicians have recently published articles which are aimed at stopping the practice of homeopathy. A controversy has developed and the homeopaths are now challenging the physicians, through the press, to debate before the public (1) whether or not homeopathy is based on scientific grounds, (2) whether it is a rational method for the cure of disease, (3) whether it is a method recognized also in some other countries and (4) whether medicine has in any form derived any benefit from homeopathy.

Improvements at the General Hospital

The General Hospital of Mexico City, because of improvements recently made, will be in the near future an important medical center. A maternity department adjoining the hospital has been opened with the help of a bequest in the will of

Señora Lavin and an appropriation from the board of public welfare of the city. The building is modern, with large halls and comfortable rooms for pregnant women and for infants, and has well equipped rooms for operations and treatment. There are 300 beds.

Another great improvement is the children's hospital, a six story building adjoining the General Hospital, the construction of which will be finished soon. The building has room for 600 children, with excellent arrangements for sunlight and air.

The General Hospital is made up of pavilions, each of which has forty beds and is encircled by gardens. This disposition has disadvantages in connection with the transport of patients after operations. To avoid the inconveniences, the separated pavilions are to be united in only two large wings for surgery and for internal medicine respectively, each of which will contain 500 beds. Two additional pavilions are to be constructed for infectious diseases and for specialties. The General Hospital as a whole will have, through the various improvements, a total of 3,000 beds.

A Physician Appointed President of the University of Mexico

The pay of teachers of the University of Mexico and other expenses in the university were reduced during 1934 on account of economic conditions. The federal government has given the university through the secretariat of public education 5,000,000 Mexican pesos (about \$1,350,000) for expenses in 1935. At the same time Dr. Fernando Ocaranza, who for many years has been a professor of the School of Medicine and later director of the school, has been appointed head of the university. The medical school, during its centennial celebration in 1933, received several gifts, which made possible new laboratories of chemistry and bacteriology and an amphitheater for dissecting and experimental work. A new department for clinical research will begin to function in 1935.

Campaign Against Leprosy

According to the latest census, there are about 2,000 lepers in the country. The campaign against leprosy has recently been intensified by the department of public health. A new dispensary for lepers was recently opened in Mexico City and five more are going to be opened in various states. All the dispensaries will be functioning in March and will have a personnel of specialized physicians, nurses and other workers. Three leprosariums at a total cost of 300,000 Mexican pesos (about \$81,000) will be constructed.

Onchocerciasis

A careful study of the transmission of onchocerciasis is being carried on by a special committee under the chairmanship of Dr. Salvador Gonzalez Herrejon. The condition has been found in persons living in the mountains of Oaxaca. The causal agent is a simulum which transmits the infestation by its bite. The infestation results in blindness and mental disturbances. In some regions 80 per cent of the population is blind. The treatment of the condition is surgical and not very promising. A comprehensive monograph on the habits and reproduction of the simulia is in preparation and will serve as a basis for the campaign against onchocerciasis. Dr. Gonzalez Herrejon has already published articles on his early observations. His work has been considered of great importance both in Mexico and abroad.

Meeting of Biologic Society

The Sociedad Mexicana de Biología held its annual meeting in Mexico City, October 22-26. The following articles were presented and discussed: the serologic relation between endemic and epidemic typhus in Mexico City, by Dr. Hermann Mooser, the bicolorimetric method for determination of *pu*, Dr. Juan Roca, thalamencephalohypophyseal histologic entity, Dr. Ana-

stasio Vergara C., Mexican mosquitoes, Dr. Alfonso Dampf, blood groups in childhood from a biologic point of view, Dr. Jose F. Franco, meningitis encephalitis of bovine, Dr. Javier Escalona, *Bacillus Welchii* isolated from the intestine, Dr. Pedro Vera, experiments with typhus antiserum, Drs. Gerardo Varela and Miguel Angel Parada.

Vaccination Departments

Vaccination departments for school children will be in operation during January of this year in about seventy different dispensaries of public health and welfare of the city and in different hospitals. Adults also will be vaccinated, if they wish, at the same stations. The vaccination of Indians in the rural districts is carried on without any difficulty now, as they have learned of its value and the lack of danger attending vaccination.

RIO DE JANEIRO

(From Our Regular Correspondent)

Dec 15, 1934

Visceral Leishmaniasis in Brazil

Dr. H. Penna recently reported the presence of visceral leishmaniasis in Brazil. With the aim of discovering evidence of any yellow fever that might be present, a branch laboratory was established in 1930 in northern Brazil. A histologic study of the liver of persons who died within ten days from the onset of their illness was made. The study yielded data on (1) the presence of yellow fever in towns and villages apparently free of the disease, (2) the distribution of some other diseases, such as malaria and schistosomiasis, and (3) the presence of hepatic lesions indicating visceral leishmaniasis (kala-azar), a disease not previously reported in Brazil. The material examined consisted of sections of liver taken from cadavers with a viscerotome, which were then fixed in a 10 per cent solution of formaldehyde and stained by hematoxylin-eosin. The sections showing leishmaniasis are characterized by the presence of organisms having the appearance of *Leishmania*, enclosed in large cells of the macrophage type inside the liver capillaries. The parasitic cells are round, about 2 microns in diameter, and have a nucleus and a kinetoplast both of which take hematoxylin, although they are more distinct when the Romanowsky stain is used. With the Giemsa stain the cytoplasm stains light blue and the nucleus darker blue, while the kinetoplast strongly stains a yellow red. The nucleus is round and the kinetoplast is rod shaped. In a study by comparison of liver sections, prepared by Penna and of sections from authentic cases of kala-azar prepared by Dr. H. B. Aragão, no difference could be observed. The organisms obtained by Penna when compared with those of experimental leishmaniasis caused by *Trypanosoma Cruzi*, as seen in the liver, spleen and adrenals of inoculated dogs, showed some differences, especially related to their size. The organism isolated by Penna probably belongs to the form of *Leishmania* reported by Ross in 1903. Cultures have not been prepared as yet, because no clinical cases have been observed. Leishmaniasis lesions were found in forty-one sections from a total of 47,000 liver sections examined up to Sept. 30, 1934. The earliest age in the whole group was 45 days and the most mature, 56 years. Probably the figures of 1 per thousand of visceral leishmaniasis do not represent the actual proportion of the disease in Brazil, since it was found only in a selected group of persons who died within ten days of the onset of a disease. The study, as said before, was intended to discover the presence of yellow fever, which has a more rapid course than that of visceral leishmaniasis.

Carlos Chagas

Dr. Carlos Chagas, head of the Instituto Oswaldo Cruz and the discoverer of American trypanosomiasis (Chagas' disease), is dead. Dr. Chagas was born in Oliveira, Minas Geraes, in

1879 and he graduated from the School of Medicine of the University of Rio de Janeiro in 1903. He was appointed chief physician to the public health hospitals in 1904, head of the committee for prevention of malaria in Minas Geraes in 1905, assistant head of the Instituto Oswaldo Cruz in 1908 and head of the institute in 1917. He was appointed head of the commission for the study of malaria in the Amazon River region in 1912, head of the campaign against influenza in 1918, was director of public health in Rio de Janeiro from 1919 to 1926, professor of tropical medicine in the Faculty of Medicine of Rio de Janeiro in 1925, a permanent member of the Committee of Hygiene of the League of Nations in 1925 and technical head of the International Institute of Leprosy in 1933. He was awarded the Schaudinn prize and in 1925 the Kummel prize given by Hamburg University. Degrees and offices that he held included doctor *honoris causa* by the universities of Paris in 1926, of Lima in 1929 and of Howard and Brussels in 1933, honorary professor of the Universities of São Paulo and Minas Geraes and of the School of Medicine of Bahia, honorary member of the national University of Buenos Aires and of the University of Arequipa, doctor in agrarian sciences by the University of Buenos Aires, member of the Academy of Medicine of Paris of the Society of Tropical Medicine and Hygiene of London and of medical societies in Lima, Germany, Italy, New York, Belgium, Chicago and other places. Dr Chagas was president of the Pan-American Conference of Pathology, Microbiology and Hygiene in Rio de Janeiro in 1929 and a delegate to the seventh Pan-American Conference in Montevideo in 1933 to the International Conference of Parasitology and Microbiology in Buenos Aires in 1916 to the Congress of Malaria in Rome in 1923 and to the International Congress of Hospitals in Atlantic City in 1929. He was invited to lecture in many places abroad and was honored with the following medals: Legion of Honor from France, the Order of Italy, the Order of Belgium, the Order of Alfonso XIII, the Order of Isabel la Católica and the Order of Rumania.

BUCHAREST

(From Our Regular Correspondent)

Jan 16, 1935

Can Alcohol in the Human Body Become Ignited?

It is a popular belief in Rumania that the body of a person, soaked with alcohol, is combustible. Prof. A. Elfer of Cluj, in a popular lecture before the Hygienic Society, said that in past centuries it was earnestly deemed possible that the alcohol laden breath of a tippler may catch fire from the glow of an oven or even from his own pipe. Cases of "combustio spontanea," the burning of the body of itself, have been reported especially in France, the first one in 1725. From the study of several hundreds of recorded cases it is evident that "self igniting" (this was its scientific term at that time) was more frequent with women than with men, more common in winter than in summer, and more common in cases of acute drunkenness than in the normal condition, and it is probable that they were simply accidents to which drunken persons being careless, become victims by setting their clothes on fire. However, from the point of view of forensic medicine it is important to decide whether such self ignition of the body is possible. It was alleged in 1847 that the countess Gorlitz became ignited spontaneously in Darmstadt, Germany and burned to death. A commission whose members included the greatest chemical experts of the age, Liebig and Bischoff, studied this case and completely refuted the theory of spontaneous combustion. The commission found that the human body, soaked with ever so much alcohol could not ignite of itself by any means, nor could it easily be set on fire. In the decomposition of a corpse inflammable gases may develop but not even the ignition

of these will lead to incineration. Liebig's investigations refuted the theory of self combustion for once and for all, but in eastern Europe the topic is still of great interest to laymen.

The Blind in Rumania

Dr. Virgil Popovici, senior physician to the Institute for Blind People in Temisoara, has written a little book on the blind in Rumania. According to this book, 34.5 per cent of all blind people of Rumania live in the Banate, 21.6 per cent in Transylvania, 6.64 per cent in the old kingdom, and 2.7 per cent in Bucovina. Banate is the province most infested by trachoma. Although the Hungarian government and its successor, the Rumanian government have established dispensaries even in the remotest villages where free treatment and instruction as to protection against this scourge is obtained, trachoma is still difficult to eradicate. Popovici says that in Rumania there are only 64 blind persons per hundred thousand of population. As to the nationality of the blind people, 46 per cent are Rumanians, 24 per cent Germans, 30 per cent Magyars, 6 per cent Jews, and 4 per cent Slavs, 41 per cent of the blindness is congenital. Dr. Popovici urges the formation of an association to aid the blind industrially and culturally and to conduct a campaign to defeat the conditions and causes that lead to blindness.

Tuberculosis in Rumania

Dr. Manguirea, director of the demographic bureau, reports that the number of tuberculosis patients in Rumania is about 400,000 and that the hospital and sanatorium beds at the disposal of these patients is 2,004 less than it was in 1926. It is imperative to provide at least 18,000 beds for these patients. Under the present critical economic conditions there is little hope that this can be accomplished. In the last three years only one new sanatorium has been erected by the ministry of public health, the one in the forest of Pantelimon near Bucharest. Two small sanatoriums in Filaret and Zerlend, were closed, as they did not meet the requirements of the times.

The mortality from tuberculosis is about 27 per thousand of population. In the villages and 15,200 tuberculous patients succumb annually, without having had medical care. Rumania spends one leu (at present about 1 cent) on tuberculosis per capita of the whole population, other countries spend from 20 to 100 lei.

Marriages

THOMAS LAURIN GRITZAA, Talmage, Neb. to Miss Lila Maude Lehman of Formosa, Kan., Nov. 18, 1934.

TERRY BIRD, Panama City, Fla. to Miss Eleanor Conner of Tallahassee at Headland, Ala., Dec. 30, 1934.

IRA MILBURN DIXON, Stockbridge, Mass., to Mrs. Elizabeth Barber Hoffmann of New York, January 24.

ROBERT HENRY DE JARNETTE, Dahlonga, Ga., to Miss Mary Lou Gates at Mount Vernon, Dec. 27, 1934.

JULIAN BUSBY, Kannapolis, N. C. to Miss Margaret Little of Greensboro at Lexington, Dec. 24, 1934.

ROBERT STUART ROBERSON, Hazelwood, N. C., to Miss Eunice Simons of Colerain, Dec. 27, 1934.

THEODORE MORRISON CRAIN, Monterey, Tenn., to Miss Effie Judd at Harrison, Dec. 21, 1934.

VIOLETTA G. SHELTON, Los Angeles, to Mr. Etienne Girardot at Yuma, Ariz., Dec. 30, 1934.

ORCENA F. KNEPPER to Mr. J. Irvine Lyle III both of Plainfield, N. J., Sept. 10, 1934.

JOSEPH MEREDITH BOOMER, Omaha, to Miss Naomi Schleiger of Lincoln, Neb., recently.

LEO DAVID O'KANE, Fullerton, Neb., to Miss Adelle Sindelar of Howells, Dec. 3, 1934.

Deaths

Ernest Oliver Joseph Eyttinge ♂ Lieut, Commander, U S Navy, retired, Redlands, Calif, Columbia University College of Physicians and Surgeons, New York, 1904, entered the navy in 1905 and retired in 1919 for incapacity resulting from an incident of service, fellow of the American College of Surgeons, formerly secretary of the San Bernardino County Medical Society, attending neurologist to the San Bernardino County Hospital, aged 54, died, January 20 of injuries received when the automobile in which he was driving overturned

William Henry Bucher ♂ Lieut, Commander, U S Navy, retired, Olive View, Calif, Medico-Chirurgical College of Philadelphia, 1896, entered the navy in 1898 and retired in 1909 for incapacity resulting from an incident of service, veteran of the Spanish-American and World wars, medical superintendent of the Olive View Sanatorium, aged 60 died, Dec. 30, 1934, at his home in San Fernando, of pneumonia

Charles Carroll Habliston, Baltimore, University of Maryland School of Medicine, Baltimore, 1914, member of the Medical and Chirurgical Faculty of Maryland and the American Clinical and Climatological Association, associate professor of medicine at his alma mater, served during the World War, on the staff of the Baltimore City Hospitals, aged 44, died, January 17, of heart disease

Henry Webster Bortner, Everett, Wash Ohio State University College of Medicine, 1914, member of the Washington State Medical Association, past president of the Snohomish County Medical Society, aged 45, served during the World War, member of the staffs of the General Hospital and the Providence Hospital where he died, January 8, of cirrhosis of the liver and nephritis

John Alexander Campbell ♂ Williamsport, Pa, College of Physicians and Surgeons, Baltimore, 1901 member of the House of Delegates of the American Medical Association, 1924-1927, 1929-1931, treasurer and past president of the Lycoming County Medical Society, on the staff of the Williamsport Hospital, aged 59, died, January 4, of influenza and pneumonia

Percy Betterman Battey, Bedford, Hills N Y, John A Creighton Medical College, Omaha, 1911, member of the Connecticut State Medical Society, the American Psychiatric Association and the American Orthopsychiatric Association, served during the World War, medical superintendent of the Westfield State Farm, aged 46, died, January 3, of heart disease

George W Bushong, Tompkinsville, Ky, Hospital College of Medicine, Louisville, 1897, member of the Kentucky State Medical Association, county health officer for many years postmaster, also a druggist, on the staff of the Samson Community Hospital, Glasgow, aged 62, died, January 7, in St Thomas Hospital, Nashville, Tenn, of pneumonia

George Edgar Dean, Scranton, Pa University of Pennsylvania School of Medicine, Philadelphia, 1877, member of the Medical Society of the State of Pennsylvania, formerly county coroner, aged 81, for twenty-one years on the staff of the Lackawanna Hospital, now known as the State Hospital, where he died, January 12, of bronchopneumonia

Robert James Carlisle ♂ New York, Bellevue Hospital Medical College, New York, 1884, professor of medicine, University and Bellevue Hospital Medical College, aged 75 consulting physician to St Joseph's Hospital, Far Rockaway, the Bronx Hospital and Bellevue Hospital, where he died, January 15, of coronary thrombosis

Zadock Troxell Kalbaugh ♂ Piedmont, W Va, University of the City of New York Medical Department, 1891, fellow of the American College of Surgeons, veteran of the Spanish-American and World wars, bank president, for many years member of the city council, aged 65, died, January 11, of cerebral hemorrhage.

Thomas Donald Keckich ♂ Gary Ind, Rush Medical College, Chicago 1926, associate in ophthalmology, Northwestern University Medical School, Chicago, served during the World War, aged 36, on the staffs of the Methodist Episcopal Hospital and St Mary's Mercy Hospital, where he died, January 9, of pneumonia

Howard Clarke ♂ Honolulu Hawaiian Tulane University of Louisiana Medical Department, New Orleans, 1905, fellow of the American College of Surgeons served during the World War on the staffs of the Queen's, Children's and St Francis hospitals, aged 51, died, January 6, of carcinoma of the stomach.

George Frederick William Buttschardt, Queens Village, N Y, University and Bellevue Hospital Medical College, New York, 1902, member of the Medical Society of the State of New York, formerly on the staff of the Bethany Deaconess Hospital, Brooklyn, aged 61, died, January 21, of angina pectoris

Chester Caldwell Funk, New Albany, Ind, University of Louisville (Ky) Medical Department, 1903, member of the Indiana State Medical Association, formerly health officer of New Albany, served during the World War, on the staff of St Edward's Hospital, aged 54, died, January 15, of angina pectoris

James Melvin Delevett, Baltimore, Baltimore Medical College, 1903, member of the Medical and Chirurgical Faculty of Maryland, formerly member of the school board, aged 62 formerly chief resident physician of the Maryland General Hospital, where he died, January 18, of pneumonia

Isaac Lycurgus Van Zandt, Fort Worth, Texas University of Louisiana Medical Department New Orleans, 1866, member of the State Medical Association of Texas, Civil War veteran, aged 95, died, January 10, of heart disease, prostatic obstruction and nephritis

Frona Abbott, Denver, Denver Homeopathic College, 1899, formerly professor of hematology at her alma mater, aged 65 died, Dec 28, 1934, in the Los Angeles General Hospital, of injuries received when the automobile in which she was driving was struck by a truck

Minta Proctor Kemp, Philadelphia, University of Michigan Medical School, Ann Arbor, 1900, member of the Medical Society of the State of Pennsylvania, aged 59, on the staff of the Friends Hospital, where he died, Dec. 29, 1934, of carcinoma of the liver

Anthony Cristiana Bavuso, Framingham, Mass, Middlesex College of Medicine and Surgery, Cambridge, 1927, member of the Massachusetts Medical Society, aged 32, on the staff of the Framingham-Union Hospital, where he died, Dec. 30, 1934, of pneumonia

Victor James Capron ♂ Friday Harbor, Wash Jefferson Medical College of Philadelphia, 1888, formerly member of the state board of health, state legislature, and mayor of Friday Harbor, aged 67, died, Nov 16, 1934, in the Virginia Mason Hospital, Seattle

Richard Theodore Bang ♂ New York, College of Physicians and Surgeons, Medical Department of Columbia College New York, 1879 formerly attending physician, outpatient department, New York Hospital, aged 79, died, January 16, of heart disease.

David Lauderdale Bryson, Calhoun Falls, S C Atlanta College of Physicians and Surgeons, 1910, member of the South Carolina Medical Association, aged 52,, died, January 5, in the Anderson (S C) County Hospital, of cardiovascular renal disease

Frank Cline Shipman, Jersey City, N J, New York Homeopathic Medical College and Flower Hospital, 1908 member of the Medical Society of New Jersey, aged 54, died, January 5, of hemorrhage resulting from carcinoma of the tongue.

William Wallace Kinkead, Nashville Tenn, Columbus (Ohio) Medical College, 1882, University of Tennessee Medical Department, Nashville, 1886, veteran of the Spanish-American War, aged 77, died, January 6, of carcinoma of the cecum

Charles Henry Chesebro, Utica, N Y, University of the City of New York Medical Department, 1884, member of the Medical Society of the State of New York, aged 76, died, Dec. 14, 1934, of cerebral softening and arteriosclerosis

Oreste Castagna, New York, Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1901, member of the Medical Society of the State of New York, aged 57, died, January 14, of a self-inflicted knife wound of the heart

Walter Scott Bell ♂ Elsie, Mich State University of Iowa College of Medicine, Iowa City, 1897; on the associate staff of the Clinton Memorial Hospital, St Johns, aged 62, died, January 19, of carcinoma of the urinary bladder

Daniel Francis Hochdoerfer, St Louis, Beaumont Hospital Medical College, St Louis, 1889, for many years coroner's physician, formerly of the staff of the Alexian Brothers' Hospital, aged 66, died, January 8, of carcinoma

Joseph Parsons Comegys ♂ New York, College of Physicians and Surgeons, Keokuk, Iowa, 1890, Jefferson Medical College of Philadelphia, 1891, served during the World War aged 69, died January 20, of pneumonia

Henry V Byers, Newton, Iowa, Eclectic Medical Institute, Cincinnati, 1875 member of the Iowa State Medical Society, aged 86 died, January 5, in the Mary Frances Skiff Memorial Hospital, of heart disease

Dexter Peter Cannaday, Roanoke, Va., Medical College of Virginia, Richmond, 1905 member of the Medical Society of Virginia, aged 57, died, Nov 11, 1934, of pneumonia, following perforated duodenal ulcer

Warren Henry Hoey, Newton, Mass., Harvard University Medical School, Boston, 1902 member of the Massachusetts Medical Society served during the World War, aged 53, died, Dec. 31, 1934

Cicero Holcomb Cox, Waynesboro, Ga., University of Georgia Medical Department, Augusta, 1886 past president of the Burke County Medical Society, aged 68, died January 17, of pneumonia

Joseph Hector Bainton ♂ New York, Columbia University College of Physicians and Surgeons New York 1901 on the staff of the Morrisania City Hospital, aged 59, died, January 7, of coronary occlusion

Charles Thomas De Loach, Sarepta, La., Memphis (Tenn) Hospital Medical College, 1905 member of the Louisiana State Medical Society aged 54, died Dec 25, 1934, of cerebral hemorrhage

Addison Milton Rathbun, Rice, Minn. Rush Medical College, Chicago 1878 member of the Minnesota State Medical Association aged 80, died, Dec 13 1934, of myocarditis and diabetes mellitus

Francis Elgin Prewitt, Phoenix, Ariz. Gross Medical College Denver, 1898 formerly police surgeon in Denver aged 66 died, Nov 25, 1934, of cerebral hemorrhage and myocarditis

Edward Harris ♂ Cumberland Md. Hahnemann Medical College and Hospital of Philadelphia 1902 aged 55, on the staff of the Memorial Hospital, where he died, January 22, of pneumonia

William Woolsey Bellamy, Watertown Mass. Harvard University Medical School, Boston 1902 member of the Massachusetts Medical Society, aged 57, died, January 17, of pneumonia

Frederic Burton Cornell, Aurora Colo. College of Physicians and Surgeons, Baltimore 1902 aged 58 died, January 16 in the Colorado General Hospital, Denver, of heart disease

Foster Wand Burke ♂ Laclede, Mo., Marion-Sims College of Medicine, St. Louis, 1897, formerly secretary of the Linn County Medical Society, aged 60 died, January 3, of heart disease.

Robert Joseph Kirkwood Jr., Boston Harvard University Medical School, Boston, 1925 served during the World War, aged 38, died January 3, of angina pectoris and coronary occlusion

James Wesley Ellis, Owensboro, Ky., Jefferson Medical College of Philadelphia, 1870 past president of the Kentucky State Medical Association, aged 88, died, January 4, of senility

Lincoln Mock Bowman Alton, Ill., Rush Medical College, Chicago, 1886, member of the Illinois State Medical Society, aged 74, died, January 9, of heart disease following pneumonia

Watson H. Harwood, Chasm Falls, N. Y., University of Vermont College of Medicine Burlington, 1881, aged 80 died, Dec 22, 1934, of heart disease and hypertrophy of the prostate

Wilson David Forsythe New Concord, Ohio, Starling Medical College, Columbus, 1891, member of the Ohio State Medical Association, aged 75, died, January 12, of toxemia

George W. Fleming, Petitcodiac N. B., Canada, McGill University Faculty of Medicine Montreal, Que., 1893, aged 72, died Nov 7, 1934, in Montreal following a prostatectomy

William O. Mabry, Goodman, Miss., Memphis (Tenn) Hospital Medical College, 1897, member of the Mississippi State Medical Association aged 61 died, Dec. 27, 1934

Chauncey Elder Kirk, Pittsburgh Western Pennsylvania Medical College Pittsburgh 1894 aged 63, died, Dec 29 1934, in St. Joseph's Hospital of chronic nephritis and uremia

Valentine Hummel Fager ♂ Harrisburg Pa. University of Pennsylvania School of Medicine, Philadelphia, 1892, aged 68 died, Dec 22, 1934, of coronary thrombosis

William Andrew Fulton, Burlington, Wis. Rush Medical College, Chicago 1893 member of the State Medical Society of Wisconsin, aged 66 died, January 26, of influenza

William Homer Conklin, Ansonia, Conn., University of the City of New York Medical Department, 1882 aged 74 died, January 11, of chronic myocarditis and nephritis

Orrie Ianthas Hetsler ♂ Blountsville, Ind., Eclectic Medical Institute, Cincinnati, 1896, aged 63, died, January 19, in the Ball Memorial Hospital, Muncie, of pneumonia

James Leslie Cannon, Toledo, Ohio, Medical College of Ohio, Cincinnati, 1901, served during the World War, aged 62 died, January 14, of carcinoma of the prostate

Lemuel Hines, Mesilla Park, N. M., Eclectic Medical Institute, Cincinnati, 1890 aged 69, died, January 10, at Tucson Ariz., of coronary occlusion and angina pectoris

Frank Edgerton Deeds, Sandusky, Ohio, Albany (N. Y.) Medical College, 1914, aged 44 died January 17, in Winston Salem, N. C., of pulmonary tuberculosis

Frank Allen Augur, South Bethlehem, N. Y., College of Physicians and Surgeons Baltimore, 1886, aged 70, died, Dec 2, 1934, of bronchopneumonia

Frank Lightfoot ♂ Great Bend, Kan. Rush Medical College, Chicago 1876 health officer aged 84, died, January 7 in St. Rose Hospital, of myocarditis

Anton George Frye, St. Louis, Universität Heidelberg Medizinische Fakultät, Heidelberg, Baden, Germany, 1884 aged 72, died Dec 24, 1934

Julius C. Hoffman, Palo Alto Calif., Rush Medical College, Chicago, 1869, Civil War veteran, aged 86, died, January 4, of coronary occlusion

Benjamin F. Bartho ♂ Mount Carmel, Pa. College of Physicians and Surgeons, Baltimore, 1887, bank president, aged 72 died Dec 30, 1934

Emil Fenton, New York, New York University Medical College, 1896 aged 63, died, January 14, in the Post Graduate Hospital, of angina pectoris

Otto Heber Jeppson, Salt Lake City Utah Northwestern University Medical School, Chicago, 1909, aged 59, died, January 20 of myocarditis

William Arthur Meighen, Perth Ont. Canada McGill University Faculty of Medicine, Montreal Que., 1901 aged 61, died Dec 27, 1934

Bernard Miville Deschênes, St. Pascal Que., Canada, Laval University Faculty of Medicine Quebec 1895, aged 65, died, Nov 21, 1934

Rudolph Fisher, Jamaica N. Y., Howard University College of Medicine, Washington, D. C., 1924, aged 37, died, Dec 26 1934

John A. Ewing, La Vergne Tenn. Vanderbilt University School of Medicine Nashville, 1893, aged 74, died, January 21, of heart disease.

Joseph Steven Dozier, Nashville, Tenn. University of Nashville Medical Department, 1907, aged 62, died, January 9, of pneumonia

Elizee Bellemare, St. Barnabe Nord Que., Canada School of Medicine and Surgery of Montreal, 1879, aged 81 died, Nov 18, 1934

Isaac W. N. Baker, Sussex N. B. Canada, University of Vermont College of Medicine, Burlington, 1885, aged 73, died, Nov 27, 1934

George Stanton Hollister, Laton Calif., University of Michigan Medical School, Ann Arbor, 1892, aged 65, died Dec 27, 1934

William T. Bell, Stoutsville, Mo., Missouri Medical College, St. Louis, 1886, aged 76, died, January 17, of arteriosclerosis

Clyde E. Ehinger, Keokuk Iowa Chicago Homeopathic Medical College, 1880, aged 76, died January 3, of heart disease

Francis Wong Leong, Honolulu, Hawaii, St. Louis University School of Medicine 1908, aged 53 died Oct 10, 1934

William C. Everett, Hazen, Ark. (licensed in Arkansas in 1903) aged 68, died Dec 28 1934 in a hospital at Little Rock

William S. Golden, Worthville, Ky. Louisville Medical College 1882 aged 76, died January 18 of angina pectoris

Cassius Harris Morgan, Higgins N. C. Tennessee Medical College Knoxville, 1901, aged 58 died Dec 10 1934

George Revis, Sandy Hook, Va. Medical College of Indiana, Indianapolis, 1901 aged 67 died Nov 29, 1934

John C. Hafford, Black Oak Ark. (licensed in Arkansas in 1903), aged 63, died, Dec. 22, 1934

Correspondence

DANGERS OF TETANUS ON PUBLIC BEACHES

To the Editor—In the instructive and interesting survey by Drs Miller and Rogers of the present status of tetanus (*THE JOURNAL*, January 19, p 186) I note the following passage "Ordinary wounds acquired in the home or in clean places [*italics mine*], free from possible fecal contamination, or while bathing at the shore [*italics mine*] should not require the injection [*of antitetanus serum*]" Many medical practitioners have the experience, or at least the impression that "shore" injuries are often complicated by tetanus. Few 'metropolitan' beaches if any, are free from possible fecal contamination. Wreckage containing rusty nails, wire and corroded metal odds and ends of garbage and other jetsam and flotsam, broken clam shells and bottles, sharp stones, wood splinters, and so on, are present in abundance. Of thirty-three cases listed in abstract by the authors of the paper, nine at least gave a history of injuries such as might well have been received while in bathing or playing on the beach. Perhaps it might be the part of prudence to add "beach injuries" to the compound fractures, gunshot wounds, deep punctured wounds, street wounds' and "farm wounds" that should all be treated prophylactically.

PERCY FRIDENBERG, M.D., New York.

INTRACAPSULAR FRACTURE OF THE HIP

To the Editor—I note in the paper by Drs Howard and Christophe on the treatment of intracapsular fracture of the hip at the Massachusetts Memorial Hospitals (*THE JOURNAL*, Dec. 15, 1934, p 1833) that the purpose is to compare the end results of treatment by the "abduction double spica of Whitman with those of the traction methods of Ruth and Peckham." This suggests the following comments:

1 That there is no "Whitman double spica" since I have never used such an appliance.

2 That the abduction treatment is quite independent of the external appliance. It is in essence the utilization of anatomic mechanics to correct deformity and to oppose and fix the fragments. The function of $\frac{1}{2}$ external splint is simply to support the limb in the altitude that assures the anatomic fixation, namely, complete abduction, complete extension and slight inward rotation. For this purpose plaster of paris is the only means generally available, and the long spica, which leaves the other limb free is in my opinion the most comfortable and the most effective splint.

It may be noted furthermore that the abduction method is comprehensive in its scope, including the incomplete fractures of childhood, the epiphyseal separations and fractures at the base of the neck, as well as those with which the paper under consideration is directly concerned.

Finally, it has extended the range of effective treatment to extreme old age.

In this connection it may be noted that the death rate at the Massachusetts Memorial Hospitals (211 per cent) is far above the average of other statistics. Stern and his associates, for example, have reported seventy-seven cases of medial fracture treated by the abduction method in a Cleveland hospital. Twenty-eight of the patients were between 60 and 70 and seventeen were between 70 and 80 yet the mortality was but 7 per cent (*Surg Gynec & Obst* 53:250 [Aug] 1931).

Formerly treatment of patients of this class was purely symptomatic, yet the mortality was high and I think it may be assumed that the death rate that can be attributed directly to treatment must be low.

I conclude that the relative advantages of the abduction treatment in the comprehensive range gets effectiveness and its practicability under all conditions are so obvious that one who has been trained in its application and in the further details of the treatment will find little occasion for substitutes.

ROYAL WHITMAN, Sunningdale, Berks, England

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

HIGH FAT DIETS IN GALLBLADDER DISEASE

To the Editor—Are high fat diets beneficial to patients with gall bladder disease or stone? My question is prompted by the well known olive oil cure for gallstones. What is the opinion of competent authorities on this subject? Is it not a fact that high blood cholesterol will tend to increase the formation of stones because high fat feeding, especially with eggs, increases cholesterol? Please omit name.

M.D. Ohio

ANSWER.—It is a common practice to forbid fats to patients with gallbladder disease. The ideas back of the practice are several. First, it is thought that with the lowering of cholesterol in the blood there will be less tendency to the formation of stones, second, that with the mechanism for the concentration and storage of bile out of order, the digestion of fats may suffer, and third that, actually, patients with gallbladder disease often do better if they avoid the eating of fat and particularly of large meals rich in fat.

It seems foolish to worry about the cholesterol content of the blood in patients with gallstones, because every pathologist and surgeon knows that in most cases it looks as if the stones had been formed at one time because they are all alike in color and composition. Only occasionally does it appear that there must have been two or three separate episodes in which stones of different types were formed. It seems then that the woman who gets two big gallstones perhaps during her first pregnancy at the age of, say, 22 years, will have these two stones and no more when she is operated on, say, at the age of 50 years. Under these circumstances it seems foolish to impose dietary restrictions with the hope of saving the woman with cholelithiasis from getting more stones. Besides, there is little reason for assuming that the acquisition of a few more stones would influence the clinical picture. So far as is known, it is the coming of infection that changes a "silent" gallbladder full of stones into a painful and menacing gallbladder.

The "well known olive oil cure" is really no cure at all, it is usually the device of a quack to collect money for the extrusion from the bowel of a lot of pellets of castile soap (made in the intestine from the olive oil), which are thought by the victim to be gallstones.

There is considerable evidence to indicate that women in many parts of the Orient seldom suffer with gallstones, and this has been thought to be due to a consumption of fat lower than that common in Europe or America. Actually, in the absence of exact information or of knowledge in regard to other possibly more important factors, these observations of missionary physicians and others cannot be stressed. It may be that the missionary doctor sees few gallstones because he rarely gets a chance to operate on or to perform necropsies on old women. They are too conservative and too fearful of the "foreign devil."

So far as we know, no one has been able to produce gallstones in man by feeding diets high in cholesterol. Some experiments on animals have shown that during the normal concentration of the bile in the gallbladder conditions might arise in which there would come an abnormal proportion between the concentrations of cholesterol and of bile acids. Under these conditions, stone-forming material might be precipitated. Others believe that infection is the most important factor, while others ascribe everything to stasis.

In the present state of experimental and clinical knowledge, the only conclusion seems to be that there is no logical diet for cholecystitis or cholelithiasis, and in actual practice no physician with an open mind and a large experience in this field would ever hope to put a stop to flare ups of cholecystitis by prescribing a diet. This may sound like black heresy to physicians in Europe who make their living at watering places by treating patients with cholecystitis, but any gastro-enterologist of experience knows that, commonly, these patients, after perhaps a temporary improvement due to rest, more careful eating and purgation, get into trouble again.

EXAMINING URINE FOR SUGAR

To the Editor—Five cubic centimeters of qualitative Benedict's solution and eight drops of a urine specimen were boiled. The reaction showed no reduction. The urine specimen was sent to an out of town laboratory. A few drops of chloroform were added as a preservative. The report was positive for sugar. Will you please advise me whether presence of the chloroform was responsible for a positive reaction or whether it was due to decomposition of the urine or to both factors? What are other preservatives that can be used to avoid any possibility of false reports? Kindly omit name.

M D New York.

ANSWER.—In order to avoid decomposition of urine when it cannot be examined within twenty-four hours after being passed, many urinary preservatives have been recommended. But when not absolutely necessary it is better to avoid them. Urine kept in a cool place in a clean bottle can be examined even thirty-six hours after being voided.

The following preservatives have been used: salicylic acid, boric acid, chloroform, thymol solution of formaldehyde, camphor, chloral hydrate and corrosive mercuric chloride.

Chloroform added in small quantity to urine is a satisfactory preservative. But it must be known that its presence will lead to a pseudocarbhydrate reaction with qualitative Benedict's solution. The chloroform should be removed by heating the urine and then the tests are not affected. In the case cited, the chloroform was undoubtedly the cause of the pseudoreaction.

Three or four drops of solution of formaldehyde may be added for each pint of urine. This is an efficient preservative but it will lead to reactions simulating sugar and even albumin and also it forms a crystalline compound of formaldehyde and urea. Solution of formaldehyde also greatly interferes with the bile, urobilin and indican tests.

Thymol is a good preservative, but an excess may give a reaction similar to those for bile pigments, indican and albumin. The amount used should not exceed 0.1 Gm. for each hundred cubic centimeters of urine. Camphor, chloral and boric acid have been used, but they possess no advantages over the others. Boric acid may interfere with sugar determination. The examiner should be on his guard in reporting abnormal chemical action in a urine specimen to which a preservative has been added.

If it is desired to preserve a specimen of urinary sediment the best method is to add from 2 to 5 drops of a 5 per cent chromic acid solution. The only change will be a coagulation of the albumin into a granular material. It will preserve all the features permanently, not even causing any changes in the casts. Hayem's solution is also an excellent preservative for urinary sediment.

DENTAL CARIES

To the Editor—A certain family in my practice has three children, all of whom have teeth susceptible to early decay. The ages are 9, 8 and 6 respectively. They are representatives of the better class and their food is adequate in every respect. Only one indulges too much in sweets. Their teeth get constant personal and professional care. The mother has been advised by her dentist to use a proprietary combination of calcium phosphate and viosterol. As these children all drink an abundance of milk I have told her that this is useless. She wants to know what can be done to prevent bad teeth in her children. These youngsters are above average in health and nutrition although all three are asthmatic or potentially so. Is there any indication for calcium therapy when milk ingestion is ample? Could you suggest any method or treatment for this type of case?

JOHN HOWARD GREENE, M.D., Slab Fork, W. Va.

ANSWER.—A large amount of scientific evidence has of recent years accumulated which indicates that dental caries is essentially a dietary deficiency disease. Experiments carried out in orphan institutions where the complete diet was strictly under control show that the frequency of dental caries rises and falls with the increase or decrease of carbohydrates in the diet. In a small percentage of children caries was completely inhibited, in approximately 90 per cent of all the children the caries prevalence was markedly reduced, and in only a small percentage of cases did diet, apparently controlled, manifest no inhibiting influence. In still other cases it has been shown that some children remain immune, no matter how unbalanced the diet.

An adequate diet should be diversified with a well balanced calcium-phosphorus ratio, along with a goodly amount of vitamins D and C.

While diet must be regarded as the one most important factor in susceptibility to caries it is by no means the only one. Others are heredity, the glands of internal secretion, mechanical factors and oral hygiene. The significance of heredity and the glands of internal secretion are today but little understood. Irregularly occluding teeth are more frequently carious than those in normal occlusion. Oral hygiene is important only as far as caries is concerned in those individuals who are sus-

ceptible. Whenever *Bacillus acidophilus* is present in the mouth, caries also is found, without its presence, caries is never found. Even the most careful mouth hygiene cannot completely prevent caries when conditions of the mouth are favorable to the existence of *Bacillus acidophilus*, but it can materially limit its activity. The condition that permits *Bacillus acidophilus* to live in some mouths and not in others is not known, but it is assumed to be systemic. The glands of internal secretions may, of course, be responsible, their abnormal as well as normal functioning may be affected by diet.

In regard to these three children, the diet should be knowingly and dependably regulated. This is difficult to do in private families. The diet should contain at least a gram of calcium daily. Alkaline fruits and vegetables should be given preference to acid cereals. In addition, the meal should be ended with some hard food substance to exercise the jaws and cleanse the teeth mechanically. Eating between meals, if any, should be restricted to fruits. If results are still unsatisfactory, the glands of internal secretion should be suspected. The fact that these children are actually or potentially asthmatic suggests disturbed calcium metabolism. The glands are again assumed to be responsible. The administration of calcium and phosphorus is of doubtful value if the diet is diversified; it usually contains ample amounts of these. The difficulty lies in the direction of improper assimilation.

POSSIBLE MOVEMENT OF CERVIX—INFECTION WITH GONORRHEA

To the Editor—1. Some years ago I knew a young woman who during coitus had the ability to rub the cervix uteri to and fro, anteroposteriorly against the male glands thus producing early orgasm. I have known of no similar case reported nor have I been able to find on inquiry among friends a like case. Is it unique? 2. On a certain day a man indulged in coitus with a woman who infected him with gonorrhea, as proved by his developing the disease after the ordinary incubation period. About twenty-four hours after the infecting contact the man had connection with a healthy girl. The result to this girl is not known to me. Did she possibly or probably contract gonorrhea? Please omit name.

M D

ANSWER.—1. During ordinary coitus the cervix makes various movements coming down to meet the penis, the external os opens and a suction action takes place to facilitate the entrance of the semen into the uterus. All this is purely reflex and involuntary. There are also many women, especially those of a passionate nature, who during coitus make all sorts of movements with the external genitals, but no instance has ever been recorded in which the woman could voluntarily move the cervix by itself either during coitus or otherwise. Either of the motions just described could easily be mistaken for such a condition.

2. As soon as a man is infected with gonorrhea, gonococci have entered his urethra, although it generally takes several days for these to multiply to sufficient numbers to cause the well known irritation and bring on the usual symptoms. But the gonococci are there at once after an infecting coitus, and it is more than likely that he would infect a third party even though his symptoms do not appear till much later.

LOW BLOOD SUGAR RECORDS

To the Editor—A patient of mine who took 55 units of insulin unwittingly at 6 p. m. and lapsed into coma about 9 o'clock was not treated until 11 when it required 70 cc. of 50 per cent dextrose intravenously to restore consciousness. Two blood sugar estimations by a competent technician were done on blood taken just before the dextrose was administered. Both readings were 14 mg. per hundred cubic centimeters. I am desirous of information regarding low blood sugar records and what the lowest record in the literature is. Please do not publish name.

M D Massachusetts

ANSWER.—Any data regarding low blood sugar records should be accompanied by a statement of the method used. In general, older methods yielded higher values because of non-sugar reducing substances (partly glutathione). Newer methods, largely by use of different protein precipitants, give values that are lower and represent more nearly the true dextrose content of the blood. It seems possible that in severe hypoglycemia the dextrose in the circulating blood may approach zero. In such a situation the blood sugar determination with certain colorimetric methods may give values that are about 20 mg. per hundred cubic centimeters or somewhat lower, although accurate colorimetric readings are usually not possible. Without knowing the type of method used in the case described, one may only suggest that possibly the "blood sugar" of 14 mg. per hundred cubic centimeters represented non-sugar reducing substances. Determination after fermentation with yeast might have settled this point. Blood sugars "too light to read" are not uncommon, and the literature contains at least one report of a blood sugar said to be zero.

NUMBNESS OF LIP AFTER OPERATION

To the Editor—In June 1931 I had an operation consisting of tonsillectomy and removal of polyps from the left maxillary sinus, the incision for the latter being made under the left side of the lip. Immediately after the operation I noticed an almost complete loss of sensation in the left half of the upper lip and in the left upper teeth. There was no motor paralysis of the lip. This condition improved slightly during the first year but I have noticed very little change in the last two years. The sensation I now have is difficult to describe but can best be characterized as a combination of numbness and hyperesthesia. For example food can collect between the lip and the teeth without my being aware of its presence there. I might add that the operation was performed by a very reputable man who specializes in this type of work. The point in which I am particularly interested is the ultimate effect of this condition on the teeth involved. My dentist has checked the teeth every six months since the operation and has found none dead but a much stronger electric current is required to produce a response in the teeth involved. I had roentgenograms made of these teeth two years ago and their condition was good at that time. In your opinion is there any chance for further nerve regeneration? Do you think that this condition will eventually necessitate the removal of these teeth? Please omit name.

MD Tennessee

ANSWER—The conditions described are doubtless due either to the operation or to the infection of the antrum probably the former. No criticism of the operator is implied, as this is an occasional complication of even the most skilful surgeon's work. Further improvement in sensation after three or more years is improbable. As to the teeth, the prognosis is wholly favorable. The nerve supply of the pulps is not entirely confined to a single group of nerve fibers and consequently it may be assumed that the teeth concerned are partially supplied with nerves. The life of the pulps of these teeth is dependent on an adequate blood supply and there is no reason to infer that this has been damaged in any way at all. There is no danger, therefore, that these teeth will have to be removed because of the postoperative complication described.

PREDOMINANT SEX IN HERMAPHRODITISM

To the Editor—In hermaphroditism does one sex always predominate and function while the other sex is rudimentary and incapable of function? Are there cases reported in which both sexes are rudimentary and incapable of function and vice versa?

BENJAMIN FLEISSIG MD New York City

ANSWER—As a rule one set of sexual organs predominates and the opposite sex is rudimentary. As an example may be mentioned a large clitoris having more or less the resemblance of a penis while the other female organs are well developed. As an opposite example may be mentioned a small penis accompanied with a scrotum that is more or less bifid, resembling the vulva, while the penis resembles the clitoris. But all gradations have been reported, varying from both sets of organs being rudimentary to (rather unusual) both sets of organs being perfectly developed.

IMMUNIZATION AGAINST SCARLET FEVER

To the Editor—My own little girl, aged 7 had the five doses of scarlet fever toxin three years ago. This fall her Dick test shows a small area, 2 cm. of faint redness which I read as positive. Five years ago she had three doses of diphtheria toxin antitoxin. I gave her 1,000 units of diphtheria antitoxin thinking I had possibly exposed her from my clothing. This fall her Schick test was very much positive. 1 Should she have a repetition of the five dose scarlet fever toxin? 2 Is she apt to be protein sensitive to the scarlet fever toxin on second administration? 3 What is your opinion of the aluminum precipitate toxoid (one dose)? 4 I do not want so much repetition so will the one dose toxoid given during the five weeks necessary to complete the injections of scarlet fever toxin interfere with the development of immunity to either disease? 5 What can I tell my patients who inquire about the five dose scarlet fever toxin? I have been telling them that I think it worth the effort and expense but have recommended it rather guardedly.

H D KINDELL MD New Richmond Ind

ANSWER—1 She should have further immunization against scarlet fever. This may be accomplished by injection of the first, third and fifth immunizing doses of scarlet fever toxin at intervals of one week, omitting the second and fourth doses.

2 There is no foreign serum in scarlet fever toxin. Occasional individuals, particularly those who have had diphtheria toxoid, are sensitive to proteins in the ordinary broth used in the preparation of the toxin. In such persons 0.2 cc of a 1:1,000 solution of epinephrine chloride taken up in the same syringe and injected with the toxin prevents disagreeable reactions.

3 The efficacy of the one dose of alum precipitated diphtheria toxoid is not yet established.

4 If the three doses of scarlet fever toxin suggested are used only two weeks will be required and it would be best to defer diphtheria immunization until after that period.

5 Some individuals retain immunity with greater difficulty than the majority and in these persons, as in the correspondent's daughter, it is usually found that there is a greater loss of immunity to diphtheria than to scarlet fever. The diphtheria as well as the scarlet fever immunization should be repeated. The tendency to loss of immunity in these individuals may apply also to smallpox.

Less than 10 per cent of persons immunized with the five doses of scarlet fever toxin lose enough immunity to require further immunization. However these persons never become susceptible to the same degree they were in the beginning so that if they received no further immunization and subsequently contracted scarlet fever the disease would not be as severe as it might have been without any previous immunization.

ROENTGEN THERAPY IN TERATOMA OF TESTIS

To the Editor—I have a patient who had pain in the left testicle beginning several days after a minor injury but too slight for concern. He was observed by several physicians for about ten weeks, no enlargement or other sign was noticed. He was finally given an Aschheim-Zondek test which was positive. A second positive test was made several weeks later and finally one year ago an orchidectomy was performed which was about four months after the first signs and without any preceding roentgen therapy. The pathologist's report was teratoma, no increase in size and no involvement of the scrotum or cord. Superficial and high voltage roentgen therapy was started about ten days following the operation the lungs were not included. The patient suffered a severe reaction with pronounced gastro-intestinal disturbance which has been followed by a colitis persisting to date. There has been no other symptom or any abnormal condition. The patient has been greatly worried about his case especially during the first few months following operation. The Aschheim-Zondek test has been consistently negative. The patient lost a few pounds during the hospitalization and his weight has remained stationary. There is a difference of opinion as to the treatment of this case. The question arises whether or not further roentgen therapy should be given. Considering the negative tests and the nonfulminating nature of the lesion what extra consideration does the colitis involve? Please omit name.

MD Indiana

ANSWER—In the absence of clinical evidence of disease, including roentgenologic examination of the lungs, and in the absence of a positive Aschheim-Zondek test, the consensus is that it is not advisable at this time to execute further roentgen therapy. There is some ground for difference of opinion on this position and some radiologists adopt the method of prophylactic irradiation at intervals over a long period in the absence of clinical recurrence. In this particular case the latter procedure is not advisable because the patient is apparently sensitive to radiation and developed a reaction following these treatments. Furthermore, if prophylactic irradiation is given in the absence of clinical evidence of disease, the areas that must be treated include such widely distributed sites as to render this procedure practically difficult to execute. Under the circumstances it is recommended that no radiation be administered at this time but that the patient be examined at frequent intervals, including x-ray films of the lungs and Aschheim-Zondek tests and that treatment be deferred to such a time as clinical evidence of disease arises or when the Aschheim-Zondek test shows an increasing amount of hormone in the urine.

LEAD POISONING

To the Editor—A local factory producing pigments is having trouble with lead poison, in spite of all the usual precautions being taken to avoid it. What would be the simplest and most accurate method for detecting minute amounts of lead in the blood of employees so that they might be moved to other parts of the factory before symptoms develop? Would spectroscopic examination of the blood of employees at regular intervals be practical? A high calcium diet causes deposit of lead in the bones while a low calcium diet with ammonium chloride favors its excretion. Would it be best for those necessarily exposed to lead but showing no symptoms to be on a high or low calcium diet during the time they are so exposed? In other words would it be better to attempt to deposit lead in the bones as it is absorbed by a high calcium diet or to attempt to eliminate it constantly by a low calcium diet? I will appreciate any reference to the recent literature covering these points. Kindly omit name.

MD Pennsylvania

ANSWER—The best way to determine whether absorption of lead has occurred is to look for stippled red cells. For this a smear of blood should be fixed in methyl alcohol and stained with methylene blue either alone or followed by a light eosin stain by which method the red cells appear either greenish blue or light red, powdered over with fine blue-black granules which are sometimes clumped together. It is usually held that there should be more than 100 such cells per million to make a positive diagnosis and some authorities ignore anything under 500 per million but for an indication of the beginning of lead absorption the physician will do well to accept the lower figure.

For men constantly exposed to lead but showing no symptoms of plumbism the administration of a high calcium diet (especially in the form of milk) to encourage storage in the skeleton has the sanction both of long practical experience with this old poison and also of the newer experimental studies. Following are references:

- Cabot R. C. *Clinical Examination of the Blood* ed 5 New York 1904, p 419
 Naegeli Otto *Blutkrankheiten und Blutdiagnostik* Berlin 1919 p 629
 Aub Fairhall Vinot and Reznikoff *Lead Poisoning Medicine Monographs* Baltimore: Williams and Wilkins Company 7 1926
 Aub J. C. Robb G. P. and Rossmel Elsie *The Significance of Bone Trabeculae in the Treatment of Lead Poisoning* *Am J Pub Health* 22: 825 (Aug) 1932
 Belknap E. L. *Lead Poisoning, The Diagnosis and Treatment of Its Most Toxic Episode Lead Colic* *Wisconsin M J* 28 346 (Aug) 1929

ERUPTION ON AURICLE

To the Editor—May I trouble you for a little help in regard to a woman patient aged 24 who has an eczematous circle just back of the auricle? The inflammatory area is about 10 mm. wide and extends the entire length of the ear. Scales form and there is constant itching unless some remedy is applied to relieve it. Examination of the urine is negative. The general health of the patient is good except that she has some catarrh. An examination of the nasal passages was negative. She has some dandruff in the hair but not sufficient to be thought the cause of the eczema. All the usual remedies have been tried including ultra violet rays. I presume you would want further data for diagnosis but the fact is that all tests have been negative. It is now some three years since the area of redness appeared and it is constantly becoming more annoying. Kindly omit name.

M D, Ohio

ANSWER.—It is assumed that there is only one patch of itching, scaly dermatitis. It is referred to as a circle but this may mean only that it is oval, not clear in the center. The diagnosis rests in all probability between ringworm and lichen simplex. The scales should be examined for a fungus by soaking them for seventy-two hours in 10 per cent potassium hydroxide solution and examining with the high dry lens. If a fungus is found, half strength tincture of iodine should be applied once daily until irritation begins or until the stain becomes too evident, when Whitfield ointment, 3 per cent of salicylic acid and 6 per cent benzoic acid in ointment of rose water may be applied once a day.

If by a circle is meant a round or oval patch, the probable diagnosis is lichen simplex, kept up by rubbing or scratching. Only energetic measures will avail. X-rays and radium can be used only in the mildest dosage within the hairy scalp. Ultraviolet rays applied to cause vesiculation may be used, or graduated strengths of cresolic acid in alcohol, painted on once a week, in strength sufficient to cause scaling.

HOMOSEXUALITY AND MENTAL DEFECT AFTER ENCEPHALITIS

To the Editor—A boy now 14 who had encephalitis complicating pneumonia when a few months old and has failed to develop normally either mentally or physically, in the interval in spite of the best of attention and care is now showing a propensity to homosexuality. There now remains no doubt that during the past year he has engaged in the act not only with smaller boys but with men as well. Knowledge of the situation first came from some individuals he had solicited on the street and who knew him. His parents are now aware of his condition and are keeping him under complete surveillance having withdrawn him from school. What can be done with such a case from a medical and from a social standpoint? Where can I obtain reliable literature on the problem? Please omit name and address.

M.D. Tennessee

ANSWER.—It would particularly be important to know the degree of mental defect and in what way the physical development is lacking. One must not assume offhand that this boy is a true sexual invert. Being defective, he may accidentally have been inducted into homosexual practices. In his "Psychopathia Sexualis" (twelfth English edition, p 286) Kraft-Ebing describes how masturbators may acquire fondness for such practices, often on account of external circumstances, and a defective boy is more likely to do this. Homosexuality has been mentioned among the sequels of epidemic encephalitis, for instance by Rudolph Neustadt (*Die klonische Encephalitis epidemica*, Leipzig 1932, p 11). E. P. Bleuler (*J Nerv & Ment Dis* 71 361 [April] 1930) believes that homosexuality is curable in certain cases and the same opinion was held by the late Emil Kraepelin. Unless this boy is sufficiently defective to be eligible for the ordinary institution for defectives, he may possibly fit in the special institution for encephalitic behavior disorders described in a monograph by Earl D. Bond and Kenneth E. Appell *The Treatment of Behavior Disorders following Encephalitis* New York, 1931. The boy ought to be examined by a psychiatrist with child guidance experience.

CHRONIC MICROCYTIC ANEMIA

To the Editor—I am at a loss to classify the type of anemia of the following case and would appreciate greatly any help. A quadriplegia, aged 39 complains of sore mouth weakness and some shortness of breath. The duration of these symptoms is indefinite, the onset having been gradual, but she thinks about one year. She has no sensory disturbances. The patient is very nervous and apprehensive about her condition. The positive changes on examination are: lemon yellow color to skin; smooth glossy tongue, lips very pale; finger nail beds of poor color. Blood count showed hemoglobin 55 per cent (Dare) red blood cells 3,700,000 white blood cells 7,750 (patient menstruating). Smears showed polymorphonuclears 70 per cent, single lobed neutrophils 3 per cent, lymphocytes 15 per cent, eosinophils 8 per cent, transitionals, 4 per cent. Erythrocytes showed microcytes present, macrocytes present, poikilocytes present, basophilic degeneration present. 17 were reticulocytes found in two lengths of slide. Platelets seemed to be increased in numbers. A gastric examination was tried but the patient insisted that she could not swallow the tube. However since the time she has been on diluted hydrochloric acid her mouth is not so sore and she is able to taste her food better. Present treatment consists of diluted hydrochloric acid (15 drops with meals) and lexttron (Lilly) four drops three times a day. Suggestions as to both diagnosis and treatment will be greatly appreciated. Kindly omit name.

M D Pennsylvania.

ANSWER.—The anemia appears to be of the iron deficiency type, such as occurs in women who have profuse loss of blood during their periods, but who, possibly because of a deficient secretion of hydrochloric acid have difficulty in utilizing the iron of their food. Each period causes an increased loss of blood without adequate restitution in the intervals. This type of anemia is sometimes called chronic microcytic anemia or idiopathic hypochromic anemia. Iron must be given in large doses (e.g., reduced iron, 0.5 Gm in capsules three times a day, after meals). Dilute hydrochloric acid (U. S. P.) may be given in 4 cc doses in a glass of water with each meal. If there is abnormal bleeding, the cause must be removed if possible.

POSTOPERATIVE RECURRENCE OF CYSTOCELE

To the Editor—I have observed early recurrence after an operation for a large cystocele. In quite a number of such operations I never had this experience. Is it difficult to find a cleavage plane between the vaginal wall and the bladder at a secondary operation? Is there any technical advice that I could use to advantage? Please omit name and address.

M D New York.

ANSWER.—Postoperative recurrence of cystocele is not common except following subsequent pregnancy and delivery. Recurrence is usually due to insufficient correction of an associated uterine prolapse. There is no fixed method for subsequent operations for its correction, and the type of operation to be performed depends on whether the patient is in the child bearing period or beyond the menopause. If in the former period, plastic repair should be done together with some type of internal shortening of the round and uterosacral ligaments. If the menopause has occurred an operation of permanence should be done. In case there is considerable prolapse, a Mayo vaginal type of hysterectomy and perineorrhaphy is the operation of choice. Should there be a large cystocele without much prolapse, a Watkins interposition operation should be performed, provided the uterus is of normal size.

DUPUYTREN'S CONTRACTURE

To the Editor—A girl aged 5 years was stricken with acute anterior poliomyelitis and survived with a rather marked residual paralysis of both lower extremities and with only slight atrophy of the muscles of the hands. After eight years the legs have shown no improvement but the hands have improved to the point at which the child learned to play the piano and could write quite well. At the age of 14 she was exposed to scarlet fever and a prophylactic dose of antiscarlatinal serum was administered by a physician who was not informed of the child's sensitivity to horse serum. No serum reaction was noted for the child contracted scarlet fever soon after the injection. After a stormy convalescence the fingers of both hands particularly the third phalanges were found to be spastically flexed in a clawlike fashion. This flexion has persisted, resulting in the child having to give up the piano and making writing very difficult for her. What from the facts stated might possibly have precipitated the present condition of her fingers? What is the prognosis? Kindly omit name and address.

M D New York.

ANSWER.—The history has some points of resemblance to Dupuytren's contracture. There may be fascitis, myositis or tendinitis.

There is evidently a postural, a toxic and a chemical factor involved in this case.

Any infection or chemical reaction may produce a contracture. Deformity is frequently the price paid for comfort during the acute stage of any illness.

The various factors in the treatment include adjustable splints, physical therapy including heat, massage and hot paraffin dips, and operations such as capsulorrhaphy or capsulotomy and tendon plastic procedures.

Medical Examinations and Licensure

COMING EXAMINATIONS

ALASKA Juneau March 5 Sec Dr W W Council Juneau

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *Written (Group B candidates)* The examination will be held in various cities throughout the country April 29 *Oral (Group A and Group B candidates)* New York June 10 Sec Dr C Guy Lane 416 Marlborough St. Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written (Group B candidates)* The examination will be held in various cities of the United States and Canada March 23 *Final oral and clinical examination (Group A and Group B candidates)* Atlantic City, N J June 10 11 *Group B application lists close Feb 23 and Group A application lists close May 10* Sec Dr Paul Titus, 1015 Highland Blvd. Pittsburgh

AMERICAN BOARD OF OPHTHALMOLOGY Philadelphia June 8 and New York, June 10 *Application must be filed at least sixty days prior to date of examination* Sec Dr William H Wilder 122 S Michigan Blvd. Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY New York June 8 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha

AMERICAN BOARD OF PEDIATRICS Atlantic City N J June 10 and St Louis Nov 19 Sec Dr C A Aldrich 723 Elm St Winnetka Ill

ARIZONA *Basic Science* Tucson March 19 Sec Dr Robert L Nugent Science Hall University of Arizona Tucson

CALIFORNIA *Reciprocity* Los Angeles March 13 Sec Dr Charles B Pinkham 420 State Office Building, Sacramento

CONNECTICUT *Regular* Hartford March 12 13 *Endorsement* Hartford March 26 Sec Dr Thomas P Murdock 147 W Main St Meriden *Homopathic* March 12 Sec Dr J H Evans 1488 Chapel St New Haven

IDaho Boise April 2 Commissioner of Law Enforcement, Hon Emmitt Pfost 203 State House Boise.

ILLINOIS Chicago April 9 11 Superintendent of Registration Department of Registration and Education Mr Eugene R Schwartz Springfield

MAINE Portland March 12 13 Sec Board of Registration of Medicine Dr Adam P Leighton Jr 192 State St Portland

MASSACHUSETTS Boston, March 12 14 Sec Board of Registration in Medicine Dr Stephen Rushmore 144 State House Boston

MINNESOTA *Basic Science* Minneapolis April 2-3 Sec Dr J Charney McKinley, 126 Millard Hall University of Minnesota Minneapolis

MONTANA Helena April 2 Sec., Dr S A Cooney, 7 W 6th Ave Helena

NEW HAMPSHIRE Concord, March 14 15 Sec Board of Registration in Medicine, Dr Charles Duncan State House Concord

NEW MEXICO Santa Fe, April 8 9 Sec Dr P G Cornish Jr 221 W Central Ave Albuquerque

OKLAHOMA Oklahoma City March 12 13 Sec Dr J M Byrum Mammoth Bldg Shawnee

PUEERTO RICO San Juan March 5 Act Sec. Dr Ramón M Suarez, Box 536, San Juan

WEST VIRGINIA Charleston March 18 State Health Commissioner Dr Arthur E McClue, Charleston

WISCONSIN *Basic Science* Madison March 16 Sec Prof Robert N Bauer 3414 W Wisconsin Ave. Milwaukee

North Carolina June Examination

Dr Benjamin J Lawrence, secretary, North Carolina State Board of Medical Examiners, reports the written examination held in Raleigh, June 19 23, 1934. An average of 80 per cent was required to pass. Seventy-three candidates were examined, all of whom passed. Thirty-two physicians were licensed by endorsement after an oral examination. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Yale University School of Medicine	(1927)	88	
Georgetown University School of Medicine	(1934)	92 9	
Howard University College of Medicine	(1933)	86 4,	
86 9 93 1			
Emory University School of Medicine	(1934)	85	
85 4 86 6 87 9			
University of Georgia School of Medicine	(1934)	95	
Rush Medical College	(1934)	85	
Tulane University of Louisiana School of Medicine	(1933)	94	
(1934) 88 88 1 89 1 91, 93 3			
Johns Hopkins University School of Medicine	(1932)	90	
(1934) 90 3			
University of Maryland School of Medicine and College of Physicians and Surgeons	(1934) 83 1 85 7, 86 9 88 1		
Harvard University Medical School	(1934)	90 3	
Washington University School of Medicine	(1934)	86 6	
New York University University and Bellevue Hospital Medical College	(1934) 86 3 91 3 92 7		
Duke University School of Medicine	(1932)	91 7,	
(1933) 93, (1934) 90			
Jefferson Medical College of Philadelphia	(1931)	92	
(1934) 81 82 9 86 3 86 9 87 1 89 9 94 4 94 6 96 3			
Temple University School of Medicine	(1932)	89 1	
(1933) 88 1 89 4 (1934) 86 1 89 7 91 3			
University of Pennsylvania School of Medicine	(1928)	88 7,	
(1934) 85 6 91 3 91 4 91 6 92 92 1			
Medical College of the State of South Carolina	(1933)	87 4	
(1934) 85 6 88 9 90 1 90 7			
McBarry Medical College	(1933)	85 6	

Vanderbilt University School of Medicine	(1934)	90 3
Medical College of Virginia	(1934)	85
85 6, 87 1 87 4 87 6 89 9, 90 90 6, 91 1 91 3 93 4		
McGill University Faculty of Medicine	(1934)	85 7
School	LICENSED BY ENDORSEMENT	Year Endorsement Grad of
George Washington University School of Medicine	(1914)	Dist. Colum
Atlanta College of Physicians and Surgeons	(1912)	Georgia
Northwestern University Medical School	(1899)	Illinois
Rush Medical College	(1929)	N B M Ex
Louisiana State University Medical Center	(1934)	Louisiana
Tulane Univ of Louisiana School of Med	(1920)	(1933) Alabama,
(1932) Louisiana		
Johns Hopkins University School of Medicine	(1929)	Maryland
University of Maryland School of Medicine and Col lege of Physicians and Surgeons	(1932)	(1934) Maryland
Harvard University Medical School		(1928) N B M Ex
(1931) Michigan		
University of Minnesota Medical School	(1933)	Minnesota
Columbia Univ College of Physicians and Surgeons	(1926)	N B M Ex
New York University Medical College	(1894)	Illinois
University of Rochester School of Medicine	(1932)	N B M Ex
Jefferson Medical College of Philadelphia	(1924)	Illinois
University of Pennsylvania School of Medicine	(1933)	Virginia
Woman's Medical College of Pennsylvania	(1932)	N B M Ex
Medical College of the State of South Carolina	(1932)	S Carolina
McBarry Medical College	(1932)	Georgia
Tennessee		
University of Tennessee College of Medicine	(1923)	Georgia
(1930), (1931 2) Tennessee		
Vanderbilt University School of Medicine	(1931)	Tennessee
Medical College of Virginia	(1930) (1931)	(1933 2) Virginia

Maine November Report

Dr Adam P Leighton Jr, secretary, Maine Board of Registration of Medicine, reports the written examination held in Portland, Nov 13-14, 1934. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Seventeen candidates were examined, all of whom passed. Two physicians were licensed by reciprocity. Two physicians were licensed by endorsement after an oral examination. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Georgetown University School of Medicine	(1934)	82 2	
Loyola University School of Medicine	(1934)	82 8*	
Medical School of Maine	(1914)	82 5	
Boston University School of Medicine	(1932)	88 8	
(1933) 84 5 85 7 (1934) 83 8 86 3			
Harvard University Medical School	(1892)	75 3	
(1934) 87 1, 87 3 88 2			
Tufts College Medical School	(1926)	83 1,	
84 4 (1934) 82 8 83 8			
Hahnemann Med College and Hospital of Philadelphia	(1934)	83 9	
School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Western Reserve University School of Medicine	(1930)		Ohio
University of Tennessee College of Medicine	(1919)		Tennessee
School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Tufts College Medical School	(1933) N B M Ex		
New York University University and Bellevue Hospital Medical College	(1933) N B M Ex		
* This applicant has completed his medical course and will receive his M.D. degree on completion of internship. License is being withheld			

Montana October Report

Dr S A Cooney, secretary, Montana State Board of Medical Examiners, reports the written examination held in Helena, Oct 2-3, 1934. The examination covered 10 subjects and included 50 questions. An average of 75 per cent was required to pass. Two candidates were examined, both of whom passed. Nine physicians were licensed by reciprocity and 3 physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Creighton University School of Medicine	(1933)	81 6	
University of Alberta Faculty of Medicine	(1932)	82 7	
School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Denver and Gross College of Medicine	(1904) Colorado		Indiana
Northwestern University Medical School	(1930) Minnesota		
Rush Medical College	(1926) Minnesota		
(1932) California			
University of Michigan Medical School	(1930)		Michigan
University of Minnesota Medical School	(1929)		Minnesota
St. Louis College of Physicians and Surgeons	(1903)		N Dakota
Creighton University School of Medicine	(1927)		Nebraska
University of Wisconsin Medical School	(1932)		Wisconsin
School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Rush Medical College	(1933) N B M Ex.		
University of Minnesota Medical School	(1933) N B M Ex.		
Columbia Univ College of Physicians and Surgeons	(1929) N B M Ex.		

Book Notices

Nutrition and Disease. The Interaction of Clinical and Experimental Work. By Edward Mellanby M.D. FRCP FRS Consulting Physician Royal Infirmary Sheffield. Cloth. Price 8/6. Pp 171 with 65 illustrations. Edinburgh & London Oliver & Boyd 1934

This book presents the substance of a series of lectures delivered before the Royal College of Physicians in June 1933. It describes some of the problems that the author investigated while holding the combined laboratory and clinical post of professor of pharmacology, University of Sheffield, and consulting physician of the Royal Infirmary, Sheffield, England. The lectures attempt particularly to point out how the combined experiences of the laboratory and the ward or clinic interact in furthering medical science. With this end in view, the author shows how observations of disease in human patients have stimulated research on animals and how these laboratory observations have in turn been carried back to the ward for testing on human subjects. It is only through such mutual interaction, he believes, that the problem of nutrition in relation to disease can be solved.

Five main topics are covered in the lectures: (1) rickets, (2) dental structure and disease, (3) simple and toxic goiter, (4) nutrition and infection, and (5) nutritional influences on the nervous system. The report on rickets describes the author's early work in producing this disease experimentally in dogs, his discovery that cereals are rickets producing and that a fat-soluble vitamin is rickets preventing and follows the high spots in the rapid development of knowledge of this subject to the present time. Emphasis is given to the author's view that cereals, oatmeal in particular, contain an anticalcifying substance, a toxamin, which may be counteracted by calcium salts, by boiling the cereal in dilute acid or by vitamin D in any of its manifold forms. Reference is made to the finding by Gyorgi that maize has a more pronounced effect than oatmeal and to unpublished work of Bruce and Calow that phytic acid may be the toxic substance involved. Although this theory of an anticalcifying factor in cereals is not universally accepted, the majority of research workers believing that a deficiency of vitamin D, an unbalanced calcium phosphorus ratio or other factor interfering with calcium utilization is sufficient to account for rickets without postulating a toxic factor, the difference in point of view is of academic rather than practical importance, since both groups recognize that, whatever the fault, it may be corrected by including a source of vitamin D in the diet. To this Mellanby would add the restriction of the cereal intake.

The lecture on dental structure and disease presents in a brief fifteen pages the gist of Mrs. Mellanby's extensive investigations from 1917 to the present time on the factors determining tooth structure, incidence of caries and other dental disease, and practical methods for their prevention and control. Evidence is presented from laboratory work on animals and studies of human teeth to show that all types of faulty structure may be produced at will in animals by making slight changes in the diet, that there is a close correlation in human teeth between structure and caries—that is, that teeth of bad structure tend to be more carious than those of good structure and that the resistance of the teeth regardless of their original structure, may be increased by feeding diets good in calcifying properties, through building up of secondary dentin and that carious areas may even be arrested or healed by this means. Pyorrhea, moreover, may be induced or prevented by the absence or presence in the diet of determining dietary factors. The diet that produces normal tooth development and prevents or arrests caries is the same as that which prevents rickets, namely, one rich in calcium and phosphorus and vitamin D and low in cereals, while vitamin A is held to control the development of the gingival epithelium and a deficiency of this factor therefore, favors the development of pyorrhea. There is, of course, a whole school of workers who would present an entirely different theory of dental decay with evidence to support it, e.g. the one of which Bunting is a chief exponent. Again however, the disagreements are largely in respect to the mode of action rather than in the practical applications for the diets advised by the opposing schools for tooth protection are essentially the same.

The section on the thyroid reviews the history of thyroid physiology and especially the work of Marine and others on the relation of iodine to simple and toxic goiter. A summary of the experimental and clinical evidence from his own as well as other laboratories seems to the author to support the view that, although there is a close resemblance microscopically between simple and toxic goiters, their etiology is fundamentally different. "The simple goiter is due primarily to a deficiency of iodine in the body, whereas the toxic goiter is caused mainly by some mechanism pulling out the colloid with its active principles, as soon as it is formed into the general circulation and thus producing a local absence in the gland itself, and an excess in the blood. Both mechanisms produce thyroid hyperplasia. There is good evidence that the mechanism responsible for the withdrawal of the thyroid colloid involves a chemical substance in the anterior part of the pituitary gland. The deficiency of iodine which leads to simple goiter is primarily dietetic, especially in early life and the period of growth. The author presents evidence that has led to these conclusions and discusses their relation to the prevention and treatment of both types of goiter.

The discussion on nutrition and infection seems an unusually able and fair presentation of this debated subject. The author points out the difficulties involved owing both to inadequate methods of judging nutrition and to varied conceptions of what is meant by "infection." He shows how almost invariably workers with rats have demonstrated extreme susceptibility of vitamin A deficient rats to infections especially of the respiratory tract and the less clear-cut results in human beings. He points out that results as found in animals would not be expected in human subjects, because few diets even of the very poor are as deficient in vitamin A as are given experimental animals. It is known, however, that the poor, whose diets tend to be low in the protective foods, do have a higher incidence of the type of infection related to dietary deficiencies than do the higher economic groups. Clinical and experimental evidence from the author's laboratory and elsewhere is presented which shows that "in some infective disorders of the mucous membranes affecting human beings vitamin A raises the resistance and diminishes the incidence and severity of such disorders" (e.g. puerperal sepsis, measles). On the other hand, evidence is also given to show that "infection foci of the type seen in vitamin A deficient animals develop in human beings independent of the vitamin A reserves and therefore may have a different aetiological significance." The author believes very definitely then that vitamin A is one factor at least in the body's defense against infections, especially those involving epithelial tissues but he realizes also that there are other factors concerned, and he expresses himself as "prepared to use every available weapon which promises to lead to further knowledge."

The two lectures on nutrition and the nervous system deal with vitamin A in a newer role in relation to nervous disorders. It is shown through experimental evidence that widespread nerve degeneration results from a vitamin A deficiency and that nerve changes are found in xerophthalmia, night blindness and retinobulbar neuritis and may be the primary factor in these conditions and possibly also in other infective foci found in vitamin A deficient animals. The theory is also advanced that a vitamin A deficiency is wholly or in part responsible for the degenerative nervous changes found in a variety of diseases or conditions that were formerly attributed to other factors, namely, beriberi, convulsive ergotism, pellagra, lathyrism, and other conditions. In some of these as in ergotism and lathyrism a neurotoxin also is involved but vitamin A or carotene will prevent the changes and the accompanying clinical manifestations. The author admits that much additional work is needed to clarify this problem, but he believes that "the present work suggests not only a new field of possibilities in the way of treatment which is worthy of study but that in the diseases referred to above specific dietetic influences will prove to be of great importance certainly as prophylactic agents, and to a less degree as a curative means."

This book is an excellent concise presentation of the author's work and conclusions in a number of important fields of nutrition research. The conclusions expressed are in the main those commonly held by research workers, but some represent interpretations for which the author is at present the chief exponent.

As one reads through the entire text the points that stand out are the author's conviction that cereals have a definite antagonistic action in many aspects of human nutrition, and his strong belief in the dominating role assumed by vitamin A in the prevention of disease through its protective action both on the epithelial tissues and on the nervous system. The point of view and the supporting evidence should stimulate to further research in these fields.

Protoplasma Monographien Herausgegeben von R. Chambers und anderen. Band VII Pathologie der Mitose. Von Georg Loltzer. Privatdozent der Embryologie an der Wiener Universität. Cloth. Price 16.20 marks. Pp 338 with 113 illustrations. Berlin Verlag von Gebrüder Borntraeger 1934.

A complete survey of the abnormalities occurring in cell division is contained in this monograph. The interest in the subject lies not only in the biologic aspect in that mutations are now being produced in large numbers in the fruit fly *Drosophila* by irradiation but also because it is undoubted that the action of x-rays, radium, cathode rays and ultraviolet rays is in part at least on the division mechanism of the cells. Certain of the theories of the origin of cancer which have been proposed in recent years assume that changes in the chromosomes may lead to the production of new races of cells, which possess the capacity of unlimited growth and large series of studies have been devoted to the investigation of the morphology of the mitotic figures and the number of chromosomes in cells of malignant neoplasms. All of this is excellently surveyed and the reader who wishes to extend his knowledge will find a useful and complete bibliography appended. There are also drawings, photomicrographs and charts.

Practical Surgery of the Abdominal and Pelvic Regions By James William Kennedy M.D. F.A.C.S. Surgeon in Chief to the Joseph Price Hospital Philadelphia. Second edition. Cloth. Price \$7.50. Pp 861 with 133 illustrations. Philadelphia F. A. Davis Company 1934.

This book was inspired by a student's love for his great master, Dr. Joseph Price, the author acting as an exponent of principles endorsed by his predecessor, particularly those which are at variance with the popular teachings. The chapters have been arranged in a haphazard manner, for instance a chapter on ligature and suture material is preceded by one on inguinal hernia and followed by one on surgery of ovarian cysts. The eulogy of Dr. Price is carried to extremes and includes a hyperbolic statement that "probably no operator living or dead was more the master of difficult and trying major abdominal work than Dr. Price." Some statements are contrary to the experience of other surgeons, others will be met with astonishment. Appendectomy in form of a stumpless removal of the organ is advocated irrespectively of the stage of peritoneal involvement, adhesions should be broken and the appendix removed in every instance, the author has probably an unrivaled record of "a good many thousands of appendectomies without a single death in cases where drainage was not necessary." He also established an enviable record of a mortality of 0.2 per cent after vaginal hysterectomy by the clamp method. The correctness of the statement that vaginal hysterectomy has the lowest operative mortality of any major operation will not go unchallenged. The author must be a second Houdini, as in 90 per cent of the cases he performs a vaginal hysterectomy in less than five minutes (p 15). He feels justified in promising a successful repair of the perineum in practically 100 per cent of the cases. On page 278 he says that no harm follows penetration of the rectum while repairing the perineum. According to his experience, the very ill patients from gonorrheal infection stand surgery well. The gangrenous gallbladder should be drained not removed. Trendelenburg's position, retractors and rubber gloves are tabu in abdominal surgery, absorbable material is never used, through and through sutures are employed as a routine for closure of abdominal incisions. Let us forget the author reminds us countless times of his eleven years long apprenticeship with Dr. Price. The style and punctuation justify a suspicion that Gertrude Stein acted as a collaborator. A few quotations may corroborate this statement. The description of figure 32 reads as follows: 'Fig 32 illustrates the popular method of tying the meso appendix which is incorrect in that it does not include the proximal vessels to the point of transfixion with a blunt instrument as a ligature carrier

such as the hemostat and thus the bleeding which might take place from the vessels which are not included within the ligature. The error is in the use of a blunt instrument such as a hemostat by which the ligature is carried through the meso appendix too far from the ceco-appendiceal angle which ligature does not include the most proximal vessels which are often the largest and nourish the proximal end of the appendix which becomes the stump of the incomplete operation." Practically every statement throughout the book is repeated several times. "Tubercular' is used instead of "tuberculous", "tenaculæ" instead of "tenacula", one finds such expressions as "the fibroid patient" (p 15), "the pathological surgeon" (p 105) or a sentence, "classify the lesion into operative and non-operative hours" (p 100), 'I do not approve clamping any vessels if it can be avoided which later must be tied' (p 532). It is highly regrettable that such inexcusable shortcomings detract considerably from the value of the book which is exceptionally well illustrated and replete with interesting discussions.

L'épaule Anatomie des formes extérieures anatomie radiographique chirurgie opératoire Par Antoine Bassot professeur agrégé à la Faculté de Paris et Jacques Mialaret interne des hôpitaux de Paris. Paper. Price 65 francs. Pp 292 with 116 illustrations. Paris Masson & Cie 1934.

This book forms the second link in a series of monographs on normal anatomy and operative technic of articulations, the first being a monograph on the knee, a book on surgery of the ankle will soon follow. The first part of the book gives a thorough description of the normal appearance of the shoulder region as observed in the course of a clinical examination, and a detailed description of the roentgenographic appearance of a normal shoulder follows. This chapter is supplemented by an unusual and instructive feature in the form of drawings in which ligaments, tendons and muscles are sketched over roentgenograms. Finally, roentgenograms of injected synovial sacs and arterial trees are reproduced. The second part of the book is subdivided into several chapters discussing the most popular avenues of approach to the shoulder articulation, the treatment of penetrating wounds and suppurative arthritis, the surgical treatment of fractures of the upper portion of the humerus, surgery of dislocations of the shoulder, arthrodesis, surgical treatment of tuberculosis, ankylosis, intradeltoid amputation, and exarticulation of the shoulder. The monograph is complete well planned and not too verbose. The subject is presented in a clear, simple, concise manner. There are many beautiful roentgenograms, reproductions of photographs, diagrams and schematic drawings. The work is not a simple compilation of data, the authors carefully describe various methods in vogue but express their own views on many controversial subjects. Certain omissions have been noticed, for instance, the technic of local anesthesia has not been described as apparently it is not in favor with the authors. American literature received due consideration, e.g., Nicolas and Fowler's methods of operation for recurrent dislocation of the shoulder are discussed by the authors, generally speaking, however, bibliographic references are sadly inadequate for the amount of material covered in the text and there is no index of the literature. The book may be highly recommended to general and orthopedic surgeons, even those not well versed in the French language, as the illustrations talk for themselves.

Aids to Osteology By Philip Turner B.Sc. M.B. M.S. Consulting Surgeon Guy's Hospital London. In collaboration with N. L. Eckhoff M.S. F.R.C.S. Assistant Surgeon Guy's Hospital. Third edition. Cloth. Price \$1.50. Pp 222. London Baillière Tindall & Cox Baltimore William Wood & Co 1934.

The nomenclature recommended by the Anatomical Society has been adopted throughout this edition. It is about thirty pages longer than the preceding edition, and a revision of the text has been made by Mr. N. L. Eckhoff. The subject is treated under the headings of bones of the upper extremity, lower extremity, spine and thorax, and skull. A description of each individual bone is offered, giving its location, shape, articulations and attachments of muscle and ligaments. This book, while devoid of illustrations, offers a useful and accurate guide to the student or practitioner in quest of descriptive information about the various bones of the skeleton.

Medicolegal

"Public Hospital" Defined—The defendant operated a hospital in Minnesota which she claimed came within a constitutional provision exempting public hospitals from taxation. The constitutional provision provided as follows:

Public burying grounds public school houses public hospitals academies colleges universities and all seminaries of learning all churches church property and houses of worship institutions of purely public charity and public property used exclusively for any public purpose shall be exempt from taxation.

During the year in question, 1931, the evidence showed that the hospital was conducted as an "open hospital," all physicians and patients being admitted on equal terms. The county sent to the hospital all patients who were public charges and paid therefor at a fixed rate. The hospital was conducted at a loss, although the defendant testified that she would not have refused to make a profit had it been possible. There were no charity beds in the hospital. A charge was made to all physicians for operating in the hospital and a regular charge was made to all patients. The defendant had full control and management of the hospital and had power to determine who should or should not be admitted and what doctors should or should not use the hospital. The trial court found that the institution was not a public hospital and the defendant appealed to the Supreme Court of Minnesota.

The word "public," said the Supreme Court, may be variously defined. It may be defined as meaning open for the use, enjoyment, and the participation of the public generally, even though a fee is charged as a public dance hall, a public carrier, etc. It may be defined as meaning owned by the public, that is, by the government or some of its subdivisions, as a public building, public court house, etc. It may in certain situations be defined as meaning operated for the benefit of the public rather than for the benefit of a private individual. It is quite evident continued the court from a consideration of the entire constitutional provision, that it was not intended to confine exemptions from taxation only to property owned by the public. It is unreasonable to suppose that mere access to, use of, or patronage by the public is the sole and only test of whether property is exempt under the provision of the constitution. In using the words "public hospital," the court said, the framers of the constitution and the voters meant first that there should be free access to the public without discrimination in order that a hospital may be a public hospital. It was further intended that a public hospital also should be operated for the benefit of the public in contradistinction to being operated for the benefit of a private individual, corporation or group of individuals. So construed, operated for the benefit of the public means operated without an intent to make a private profit. It is not thereby meant that the institution must dispense charity or that it may not charge a fee for services rendered. Operated for the benefit of the public does mean that the receipts shall not be substantially more than the disbursements, so that a profit results. The provision does not mean that a hospital is exempt for a particular year merely because there is no profit for that year. The controlling feature is whether the institution was built, organized and/or is maintained with an intent to make a private profit, not whether there happens to be a profit in any given year. Applying this definition to the case at bar, the court said that the defendant's hospital was not a public hospital. We will assume, said the court, that it was open to the public indiscriminately in 1931, but it was not operated for the benefit of the public during that year. The judgment of the trial court was affirmed—*State v. Browning (Minn.)*, 255 N W 254.

Malpractice Septic Arthritis Attributed to Negligent Treatment for Scarlet Fever—Two suits were instituted against the defendant-physician, one by the patient, a child, and the other by the patient's father, wherein it was contended that by reason of the defendant's negligent treatment for scarlet fever the patient developed septic arthritis and became permanently crippled. In each case a verdict was rendered for the plaintiff and the defendant appealed to the Supreme Judicial Court of Massachusetts.

The defendant contended, principally, that even admitting the truth of the plaintiff's evidence tending to establish negligence, there was no evidence showing the causal connection between the negligence and the patient's injury. The testimony taken as a whole, said the Supreme Court, was sufficient to warrant the jury in finding that the defendant knowingly was guilty of omissions in the care of the patient which would bring unnecessary suffering to him and would contribute to, if they were not responsible for, the patient's permanently crippled condition. The defendant concluded that he was negligent in administering the "antitoxin." He failed to instruct the mother, or other attendant of the child, to keep him on a milk diet and to give him plenty of water. He discouraged the removal of the child to a hospital and failed to call in a specialist or a consultant. He opened without the proper aseptic precautions abscesses that developed and in other ways did not do what good practice demanded. Although the jury might have found that no single act of the defendant proximately caused injury to the patient, the testimony warranted the jury in finding that the omissions of the defendant constituted improper practice from a medical standpoint and that they, in combination, caused to some degree injury to the patient. It was not essential to the defendant's liability, continued the court, that he should be able to foresee the precise manner in which the injury happened, it was sufficient that injury to another was reasonably to be apprehended as the result of the negligent conduct.

The Supreme Court, therefore, upheld the verdict in favor of each plaintiff, subject, however, to final action by the trial court on the defendant's pending motion in each case for a new trial on the ground of excessive damage—*Marangian v. Apehan (Mass.)*, 190 N E 729.

Insurance, Life Chiropractor Not a "Physician."—The plaintiff insurance company sought to avoid payment on a life insurance policy issued to the defendant's deceased husband contending that the insured was treated by a "physician" within the meaning of a clause in the application for the policy which provided, in effect, that the policy should not take effect if the insured was treated by a "physician" between the date of his medical examination and the delivery of the policy. During that period, the insured was treated by a chiropractor. From an adverse decision in the trial court, the insurance company appealed to the Supreme Court of Michigan.

The application blank, said the Supreme Court, like the insurance policy, was prepared by the insurance company and hence it should be read in terms most favorable to the insured. So read, the word "physician" must be held to mean a legally licensed physician or doctor of medicine. Such is the meaning that a reading of the application would convey to the ordinary lay mind. It follows that, concluded the court, notwithstanding the insured consulted a chiropractor and was treated by him between the date of the medical examination and the delivery of the policy, the insurance became effective on the delivery of the policy. The decree entered by the trial court awarding the defendant the amount due on the insurance policy was consequently affirmed—*New York Life Ins. Co. v. Modzelewski (Mich.)*, 255 N W 299.

Society Proceedings

COMING MEETINGS

- American Orthopsychiatric Association New York Feb 21 23 Miss Mary A. Clarke, 50 West 50th Street New York, Secretary
- American Society for Pharmacology and Experimental Therapeutics, Detroit April 10-13 Dr. E. K. M. Geiling 710 N Washington Street Baltimore Secretary
- American Society of Biological Chemistry Detroit April 10-13 Dr. H. A. Mattill State University of Iowa Iowa City Secretary
- Annual Congress on Medical Education and Licensure Chicago, Feb 18-19 Dr. William D. Cutter 535 North Dearborn Street, Chicago, Secretary
- Federation of American Societies for Experimental Biology, Detroit, April 10-13 Dr. H. A. Mattill State University of Iowa Iowa City Secretary
- Pacific Coast Surgical Association Santa Barbara Calif Feb 21-23 Dr. Edgar L. Gilcreest 384 Post Street San Francisco Secretary
- Southeastern Surgical Congress Jacksonville Fla March 11-13 Dr. Benjamin T. Beasley 478 Peachtree Street N.E. Atlanta Ga. Secretary
- Tennessee State Medical Association Nashville April 9-11 Dr. H. H. Shoulders 706 Church Street Nashville Secretary

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below

American J Digestive Diseases and Nutrition, Chicago

I 609 676 (Nov.) 1934

Some Observations on Reciprocal Relationship Between Gastrointestinal and Female Pelvic Disturbances J Friedenwald and S Morrison Baltimore —p 609

Discussion and Appraisal of Some Functional Disturbances of Digestive Tract H F Kramer, Brooklyn —p 614

Comparison of Methods for Quantitative Estimation of Diastase in Duodenal Fluid C R Schmidt H Greengard and A C Ivy Chicago —p 618

Complete Treatment of Pernicious Anemia R L Haden Cleveland —p 638

Treatment of Functional Vomiting C H Drenckhahn and D I Wilbur Rochester Minn —p 635

The Relation of Anemia to Surgical Diseases of the Gallbladder R A Kordenal, Chicago —p 638

I 677 758 (Dec.) 1934

Gastrointestinal Studies V Gastric Juice in Anemias Other Than Pernicious Anemia P J Fouts O M Helmer and L G Zerfas Indianapolis —p 677

*Influence of Mucilaginous Substances on Emptying of the Stomach H Keeheles H I Sapoznik R Arens and J Meyer Chicago —p 684

Studies on Gastric Hunger Mechanism I A Manville and E G Chumard Portland Ore —p 688

Carcinoma of the Colon C W Heald Battle Creek Mich —p 693

Diagnosis and Prognosis in Gastric Ulcer Clinical Study of Five Hundred Consecutive Operatively Demonstrated Cases Notes T Smithies Chicago —p 697

Unusual Right Diaphragmatic Hernia W C Boeck and W C Cook Los Angeles —p 705

Diverticula of Jejunum Review of Literature and Report of Two New Instances J S Levy and A De Groot Little Rock Ark —p 708

Okra as an Adjuvant in Treatment of Peptic Ulcer Observations on Twenty Two Patients A J Atkinson Chicago —p 713

Chemical Phase of Gastric Secretions and Its Regulation B P Babkin Montreal —p 715

Accessible Closed Loops of Small Intestine and Colon G E Burget Portland Ore —p 722

*Bactericidal Power of Stomach and Some Factors Which Influence It A Hansen Chicago —p 725

Convenient Method of Establishing Diet and Insulin Therapy in Diabetes Sister Mary Edwina, Racine Wis —p 728

*Studies in Food Allergy Preliminary Report A W Oelgoetz P A Oelgoetz and Juanita Wittekind Columbus Ohio —p 730

Röntgenographic Differentiation Between Diverticulitis and Cancer of Sigmoid W H Stewart and H E Illick New York —p 738

Influence of Mucilaginous Substances on Emptying of Stomach—Keeheles and his associates tested the effect of hog's mucin, okra, olive oil and agar on the motility of and the digestion in the stomach. Tests were performed on six normal subjects, six patients affected with peptic ulcer and a dog carrying both gastric and duodenal cannulas. While all the test substances decreased the emptying time of the stomach, okra had the greatest effect. At the beginning of digestion, hog's mucin increases and okra decreases gastric motility. After three hours this is reversed and okra diminishes the emptying time by 26 per cent. In the stomach okra does not impair the digestion of meat; it considerably decreases the amount of gastric secretion. The therapeutic significance of these results is discussed.

Bactericidal Power of Stomach—Hansen shows that the bactericidal power of the stomach can be influenced by a number of factors. This property is enhanced by the taking of a meal one hour before the drinking of infected fluids. Meals with a high buffering value help to hold, and slowly give off, acid which serves to kill bacteria ingested one or more hours after the taking of a meal. In order that the bacteria may be killed it is important that the gastric contents develop an acidity as high as or greater than *pu* 2. After drinking contaminated liquids, the taking, within a short interval of time, of another

meal, perhaps well buffered and somewhat alkaline, will tend to wash living bacteria, left behind in the nasopharynx or esophagus by the infected meal, directly into the intestine. It has been found that banana pulp serves as a well buffered meal to hold hydrochloric acid in the stomach. The sterilization of the gastric contents can be influenced by the resistance which some foods show to acidification, that is, the so called acid deficit. The authors' experiments were carried out on seven normal persons and on many patients, most of the latter ambulant, who were affected with minor disturbances, such as hay fever. The bacterium used was *Bacillus prodigiosus*, which was mixed with water or milk with a known buffer value and hydrogen ion concentration. Most of the foods used to influence the sterilizing power of the stomach were fruits.

Studies in Food Allergy—The Oelgoetzes and Wittekind conclude from their study on sensitization to food that: 1 Most of the protein ingested is not split to the stage of amino-acids in the gastro intestinal tract. A large part of the protein is absorbed into the blood as acid or alkali metaprotein and other derived proteins. The gastro-intestinal tract is essentially a receiving and mixing mechanism. Digestion is started in the gastro intestinal tract but is continued and completed in the blood stream. 2 Normally, sufficient pancreatic juice is secreted to combine with all the food eaten and to provide an excess, which passes free (uncombined) into the blood stream, where it acts as a buffer solution, combining with and digesting any food that has been absorbed unmixed with enzymes. 3 Blood serum normally contains free pancreatic enzymes in a definite and constant concentration. These enzymes can be demonstrated by a test that the authors describe. 4 The concentration of pancreatic enzymes in the blood serum of a person on a regular ration, compared with that after taking a "test meal" consisting of quantitatively a greatly increased total ration, appears to be a direct measure of that individual's pancreatic (digestive) function. 5 It is probable that 'hypersensitiveness' to foods is caused by an excess of free food (free of enzymes) in the blood serum, and that this excess is caused by a low pancreatic threshold (hypofunction). 6 In the authors' opinion the state of 'allergy' to foodstuffs can be determined by ascertaining the concentration of free amylase in the serum before and after a test meal. 7 The rational treatment of sensitization to foods lies in the reduction of the total food intake. If the patient can maintain normal weight and adequate buffer enzymes on the reduced ration no other treatment is necessary. If he is unable to do so, it would seem that dry pancreatic enzymes must be administered to make up the shortage.

American J Obstetrics and Gynecology, St. Louis

28 783 942 (Dec.) 1934

Limitations and Dangers of Intra Uterine Application of Radium in Treatment of Carcinoma of Body of Uterus J A Sampson Albany N Y —p 783

Röntgenologic Study of Mechanism of Engagement of Fetal Head W E Caldwell H C Moloy and D A D Esopo New York —p 824

*Present Day Trend in Treatment of Fibroids of Uterus Analysis of Statistics of the Michael Reese Hospital During Past Eleven Years J L Baer, R A Reis and E J DeCosta Chicago —p 842

*Blood Chemistry in Preeclampsia and Eclampsia H J Stander and J F Cadden New York —p 856

Management of Cases of Persistent Active Phase of Adnexoperitonitis W R Cooke Galveston Tex —p 872

Injury of Ureter in Pelvic Surgery P T Brown Phoenix Ariz —p 879

Analysis of Errors Inherent in Pregnancy Tests Based on the Aschheim Zondek Reaction Lesty Davy and E L Sevringhaus Madison Wis —p 888

Successful Treatment of Case of Polyneuritis of Pregnancy P J Fouts, G W Gustafson and L G Zerfas, Indianapolis —p 902

Improved Irrigating Unit L H Biskind Cleveland —p 907

Extract of Thymus in Pregnancy M G DerBrucke Brooklyn —p 912

*Prevention of Impetigo Neonatorum by Use of Bacteriophage Preliminary Report P W Winder Ann Arbor Mich —p 914

Treatment of Fibroids of Uterus—Baer and his associates analyzed the case records of 1,001 patients treated for fibroids of the uterus during the last eleven years. No evidence was found to justify the conclusion that fibroids result from ovarian pathologic changes. Absolute sterility in this series was apparently due to tubal changes and not to the presence of fibroids or ovarian disturbances. Of the 1,001 patients, 73.5 per cent had one or more children and 80.4 per cent either had offspring

or had aborted, leaving an absolute sterility of only 19.6 per cent. Malignant conditions of the pelvis were found in 0.9 per cent, there being five sarcomas in fibroids and four carcinomas of the body of the uterus. The frequency of total hysterectomy shows an increase from 1.4 per cent in 1923 to 14.6 per cent in 1933. Vaginal hysterectomy shows a steady increase from 5.5 per cent to 18.1 per cent. Supravaginal hysterectomy remains the most frequently used treatment for fibroids, 56.2 per cent in 1923 as compared with 57.6 per cent in 1933. Myomectomy has its own group of indications. In the younger age group in which there are one or more children, it is being supplanted by supravaginal hysterectomy, 21.9 per cent in 1923, 7.6 per cent in 1933. The selection of radium as the treatment for fibroids has steadily diminished because of the increasingly long list of direct contraindications, the undesirability of a precipitate menopause, the inability to examine the pelvic and abdominal viscera and an appreciable proportion of failures, 11.1 per cent. Radium was used in 15 per cent of cases in 1923 and in 2.1 per cent in 1933. Partial or complete removal of the adnexa was performed in 47.1 per cent of the patients. Indications for these operations on the adnexa included not only pathologic changes but mechanical reasons and prophylaxis. The total mortality was 0.7 per cent (seven deaths). In the last group of 484 consecutive patients there was one death (0.21 per cent).

Blood Chemistry in Preeclampsia and Eclampsia—Stander and Cadden regard preeclampsia and eclampsia as the same disease. Their frequently repeated blood chemical studies in 108 eclamptic and forty preeclamptic patients showed that the blood chemistry is an indispensable index of the severity of the disease and of specific treatment needed. The nonprotein nitrogen content of the blood in eclampsia and preeclampsia remains within normal limits except in certain instances, late in the disease, when a rise indicates involvement of the kidneys as a result of the eclamptic disease. The blood urea nitrogen remains low, as in normal pregnancy, with the result that the ratio between urea nitrogen and nonprotein nitrogen is about 0.4, as compared with 0.5 in normal nonpregnant persons. The blood uric acid is increased in eclampsia and preeclampsia, indicating, the authors believe, a disturbance in its destruction in the liver. The uric acid content in the blood may be regarded as a fairly safe criterion of the severity of the disease. The blood sugar in eclampsia and preeclampsia is not greatly disturbed. Occasionally a definite hyperglycemia follows an eclamptic convulsion, owing perhaps to muscular activity. The alkali reserve is often decreased greatly, sometimes even to the level of true acidosis. The carbon dioxide combining power is the best and most readily available index of the necessity of antacidosis treatment. The blood chlorides are not decreased markedly except in an occasional patient with marked edema. Blood thioneine values in eclamptic patients are within normal limits. Glutathione is similarly within normal limits, except in patients with low blood hemoglobin readings. The increase in blood uric acid in eclampsia and preeclampsia cannot be accounted for by an increase in thioneine. The hyperglycemia sometimes observed in the convulsive stage of eclampsia appears to be a true hyperglycemia and not due to glutathione or thioneine.

Prevention of Impetigo Neonatorum by Use of Bacteriophage—Winder applied a stock solution of staphylococcus bacteriophage to the skin of the new-born in an effort to prevent impetigo neonatorum. Immediately following delivery and after the usual oil bath the entire surface of the infant's body (including the scalp) is washed with the bacteriophage. The aim is to assure a surface film of bacteriophage covering the entire body. This so-called bacteriophage rub is repeated on the fifth day, following the regular soap and water bath. The bacteriophage solution, being nontoxic and sterile, may be applied more often and probably should be repeated when an epidemic is in progress. Of fifty-six female infants receiving the treatment, no instance of impetigo contagiosa neonatorum has occurred. Of sixty-one male infants not receiving treatment there were twenty-one cases of impetigo contagiosa neonatorum. The use of staphylococcus bacteriophage as a surface wash for new-born infants appears to be a preventive of impetigo neonatorum.

American Journal of Psychiatry, New York

91: 485-724 (Nov.) 1934

- Alzheimer's Disease. Clinicopathologic Study of Five Cases. D. Rothschild. Foxborough, Mass.—p. 485.
- Anamnesis of the Toxic Goiter Patient. Agnes Conrad. New York.—p. 521.
- Neuroses Associated with Gastro-Intestinal Tract. G. E. Daniels. New York.—p. 529.
- Physical Mental Relationships in Illness. Trends in Modern Medicine and Research as Related to Psychiatry. H. F. Dunbar. New York.—p. 541.
- Dynamic Aspects of Cardiovascular Symptomatology. T. P. Wolfe. New York.—p. 563.
- The Briggs Law of Massachusetts. Review and Appraisal. W. Overholser. Boston.—p. 585.
- The Miller Delusion. Comparative Study in Mass Psychology. S. Stone. Concord, N. H.—p. 593.
- Emotional States of General Paresis. P. G. Schube. Boston.—p. 675.
- Crimes of Unintelligible Motivation as Representing an Initial Symptom of Insidiously Developing Schizophrenia. Study of Comparative Effects of Penitentiary Versus Hospital Regimen on Such Cases. A. W. Hackfield. Seattle.—p. 639.
- Suicides and Homicides in Their Relation to Weather Changes. C. A. Mills. Cincinnati.—p. 669.
- The Pyknolepsies. S. E. Jelliffe. New York and J. Notkin. Poughkeepsie, N. Y.—p. 679.
- Criteria for Estimating Value of Psychiatric Service in the Field of Criminology. B. Glueck. New York.—p. 693.

Archives of Internal Medicine, Chicago

54: 831-1022 (Dec.) 1934

- Spider Poisoning. Experimental Study of Effects of Bite of Female Latrodectus Mactans in Man. A. W. Blair. University Ala.—p. 831.
- Life History of Latrodectus Mactans. A. W. Blair. University Ala.—p. 844.
- Pernicious Anemia. Results of Treatment of Neurologic Complications. R. R. Grinker and Ernetine Kandel. Chicago.—p. 851.
- *Characteristics of Synovial Fluid in Various Types of Arthritis. Study of Ninety Cases. C. S. Keefer, W. K. Myers and W. F. Holmes Jr. Boston.—p. 872.
- Calorigenic Action of Single Large Doses of Desiccated Hog Thyroid. Comparison with Action of Thyroxine Given Orally and Intravenously. W. O. Thompson, Phebe K. Thompson, S. G. Taylor III and Lois F. N. Dickie. Chicago.—p. 888.
- *Myasthenia Gravis Associated with Thymoma. Report of Two Cases with Autopsy. J. Brem and H. F. Wechsler. New York.—p. 901.
- Neurogenic Erosions and Perforations of Stomach and Esophagus in Cerebral Lesions. Report of Six Cases. Mabel G. Masten and R. C. Bunts. Madison Wis.—p. 916.
- *Adams Stiles Syndrome with Transient Complete Heart Block of Vagovagal Reflex Origin. Mechanism and Treatment. Soma Weiss and E. B. Ferris Jr. Boston.—p. 931.
- The Heart and Great Vessels in Combined Syphilitic and Rheumatic Infection. J. R. Lisa and Gertrude Jackson Chandlee. New York.—p. 952.
- Some Factors Determining Variability of Skin Temperature. H. Freeman and F. E. Linder. Worcester, Mass.—p. 981.
- Test of Blood Flow to an Extremity. Its Clinical Applications. H. C. Lueth and D. C. Sutton. Chicago.—p. 988.
- Circulatory Dynamics in Myocardial Infarction. A. M. Fishberg, W. M. Hitzig and F. H. King, New York.—p. 997.

Characteristics of Synovial Fluid in Arthritis—Keefer and his co-workers examined 120 samples of synovial fluid from ninety patients with various types of arthritis to determine the diagnostic significance of the various biologic and chemical characteristics of the fluid. 1. The bacteriologic examination of the fluids yielded information of the greatest value in the etiologic diagnosis of arthritis. Inoculation of guinea-pigs with the synovial fluid was helpful in the diagnosis of tuberculous arthritis. 2. The results of the gonococcal complement fixation and Wassermann tests of the blood and synovial fluids were in agreement. Both tests were of distinct aid in the etiologic diagnosis of disease of the joints. 3. The total cell count of the synovial fluid was increased in all the types of arthritis studied. It was highest in the infected fluids and lowest in the cases of Charcot joints and traumatic arthritis. Most noninfected fluids contained less than 40,000 cells per cubic millimeter. 4. When the synovial fluid was infected with micro-organisms the polymorphonuclear cells were greatly increased from 86 to 100 per cent and the lymphocytes, monocytes and clasmatocytes were few in number. In tuberculosis of the joints the polymorphonuclear count varied from 46 to 93 per cent and the lymphocytes and monocytes were increased. 5. The percentages of lymphocytes, clasmatocytes and monocytes were always higher in the noninfected than in the infected fluids. The presence of a low cell count with an increase in the monocytes, lymphocytes and clasmatocytes was an indication of a noninfected fluid. 6. The chemical examination of the fluids yielded no information of diagnostic value in discriminating

between infected and noninfected fluids. The nonprotein nitrogen of both the infected and the noninfected synovial fluids was the same as that of the blood. The sugar content varied with the presence of organisms, the number of cells and the level of the sugar in the blood. A low sugar content did not always mean an infected fluid. The total protein value of the synovial fluid was increased in both groups and indicated only an inflammatory reaction. Aside from the bacteriologic, cytologic and serologic examinations of the synovial fluid, other tests yielded little information of diagnostic value.

Myasthenia Gravis Associated with Thymoma—Because of the degenerative changes found in the suprarenal cortices in their two cases and in others cited in the literature and because of the reciprocal relationship that apparently exists between the suprarenal cortex and the thymus, Brem and Wechsler submit a new theory to explain the occurrence of thymomas in this disease, that the pathologic changes in the thymus are secondary to a degenerative lesion of the suprarenal. They believe this is supported by the following observations. The relationship between lesions of the suprarenal cortices and asthenia, such as occurs in Addison's disease and in chronic suprarenal insufficiency, needs no elaboration but that many such cases exhibit a hyperplasia of the thymus at necropsy is not well known. Following suprarenalectomy in the rabbit and rat, and less frequently in the dog and cat, there occurs a rapid and remarkable regeneration of the thymus, even in old animals. In infants, beginning about the second week of extra-uterine life, there occurs a spontaneous involution of the suprarenal cortex, coincident with a rapid increase in the size of the thymus. Finally, Marine assembled much evidence in support of the contention that status lymphaticus in man is dependent, in part at least, on a deficiency of some internal secretion common to both the suprarenal cortex and the gonads. The cortical extract that has been found to be efficacious in Addison's disease may not be the only hormone secreted, and in analogy to the pituitary syndromes, a derangement of another hormone of the suprarenal may be the causative factor in myasthenia gravis. The significance of thymic hyperplasia and thymomas in myasthenia gravis is still shrouded in mystery, but that some relationship does exist is shown not only by the frequency of their occurrence but by the good results reported in this disease following extirpation and irradiation of the thymus. The cardiac musculature in the authors' two cases exhibited the typical lymphorrhages which have usually been described as being present only in the skeletal muscles. Atrophy of the skeletal muscles was noted in one of the cases.

Adams-Stokes Syndrome with Transient Complete Heart Block—Weiss and Ferris report a case in which for ten years there were attacks of fainting precipitated usually by the swallowing of food. The patient had a traction diverticulum of the esophagus, distention of which with the aid of a rubber balloon promptly induced auriculoventricular dissociation of the heart and syncope. The release of pressure in the balloon was associated with a prompt return of normal sinus rhythm and the disappearance of symptoms. Barium chloride failed not only to influence the severity and the frequency of syncope but also to prevent the development of heart block. Epinephrine and ephedrine in small doses which induced no change in the arterial pressure and only slight elevation in the heart rate, abolished all the symptoms, although pressure on the diverticulum continued to induce complete heart block. Following the administration of epinephrine and ephedrine the onset of idioventricular rhythm, in contrast to the control observations, was associated with remarkably regular rhythm as a result of increased excitability of the ventricles. Atropine in doses that produced only slight depression of the vagal motor endings abolished the symptoms as well as the heart block. Paralysis of either of the vagus sheaths in the neck with procaine hydrochloride also abolished the fainting and the block. The Adams Stokes attack in this case was induced by heart block precipitated by a vagovagal reflex. The source of the reflex was irritation of the sensory endings of the vagi by the diverticulum. The intracardiac mechanism active at the onset and the disappearance of heart block of reflex origin are described. The cardiac output and other aspects of the hemodynamics in a case of complete heart block were studied with the acetylene

and optical methods. Ephedrine failed to induce a significant change in the blood flow. The relative part played by organic cardiac lesions and of neurogenic factors in the precipitation of Adams-Stokes attacks with heart block is discussed, and the simultaneous presence of multiple etiologic factors is stressed. Abnormal hyperactivity of the vagovagal reflex can be associated with a normal state of other reflexes of the same type. In the precipitation of Adams-Stokes attacks, cerebral ischemia due to decreased cardiac output is only one factor, other factors, particularly vasomotor reflexes, are emphasized.

Archives of Pathology, Chicago

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- Plastic Studies in Abnormal Renal Architecture. II Morphology of Abnormal Nephron in Terminal Hemorrhagic Bright's Disease. Jean Oliver and Ann Seaward Luey Brooklyn—p 777
- Ligation of Common Bile Duct in the Rat. Anatomic and Behavioristic Effects. C. P. Richter and J. A. Benjamin Jr. Baltimore—p 817
- *Studies in Atherosclerosis. Chemical Experimental and Morphologic. V Possible Dangers of Iodine Therapy in Atherosclerosis of Aorta Seen from Experimental Standpoint. S. R. Rosenthal, Chicago—p 827
- *Argentaffinomas of Gastro-Intestinal Tract. Benign and Malignant. O. T. Bailey. Boston—p 843
- *Allergic Inflammation of Lungs. Pathogenesis of Lobar Pneumonia. B. M. Fried, New York—p 865
- Effect of Parathyroid Extract on Bones of Hypophysectomized Rat. Histologic Study. H. Selye, H. Mortimer, D. L. Thomson and J. B. Collip. Montreal—p 878
- Dinitrophenol. Studies of Blood, Urine and Tissues of Dogs on Continued Medication and After Acute Fatal Poisoning. M. L. Tainter, W. C. Cutting, D. A. Wood and F. Proeschner, San Francisco—p 881

Iodine in Treatment of Atherosclerosis—Rosenthal states that large physiologic doses of iodine in the form of inorganic potassium iodide or organic iodine bound intramolecularly with protein produced a marked increase of the cholesterol in the blood and liver and a corresponding decrease of the cholesterol in the bile in rabbits fed cholesterol. The hypercholesteremia thus produced was far beyond that of rabbits which had had cholesterol alone added to their diet. When iodine was added later in the course of cholesterol feeding, the cholesterol esters of the blood increased for six weeks. The author suggests that in the rabbits in which the cholesterol metabolism was so markedly disturbed the action of the iodine on a slightly active gland caused a regression of the gland and in doing so liberated an increased amount of the thyroid hormone. The latter stimulated the general metabolism as well as the liver. As the liver excretes only free cholesterol through the bile, there was a corresponding proportional increase of the cholesterol esters of the blood. The aortas of the latter animals presented the most marked lipid deposit, stressing the importance of the cholesterol esters in experimental atherosclerosis. A comparison of the thyroids of the animals fed iodine with those of the animals not fed iodine revealed a resting state of the colloid in the former and a slightly active state in the latter. As the action of iodine in the prevention of deposits of lipid in the aorta of the rabbit fed cholesterol is dependent on increased thyroid activity, its employment in man should be guarded.

Argentaffinomas of Gastro-Intestinal Tract—Bailey describes a series of thirty-one argentaffinomas of the gastro-intestinal tract and presents three cases in detail as representative of the various types of these tumors. The stroma of the argentaffinoma consists of collagen fibers, reticulum, nerve fibers, smooth muscle cells and elastica. A study of the elastic tissue shows it to be abundant in both the benign and the malignant type of argentaffinoma. The metastatic tumor has a stroma composed of collagen, reticulum and elastic fibers. The elastica is derived in part from the adventitia of the small and medium-sized blood vessels in the tumor. The argentaffinoma has the property of stimulating the production of elastic tissue, a characteristic rare among tumors. Intestinal obstruction results from the growth of the tumor in the serosal layer with consequent buckling and distortion of the tunica muscularis. Complete annular tumor growth did not occur. The author presents material to show that the argentaffinoma cannot be regarded as a paraganglioma of the sympathetic nervous system. Clinically, the argentaffinoma in any location except the appendix is characterized by its extremely asymptomatic course—throughout life if the tumor is benign, if malignant, until late in the natural history of the tumor. With location

in the appendix, the symptoms of acute or chronic appendicitis are simulated frequently. This is true whether the tumor is benign or malignant. The extremely slow growth of the tumor of the malignant type encourages radical resection even in the presence of metastases. The tendency of the tumor to grow in cords in the mesentery renders it advisable to resect a segment of mesentery even in the absence of gross invasion. Because of the asymptomatic course of the malignant tumors until late, few have been subjected to early operation. Of those that were, very few have recurred.

Allergic Inflammation of Lungs—Fried observed that, when an antigen is repeatedly injected subcutaneously into an animal its absorbing capacity diminishes with each subsequent injection. Moreover, in these cases the last injection (usually the fifth or sixth) produces an acute exudative inflammation locally, looked on as an anaphylactic phenomenon, it is assumed that it occurs as a result of a combination of antigen and antibodies. In the experiments reported, rabbits were sensitized by repeated intraperitoneal injections of horse serum, the last injection (defined as "shocking") being introduced into the lungs by way of the trachea. A study of the lungs of these animals showed that: 1. The intratracheal ("shocking") injection of the heterologous serum soon produced an acute exudative rapidly spreading inflammation in the lungs. 2. In a high proportion of the animals studied the lesion at its height was confined to one lung having a diffuse lobar distribution. 3. The gross and microscopic aspects of the pulmonary lesion resembled in many ways acute lobar (fibrinous or genuine) pneumonia as seen in man. The nature of the latter disease was analyzed and the hypothesis arrived at was (in accord with the views of earlier observations) that in this malady the character of the lesion in the lung probably depends on a state of local pulmonary hypersensitiveness (allergy hyperergy). The author states that the similarities between the lesions in the lungs in genuine pneumonia in man and those that he observed in the experiments with horse serum (which he regards as "model" infections) favor the foregoing hypothesis.

California and Western Medicine, San Francisco

41 361-432 (Dec.) 1934

- The Common Cold K F Meyer San Francisco—p 361
Rocky Mountain Spotted Fever and Endemic Typhus Fever Observed in California E L Munson San Francisco—p 365
Anesthesia in Surgery of the Chest Dorothy A Wood San Francisco—p 373
Posture in Early Childhood C L Lowman, Los Angeles—p 382
Birthmarks Observations on Treatment C R Caskey Los Angeles—p 385
Ketosis Relation of Pituitary to Sex Differences Therein H J Duell Jr Los Angeles—p 388
Treatment of Low Grade Epidermoid Carcinoma by Means of Radium Needles O N Meland Los Angeles—p 390
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Georgia Medical Association Journal, Atlanta

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- Bilateral Renal and Ureteral Calculi S A Kirkland Atlanta—p 449
Chest Conditions in Infants and Children W W Anderson and D F Cathcart Atlanta—p 456

Indiana State Medical Assn. Journal, Indianapolis

28 156 (Jan 1) 1935

- *Mechanical Factors in Renal Infections D W Mackenzie Montreal—p 1
Silicosis F G Banting Toronto—p 9
Modern Views About Nasal Infection R A Fenton Portland Ore—p 12
Signs and Phases of Cyclopropane Anesthesia F T Romberger Lafayette—p 18
Vaginal Hysterectomy Its History Indications and Complications. R. C. Ottinger Indianapolis—p 20
Recent Advances in Treatment of Pulmonary Tuberculosis. R S Henry Indianapolis—p 25
Decentralization in Medicine. B S Cornell Fort Wayne—p 29

Mechanical Factors in Renal Infections—Mackenzie stresses the fact that any condition of the kidney or ureter which causes urinary stasis must be regarded as a factor in the etiology of infection of the renal pelvis. The obstructing

cause may be within the urinary tract or outside of it. The most common cause of obstruction within the urinary tract is stone. The most likely sites for lodgment of urinary calculi are at the ureteropelvic junction, at the brim of the bony pelvis and at the intramural portion of the ureter as it goes through the wall of the bladder. The obstructing cause may also depend on abnormality of development. Such abnormality may take place anywhere along the urinary canal, but it occurs more particularly in the upper portion where embryologic defects between the pelvis and the kidneys are so often found. Growths and inflammations in the neighboring organs may involve the urinary tract and thereby cause urinary stasis. Since the extensive use of radium in the treatment of malignant disease of the uterus and other pelvic organs, urinary stasis and infection sometimes have occurred from involvement of the lower ureteral segment in the ensuing cicatrization of the surrounding structures. Ureteral and renal pelvic dilatation and stasis have been demonstrated in normal pregnant women. Such dilatation the author believes, is physiologic but nevertheless is a definite invitation to renal infection. Not infrequently it has been found that renal stasis has been caused by an involvement of the ureter anywhere along its course in dense, calcified lymph nodes. By far the most common cause of obstruction in the upper ureter and pelvis is the sagging or ptosed kidney. The author stresses the importance of mechanical agencies in the etiology of renal infections, in nearly 13,000 admissions 36 per cent, or 4,688 cases, were diagnosed as definite renal conditions. Of all these kidney conditions 63 per cent were of the obstructive type—pyelitis, hydronephrosis, pyonephrosis, nephroptosis and nephropotosis with hydronephrosis—conditions the etiology of which lies in the mechanical obstructions or defects. A careful analysis of obstructive renal conditions confirms his early impression that the etiologic factors concerned in the production of such conditions have their incipience in early life. One twelfth of all the admissions were infants, children and adolescents up to 20 years of age.

Journal of Bacteriology, Baltimore

28 541-650 (Dec.) 1934

- Oxidation Reduction Potentials and Ferricyanide Reducing Activities in Peptone Cultures and Suspensions of *Escherichia Coli*. C. E. Clifton J P Cleary and P J Beard Palo Alto Calif—p 541
Oxidation Reduction Potentials and Ferricyanide Reducing Activities in Glucose-Peptone Cultures and Suspensions of *Escherichia Coli*. C. E. Clifton and J P Cleary Palo Alto Calif—p 561
Studies on Certain Physiologic Characters of *Phytomonas Tumefaciens*. *Phytomonas Rhizogenes* and *Bacillus Radiobacter*. Part I H E. Sagen A J Riker and I L Baldwin Madison Wis—p 571
Id. Part II A A Hendrickson I L Baldwin and A J Riker Madison Wis—p 597
Bacterial Variation with Especial Reference to Behavior of Some Mutable Strains of Colon Bacteria in Synthetic Mediums I M Lewis Galveston Texas—p 619

Journal of Biological Chemistry, Baltimore

107: 383-606 (Nov.) 1934

- Further Studies on Availability of Iron in Biologic Materials W C Sherman C A Elvehjem and E B Hart Madison Wis—p 383
Allocation of Free Amino Groups in Proteins and Peptides S Gurn and H T Clarke New York—p 395
Studies on Purine Metabolism III Fate of Guanosine and Adenosine in Dog L R Cerecedo and F W Allen Berkeley Calif—p 421
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Sparing Action of Fat on Vitamin B VI Influence of Levels of Protein and Vitamin G H M Evans S Lepkovsky and Elizabeth A. Murphy Berkeley Calif—p 429
Id. VII Effectiveness of Various Natural Fats in Sparing Vitamin B H M Evans, S Lepkovsky and Elizabeth A. Murphy Berkeley Calif—p 439
Sparing Action of Fat on Vitamin G H M Evans S Lepkovsky and Elizabeth A. Murphy Berkeley Calif—p 443
Feeding Experiments with Mixtures of Highly Purified Amino Acids VI Relation of Phenylalanine and Tyrosine to Growth Madelyn Womack and W C Rose Urbana Ill—p 449
Phospholipid Content and Activity in Muscle W R Bloor and Ruth H Snider Rochester N Y—p 459
Vitamin E II Stability of Concentrates Toward Oxidizing and Reducing Reagents H S Olcott Iowa City—p 471
Oxidation of Metabolites III Mechanism of Oxidation of Fatty Acids in Alkaline Phosphate Hydrogen Peroxide System E J Witzemann Madison Wis—p 475
Arachidonic Acid in Butter Fat A W Bosworth and E W Sisson Columbus, Ohio—p 489

- Comparative Availability of *d*-Histidine and *l*-Histidine for Growth C J Cox Urbana Ill and C P Berg Iowa City —p 497
- Reaction Between a Ketonic Acids and α -Amino Acids R M Herbst and L L Engel New York —p 505
- Note on Preparation of Gonadotropic Extracts of Urine of Pregnancy by Tungstic Acid Precipitation P A Katzman and L A Doisy St Louis —p 513
- Oxidation of Sulphur of Acetyl and Formyl Derivatives of *d*-Cystine and *l*-Cystine in Animal Body V du Vigneaud, H S Loring and H A Craft Washington D C —p 519
- Bombicistrol Note W Bergmann New Haven Conn —p 527
- Walden Inversion XVIII Analysis of Rotatory Dispersion Curves of a Substituted Normal Carboxylic Acids P A Levene and A Rothen New York —p 533
- Rotations of Nitrophenyl Esters of Disubstituted Acetic and Propionic Acids and of Corresponding Free Acids P A Levene A Rothen and G M Meyer New York —p 555
- Studies on Biologic Oxidations III Oxidation Reduction Potential of System Lactate-Enzyme-Pyruvate E S G Barron and A B Hastings Chicago —p 567
- Id IV Mechanism of Catalytic Effect of Reversible Dyes on Cellular Respiration R H DeMelo M Kassin and E S G Barron Chicago —p 579
- Further Studies on Concentration and Chemical Nature of Vitamin G Lela E Booher New York —p 591
- Investigations of Growth Promoting Properties of Vitamin C Concentrates Lela E Booher H M Blodgett and J W Page New York —p 599

Journal of Experimental Medicine, New York

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- Effect of Staphylococcus Aureus Toxin on Kidney W C. Von Glahn and Julia T Weld New York —p 1
- Cortin Protection Against Anaphylactic Shock in Guinea Pigs J Wolfram and R L Zwemer New York —p 9
- Preservation of Typhus Fever Rickettsiae in Cultures Clara Nigg New York —p 17
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- Id XI Chemical Composition of Purified Chicken Tumor Extracts Containing Active Principle A. Claude New York —p 41
- *Demonstration of Tumor Growth Inhibiting Factor from Normal Human Connective Tissue J J Morton and D N Beers Rochester N Y —p 59
- Pressor Substances from Body Fluids of Man in Health and Disease I H Page New York —p 67
- Observations on Depressor Extracts of Human Blood and on Vascular Action of Extracts of Rabbit and Dog Blood I H Page New York —p 97
- Experimental Studies on Encephalitis I Transmission of St Louis and Kansas City Encephalitis to Mice L. T Webster and G L Fite New York —p 103
- I Bartonella Incidence in Splenectomized Bile Fistula Dogs R E Knutti and W B Hawkins Rochester N Y —p 115
- II Hemoglobin and Bile Pigment Overproduction in Splenectomized Bile Fistula Dog R E Knutti W B Hawkins and G H Whipple Rochester, N Y —p 127
- Association of Bartonella Bodies with Induced Anemia in the Dog C P Rhoads and D K Miller New York —p 139

Tumor Growth-Inhibiting Factor in Connective Tissue

—Morton and Beers point out that extracts from fresh normal human connective tissue (rectus sheath) exhibited a decided inhibiting action on grafts of rat tumor 256 transplanted into test animals. There was complete inhibition of tumor growth in 66 per cent of the animals and a marked retardation in the rate of growth in another 15 per cent the tumors in these instances being much smaller than the controls transplanted at the same time. In only one experiment was there failure to obtain a lasting growth-inhibitory effect. The tumors in these animals (19 per cent), although showing an initial retardation in growth, apparently overcame the restraint and at the end of five weeks were larger than the control series. Extracts from fresh normal human muscle tissue, on the other hand, showed no such inhibiting action on grafts of rat tumor 256

Journal of Industrial Hygiene, Baltimore

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- Bronchiogenic Carcinoma Associated with Pneumoconiosis Report of Two Cases M L Allen Philadelphia —p 346
- Carcinoma of Larynx in Pneumoconiosis Report of Cases J H Harris Philadelphia —p 348
- Massive Lesions in Pneumoconiosis Simulating Mediastinal Tumors J H Harris Philadelphia —p 351
- Alcohol Studies II Concentration of Alcohol in Blood M Schmidt Copenhagen Denmark —p 355

Military Surgeon, Washington, D C

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- Recurrent Lymphangitis of Lower Third of Leg Report of Three Cases T J Vokoun Cleveland —p 393

Missouri State Medical Assn Journal, St Louis

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- Dermoid Cysts of the Mesentery J G Montgomery and F S Morest Kansas City —p 456
- Endocrine Diagnosis and Therapy in Gynecologic Conditions C M MacBryde St Louis —p 458
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- Demonstration and Interpretation of Shadows in Urograms O J Wilhelm St Louis —p 465
- Pelvic Malignancy with Ascites and Its Diagnosis Report of Case. E B Robichaux and Y D Craven Excelsior Springs —p 467

Nebraska State Medical Journal, Lincoln

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- Fixed Skeletal Traction in Treatment of Fractures by Use of the Kirschner Wire Technic in Plaster Casts J E M Thomson Lincoln —p 441
- Acne Vulgaris and the General Practitioner D J Wilson, Omaha —p 444
- Larynx and Its Relation to Bronchoscopy and Esophagoscopy J P Rigg Grand Island —p 448
- Methods of Infant Feeding as Used in the New Born Clinic University of Nebraska College of Medicine the Past Three Years C G Weigand Omaha —p 451
- Pseudoparalysis of Childhood J V Reilly Grand Island —p 453
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- Anthrax Septicemia with Treatment by Massive Doses of Antianthrax Serum Case G N Nilsson Bloomfield —p 457
- Massive Strangulation of Intestine Due to Nonadherent Meckel's Diverticulum C H Waters Omaha —p 458
- Tubercular Appendicitis. M Emmert Omaha —p 459

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- Surgical Considerations and Complications in Gallbladder Disease R R Best, Omaha —p 1
- Appendicitis Complicated by Thrombophlebitis of Mesenteric Veins with Abscesses Case Report R J Stearns Omaha —p 6
- Significance of Nervousness in Childhood G W Dishong Omaha —p 7
- Appendicitis in Rural Community C E. Beede David City —p 12.
- Cancer of Female Pelvic Organs Report of One Hundred and Thirty Five Cases from the University of Nebraska College of Medicine E C Sage Omaha —p 16
- Bone and Joint Injuries About the Elbow H F Johnson Omaha. —p 18
- Infantile Eczema W O Colburn Lincoln —p 21
- Diarrheas in Infants A G Dow Omaha. —p 22
- Tuberculosis in Childhood E W Hancock Lincoln —p 25
- Floating Bodies in a Vein M Emmert, Omaha —p 27

Poisoning Due to Shoe Dye—Harry reports four cases of poisoning as a result of contact with shoe dye. He presents a review of the available literature on this subject and gives the general train of symptoms and signs that usually accompany these cases. Symptoms characteristic of the poisons from the solvents used in shoe dyes are headache, dizziness, restlessness, backache, paralysis, convulsions, ringing in the ears, vomiting, dyspnea, weakness, nausea and methemoglobinemia. A constant sign is the intense cyanosis or bluish black discoloration of the skin, mucous membranes and nails. The author's cases were of a mild nature but serve to illustrate the point that in all cases of intense cyanosis poisoning from shoe dyes should not be overlooked.

New England Journal of Medicine, Boston

211 1077-1126 (Dec. 13) 1934

- *Takata-Ara Test in Diagnosis of Liver Disease C W Heath with technical assistance of Elizabeth F King Boston —p 1077
- The Care of the Patient as the Religion of the Physician S Rushmore, Boston —p 1081
- Tumors of Breast D Lewis Baltimore —p 1099
- Friedman's Modification of Aschheim Zondek Test. J N Friberg Manchester N H —p 1089

Takata-Ara Test in Diagnosis of Liver Disease—Heath points out that the Takata-Ara serum reaction is not well known in this country and appears to deserve some recognition, not only as a diagnostic aid but also as an advance in the knowledge of the physiology of the liver. During the past year he has performed the test on the serums of more than 400 cases of all types entering the general hospital wards, par-

ticularly patients who showed evidence of liver disorder. The method used for testing the serum and ascitic fluid has been greatly simplified along the lines indicated by Crane. The author has found the Takata-Ara serum reaction to be positive in 60 per cent of seventy-seven cases of liver cirrhosis and also in certain cases of marked liver damage. It was positive in practically all cases of advanced liver cirrhosis. The reaction was positive in less than 3 per cent of 376 general medical and surgical cases in which there was no definite evidence of liver damage. The reaction is simple to perform and to interpret. It may be regarded at present as a specific liver function test, although it does not run parallel with other liver function tests. In particular it bears no relationship to the degree of jaundice. It is useful in the diagnosis of obscure abdominal conditions in which there is a question of liver cirrhosis or severe damage to the liver. Performed on ascitic fluid, it is of value in determining the presence of cirrhosis.

New Jersey Medical Society Journal, Trenton

31: 613-670 (Nov.) 1934

- Prenatal Care A. W. Bingham East Orange—p. 619
The Surgical Aspects of Pneumonia R. H. Diefenbach, Newark—p. 622
Examination of the Esophagus for Foreign Body Report of Unusual Case E. Reissman Newark—p. 626
Late Occurrence of Stitch Abscess Report of Case C. Hyman Atlantic City—p. 628
Clinical Application of Recent Contributions in Female Endocrinology F. E. Keene and F. L. Payne Philadelphia—p. 629
The Physician and Principles of Organized Medicine E. W. Sprague Newark—p. 634
Physicians and Other Health Agencies T. B. Lee Camden—p. 640
The Future of Medical Practice W. B. Morris Springfield—p. 642

31: 671-726 (Dec.) 1934

- Erythroblastosis of the New Born R. R. White East Orange—p. 677
Clinical Control of Chronic Hemorrhagic States in Childhood I. N. Kugelmass New York—p. 683
Subtotal Versus Total Hysterectomy M. Danzis Newark—p. 695
Uveal Infections R. W. Baseman Asbury Park—p. 700
Generalized Argyria L. J. B. LeBel Nutley—p. 703

New York State Journal of Medicine, New York

34: 993-1046 (Dec. 1) 1934

- Prepared Physicians A. J. Bedell Albany—p. 993
*Experimental Evaluation of Use of Some Vaginal Antiseptics During Labor Preliminary Report R. G. Douglas and Henrietta S. Rhee New York—p. 996
The Pathology of Senile Cataract D. B. Kirby New York—p. 1003
The Present Status of the Female Sex Hormone from Clinical Standpoint R. T. Frank New York—p. 1009
Leukocytes in Skin Diseases R. H. Rulison New York—p. 1013
*Undulant Fever Difficulties in Diagnosis and Treatment Preliminary Report of Fifty One Cases H. J. Harris Westport—p. 1017
Tissue Reactivity to Streptococci and Its Bearing on the Problem of Arthritis C. H. Hitchcock Syracuse—p. 1022

34: 1047-1104 (Dec. 15) 1934

- Treatment of Chronic Intractable Heart Disease by Total Thyroidectomy D. D. Berlin and H. L. Blumgart Boston—p. 1047
Man as a Complete Organism—In Health and Disease G. Draper New York—p. 1052
Vagaries of Appendicitis F. H. Flaherty Syracuse—p. 1064
Organization of the Columbia County Department of Health W. D. Collins Hudson—p. 1067
Relation of Columbia County Department of Health to the Physician F. C. Maxon, Chatham—p. 1069
Modification of the Detroit Plan in Administering Public Health L. Van Hoesen Hudson—p. 1072
High Power and Low Power Roentgenographic Differentiation Between Diverticulitis and Cancer of Sigmoid W. H. Stewart and H. E. Illick New York—p. 1075
Study of Six Hundred and Seventy One Cases of Peptic Ulcer with Especial Emphasis on One Hundred and Fourteen Postoperative Cases R. E. Church and J. W. Hinton New York—p. 1079
Schilling Hologram Its Value to the Surgeon A. M. Dickinson Albany—p. 1085

Use of Vaginal Antiseptics During Labor—In a study of the value of vaginal antiseptics employed during labor, Douglas and Rhee observed that both a 5 per cent solution of mercurochrome and a 1,000 aqueous solution of merthiolate are fairly efficient vaginal antiseptics during the first stage of labor. They decreased the colony counts with marked regularity and in a few instances there was at least complete temporary sterilization of the vagina. Metaphen in oil in the concentration employed is not an efficient vaginal antiseptic during the first stage of labor; the result being approximately the same as in the group of patients who received no instillation. In general the colony counts on poured plates were much higher

when incubated anaerobically than they were when incubated aerobically. In a considerable number of patients each had constant organisms in her series of inoculums in spite of instillations of the more efficient vaginal antiseptics. Carefully controlled experimental data, cultures being incubated under both aerobic and anaerobic conditions, are necessary to determine accurately the value of an antiseptic instilled in the vagina during the first stage of labor.

Undulant Fever—Within a radius of 45 miles, fifty-one patients having *Bacillus abortus* infection have been observed by Harris within eighteen months. Obviously, other cases exist in patients not ill enough to cause them to consult a physician or in those whose symptoms have been wrongly diagnosed when seen. No two of the author's patients had symptoms nearly identical. Among the frequent complaints are chills, sweating, indigestion, flatulence, constipation, nausea, vomiting, nosebleed, joint and muscle lameness, pain in various parts of the abdomen and chest, sore throat, hoarseness, cough, dysuria, loss of weight, anorexia, skin eruptions, palpitation and dyspnea. Little may be found objectively and thus a neurosis may be suggested. Usually the physical signs do not fit in with the tentative diagnosis. The diagnosis was made usually by the blood agglutination test. However, blood agglutination is negative in many instances early in the disease and, in a few cases, even after months or years. Low agglutination titers (1:10, 1:20 or 1:40) are as significant in patients with a clinical picture of undulant fever as is agglutination in dilutions of from 1:80 to 1:2,500. Repeated agglutination tests may be essential. In doubtful cases the skin test is of great value. Skin tests should not be done in patients previously treated with *B. abortus* vaccine, as violent reactions and local skin necrosis may occur. Treatment with *B. abortus* vaccine has been the only method showing real promise in these cases. Early infections appear to yield readily to vaccine therapy. Chronic infections respond slowly. The acutely ill patient does not tolerate any but the smallest amount of vaccine without severe or even violent reaction and, if circumstances warrant delay, should have no vaccine until the remission begins. Long standing cases may require much larger doses than the average full dose of 1 cc. Moderate reactions are apparently desirable, especially in long standing cases in which there may be assumed to be foci of infection in tissues not easily influenced by stimulation of antibodies. Relapse often occurs during treatment or after it has been discontinued and is usually attended by a sharp rise in agglutination titer, which subsequently falls as improvement occurs again. Forty-five patients have been discharged as apparently cured after a minimum of six weeks and a maximum of ten months of treatment and have remained well for periods up to one year. The remaining cases were of long standing before treatment was begun, the history in some indicating from five to ten years of infection and in one probably nineteen years. These patients have all improved markedly under treatment.

Oklahoma State Medical Assn Journal, McAlester

27: 425-466 (Dec.) 1934

- Anorectal Fistulas R. L. Murdoch Oklahoma City—p. 425
What Should Be Our Attitude Toward the Child with Cerebral Birth Palsy? B. H. Nicholson Oklahoma City—p. 430
Cinch Shortening Method for Extra Ocular Muscles H. O. Randel Okmulgee—p. 433
Blue Sclera L. C. Kuyrkendall, McAlester—p. 434
Treatment in Postoperative Ileus G. H. Niemann Ponca City—p. 438
Report of Perianth Bezoars Occurring Around Tulsa Oklahoma H. D. Murdock Tulsa—p. 442

Pennsylvania Medical Journal, Harrisburg

38: 157-232 (Dec.) 1934

- Why Women Die in Childbirth Some Reasons and Remedies F. C. Holden New York—p. 157
Psoriasis P. A. Deckard Harrisburg—p. 160
Treatment of Hemorrhoids Comparison of Operative and Nonoperative Methods M. S. Kleckner Allentown—p. 163
Arthritis of the Spine S. J. Hawley Danville—p. 168
Dinitro Compounds and Weight Reduction E. L. Bortz A. Sindoni Jr. and Ethel May Hobson Philadelphia—p. 170
Rupture of the Kidney T. C. Stellwagen Philadelphia—p. 174
Minor Conditions Affecting Ear, Nose and Throat J. R. Simpson Pittsburgh—p. 178
Significance of Intelligence Quotient B. L. Keyes Philadelphia—p. 182
Preventive Treatment of Goiter in Schools J. M. Quigley Clearfield—p. 185

Public Health Reports, Washington, D C

40: 1415 1452 (Nov 30) 1934

- Experimental Psittacosis in Pocket Gopher V M Hoge—p 1415.
Pathology of Psittacosis in Pocket Gopher R D Lillie and V M Hoge—p 1419
The Constitutional Psychopath as the Warden's Problem H C Hill—p 1423

40: 1453 1494 (Dec 7) 1934

- Further Studies on Growth and Economic Depression Comparison of Weight and Weight Increments of Elementary School Children in 1921 1927 and 1933 1934 C E Palmer—p 1453

40: 1495 1526 (Dec 14) 1934

- *Distribution of Immunity Against Encephalitis Virus of the St Louis Type in the United States as Determined by the Serum Protection Test in White Mice J G Wooley and C Armstrong—p 1495
What Every Person Should Know About Milk L C Frank—p 1505

40: 1527 1556 (Dec 21) 1934

- Job Analysis of Rural Sanitation Officer Brunswick Greenville Health Administration Studies Number Two J O Dorn and J W Mountin—p 1529
Psychiatric Aspects of Job Placement J G Wilson—p 1543

Distribution of Immunity Against Encephalitis Determined by Serum Protection Tests in White Mice—Wooley and Armstrong carried out serum protection tests in mice on 524 human serums collected from forty-nine cities located in twenty-six states and the District of Columbia which gave definite protection in 158, or 30.1 per cent questionable protection in 56 or 10.7 per cent, and no protection in 310, or 59.1 per cent. Serums giving definite protection were collected from thirty-two cities located in twenty-one states and the District of Columbia. Of serums from thirty-nine cases of clinically definite encephalitis from the St Louis epidemic (1933), collected from four to ten months following the attack, thirty-seven, or 94 per cent, showed protection. Among 113 normal controls having no known exposure to encephalitis there were eleven, or 9.4 per cent, whose serums gave protection, while among fifty-six normal controls who had been in contact with cases there were twenty, or 35.7 per cent whose serums showed definite protection. A positive serum protection test is believed to be evidence that the serum donor had been in contact with the virus of encephalitis and had suffered either a clinical or a subclinical type of infection. The authors believe that the serum protection tests that they report indicate that the St Louis (1933) type of encephalitis is immunologically distinct from epidemic encephalitis, poliomyelitis and the post-infectious encephalides.

Rhode Island Medical Journal, Providence

17: 179 194 (Nov 1) 1934

- Report of Delegate from the Rhode Island Medical Society to the American Medical Association G W Wells Providence—p 179
Undulant Fever (Brucellosis Hominis) M L Grover Providence—p 180

17: 195 210 (Dec.) 1934

- Methylene Blue in Cyanide and Carbon Monoxide Poisoning Survey of Literature H B Luke Providence—p 195
Perinatal Vomiting of Pregnancy F S Hale Providence—p 200
Quinidine Sulphate Therapy C B Leech Providence—p 205

Southern Surgeon, Atlanta, Ga

3: 251 330 (Dec.) 1934

- Surgery in Pulmonary Tuberculosis Its Increasing Importance P H Ringer Asheville N C—p 251
Abdominal Disease as Cause of Abdominal Symptoms F K Boland Atlanta Ga—p 262
Vaginal Hysterectomy Its Indications Advantages and Technic S O Black Spartanburg S C—p 271
Tumors of the Breast J F Erdmann New York—p 277
Intracapsular Extraction of Cataracts S C Howell Atlanta Ga—p 290
Value of Bronchoscopy in Diagnosis and Treatment of Lung Suppuration W F Zinn Baltimore—p 294
Developments in Operative and Diagnostic Instrumental Urology J F McCarthy New York—p 303
Appendicitis with Peritonitis Treatment Without Drainage A M Shipley Baltimore—p 308
*Observations on Peptic Ulcer Experiments Indicating Etiologic Importance of Chemical and Mechanical Factors and Their Relationship to Pyloric Dysfunction C B Morton University Va—p 316

Observations on Peptic Ulcer—Morton discusses experiments which seem to suggest that the pylorus plays an important part in controlling the chemical and mechanical factors which are commonly thought to be of importance in the etiology

of peptic ulcer. The results of the experiments, in which a degree of alteration in the normal function of the pylorus has been produced by encircling the pyloric ring with a contractile band of jejunal muscle, seem to indicate that primary pyloric dysfunction may cause chronic inflammatory lesions of the duodenum, probably through a disturbance in the normal acid-alkali relationship and balance at the pylorus. In the dog the lesion is a duodenitis that is almost identical with duodenitis in man. Because of the definite relationship between duodenitis and duodenal ulcer clinically, the probable significance of the results as regards the etiology of peptic ulcer in man is suggestive.

Texas State Journal of Medicine, Fort Worth

30: 487 550 (Dec.) 1934

- *Sporadic Hemophilia, with Especial Reference to Successful Therapy W L Marr and G Herrmann Galveston—p 494
Bronchoscopic Irrigation and Aspiration in Treatment of Lung Abscess L Daily Houston—p 499
Primary Intracranial Neoplasms Report of Thirty Cases W N Powell Galveston—p 505
Tarsectomy in Incomplete Ptosis C S Alexander Houston—p 511
Hay Fever Pollens of West Texas Area E D Sellers Abilene—p 514
Sodium Barbitol and Sodium Phenobarbital Narcosis in Treatment of Acute Psychoses G F Witt and T H Cheavens Dallas—p 517
The Fifth Nerve and Its Reflexes A H Andrews Chicago—p 521
Transvaginal Sterilization H O Smith Marlin—p 525
Public Health Measures in Control of Syphilis C F Lehmann San Antonio—p 529

Sporadic Hemophilia and Its Therapy—Marr and Herrmann cite two sporadic cases of hemophilia. They believe that a reliable and effective treatment, constantly available, consisting of the intramuscular injection of whole blood and blood taken from the patient himself, combines the effect of venesection with that of injected blood. They also believe from the results of the blood studies observed following the injection of whole blood that the decrease in the coagulation time can be explained on the basis of the increased platelet count, and it seems conceivable that these new platelets must be less resistant to disintegration and therefore more likely to promote a quicker coagulation of the blood. Between periods of bleeding to promote general health, to prevent infection and to maintain the clotting element at the highest possible level a high protein, gelatin and high vitamin B diet is indicated. The use of protein sensitization is effective if followed continuously, but care must be exercised not to produce a generalized protein reaction. Good results may be obtained by the use of estrogenic substance in some cases. The causes of sporadic hemophilia are not known, but congenital syphilis is occasionally accompanied by this condition. Other causes may be operative such as the absence of estrogenic substance. This possible etiologic factor remains to be established. In this manner the authors' second patient, conceived at the end of a long family and during the onset of the mother's menopause, seems worthy of comment.

West Virginia Medical Journal, Charleston

31: 1-48 (Jan.) 1935

- Diabetes Mellitus and Its Complications H G Thompson Charleston—p 1
Historical Review of Factors in Specific Therapy T W Murrell Richmond, Va—p 6
Urinary Stasis Its Influence on Chronic Infection of Urinary Tract J U Rohr, Charleston—p 12
Some Physiologic Considerations of Cardiovascular System E J Van Lierc Morgantown—p 14
Community Participation in General Disease Prevention R I Frame Sharples—p 17
Digitalis Its Uses and Dangers D C Ashton Beckley—p 19
Abdominal Pain J W Moore Charleston—p 22

Yale Journal of Biology and Medicine, New Haven

7: 83 190 (Dec.) 1934

- Method for Remote Control of Electric Stimulation of Nervous System E L Chaffee Boston and R U Light New Haven Conn—p 83
Unusual Diaphragmatic Hernia Found in the Course of Dissection of White Male Aged Sixty J Budnitz M Miller and H B Ferris New Haven Conn—p 129
Tissue Reactions in Immunity Some Clinical Implications R L Kahn Ann Arbor Mich—p 133
Anatomic Variations in Fifth Lumbar Vertebra as Factors in Low Back Pain D S O Connor New Haven Conn—p 147
The Shadowed Side of Spallanzani J B Hamilton New Haven Conn—p 151

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

46 457 514 (Nov.) 1934

Cheirpompophlyx A. D. McLachlan and W. H. Brown—p. 457
Id. I. Vuende—p. 479

British Journal of Ophthalmology, London

18 625 672 (Nov.) 1934

Trachoma in the British Colonial Empire Its Relation to Blindness
Existing Means of Relief Means of Prophylaxis A. F. MacCallan—p. 625
Adult Filariæ (Wuchereria) Bancrofti in Anterior Chamber R. E. Wright—p. 646
Catholysis as New Technic for Operative Closure of Holes in Retina
and for Treatment of Its Detachment A. Vogt—p. 650
Hinged Perforated Diaphragms for Trial Frame P. J. Hay—p. 652

Clinical Science, London

1: 225 326 (Nov. 14) 1934

The Alleged Relation of Hyperfunction of the Posterior Lobe of the Hypophysis to Eclampsia and Nephropathy of Pregnancy G. W. Theobald—p. 225
Relation of Hypercholesterolemia to Increased Tolerance for Thyroid Preparations in Nephrosis R. S. Aitken—p. 241
*Effect of Diet of Pure Glucose on Fluid Balance of Body F. B. Byrom—p. 245
*Influence of Diet on Sugar Tolerance of Healthy Men and Its Reference to Certain Extrinsic Factors H. P. Himsworth—p. 251
Relationship Between Total Osmotic Pressures of Plasma and Edema Fluid in Man E. J. Baldes and F. H. Smirk—p. 265
Nature of Myxedema F. B. Byrom—p. 273
*Observations on Effect of Food, Gastric Distention, External Temperature and Repeated Exercise on Angina of Effort with Note on Angina Sine Dolor E. J. Wayne and A. Graybiel—p. 287
*Observations on Angina Pectoris and Intermittent Claudication in Anemia G. W. Pickering and E. J. Wayne—p. 305

Effect of Diet of Dextrose on Fluid Balance of Body—Byrom states that during the last two years a number of diabetic patients have been restricted, for therapeutic reasons to a diet composed of pure dextrose dissolved in distilled water, for periods of from five to ten days. The daily intake of dextrose varied in different cases, between 480 and 600 Gm, administered in equal doses every hour or every two hours throughout the twenty-four hours. Insulin was given simultaneously in sufficient quantity to prevent, in most cases, glycosuria or ketosis. The subjects were for the most part confined to bed and were allowed to drink extra distilled water at will. In some instances the patient was at first restricted to a fixed balanced diet, isocaloric with the dextrose diet, for a preliminary period of several days. This exclusively carbohydrate diet caused invariably an immediate loss of body weight amounting to several pounds. A sudden loss of weight of this degree in the face of an adequate caloric intake of 2,400 calories daily, is likely to be due, substantially, not to destruction of body tissue but to loss of body fluid. It was found that this change was accompanied by a parallel loss of electrolytes (sodium and potassium) from the body in amounts which indicate that the loss of weight is due largely to depletion of the extracellular (water + sodium salts) and intracellular (water + potassium salts) compartments of the body fluid. The extracellular loss of fluid was caused by the sudden curtailment of the intake of sodium. Similarly the intracellular loss may be attributed primarily to potassium restriction. Destruction of protoplasm to yield protein may play a subsidiary part.

Influence of Diet on Sugar Tolerance—Himsworth found that in normal human subjects the diminished dextrose tolerance and impaired sensitivity to insulin observed when the subject is taking a high fat diet do not depend on a change in the pH of the blood to the acid side, and that the improved dextrose tolerance and increased sensitivity to insulin found in subjects receiving a high carbohydrate diet are unassociated with a change in the pH of the blood to the alkaline side. The reaction of the blood was found to be the same on either diet. The production of a compensated alkalosis in a subject on a high fat diet resulted in no improvement either of the impaired sugar tolerance or diminished sensitivity to insulin. The presence of a compensated acidosis had no deleterious effect

on the increased sugar tolerance and insulin sensitivity characteristic of the high carbohydrate regimen. In normal men the presence of a ketosis had no effect on either the dextrose tolerance or the sensitivity to insulin. The administration of raw liver to a subject balanced on a high fat diet produced no change in dextrose tolerance or insulin sensitivity. The daily oral ingestion of 25 Gm of lecithin for a period of one week, to a subject standardized on a high fat diet, caused little or no change in the dextrose tolerance. Ten days after cessation of the lecithin administration a small delayed improvement in tolerance appeared to have occurred, although the subject continued to receive the same high fat diet.

Effect of Food, Gastric Distention, Temperature and Exercise on Angina of Effort—Wayne and Graybiel observed the relationship of pain in cases of angina of effort to the taking of food, gastric distention, external temperature and repeated exercise. They found that an average reduction of 25 per cent in exercise tolerance occurred after a heavy meal in six cases of pure angina of effort. In the same six cases, exercise tolerance was unaffected by inflation of the stomach with air, even when sufficient air was introduced to give epigastric discomfort and to displace the heart. It is concluded that in angina of effort the reduction of exercise tolerance after food is due to the increased energy expenditure of the heart and not to gastric distention. In normal subjects, large amounts of air were introduced into and retained by the stomach. While the stomach was distending, slight changes in pulse and blood pressure occurred, but, when the stomach had adapted itself, no changes in the cardiovascular system could be detected, even though the heart was displaced mechanically. In a case of spontaneous angina in which both food and gastric inflation gave rise to attacks, it was considered likely that distention of the stomach may initiate reflexly an attack in this type of case. Variations in the external temperature did not affect exercise tolerance in six cases of angina of effort. Two types of angina of effort exist, in both, exercise tolerance is constant if sufficient rest is allowed between the end of one attack and the start of the next test. In one type, as this period of rest is reduced, exercise tolerance diminishes gradually, in the other there is a phase which may be as long as an hour, during which exercise tolerance is increased. Diminishing the rate of exercise had in two cases no effect and in four gave a moderate increase in the total amount of exercise performed. In a case in which the symptoms resembled those described under the term "angina sine dolore," investigation showed that the attacks were due to paroxysmal ventricular action brought on only by exercise.

Angina Pectoris and Intermittent Claudication in Anemia—Pickering and Wayne point out that pains clinically indistinguishable from those of intermittent claudication and angina pectoris may occur in any type of severe anemia. Of twenty-five consecutive ambulatory cases of severe anemia, there was pain in the legs in seven and pain in the chest in eight, induced only by exercise and relieved by rest. After cure of the anemia only one patient experienced pain in the legs and two pain in the chest. In nine grossly anemic patients, exercise of the limbs without circulatory arrest produced severe pain having the characteristics of intermittent claudication. After cure of the anemia, similar exercise produced slight or no pain. After a given amount of exercise, the flow of the blood through the active muscles is at least as great in the anemic as in the nonanemic state. The authors suggest that the stimulus which produces the pain of intermittent claudication is an accumulation in the tissue spaces of metabolites removed normally by oxidation. In six severely anemic patients, complaining of sternal pain or tightness on walking, the sensation was reproduced by exercise tests. In four patients the same exercises no longer produced pain or tightness when the blood contained more than 50 per cent of hemoglobin. In two patients the exercise tolerance increased with a rising hemoglobin content of the blood, but pain could still be induced when the blood was normal. The reaction of the rate of the heart and blood pressure to exercise is usually altered in anemia, and such alterations may contribute to the development of anginal pain. The essential factor in the production of anginal pain is a diminished oxygen supply to the working cardiac muscle. The authors' observations support the view that angina pectoris and

intermittent claudication are due to similar mechanisms operating in the cardiac and skeletal muscles. Reasons are given why some, but not all, anemic patients complain of angina or of intermittent claudication. No electrocardiographic changes characteristic of myocardial anoxemia were detected in anemic patients after exercise. In two cases the PR interval was abnormally long in the anemic state and was within normal limits after the anemia was cured.

East African Medical Journal, Nairobi

11: 241 272 (Nov.) 1934

Further Report on Bunyoni Leper Colony, Kigezi for 1933 1934 with Statistics. L. Sharp—p. 245
Glaucoma. R. J. Harley Mason—p. 255

Edinburgh Medical Journal

41: 653 728 (Dec.) 1934

Histologic Study of Normal Mammary in Relation to Tumor Growth I. Early Development to Maturity. E. K. Dawson—p. 653
Fracture of the Femur. Statistical Analysis of Two Hundred and Eighty Five Cases. L. B. Wevill and H. L. Wallace—p. 683

Glasgow Medical Journal

4: 185 224 (Nov.) 1934

Unrevealed Primary Carcinoma of Gallbladder. Report of Case with Unusual Metastases and Review of Literature. D. F. Cappell and G. R. Tudhope—p. 185
Diabetes Mellitus. Broader Basis of Interpretation. A. Glen—p. 194

Indian Medical Gazette, Calcutta

69: 601 660 (Nov.) 1934

Simple Method of Recovering Typical Cultures of Dermatophytes from Pleomorphic Growths. H. W. Acton and N. C. Dey—p. 601
Basal Metabolism of Indians in Health and Disease. Its Clinical Significance. J. P. Bose and U. N. De—p. 604
Further Observations on Treatment of Oriental Sore. J. D. Warma—p. 616
Clinical Observations on Six Hundred and Thirty Six Cases of Cerebrospinal Fever Treated in the Campbell Hospital Calcutta from March 1933 to March 1934. N. C. Kapur, A. N. Sen and B. C. Chatterjee—p. 621
Ethidol in Treatment of Tuberculous Adenitis. H. T. Ince—p. 625
Treatment of Tuberculous Caries of the Spine. T. Seshachalam—p. 626
Carcinoma of Stomach. U. P. Basu—p. 628
Molluscum Contagiosum. Preliminary Note on Treatment. L. M. Ghosh—p. 630

Molluscum Contagiosum.—Accepting the theory that molluscum is conveyed by a filter-passing virus and that the infection is a local one, the virus being confined to the molluscum nodules, Ghosh prepared a vaccine by emulsifying a nodule and killing the virus by formaldehyde. The result of the injection of this vaccine was encouraging, and the result has been uniformly successful in all the cases tried so far. About a fortnight is required for the complete cure, but improvement is noticed after ten days, i. e., after the third or fourth injection. The nodules first shrink, then dry up and drop off by themselves. No relapses have occurred as yet, although six months has elapsed with many cases. The author has not been able to determine whether an autogenous vaccine, prepared from the patient's own nodules, is more beneficial than a stock vaccine prepared from the nodules of other patients. In preparing the vaccine the skin is sterilized with a mixture of equal parts of ether and alcohol, and two or three nodules are cut off with sharp scissors. The nodules are collected in a small sterile test tube previously weighed in a fine balance. About 20 mg. of nodules is required. Freshly prepared sterile physiologic solution of sodium chloride is measured in a sterile test tube in the proportion of 1 cc. per milligram of nodule. The nodules are ground well with sterile pumice stone powder or fine sand in a sterile agate mortar until the emulsion is uniform and no tissue is felt or seen. The sodium chloride solution is added at intervals in small quantities. When the emulsion is completed the remainder of the solution is added. The emulsion is then filtered first through krysolgar and then through an L. 3 Chamberland fine bacterial filter candle. The filtrate is incubated for twenty-four hours and tested for sterility. This forms the stock active emulsion. Of the stock active emulsion, 2 cc. is added to 8 cc. of formalized saline solution again tested for its sterility, and the vaccine is ready for injection. Intra-

dermal injection is given every third or fourth day, beginning with 0.1 or 0.2 cc. and increasing by 0.1 cc. or 0.2 cc. each time, according to the reaction.

Irish Journal of Medical Science, Dublin

No. 107: 591 638 (Nov.) 1934

Anemia Yesterday and Today. F. J. O'Donnell—p. 591
Acute Cholecystitis. S. Pringle—p. 606
Brain Tumors in General Practice. A. A. McConnell—p. 611
Diagnosis of Abscess of the Brain. R. H. Micks—p. 618
Simple Test in Tuberculosis of Kidney. J. McGrath—p. 622
Miners' Nyctagmus. F. O'Sullivan—p. 629

Brain Tumors in General Practice.—To determine what were the first signs that made the physician in charge suspect a tumor of the brain, McConnell has reviewed his case notes. The signs that in his cases have aroused the physician's suspicion of intracranial tumor have been headache of any type especially in the morning, vomiting that did not materially interfere with appetite, epileptiform attacks, ranging from a transient "lapse" to full fledged convulsions, changes in mentality, retardation of growth, failure of vision, "queer feelings" in the limbs, and noises in the ear. Headache, vomiting and papilledema are the three cardinal manifestations of increased intracranial pressure. The patient can tell about the headache and vomiting, but he knows nothing of the choked disk, so that unless those symptoms suggest something to the physician the latter will not examine the optic disks, even if he is able to do so. It must be emphasized that it is papilledema not failing vision, that is the classic sign of increased intracranial pressure. Therefore papilledema must be looked for.

Test in Tuberculosis of Kidney.—McGrath outlines a test for the determination of the relative efficiency of each kidney. It consists of the gravimetric determination of the specific gravity of urine collected from each kidney through ureteral catheters. The test is especially helpful in cases of renal tuberculosis. The urine is centrifuged as soon as it is received. This throws down the formed elements that would cause errors in the determination of the specific gravity and the sediment can be used to examine for pus and for tubercle bacilli. The supernatant urine is then pipetted into the specific gravity bottle. The bottle is stoppered, wiped and weighed. It is then emptied and is weighed again when filled with urine from the other side. It is lastly weighed full of distilled water. The difference in weight is due to the higher specific gravity of the urine. As large a bottle as possible is used, as liability to error is less.

Journal of Laryngology and Otology, London

49: 709 780 (Nov.) 1934

Operative Treatment of Facial Palsy with Observations on Prepared Nerve Graft and on Facial Spasm. C. Ballance—p. 709
Malignant Disease of Larynx and Pharynx (Second Communication). A. Zuppinger and R. Stewart Harrison—p. 720
Lipoma of Larynx. Intrinsic in Origin. H. S. Birkett—p. 733

49: 781-888 (Dec.) 1934

Clinical Observations on Chronic Deafness in Children. J. A. Keen—p. 782
Aspergillosis of the Nose and Maxillary Antrum. A. B. Kelly—p. 821

Lancet, London

2: 1207 1262 (Dec. 1) 1934

Landmark in Modern Neurology. W. Trotter—p. 1207
One Hundred Histamine Test Meals on Normal Students. F. P. Lee Lander and N. F. MacLagan—p. 1210
Surgical Anatomy of Anal Canal with Especial Reference to Anorectal Fistulas. E. T. C. Milligan and C. N. Morgan—p. 1213
Two Cases of Agranulocytic Angina. One Following Administration of Allonal. J. H. Fisher—p. 1217
Agranulocytic Angina. Case Treated with Pentnucleotide. E. J. Smith—p. 1219
The Origin of Cardiac Edema. M. O. Raven—p. 1220

Agranulocytic Angina.—Fisher presents two cases of typical agranulocytic angina that were admitted to the hospital as cases of diphtheria. The first patient was found to have a terminal pneumococcal septicemia. Agranulocytic angina developed in the other patient while in the hospital. Although suffering from diabetes, her condition was good and she was getting up each day. While there she had one tablet of allylisopropylbarbituric amidopyrine daily for seventeen days and 5 grains (0.3 Gm.) of soluble barbitol for two days. Her

symptoms commenced on the seventeenth day, when she was transferred to another hospital. Apart from an occasional tablet of acetylsalicylic acid, she had taken no drugs prior to this. In the first case no drugs of any kind were being taken prior to the onset of symptoms. It therefore belongs to that category of cases in which no etiologic factor can be determined. The author was unable to obtain pentnucleotide in time for treatment, as both patients died fifteen and twenty-three hours, respectively, after admission. Both patients showed a complete absence of polymorphonuclear leukocytes and few myelocytes but numerous myeloblasts. The changes found were similar to those described by Fitz-Hugh and Krumbhaar, who put forward the hypothesis that the myeloid hyperplasia is due to a primary maturation arrest rather than to a 'primary aplasia' and pointed out certain analogies to pernicious anemia. In hemorrhagic purpura the bone marrow may show either megakaryocytic hyperplasia or aplasia. Hubble suggests that there is one variety of agranulocytic angina and one variety of hemorrhagic purpura allied to aplastic anemia, for in all three the formation of blood cells is arrested at the reticulo-endothelial stage by the absence of certain factors. The other varieties are comparable to megaloblastic anemia. In this last there is a circulating anemia in spite of proliferation of the megaloblast hyperplasia of the megakaryocytes with a peripheral thrombocytopenia, and a myeloid hyperplasia with a peripheral agranulocytosis.

Medical Journal of Australia, Sydney

2 597 628 (Nov 10) 1934

*Laboratory and Epidemiologic Investigation of Outbreak of Weil's Disease in Northern Queensland T J P Cotter and W C Sawers—p 597

Allergy in Theory and Practice I Maxwell—p 605

Heat Cramps and Uremic Cramps with Especial Reference to Their Treatment with Sodium Chloride E H Derrick—p 612

2 629 664 (Nov 17) 1934

Spinal Anesthesia G Brown—p 629

Some Problems in Urology J Smith—p 634

Further Observations on the Allantoic Membrane of the Embryo Chick and Its X-Ray Reactions W Moppett—p 640

Weil's Disease in Northern Queensland—Cotter and Sawers present the laboratory and epidemiologic observations of the Ingham epidemic of infectious jaundice. In discussing the problem of prevention they state that the combination in the Ingham district of moist conditions favorable to the existence of leptospirae, the presence of rats in great numbers and an industry that necessitates exposure of the workers raises a problem of great difficulty. The excess of water is intermittent and the nature and area of the country render drainage impracticable. In the Ingham area the rat may be of particular importance, as the flooding of the land is intermittent and but for reinfestation of the water the problem would not be so acute. The conditions in the cane areas are extremely favorable for rats, food and cover being plentiful. The destruction of rats is undoubtedly advisable, but an inspection of the country shows the magnitude and difficulty of the task. The persistence of leptospirae in the urine of human convalescents raises the question of the danger of human carriers, although there is little evidence that human carriers play an important part in the spread of the disease. In the Ingham outbreak there has been no evidence of spread by human carriers. General measures to prevent access of the organism to the mucous membrane of the mouth and to abraded skin are advisable, but the nature of the work of cutting cane and the climatic conditions render satisfactory application difficult. It is probable that persons recovered from the disease possess considerable immunity, and this naturally acquired active immunity may tend to decrease the incidence of the disease in the district. Artificial active immunization has been successfully attained in laboratory animals and with further investigation may prove a possible means of prevention in man.

Chinese Medical Journal, Peiping

48 1017 1100 (Oct.) 1934

Medical Education and the Curriculum at the Peiping Union Medical College F R Dieuaide—p 1017

Study of Noma Complicating Kala Azar in Children P L Fan and Annie V Scott—p 1046

Monilia Vulvovaginitis A Wong and T J Kuratchkan—p 1058

Blood Groups in Fukien Province H E Campbell—p 1066

Gynécologie et Obstétrique, Paris

30 401-496 (Nov) 1934

Kidney Diseases of Pregnancy of Hypertensive Character J Veron and H Pigeaud—p 401

External Hysterography J Leon and J Diradourian—p 415

*Hormone Therapy of Amenorrheas R Tschertok—p 423

Blennorrhagia and Pregnancy Astrinsky and Grinner—p 430

Hormone Therapy of Amenorrheas—Tschertok believes that many of the failures reported in treating amenorrhea by hormone preparations are due to insufficient analysis of the individual character of the amenorrhea. He divides amenorrheas into five groups and discusses the possibilities of hormone treatment for each. In the first group amenorrhea results from changes of the uterine mucosa, the ovaries remaining normal. Here there are no indications for hormone therapy. In the second group amenorrhea results from insufficient ovarian function with normal function of the anterior lobe of the hypophysis. Here hormone therapy must consist in the introduction of the missing ovarian factors. Estrogenic substance is to be recommended; the author obtains good results by the use of the urine of pregnant women in the last months. In the third group amenorrhea results from insufficient functioning of the anterior lobe of the hypophysis. Here alternating injections of anterior pituitary-like principle and estrogenic substance are recommended. The fourth group, which results from an excessive functioning of the follicular apparatus, is wholly unaffected by hormone therapy. In the fifth and final group, amenorrhea is the result of general causes. If hormone therapy is employed, it should be combined with other measures aimed at improving the general condition. Thus, he believes, hormone therapy requires patience and months of observation after each case has been carefully studied and classified, the proper therapy instituted and the dose individualized.

Presse Medicale, Paris

42: 1877 1892 (Nov 21) 1934

Diseases of Sedentary Life M Labbé—p 1877

*Leaving Uterus After Bilateral Salpingo-Ovarectomy H Costantini—p 1878

Leaving the Uterus After Salpingectomy—Costantini deplors the systematic removal of the uterus when it is merely necessary to remove diseased adnexa. He questions the rationale of performing a subtotal hysterectomy because it is easy and leaving the cervix in place when it is that portion of the uterus which is most dangerous. He believes, however, that leaving the uterus in the presence of bilateral salpingitis possesses the following advantages: 1 The pelvic equilibrium is preserved. 2 The menstrual periods reappear in from 30 to 40 per cent. 3 Auto or thoracoplastic ovarian graft becomes possible and raises the percentage of menstrual period restorations to perhaps 70. 4 The functional disorders of the surgical menopause are less frequent and less serious than those following hysterectomy.

42 1997 2012 (Dec. 12) 1934

*New Anti-Infectious Therapy Carbon Intravenously A Touraine and B Menetrel—p 1997

Treatment of Toxicomanias by Emulsion of Vegetable Lipids R Dupouy and M Delaville—p 1998

Treatment of Infections with Intravenous Injections of Carbon—Touraine and Menetrel, after using animal carbon with some success, tried the vegetable carbon, which is not a wood extract. This has a good absorbing power and possesses an electric charge in gamma rays which may be photographed. This carbon calcinated at a high temperature in contact with metallic vapors, was carefully neutralized, ground, pulverized and suspended in a 2 per cent solution of sodium chloride. The action was compared with that of animal carbon on the rabbit and then on man. The activated carbon seems to be better tolerated than the animal carbon. The anti-infectious action was tested in the rabbit without definite results. Some rabbits infected with cultures of staphylococci were more resistant after having received injections of carbon, but definite cures were obtained in only four of twenty cases. In some cases of human suppurative conditions, the results of carbon injections were more favorable. The injections are not painful and produce no early or late inflammatory reactions. The authors believe that the method of treatment is promising.

Prensa Medica Argentina, Buenos Aires

21: 2149 2196 (Nov. 14) 1934

- *Liver Function in Pulmonary Tuberculosis A A Raimondi and W d Amato—p 2149
Pulmonary Murmur in Echinococcosis of Lung J J Beretervide—p 2156
Typhoparatyphoid Agglutination After Oral Immunization R F Vaccarezza L M Martinez Dalke and A J Vaccarezza—p 2160
Endoscopy in Diagnosis of Esophagotracheobronchial Diseases J Mingo—p 2165
Glioma of Retina Case B Just—p 2180

Liver Function in Pulmonary Tuberculosis—Raimondi and d Amato state that hepatic insufficiency is commonly observed in patients having pulmonary tuberculosis. They observed the liver function especially the chologenic function in twenty-two patients four had tuberculosis in evolution thirteen active tuberculosis and five arrested tuberculosis. The four patients of the first group had clinical and functional symptoms of liver insufficiency and slight allergy a cutireaction of one plus in one patient, of two plus in two and of one plus-D in one. In three patients of this group, the hepatic function was diminished. Seven patients of the second group had functional and clinical symptoms of liver insufficiency diminished hepatic function and allergy resembling that in patients having tuberculosis in evolution that is a cutireaction of one plus in two patients two plus in two and one plus-D in three. The remaining six patients in this group did not show symptoms of liver insufficiency. Nevertheless the liver function was partially diminished and they had a better condition of allergy than did those of the subgroup of the same group that is, a cutireaction of one plus in two and of two plus in four patients. The hepatic function of the patients having arrested tuberculosis was better than that in the patients of the previously mentioned groups and the allergy was more intense that is a cutireaction of three plus in all patients of the group. Generally speaking there is a parallelism between the activity of the tuberculous lesion and the involvement of the liver function, which may serve as a prognostic datum. The study of the biligenic function is important in relation to the nutrition of tuberculous patients, since bile favors digestion, and above all the absorption of fats, owing to its zymogenic action on digestive ferments and stimulating action on the secretion of pancreatic juice. Bile also has a stimulating action on the motor functions of the duodenum and rectum, the movements of intestinal villi, the circulation of chyle and intestinal evacuation.

Revista Argentina de Cardiologia, Buenos Aires

1: 267 336 (Sept Oct) 1934

- *Peripheral Sign of Aortic Diseases L Gonzales Sabathie—p 267
*Diagnostic Sign of Total Auriculoventricular Block P Cossio and L Lascalea—p 276
Mean Intraventricular Pressure During Ejection Phase J Duomarco—p 281
Mean Arterial and Mean Intraventricular Pressure J Duomarco and R Piaggio Blanco—p 287

A Sign of Aortic Disease—Gonzales Sabathie says that the verification of blood stasis of the left external jugular vein (either predominant, if bilateral, or exclusive if unilateral) is in most cases a sign of aortic disease. He found the sign in patients suffering from any of the following aortic diseases: (1) arterial hypertension associated with aortic alterations, (2) aortitis, (3) aortic sclerosis and (4) aortic aneurysm. The sign is so noticeable in some cases that it may be observed with the patient dressed and in the standing position. When it cannot be seen in these conditions in patients suspected of being sufferers of aortic disease, it may be clearly noticed during deep expiration when the patient is placed in the dorsal decubitus with uncovered neck and the head turned to the right. Because of the intimate anatomic relations between the left innominate vein and the higher point of the aortic arch, the blood stasis of the external jugular vein may be interpreted as caused by a compression of the former by the latter due to a pathologic lengthening of the aorta. The fact that the presence of the sign coexists, in most cases with an increased venous pressure and a decreased velocity of the circulation in the left side seems to make the pathogenic interpretation of the sign more plausible.

Diagnostic Sign of Complete Auriculoventricular Block.—Cossio and Lascalea describe a sign of diagnostic

value in complete auriculoventricular block. It is an occasional third heart sound occurring early in diastole, immediately after the second sound in such a manner that it may be interpreted as a reduplication of the latter. It is heard by auscultation of the heart region from the left third costal cartilage to the apex. The phonocardiographic and electrocardiographic records, taken simultaneously, show that the third heart sound appears whenever the P wave falls immediately after the T wave of the previous ventricular beat, that is, at the exact moment in which the ventricular rapid inflow phase takes place. The casual summation of the auricular systole and the ventricular inflow is the determining cause of the third heart sound.

Jahrbuch fur Kinderheilkunde, Berlin

143: 321 380 (Dec.) 1934 Partial Index

- *Prodromal Stage of Poliomyelitis and Its Significance for Early Diagnosis and Therapy E Wieland—p 321
*Poliomyelitis. J A Toomey—p 353
Histologic Aspects of Vasomotor Centers in Death from Diphtheria P von Kiss and B Horanyi Hechst—p 363

Prodromal Stage of Poliomyelitis—Wieland asserts that since 1910 poliomyelitis has become more severe. Whereas before that time it attacked almost exclusively small children without prodromal signs and hardly ever was fatal, it is now observed also in older children and in adults, its lethality has increased, and meningitic, neuritic and abortive types are more frequent. However, together with the polymorphic symptomatology there appears also a formerly unknown preparalytic stage, the prodromes of poliomyelitis, which are of two types. The indefinite ones are general or localized conditions of weakness of the musculature. Walking may become faltering, jerking may appear in the arms and legs, indefinite rheumatoid pains may become manifest or the patient may suddenly collapse (like a "pocket knife") but then regain the use of his extremities. The second type of prodromal signs are definite and localized signs of neurogenic irritation and they are generally three in number. Lasègue's sign, the spine sign and rigidity of the neck. Lasègue's sign consists of a painful pressure point at the site where the sciatic nerves emerge from the pelvis, at the ischiadic foramen. The spine sign is a peculiar pain in the back and along the entire spinal cord. The third sign, the rigidity of the neck (meningism), is more noticeable than the others and consequently better known. The author emphasizes that on the early recognition and the correct estimation of the prodromal symptoms depends the early diagnosis and with this the possibility of a specific serotherapy of poliomyelitis. If the three characteristic prodromal signs are absent, which is the case in all abortive or in certain masked cases of poliomyelitis, the suspicion of poliomyelitis may be corroborated by the characteristic aspects of the cerebrospinal fluid. The author thinks that the symptomatic treatment is not made superfluous by modern serotherapy. The fact that fifteen of twenty-one patients with new poliomyelitis showed an intense reddishness of the pharynx and sensitive submaxillary glands, and that only five had a temporary intestinal catarrh, he considers an indication that the pharyngeal organs are the most frequent port of entry for the virus of poliomyelitis.

Poliomyelitis—Toomey agrees with some others on the point that the gastro-intestinal tract is the primary port of entry for the disease. The development of poliomyelitis may be explained, he says, by considering the virus of the disease a facultative toxin for the gray fibers. He made studies on the feces and the serum of patients with poliomyelitis. He discovered a toxic substance in the stool and the urine of patients with poliomyelitis. The spinal cord of animals that had been given injections of emulsions from the excreta of patients with poliomyelitis presented a pathologic picture similar to that in poliomyelitis. That these reactions were specific was proved by the effects of the injection of serum from patients in the acute stage and by serum from convalescents. In further experiments the author aimed at determining whether organisms of the colon or the paratyphoid groups, found in the stools of patients with poliomyelitis, have a toxic effect. He cites other factors that indicate a gastro-intestinal nature for poliomyelitis and further discusses the involvement of the sympathetic nervous system. After reviewing experiments with virus injections and attempts to produce the disease from the gastro-intestinal tract,

he describes a technic which he found effective in the experimental production of poliomyelitis by way of the gastro-intestinal tract. He points out that the anatomic conditions make it appear possible that the spread of the virus takes place along the postganglionic, sympathetic fibers that have no medulla and toward the two unprotected sites in the medulla which have no myelinated connective fibers with the sympathetic system, that is, the cervical and lumbar regions. This would explain why the terminal effects of the disease become manifest in the extremities. The author is of the opinion that the poliomyelitis virus as such is rather harmless and is not the only cause of the disease. He believes that the intestinal organisms likewise play a part in the pathogenesis of poliomyelitis.

Klinische Wochenschrift, Berlin

13: 1737 1776 (Dec 8) 1934 Partial Index

- *Inhibition of Thyroid Activity by Animal Blood H Eitel and A Loeser—p 1742
- Vitamin C Content of Brain and of Cerebrospinal Fluid in Its Dependence on Age F Plaut and M Bulow—p 1744
- Influence of Short Waves on Bacteria H Lippelt and C Heller—p 1745
- Influence of Circulatory Hormone on Resorption of Intracutaneous Sodium Chloride Wheal H Frenkel—p 1749
- *Allergy and Eclampsia R Knepper—p 1751
- Serologic Diagnosis of Cancer with Especial Consideration of Lehmann Facius Cancer Reaction S Nakagawa T Takasugi S Ogawa and J Yoshida—p 1755

Inhibition of Thyroid Activity by Animal Blood—Eitel and Loeser show that animal blood is capable of reducing the action of the thyroid secretion. If guinea-pigs are fed with thyroid and at the same time are given normal blood or serum, the typical decrease in weight does not become evident. Admixture of blood likewise prevents the over hasty development of tadpoles, which is ordinarily induced by the thyroid hormone. Thus it appears justified to resort to blood therapy in the treatment of disorders of the thyroid, which Bier did with success as early as 1901. Blum was able to prove that this action of the blood is not due to the protein bodies but rather to a substance that he designates as thyroid 'catechin'. The observation that the administration of blood reduces the general symptoms (loss of weight, increased metabolic rate, tachycardia, sweating, diarrhea, exophthalmos and so on), which result from an alteration in the thyroid activity, induced the author to investigate whether it influences also the site of production of the hormone, the thyroid. His assumption that this is the case was corroborated by the abolishment of the thyroid stimulating action of the thyrotropic hormone of the anterior lobe of the hypophysis following the injection of animal serum as well as following the oral administration of animal serum. The abolishment of the thyroid activating capacity of the thyrotropic hormone permits an estimation of the antithyroidal action of the market preparations that have been obtained by extraction from the blood.

Allergy and Eclampsia—Knepper was able to demonstrate in animal experiments that the combination of the serum-hyperergy experiment with injections of the hormone of the posterior lobe of the hypophysis produces changes in the organs that are typical for eclampsia. He thinks that these experiments indicate that eclampsia is a combination of the increased production of the hormone of the posterior lobe of the hypophysis with an allergic (hyperergic) reaction of the tissues.

13: 1777 1808 (Dec 15) 1934 Partial Index

- *Ratio of Rest Nitrogen in Blood and in Cerebrospinal Fluid in Healthy Persons and in Patients with Renal Disease. G Straube and E Leitritz—p 1779
- Neurologic Disturbances in Thrombo-Anguitis Obliterans (Buerger) K. H Stauder—p 1784
- Influence of Melanophore Hormone on Dark Adaptation of Human Eye. W Buschke—p 1785
- *Procaine Hydrochloride in Treatment of Adiposis Dolorosa (Dercum's Disease) R Boller—p 1786
- Alcoholism Following Intravenous Injection of Alcohol G Dell Acqua—p 1789

Rest Nitrogen in Blood and in Cerebrospinal Fluid—Straube and Leitritz found that the rest nitrogen in the cerebrospinal fluid reaches nearly the height of the rest nitrogen in the blood serum. The rest nitrogen quotient "serum cerebrospinal fluid" lies between 0.92 and 1.35, the mean being 1.095. This quotient increases in cases of slight increase in the rest nitrogen of the serum if the pressure of the cerebrospinal fluid

is normal, and it decreases if the lumbar pressure is increased. In nephropathies with insufficiency, the ratio between the rest nitrogen in the serum and that in the cerebrospinal fluid is the same, and it may be concluded that the same regularities exist as in other cases.

Procaine Hydrochloride in Treatment of Adiposis Dolorosa—Boller states that he first employed a procaine hydrochloride solution for the treatment of adiposis dolorosa (Dercum's disease) in 1930 and that the result was favorable. He uses a sterile 0.2 or 0.4 per cent solution of procaine hydrochloride to which a 0.4 per cent solution of sodium chloride is added. The solution should always be freshly prepared, for after several weeks it becomes yellowish and loses its efficacy. At the first injection the author administers from 10 to 20 cc., and later he gradually increases the amount to 40 or 60 cc. The injections are given daily or at intervals of several days. The author considers it advisable to make several successive injections into one part of the body and later into other parts. As a rule, after one or two injections the pains subside in the part into which the injections have been made, but they completely disappear only after several portions of the body have been treated. The author recommends the use of a needle from 10 to 12 cm in length. The injections should be made in such a manner that hardened portions in the subcutaneous fat tissues may be reached and infiltrated. Intracutaneous injections are inadvisable. The injections are rather painful, but, since improvement is generally noticeable after two or three injections, the patients usually do not object to further injections. The author reports the histories of several cases and then reviews theories on the pathogenesis of adiposis dolorosa. He thinks that the efficacy of the procaine hydrochloride injections indicates that Dercum's disease is an obesity that is complicated by polyneuritis. The procaine probably counteracts the inflammation of the nerves in the fat tissues, so that the spontaneous as well as the pressure pains disappear.

Medizinische Klinik, Berlin

30 1617 1648 (Dec 7) 1934 Partial Index

- New Problems of Diabetes Mellitus in Their Connection with Pathogenesis of Diabetic Symptoms H Schur—p 1617
- Indications for Surgical and Orthopedic Treatment During Childhood. C Springer—p 1622
- Is Especial Medical Attention Required During Period of Breaking Through of Teeth? Schoedel—p 1625
- *Secondary Effects of Amidopyrine. H Lotze—p 1628
- *When Is Roentgenoscopy Necessary in Obstetrics? K Heyrowsky—p 1630
- Tremors of Eyes in Miners M Bartels—p 1632

Secondary Effects of Amidopyrine—Lotze studied cases of acute and chronic polyarthritis, which had been treated with amidopyrine, for the appearance of undesirable secondary manifestations. He observed five cases in which amidopyrine caused inhibition of diuresis and impairment of the excreting renal tissues. These changes proved reversible. He observed one patient, in whom a lethal amidopyrine intoxication developed with signs of general intoxication and of impairment of the central nervous system. He thinks that in this case especially predisposing factors were responsible for the unfavorable action of amidopyrine. He believes that the occasional appearance of more or less severe intoxications in the course of prolonged treatment with comparatively large doses is no reason to dispense with the use of a medicament as effective as amidopyrine in the treatment of polyarthritis.

When Is Roentgenoscopy Necessary in Obstetrics?—Heyrowsky says that roentgenoscopy should be resorted to only in those pregnant or parturient women in whom an obstetric complication is to be feared or has already developed, and in whom clinical examination does not entirely clarify the condition. He thinks that anomalies of the pelvis represent the largest number of cases in which roentgenoscopy is necessary. He admits that anomalies of the pelvis may be detected by vaginal examination, but he thinks that it is not advisable so far as the estimation of the measurements of the pelvis is to decide whether spontaneous delivery is possible or a cesarean section is necessary, and, if the latter is the case, a vaginal examination is undesirable, even if it is done under aseptic conditions. This point of view must be taken not only at the onset of the delivery but also during the last few weeks of pregnancy, for an investigation of the statistics on the mortality and the

morbidity of the cesarean operations in cases with and without vaginal examinations bears this out. Thus it is the safety of the mother that makes roentgenologic examination of the pelvis preferable to vaginal examination. The author points out that in positional anomalies of the fetal head a general surveying roentgenoscopy should be made as well as a lateral exposure. The general roentgenoscopy alone is sufficient for the determination of the position of the fetus and for the diagnosis of plural fetuses, of a monster or of the death of the fetus. The presence of several fetuses can usually be determined by palpation, but, if this is impossible, roentgenoscopy should be done. Pelvic presentation can always be detected by clinical examination, and it is unnecessary to incur the expense of a roentgenoscopy. The author rejects roentgenoscopy for the purpose of measuring the fetal head. He emphasizes that roentgenoscopy should be the last resort in obstetric diagnosis and says that it is possible to make two obstetric roentgenograms without having to fear the least damage to the fetus.

30 1649 1680 (Dec. 14) 1934 Partial Index

- Causes of Elicitation of Delivery. H. Knaus—p. 1649
Roentgenologic Serial Examinations on Influence of Various Antacids. A. Beutel and P. Mahler—p. 1656
*Syphilis and Tuberculosis. Clinical Experiences in Sixty Six Cases. F. Ernst—p. 1657
Hemistatany in Uremia. A. Landsiedl—p. 1659
*New Method of Short Wave Therapy. J. Kowarschik—p. 1661
*Weltmann's Coagulation Band in Syphilis. Grete Sicher and A. Wiedmann—p. 1664

Syphilis and Tuberculosis.—Ernst made his observations on sixty-six patients who had syphilis and tuberculosis. They were detected among 6,000 patients with pulmonary tuberculosis. This number includes only those who had a positive syphilis reaction and not those who stated that they had a former syphilitic infection but now gave negative reactions. The infection with syphilis antedated the manifestation of tuberculosis in most cases by several years, the opposite occurring in only four cases. A direct unfavorable influence on the tuberculous or the syphilitic process was observed in none of the cases. The author emphasizes that the serologic examination for the presence of syphilis cannot be dispensed with in institutes for tuberculous patients, for about half of the patients state at first that they do not have the syphilitic infection. However, he thinks that the Wassermann test may be omitted and that it is sufficient to use one of the flocculation tests. The course of syphilis is usually mild in tuberculous patients. Pulmonary tuberculosis appears almost exclusively in the form of tertiary phthisis that progresses in the apicocaudal direction. As regards the life expectancy of the patients with open tuberculosis, there is no noticeable difference in patients with or without syphilis. The healing tendency is considerably less in patients with syphilis than in those without (66 per cent compared to 30 per cent). Antisyphilitic treatment often improves the therapeutic results.

Method of Short Wave Therapy.—Kowarschik points out that the short waves are used almost exclusively in the condenser or the electrical field, in which case the electrodes are separated either by an air distance or by a solid isolator such as rubber. It is suggested that the magnetic or, expressed more specifically, the electromagnetic field, be employed. The treatment in the electromagnetic field is not new as d'Arsonval introduced it under the term of autoconduction four decades ago. He suggested that the entire body, or portions of it, should be brought into wire spools (the so-called solenoids) through which high frequency currents pass. Inside of such spools there exists a magnetic field, the field lines of which run approximately parallel to the axis of the spool. This field produces induction currents in conductors placed in the spool. The author decided to take up once more the idea of d'Arsonval and to try to employ the short wave therapy in the electromagnetic field. He hoped that with a frequency 100 times as great as that which was used by d'Arsonval it would be possible to produce more convincing biologic and therapeutic actions. He describes experiments conducted in trying to devise a satisfactory instrumentarium, reports tests on the heating of stratified material plants and animals and finally describes the therapeutic application. The treatment in the spool field is not meant to be an improvement of the condenser method and does not detract from this method. Such disorders as furuncles of the face or lips disturbances of the sinuses, abscesses of the sweat glands

of the axilla and mastitis will still be treated in the condenser field. However, disorders like osteomyelitis, which involve parts of the extremities, or disorders of the different joints of the extremities, can be treated more effectively with the solenoid.

Weltmann's Coagulation Band in Syphilis.—Sicher and Wiedmann demonstrate that syphilis is one of those disorders which cause the coagulation band to deviate to the right. To explain this manifestation, they call attention to the productive character of the syphilitic process and compare it with tuberculosis. The deviation of the coagulation band to the right is entirely independent of the Wassermann reaction but it is observed more frequently in cases in which the Wassermann reaction is positive. A widening of the coagulation band (deviation to the right) is not a regular occurrence in patients with new infections, but in patients in whom the process is in the true primary stage a deviation to the right is observable. The authors emphasize that they do not wish to detract from the value of the lipid reactions or to replace them. They believe however, that by further systematic observations on the coagulation capacity of the serum they might be able to learn something new about the nature of the syphilitic process and eventually supplement the results of the lipid reactions.

30:1681 1716 (Dec. 21) 1934 Partial Index

- Bacillema in Eye Diseases. E. von Hippel—p. 1681
Clinical Aspects and Therapy of Allergic Diseases of Gastro-Intestinal Tract and of Biliary Passages. E. Urbach—p. 1683
*Prognosis and Treatment of Secondary Amenorrhea. E. W. Winter—p. 1694
New Method of Short Wave Treatment. J. Kowarschik—p. 1698

Prognosis and Treatment of Secondary Amenorrhea.—Winter mentions that secondary amenorrhea is that type in which up to a certain time the menstruation has been normal. He stresses the importance of a thorough general examination and discusses two cases that were treated for about two months. The result of hormone treatment was not encouraging in these cases. In the first woman the administration of more than 80,000 mouse units of estrus-inducing hormone produced a menstruation of two days' duration, but the systematic administration of estrus-inducing and corpus luteum hormone did not result in menstruation. In the second patient more than 100,000 mouse units of estrus-inducing hormone effected no menstrual bleeding, but the combination of hormones induced two regular menstruations. He thinks that in mild cases without atrophy of the uterus in which the amenorrhea has not existed a year Kaufmann's systematic treatment with estrus-inducing and corpus luteum hormones may be tried. In the more advanced cases, he advises beginning with the hormone of the anterior hypophysis and continuing with estrogenic preparations, giving daily from 300 to 400 units, partly by injection and partly by mouth. He thinks that in these cases a trial might be made with serum from pregnant women, and if, under the influence of this treatment, the function of the genitalia seems to improve (greater turgescence of uterus and vagina), the estrogenic preparations may be followed by the administration of corpus luteum. After menstruation has set in, the hormone therapy should be continued with small or medium-sized doses. The hormone treatment should be supported by general measures, by diathermy, by balneologic treatment and by providing sufficient amounts of vitamins, particularly vitamin E.

Münchener medizinische Wochenschrift, Munich

81 1917 1958 (Dec. 13) 1934 Partial Index

- *Surgical Prognosis in Obese and in Lean Patients. E. Seifert—p. 1917
Operations on Brain and General Surgery with Consideration of Anatomy and Physiology of Cerebrospinal Fluid System. F. Schöcher—p. 1924
Diagnosis of Tumors of Retroperitoneal Space. H. Durst—p. 1930
Thoughts of Practitioner on Pathogenesis of Rheumatic Disease. F. Worthmann—p. 1932
Unsuccessful Vaccination with Carcinoma Cell Juice. G. Blumck—p. 1933
Anesthesia in Orthopedic Interventions on Children. H. Mündtrath—p. 1934
*Endocrine System in Its Relation to Chronic Rheumatism and Chronic Articular Disorders with Consideration of Therapy. H. Sauerwald—p. 1935

Surgical Prognosis in Obese and Lean Patients.—Seifert investigated the histories of patients undergoing abdominal operations. In diagrams he shows that the surgical mortality of the obese persons exceeds that of lean persons.

in operations for appendicitis, cholecystitis, ventricular ulcer and ventricular carcinoma. He analyzes the causes that lead to the fatal outcome. These diagrams show that the lean person who dies following an operation on account of an abdominal disorder generally succumbs to the disease as such or to a complication arising from the intervention (peritonitis). The death of the obese person, however, results primarily from factors determined by his obesity, the failure of the circulatory apparatus playing the most important part. The author shows further that the obese person is at a disadvantage if he survives the operation, for disturbances in the postoperative course are more frequent in obese than in lean patients. The following postoperative complications are more frequent in obese patients: suppuration of the surgical wound, bronchitis, thrombosis and infarct, pneumonia and collapse.

Relations of Endocrine System to Articular Disorders.—Sauerwald points out that a connection between the endocrine system and rheumatic and articular disorders was demonstrated by Unger more than two decades ago but that the complicated interrelations did not become sufficiently clear until Abderhalden introduced interferometry into the diagnosis of chronic articular disorders. He shows a normal curve obtained by interferometric tests on the endocrine functions, and also curves obtained on women with endocrine and articular disturbances. The latter curves indicate various endocrine disorders, but there seems to be always a predominance of the ovarian disturbance. He treated cases of rheumatic and articular diseases in women with endocrine particularly ovarian, disturbances, successfully by administration of estrus-inducing hormone. During the first eight or ten days, the patients are given daily 100 mouse units and after that every second day the same quantity. The hormone is given in the morning, on the fasting stomach. The symptoms usually become exacerbated during the first eight or ten days, but, if after that the dosage is reduced, they disappear rapidly. The short period of irritation indicates that the hormone preparation is effective. Frequently the administration of the estrus-inducing hormone improves not only the articular disturbances but also the general condition. The author considers it advisable to continue the administration of the hormone after clinical cure and to repeat it for several weeks about twice a year.

Vestnik Khirurgn, Leningrad

34 1386 (No 100) 1934 Partial Index

Observations on Operative Treatment of Perforated Gastric Ulcers
N N Malinovsky—p 48

Intestinal Spasm as Causative Factor of Chronic Vicious Circle A. A Segal—p 56

Removal of the Appendix Without Burying of the Stump M G Kamenchik—p 66

Appendectomy Without Peritonization of Stump A. A Nemilov and N I Filimonov—p 73

*Myxoglobulosis Appendicis. G G Karavanov—p 78

*Immediate and Late Results of Lumbar Sympathectomy in Treatment of Spontaneous Gangrene A N Filatov—p 130

Myxoglobulosis of Appendix.—According to Karavanov, the condition is characterized by distention of the lumen of the appendix by a mass consisting of granules and having the appearance of boiled sago. The pathologic picture of this condition, also known as pseudomyxoma of the appendix, is characterized by obliteration of the proximal portion of the appendix, cystlike enlargement, and a mucous colloidal content. This content is usually sterile and its chemical character is that of a pseudomucin. He reports a case and reviews forty-two cases collected from the literature. The globules found in the colloid consist of albuminous substances and of pseudomucin. Histologic studies point to a chronic inflammatory process with atrophy of the glands of the mucosa in the distal portion. The etiology of the sago-like bodies is one of retention of secreted mucus in the excretory ducts of the glands of the mucosa. The occluded ducts cause the accumulation of the mucus. Eventually the occluded duct ruptures and the rounded mass of mucus is extruded into the lumen of the appendix. The course of the disease is that of a chronic appendicitis. It has been discovered accidentally in the course of operations for some other condition than appendicitis, and at necropsies. Myxoglobulosis of the appendix is a rare form of pseudomyxoma of the appendix. The rupture of such a cystic dilatation may lead to formation of pseudomyxoma of the peritoneum.

Lumbar Sympathectomy in Treatment of Spontaneous Gangrene.—Filatov reports the results of lumbar sympathectomy in thirty-four cases of spontaneous gangrene of the lower extremities. An excellent immediate result was obtained in seventeen, a satisfactory result in eleven and no result in five, there was one death due to the infection of the operative wound and general sepsis. Of fourteen cases followed for not less than one year and as long as six years, an excellent result was obtained in nine and a satisfactory result in two. In the remaining three cases there was a return of morbid manifestations after six months, two years and three years, respectively. The author had collected 294 reported cases up to 1929 which, with his own and those of his chief, make up a total of 379 cases. A satisfactory immediate result was obtained in 80 per cent of this total. In a large proportion of the cases the result was permanent. The author considers lumbar sympathectomy a well founded procedure in cases of spontaneous gangrene of the lower extremities. Its effect is to remove the vasomotor disturbances and to improve the collateral circulation. The author stresses the importance of a faultless technic. To secure success, complete sectioning of all sympathetic fibers is necessary. The success of the procedure depends on careful selection of cases. Sympathectomy is a rational procedure in the presence of vasomotor disturbances and in the absence of diffuse thrombosis. The effect of injection of a nonspecific protein serves as a most accurate indication. The author prefers typhoid vaccine. The effects to be observed after the injection of the nonspecific protein are (1) the vasomotor index, (2) the return of pulsation or improvement in pulsation and (3) the improvement in the subjective symptoms. The vasomotor index is arrived at by comparing the rise in the local skin temperature of the involved extremity and the rise in the general body temperature. If it is more than 2 degrees, a good result may be expected.

Ugeskrift for Læger, Copenhagen

96 1365 1394 (Dec 13) 1934

Simple Bed Apparatus for Exercises in Movement (Active and Passive)
H Wulff—p 1365

*Iron Therapy in Pernicious Anemia E. Mogensen—p. 1368.

*Intermittent Myeloblastosis A. Nyfeldt—p 1372

*Aleukemic Lymphatic Leukosis O Knudsen—p 1374

Use of Iron in Treatment of Pernicious Anemia.—Four cases of pernicious anemia are reported in which remission after liver or stomach treatment ceased at a certain early stage and continued only after the institution of treatment with iron. Iron therapy produced a rise in both the erythrocyte count and the hemoglobin percentage. Mogensen says that this combined deficiency disease, pernicious anemia with iron deficit, is certainly more common than is usually supposed. There were no complications as a possible cause of the iron deficiency, it may be due to the demand on the iron reserves of the organism during the forced blood platelet production in the introductory remission. The possibility of a combination of pernicious anemia with simple achylic anemia is discussed.

Intermittent Myeloblastosis.—In Nyfeldt's patient, a girl aged 16, suffering from anemia, examination of the blood gave a subnormal leukocyte count with otherwise all signs of pronounced irritation of the bone marrow, and marked anemia. Treatment with liver and iron resulted in complete return to a normal blood picture, except for a slight oligochromemia. After some months, symptoms of anemia again developed and on readmission the diagnosis of myeloblastic leukemia was certain, death followed in two weeks. The author finds no analogous cases in the literature but describes a similar instance seen in experimentation with chicken myeloblastosis.

Aleukemic Lymphatic Leukosis.—Knudsen says that this case, in a girl aged 3, was interpreted as hemorrhagic leukemia (Frank) with apparent recovery (Ugesk f Læger 96 164 [Feb 8] 1934). Four months after discharge, the patient was readmitted. The picture gradually became more like a lymphatic leukemia and was fatal after five weeks. Necropsy confirmed the clinical diagnosis of lymphatic leukemia. Attention is called to the complete restitution between the two attacks, to the exceedingly low number of white blood corpuscles on the first admission, and to the almost complete absence of enlargement of lymph glands and spleen.

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MODIFIED "COUTARD" ROENTGEN THERAPY

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Roentgen rays have been used in the treatment of malignant tumors for thirty-four years, but the general acceptance of technics delivering efficient dosages has been a very slow process. Pusey¹ reported cases of proved carcinoma of the lip treated successfully with many times an erythema dose twenty-seven years ago, but most dermatologists are still unwilling to use such effective therapy through fear of injury to normal tissues. Experienced radiologists discovered long ago that the actual cure of carcinoma requires the administration of from 5 to 10 erythema doses of γ -rays, and even more in some instances. However the first well presented proof of this fact was brought forward by Martin and Quimby² in 1930, when they showed that the actual cure of adult squamous cell carcinoma requires from 7 to 10 erythema doses.

When considered in retrospect it now seems odd that the German so-called massive dose or carcinoma dose plan should have been so generally accepted when it was presented just after the World War along with other new ideas, such as increased depth doses, back scattering and shorter wavelengths. The new technic was designed to deliver from 100 to 120 per cent of an erythema dose to all parts of the malignant tumor as an effective procedure in spite of the fact that complete clinical cures had not been previously observed with such dosages. Although clinical improvement occurred, permanent results were most disappointing.

Since it had been our practice to use from 5 to 12 erythema doses as an effective treatment for squamous cell carcinoma of the skin for more than ten years, we naturally viewed the new "carcinoma dose" with some misgiving and used it in high voltage roentgen therapy with the hope that the shorter wavelengths might possess some unknown properties that would compensate for the reduced dosage. Such did not prove to be the case in our experience, and we began to cast about for a more effective technic. In 1925 Pfahler proposed his saturation method before the International Congress of Radiology in London. At that meeting he said "Very few radiologists at present

believe that every carcinoma cell can be killed by a single massive dose." He adopted the theory for the rate of decay of radiation effect in the tissues proposed by Kingery.³ So far as we have been able to ascertain, this theory was based on no actual clinical evidence. According to Pfahler's plan an erythema dose was rapidly built up in a few days and small doses were then given at short intervals the technic being so arranged that each small dose theoretically restored the level needed to produce an erythema. This plan utilized a much larger total amount of radiation than the old massive dose procedure, and it was therefore more effective. However, reference to figure 1 shows that when this technic has been carried out for a month only a little more than $2\frac{1}{2}$ erythema doses have been delivered, even when no decay is allowed for. Since most carcinomas require higher dosages than this, some more strenuous plan is desirable.

High voltage therapy is used principally in treating tumors situated beneath normal structures, and investigators have made many attempts to increase the tumor dose without materially increasing the effect on the normal tissues, in other words they have tried to increase the selective action of the rays. In America this activity has been directed for the most part toward the production of huge tubes and machines operating at higher voltages and producing much shorter wavelengths. So far the improved efficiency has not seemed to justify the large financial outlay involved. In Europe, investigators have been more interested in changes in intensity (roentgens per minute) and in the time consumed in administering radiation. Results possessing great promise have been obtained from these studies.

The experiments of Regaud and Ferroux⁴ formed the foundation for this work. It was first shown that a dose of filtered γ -rays large enough to sterilize a rabbit's testicle completely would produce marked necrosis in the overlying skin when it was all given at one time. However when the dose was given in five equal fractions over a period of from thirteen to seventeen days, sterilization through destruction of the cells in the testicle still took place but the skin showed no irreparable injury. These observations indicate that the total effect on the more embryonic cells was not materially changed by the fractionization of the dose, whereas the damage in the superficial normal tissues was much less than one would be led to expect from Kingery's theoretical curves.

Read before the Section on Radiology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.
1. Pusey, W. A. *The Principles and Practice of Dermatology*. New York, D. Appleton & Co., 1907.
2. Martin, H. E. and Quimby, E. H. Calculations of Tissue Dosage in Radiation Therapy. *Am J Roentgenol* 23:173-196 (Feb) 1930.

3. Kingery, L. B. Saturation in Roentgen Therapy. Its Estimation and Maintenance. A Preliminary Report, *Arch Dermat. & Syph* 1:423-433 (April) 1920.

4. Regaud, C. and Ferroux, R. On the Diverse Reactions of the Tissues Treated by Roentgen Rays in Relation to the Time Factor and on the Relativity of the Biologic Dosimetry in Roentgen Therapy of Malignant Tumors. *Ztschr f Krebsforsch* 32:10-26 1930.

The possibilities accruing from the practical application of such observations are at once apparent. In 1920 Coutard⁵ began to treat patients with malignant conditions of the pharynx and larynx with huge doses divided into many fractions and administered over a period of several weeks. He used excessive filtration to reduce the intensity, but the voltage was not increased above the usual range. After making many changes he finally adopted a technic utilizing 190 kilovolts, 2 mm of zinc filter, 5 milliamperes of current, and a target skin distance of 50 cm. With these settings he found that one skin area could be given 5,000 roentgens (about 8 erythema doses) without the production of irreparable skin damage, when it was divided into ten equal parts given in ten successive days. It is true that the superficial layers of the skin were removed by this procedure but the reaction

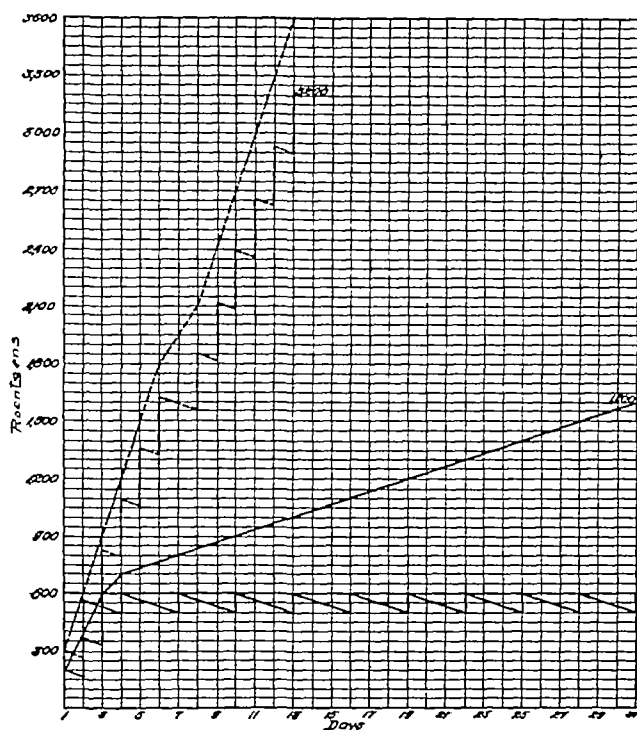


Fig. 1—Curves illustrating the cumulative effect of fractional doses. The solid lines represent a saturation plan and the broken lines the Coutard plan. In each instance the upper curve represents the total dosage whereas the lower broken line is calculated in accordance with the theoretical curves of Kingery.

was relatively painless and healing occurred in a few weeks, the tissues being left soft and pliable and apparently not seriously damaged. When the treatment was applied to the side of the neck, the mucous membranes showed a severe reaction and formed a superficial membranous exudate, but healing was fairly rapid and no sequelae remained during long periods of observation. From his experience Coutard found that a dose of 3,500 roentgens delivered to squamous cell carcinomas of the larynx and pharynx was sufficient to produce a complete regression, which was permanent in many instances. Kingery's theory was disregarded, the tumor dose being figured without any allowance for decay of the radiation effect between treatments. The skin reactions could be reduced somewhat by giving part of the exposure from each side of the neck and calculating depth doses by the accepted methods.

5 Coutard H. Roentgen Therapy of Epitheliomas of the Tonsillar Region, Hypopharynx and Larynx from 1920 to 1926. *Am J Roentgenol* 2: 313-331 (Sept.) 1932.

Between 1920 and 1926, Coutard treated a group of 212 cases, many of which were inoperable. Despite the fact that the technic was being constantly changed and improved during this period, 20 per cent of the group remained symptom free at the end of five years. This is indeed a creditable showing.

In Germany the method is rapidly gaining favor. Kahlstorf⁶ has verified the reduction in skin effect resulting from fractionization of large doses, using rabbits as experimental animals. Schwarz⁷ attributes the increased selectivity to the low intensity and advises that it be lowered even further. Juul⁸ has shown that fractionization definitely increases the selective action of rays on animal tumor implants. Holthusen⁹ believes that fractional dosage and an increased time factor are much more important in increasing selective effects than is a reduction in wavelength. Reisner¹⁰ has begun what should be a most valuable line of investigation in that he is studying the effects of various elapsed time intervals between treatments on the total dosage. Schroder¹¹ and Gunsett¹² report favorable results in the treatment of carcinoma of the cervix with the Coutard method. Zuppinger¹³ has used it to produce marked improvement in patients suffering from cancer of the sinuses, cheek tonsil, tongue, vocal cords, larynx and parotid, as well as resistant cases of lymphosarcoma.

The chief objection to the Coutard technic is the amount of time involved in its administration. According to the original plan, treatment was given for two hours each day and this procedure was continued for a period of several weeks. Not only is the cost of such a procedure excessive but only a few patients can be treated at one time in a clinic of average size.

In an effort to offset these objections we have arbitrarily adopted a method utilizing 200 kilovolts, a filter of 0.75 mm of copper and 1 mm of aluminum, a target-skin distance of 50 cm and a milliamperage of 6. With these settings we obtain 12 roentgens per minute (without backscattering) at the skin surface and can administer 300 roentgens in twenty-five minutes. When fourteen such doses (4,200 roentgens) are given in sixteen days (no treatments on Sundays) to one skin area, a marked reddening and desquamation with scattered areas of very superficial ulceration occurs. When sixteen doses (4,800 roentgens) are given in eighteen days, complete denudation of the skin occurs, a moist, raw looking surface being left. Areas treated usually measure not more than 15 cm on a side. With both methods, healing is complete in most instances in from three to five weeks. During the period of reaction the patient complains of some discomfort and has a little fever, but he has none of the severe pain that all experienced radiologists have learned to associate with necrotic areas produced by

6 Kahlstorf A. Investigation of the Skin Tolerance for Protracted Fractional Roentgen Therapy, *Strahlentherapie* 38: 499-520 1930.

7 Schwarz G. On the Theoretical and Practical Foundations of Radiation Therapy with Small Doses Extended Over Long Periods of Time. *Strahlentherapie* 37: 709-718 1930.

8 Juul J. Single Massive Dose Fractional Dose or Saturation Method, *Strahlentherapie* 38: 623-640 1930.

9 Holthusen H. The Biologic Principles of Protracted Irradiation. *Strahlentherapie* 42: 881-898 1931.

10 Reisner A. The Skin Erythema Course in Fractional Administration of Large Amounts of Radiation. *Fortschr a d Geb d Rontgenstrahlen* 45: 293-307 (March) 1932.

11 Schröder R. First Experience with Coutard's Intensive Roentgen Treatment in Female Genital Carcinoma. *Strahlentherapie* 41: 67-72 1931.

12 Gunsett A. Nine Years of Fractionated and Protracted Dosage in the Roentgen Therapy of Cancer with Some Remarks on Intra-vaginal Dosage in Roentgen Therapy of Cancer of the Cervix Uteri. *J de radiol et d electrol* 15: 685-692 (Dec.) 1931.

13 Zuppinger A. Results of Protracted Fractional Roentgen Therapy of Malignant Tumors. *Strahlentherapie* 43: 701-718 1932.

very large single doses of radiation. When the treatment is given over the neck, the mucous membranes of the mouth and pharynx show a reaction of the type described by Coutard. For a week or ten days the throat is quite sore and swallowing is so difficult that it is often necessary to use a nasal tube. However the reaction in the throat usually clears up more rapidly than the skin reaction.

Our economy of time is brought about through a reduction in filter from 2 mm of zinc to 0.75 mm of copper. Contrary to the belief of many this produces only a slight change in the wavelength so long as the voltage remains the same. Whether the increase in intensity to more than twice that used by Coutard will make any material difference in the selective effect remains to be seen.

Before undertaking the calculation of efficient depth doses we felt that the amount needed to destroy a malignant tumor on the surface should be determined. For this purpose the patient shown in figure 2 was

case supplies data that will be useful in calculating the proper amounts of radiation for other types of tumors. Figure 2 shows that the normal skin in the treated area has been in no way damaged by the treatment.

The broken lines in figure 1 indicate the dosage used in this case. The upper line represents the amount of radiation effective in the tumor, according to the experiments of Regaud and Ferroux. The lower broken line is plotted in accordance with the theory of Kingery and indicates that the radiation effective in the skin at the end of thirteen days amounts to 3,200 roentgens. Since we know that such a dose would produce necrosis if given at one time, it seems quite evident that Kingery's curves do not truly represent the effect of radiation on normal skin. Curves should be worked out representing the tolerance of skin and other normal tissues for fractionated doses and no doubt this will be done in the near future. We particularly need such data for the mucosa of the intestinal tract and other internal radiosensitive structures.



Fig. 2.—A case of squamous cell carcinoma grade 3 treated by our modified Coutard technic. A total of 3,600 roentgens was delivered to one area in twelve equal doses in a period of thirteen days. The photograph on the right was made after four months. The lesion has almost healed.

selected. The growth measured almost 3 inches (7.5 cm) in diameter and was about 1 inch (2.5 cm) thick in its thickest portion. A piece of tissue was removed and diagnosed by Dr. George T. Caldwell as squamous cell carcinoma, grade 3. Since this type of malignant growth has a radiosensitivity similar to that found in tumors of the pharynx, it offered us a good chance to check Coutard's effective dosage of 3,500 roentgens.

Thirty-six hundred roentgens was divided into twelve equal parts and administered to the tumor and the surrounding skin during a period of thirteen days, one area being used. The right eye had been enucleated many years before and the deformity in this region had no connection with the malignant tumor. In a week after the cessation of therapy the skin was quite red and showed marked desquamation but no ulceration. The tumor melted away rapidly, however, leaving a granulating wound at the point of its attachment to the underlying bone. This wound has closed in slowly, so that a clean healing ulcer about three-fourths inch in diameter now marks the site of the original lesion. The patient is symptom free and the appearance indicates that the dosage was correct. This

Since we have used our modified technic for only a little more than a year, we cannot offer any statistical data of value and submit this paper only as a preliminary report. Twenty-five patients, most of them with inoperable conditions, have been treated and in practically every instance the improvement has been marked and has seemed amply to justify the temporary discomfort produced. This series includes cases of carcinoma of the cervix, ovary, breast, rectum (squamous cell type), mouth, pharynx, liver and larynx, and a radioresistant lymphosarcoma of the mediastinum. Tumors of the pharynx have shown miraculous improvement. Martin and Pfueger¹⁴ described the extreme radiosensitivity of neoplasms in this region and it constitutes therefore one of the most favorable of the internal sites for the Coutard therapy. Large breast tumors and their metastases have also responded well, and the method certainly has a definite place in the treatment of inoperable conditions.

We have on several occasions used this technic in cases of advanced carcinoma of the mouth in which

¹⁴ Martin, H. E. and Pfueger, O. H. The Comparative Radiosensitivity of Pharyngeal Tumors. *Radiology* 17: 425 (Sept.) 1931.

radium implantation had produced only partial regression. In each instance little or no added improvement was obtained, and the patients were made more uncomfortable. This outcome was of course to be expected, since there is usually little to be gained by the repetition of any radical plan of radiation therapy if the first attempt fails.

There is undoubtedly a large field of usefulness for fractionated external dosage in connection with interstitial radium implantation. In some clinics the external therapy is being administered with a large radium pack. Healy has found it most advantageous to give a preliminary series of roentgen treatments to the pelvis using a modified Coutard plan before applying radium in carcinoma of the cervix. The roentgen therapy alone causes a definite regression of the primary tumor, thereby lessening the chance of infection, and it also delivers more effective dosage to the broad ligament regions. The combined techniques render radiation therapy more complicated and time consuming but the main goal is an increase in efficiency.

has been low and I believe that he has stressed this point as being advantageous on account of the more prolonged exposure which it necessitates, or permits, depending on which view one cares to take of it. This is one of the factors which the authors have altered as a matter of economy in both time and expense. Filtration also is variable, and opinion, both clinical and physical, is by no means unanimous. The authors have utilized here again the more economic filtration. In the original Coutard work and in the work of the authors the distance has remained at 50 cm. This again is a variable factor and many radiologists feel that it can be increased to advantage. The quantity of radiation in other words the number of roentgens delivered in an individual exposure alters the actual time of the individual exposure and consequently has its influence on the total period to be consumed in the full round of treatment. By adjustment of these factors and variations of the total quantity of radiation being used the total treatment interval may be adjusted anywhere from a fortnight to six weeks. For several years I have employed a set of factors very close to those of the authors, except with filtration which has been slightly heavier (0.87 mm. of copper plus a secondary aluminum filter). I have checked over a number of these cases and find that our total quantities of radiation agree surprisingly well. This principle of multiple

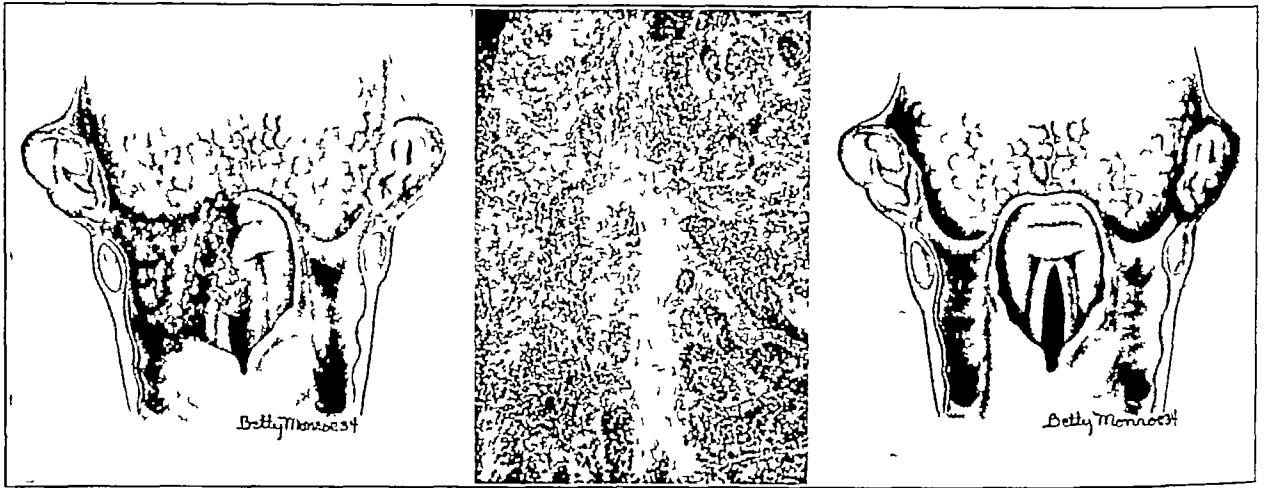


Fig. 3—Squamous cell carcinoma grade 3 of the pharynx and larynx which was producing dysphagia and marked dyspnea. The drawing on the right was made three months after the completion of the modified Coutard technic when the patient was entirely symptom free.

SUMMARY

1 The technic of high voltage roentgen therapy has progressed from the single massive dose through the saturation method to the more modern Coutard plan.

2 Coutard has definitely increased the selective action of x-rays on malignant tissue by reducing the intensity with excessive filtration and prolonging the time by the fractionization of very large doses.

3 A modification of the Coutard technic here described is apparently efficient and much less time consuming than the French procedure.

Baylor University Hospital

ABSTRACT OF DISCUSSION

DR. DOUGLAS QUICK, New York: The Coutard technic is really the statement of a principle rather than the enunciation of a definite and rigid technic. The principle involved is that of multiple exposure for the most part daily with 200 kilovolts equipment approximately, which over a period of from three to five or six weeks in certain instances produces a membranous reaction on the mucous membrane of the mouth or throat and secondarily a superficial destruction of skin. There are various factors any one of which may be varied. Voltage is reasonably standard around 200 kilovolts but need not necessarily remain so. The milliamperage as employed by Dr. Coutard

divided doses has brought about more general interest in roentgen therapy than anything since 200 kilovolt radiation was ushered in a few years ago by the German "massive dose" technic. So many factors are variable that a study of the variations possible, from the clinical standpoint, is fascinating. Clinically, radiologists are governed in doing this by close observation of the reactions, and guided to a degree by their associates from the laboratory, not forgetting that beyond a certain point clinical reactions and physical laboratory calculations may possibly become divergent.

DR. E. L. RYDINS, Iowa City: Since syphilis is a common complication in malignant growths of the neck and pharynx I wonder whether the authors noticed if the skin of people with syphilis and carcinoma was more sensitive to irradiation, provided they were getting intensive antisyphilitic treatment at the same time.

DR. G. E. PFAHLER, Philadelphia: The authors referred to the saturation method of treatment. I want to call attention to the fact that neither Kingery, Pfahler nor Coutard originated the principles underlying the technic described. It involves practical dosage carried over long periods of time and Dr. Coutard has very wisely added higher filtration. He has taught that in certain localities particularly the neck and face, or wherever there is abundance of good circulation irradiation can be carried to a much severer degree or higher dosage than was formerly thought possible. One who attempts, however, to carry that dosage to the same degree over the abdomen will regret it. I have talked this over with Dr. Coutard and he agrees that

in principle there is no difference whatever between the saturation method and the Coutard method. I would like to correct the authors on one point: if they carry this method out properly, they will do as I am doing, give from six to eight erythema doses in four weeks. That is exactly what Dr. Coutard is giving. Dr. Reisner, working in the Hopfelfelder laboratories in Frankfurt, has shown that the saturation curves which I drew are too high, that the dosage is too low, and I agree with him. I have increased that dosage along these saturation curves. As a safe procedure I have increased the dosage 20 per cent at each point. I think it probably can be increased more. The advantage of these so-called saturation methods is that if one does what the authors have done, instead of treating the patient twice a day as I recommended in 1925 one finds it necessary to treat them once a day, or if because of illness or some other interruption the patient cannot get there for two, three or four days, the saturation curve will enable one to bring the dosage up and give the required dosage. With regard to the higher filtration or wavelengths, if I could handle the thousand kilovolt apparatus with the facility that I can handle the 200 today, I would unquestionably use a million volts and higher filtration, but the difficulty which I see in that technic is that it is too cumbersome and one sacrifices in the ability to direct the rays carefully what one gains in other respects. That will be overcome in the future. All that is needed is to apply one's energies as has been done with the 200 kilovolt dose the technic of which is just being learned. Physicians should not allow themselves to be carried away too much by these physical experiments. Clinical observations have taught them more in medicine than anything else.

DR. MAURICE LENZ, New York. When five years ago I started treating carcinomas of the pharynx and larynx and other malignant growths with the Coutard method modified as regards time of treatment, I felt as enthusiastic as the authors do today. I am still as enthusiastic as they are about administering 25 roentgens, 10 roentgens or, as the Memorial does 65 roentgens per minute, provided the field used is small. I use not larger than 7 by 7 or 8 by 8 cm. However when the same technic is tried in larger fields (20 by 20 or 15 by 20 cm.) difficulties are apt to arise. In such fields when I gave 25 roentgens per minute, with the proviso that the total dosage was up to 3,000 roentgens, complications arose, whereas I was able to give this dosage when the field was less than 10 by 10 cm. I believe the crux of the situation is size of field when the dosage is as large as Coutard uses. If the daily administration of roentgens ranges somewhere between 300 and 400 roentgens, fields as large as 15 by 20 cannot be used if 65 roentgens or 25 roentgens per minute is to be given. For such fields there is no short cut. One has to stick, I believe to either what Coutard says or might go up to 10 roentgens per minute.

DR. A. G. RAY, Jackson, Ohio. It is the end results that tell more than anything. I have a 65,000 volt machine—very low voltage, I will admit, but the results are good. I use 3 milliamperes and give an exposure of ten minutes until the patients get the erythema, then I put it down to 2 or 15 milliamperes and always give an exposure of ten minutes. I give exposures five days apart and give eight exposures. I have treated more than a hundred epitheliomas and carcinomas. One carcinoma of the bone was arrested and the patient lived four years. In a sarcoma of the breast the ulcer was about 3 inches wide. I exposed that fourteen times at intervals of five days taking off the dead tissue every time the patient came in until the gland was removed. The cure lasted eight years when it recurred in the lung. I have given the exposures empirically. I think from the results of sixteen years' experience with three x-ray burns, I obtained a basis and I have been acting on that basis ever since. I have never failed to cure an epithelioma.

DR. I. S. TROSTLER, Chicago. I have a method by which one can protect oneself from lawsuits. A statement releasing the radiologist an ordinary release given before the treatment, has no force at all, but if one has the patient sign a statement worded as follows, "Recognizing that I have a disease which will destroy my life, I hereby give consent to the use of unusual and extraordinary methods in the treatment of my case, one will be protected."

DR. J. M. MARTIN, Dallas, Texas. The discussion brought out some very helpful points. While we are enthusiastic about the Coutard method and are fairly well satisfied with the modified technic adopted, we are aware that there are other modifications of this method that will produce equally good results. In referring to Dr. Pfahler's saturation technic I was quoting from his London paper. I am glad to hear him say that his total dose in roentgens has been materially increased. Replying to Dr. Trostler. While the dermatitis is considerable in all these cases we have had no legal complications. Usually a surgeon, a dermatologist and a pathologist see these cases with us. Most of the patients so treated have advanced carcinoma with one foot in the grave. We go into details in telling them just what to expect and how long they will be in recovering from the effects of the treatment. After recovery the gratitude of these people is unbounded. These cases should always be kept under observation and control. Ultraviolet ray treatment for the dermatitis is harmful. Likewise sunburn over the areas treated will aggravate the dermatitis. I want to thank Dr. Quick for his liberal discussion of my paper. If there is a better modification of the Coutard method of treatment, we will be glad to learn about it. The radiologist is the only hope for these unfortunate cancer victims.

THE ROENTGEN DIAGNOSIS AND TREATMENT OF TUMORS OF THE BLADDER

THEIR SERIAL STUDY WITH PNEUMOCYSTOGRAMS,
SHOWING RESULTS OF TREATMENT
BY IRRADIATION

GEORGE E. PFAHLER, M.D., Sc.D.

AND

JACOB H. VASTINE, M.D.

PHILADELPHIA

So far as we have been able to find, pneumocystography was first used in the diagnosis of tumors of the bladder by one of us (Pfahler) in 1908, and this method was discussed by him at various roentgenology meetings from time to time. A formal presentation was made together with a lantern slide demonstration of a number of tumors of the bladder before the Philadelphia Roentgen Society on May 8, 1919.¹ However, Braasch says "Air was used in the bladder for the demonstration of a diverticulum by Kellar in 1904" (reference not given).

This method of study of tumors of the bladder we believe should be used as a routine because of the valuable primary and supplementary information that is obtained. We believe that pneumocystography cannot replace cystoscopy, but in the management of a serious condition such as tumors in the bladder, nothing that would be helpful should be neglected. Pneumocystography is harmless and painless and requires no great amount of paraphernalia. Therefore it can be used in conjunction with cystoscopy or, at times, when cystoscopy cannot be performed. In many cases the examination by a cystoscopist is not practical for one of the following reasons:

- 1 Because of the fear of pain that generally accompanies cystoscopic examinations
- 2 Because of the inability to pass the cystoscope
- 3 Because of severe hemorrhage, which clouds the field of vision in the bladder
- 4 Because an expert cystoscopist is not always available

Read before the Section on Radiology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.
¹ Pfahler, G. E. The Injection of Air for the Roentgen Diagnosis of Tumors of the Bladder. *Am. J. Roentgenol.* 6: 371-375 (Aug.) 1919.

5 Because of possible objections on the part of patients, which leads them to postpone or refuse a cystoscopic examination and thus delay the diagnosis

TECHNIC FOR PNEUMOCYSTOGRAM

It is our custom to make a general film of the entire urinary tract posteriorly and one smaller film anteriorly of the bladder preceding the injection of air. These preliminary films will demonstrate any opaque calculus but they are particularly useful in demonstrating any

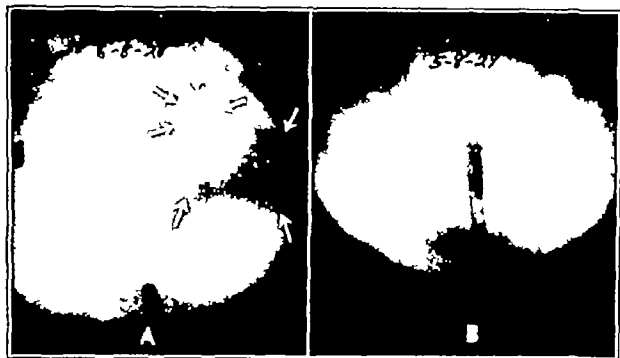


Fig 1 (case 1)—A T J T a man aged 49 referred March 21 1925 by Dr F J Dever on account of carcinoma of the glans penis which had existed for one year. Treated successfully by radium x-rays and electrocoagulation. A three years later June 8 1928 the patient returned with a history of hematuria for six months. The pneumocystogram shows an ulcerating broad based tumor of irregular density occupying the left wall of the bladder and extending over toward the region of the left ureter. It projected into the bladder 5 cm and the base was 3 cm. A second tumor on the posterior wall of the bladder was approximately 2 cm in diameter. B after treatment by high voltage roentgen therapy and also by cystoscopic electrocoagulation done by Dr Wilbur Haines. A pneumocystogram made May 8 1929 shows tumors entirely gone. The bladder is normal throughout. The patient was still well April 17 1934 five years after treatment.

localized collection of gas in the rectum or pelvic colon which might otherwise be confusing in the interpretation of subsequent pneumocystograms.

The urethral orifice is cleansed with an antiseptic solution. A sterile rubber catheter of the largest size that will pass easily is then lubricated and is introduced in the usual manner. Any retained urine is withdrawn and a special effort should be made to extract all the urine for if any fluid remains in the bladder it tends to obscure the presence of a tumor. If there is an obstruction from a prominent middle lobe of the prostate, it may be necessary to use a prostatic catheter. After this catheter is introduced, it is connected by means of glass tubing to an atomizer bulb. If one uses for this purpose glass tubing that is wide at one end it is possible to introduce cotton so as to filter the air as it is injected. We believe that there is little danger of infection from any air injected, because it is not likely that the soil will be suitable for the development of any germs from the air.

After the urine has been withdrawn and the atomizer bulb firmly attached air is injected by gentle compression of the thumb and index finger. The air is pumped into the bladder until the patient complains of bladder

distention or until distention of the bladder can be felt by palpation, or an outline is made by percussion. A pair of hemostatic forceps is then clamped on the catheter, and this is strapped firmly with the adhesive plaster to the surface of the thigh. To economize on time, all these preparations should be made in advance and the patient should be lying on the Potter-Bucky diaphragm with the tube set in position, so that there will be no unnecessary delay or discomfort.

EXPOSURES

We usually make one or two films posteriorly first and then rotate the patient on to the abdomen, being especially cautious that the catheter is not disturbed in turning the patient on to the abdomen, then at least two additional films are made anteriorly. Most tumors are shown best in the anterior position, because most tumors occupy the posterior wall and therefore when the patient is lying on the abdomen, the air surrounds the tumor. It is at times helpful also to make oblique anterior films. Especially is this valuable when diverticula are associated. If one chooses to demonstrate more definitely the presence of diverticula, it would probably be best to release the air by releasing the clamp and inject the bladder with an opaque solution, such as 12.5 per cent sodium bromide. We have not found the opaque cystograms of additional value in the diagnosis of tumors, but the opaque cystograms are especially valuable in the diagnosis of diverticula.

OBJECTIONS TO THE EXAMINATION

After making several hundred of these examinations, we can state definitely that no harm has ever resulted, and there is practically no more inconvenience to the patient than that which would follow an ordinary catheterization. We have never had any case of air embolus follow one of these injections and there has never been any emphysema in the tissues. Bedrna

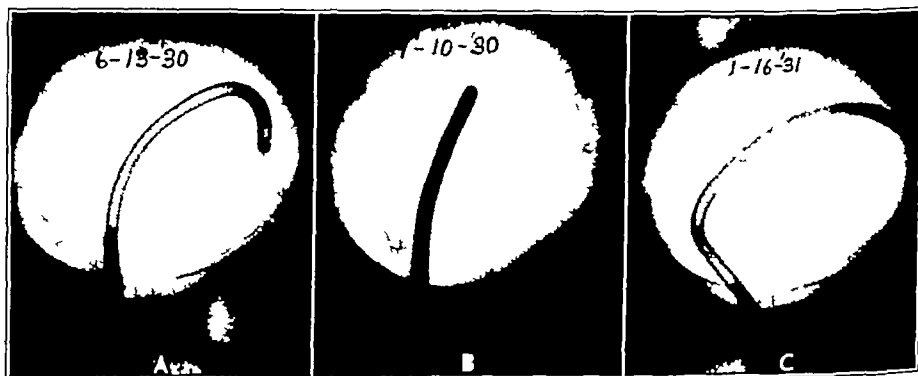


Fig 2 (case 2)—Mrs G W S aged 55 was referred by Dr J M Anders June 13 1930 on account of hematuria for several months. A tumor irregular in outline with a broad infiltrating base surrounding the urethra, about the size of a hen's egg. The patient was given high voltage roentgen treatment. B after three months on Sept 10 1930 reexamination showed that five sixths of the tumor had disappeared. All the patient's symptoms had gone. C after six months on Jan 16 1931 the patient was reexamined and all the tumor had disappeared. On July 28 1932 examination showed that the bladder was entirely well. The patient is without any symptoms four years after treatment.

and Simon have reported on 345 cases in which air was injected directly into the ureter and kidney pelvis with no complications. There certainly would be more risk from injection of air directly into the pelvis of the kidney than from injection into the bladder. The patient is always conscious and as soon as the patient complains of a sensation of fullness the injection is stopped. We believe, therefore, that no harm is likely to occur. Any external pressure effect from fecal matter in the rectum can easily be eliminated by pre-

liminary evacuation of the rectum, and the presence of any such matter can easily be determined by a preliminary digital examination by rectum

INTERPRETATION

We have succeeded in demonstrating both benign and malignant tumors varying in size from 1 to 8 cm. It is not always possible, of course to make a pathologic diagnosis by means of pneumocystography as to malignancy or benignity just as it is not always possible to make a diagnosis cystoscopically or macroscopically. In general, however, if a tumor is small, sharply defined and pedunculated and especially if there are multiple tumors, the probabilities are that it is benign. If it is large, irregular on the surface and associated with a broad base it is probably malignant. If the tumor has definitely infiltrated the bladder wall so that it cannot stretch normally one obtains more definite evidence of a malignant growth than could be obtained cystoscopically.

Since urologists state definitely that all tumors of the bladder are potentially malignant, the important matter is to demonstrate the tumor and to get rid of it by the best means possible, according to the indications in any individual case.

TREATMENT OF TUMORS OF THE BLADDER

Through the kind cooperation of the surgeons and urologists with whom we have been associated, we have been privileged to make various combinations in the treatment of bladder tumors, such as (1) excision preceded or followed by irradiation, (2) cystotomy and direct surface application of radium, (3) cystotomy, electrocoagulation and insertion of radium

Relative Results Obtained by Various Methods*

Treatment	No. of Patients	Treated Prior to 3 Years Ago		3 Year Survival		Not Traced	
Suprapubic cystotomy	43	4	39	4	9.2%	39	
electrocoagulation							
radium needles	7	7				7	
Surgical excision post							
operative roentgen therapy	6	6				6	
Surgical excision radium							
pack in bladder, post	3	1	2			2	
operative roentgen therapy							
Exploratory tumor not	5	1	4	1	20.0%	4	
removed, postoperative							
roentgen therapy	11	4	7	2	33.3%	6	
Cystotomy electrocoagu-							
lation radium pack in	18	7	11	5	33.3%	9	1
bladder postoperative							
roentgen therapy	93	17	76	18	15.0%	73	1
Electrocoagulation cysto-							
scopically postoperative							
roentgen therapy radium							
postoperatively							
Irradiation only							
Total							

* Our previous publications gave a more complete discussion of the various methods of treatment other than high voltage roentgen therapy supplemented by cystoscopic electrocoagulation.

needles or seeds, (4) cystotomy, electrocoagulation, and surface application of radium to the base of the tumor, (5) preliminary roentgen therapy, local destruction, subsequently followed by additional roentgen therapy, and (6) high voltage roentgen therapy, with high filtration, supplemented, if necessary, with electrocoagulation (through the cystoscope) of any remnant that does not respond to irradiation. Our most brilliant results, which have been the most pleasing to the patients have been obtained by the last two methods.

Recently in the discussion of this subject before the Pan-American Medical Congress, Dr. Hugh Young

stated that at least three fourths of the tumors of the bladder are inoperable, chiefly because approximately 75 per cent occupy the region of the ureters or the urethral orifice, and since all tumors of the bladder are potentially malignant it would seem that one must aim at early diagnosis, and early and thorough treatment by a combination of irradiation and perhaps, electrocoagulation. Small benign tumors are being destroyed daily by urologists by cystoscopic electrocoagulation but it is also well known that these tumors

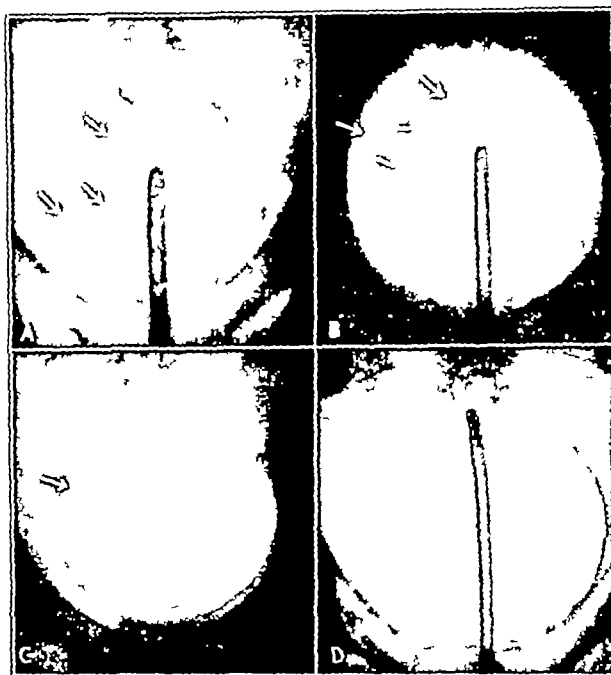


Fig. 3 (case 3).—A man aged 54, was referred May 6 1933 by Dr. William Mackinney on account of hematuria for only two days. By cystoscope and by pneumocystogram A there was found an ulcerating infiltrating carcinoma involving 6 cm. of the upper left quadrant of the bladder and located more anteriorly than posteriorly. It projected into the bladder 3 cm. B a pneumocystogram made Sept. 11 1933 four months after high voltage roentgen therapy was begun shows that most of the infiltrating of the bladder wall was gone. The density of the tumor has decreased, and the size of the tumor has decreased about 50 per cent. The patient was treated only with high voltage roentgen therapy 200 kilovolts filtered through 2 mm. of copper the treatment being given through five different portals of entry directed toward the tumor area. C Jan. 8 1934 a remnant of the tumor which was finally destroyed by Dr. Mackinney with electrocoagulation. The patient was treated during a period of about six months receiving a total of approximately 3500 roentgens through each portal of entry. During all this time the patient continued his occupation as a practicing physician. D May 24 1934 the bladder wall was smooth in outline the patient was symptomatically well cystoscopically well and well as shown by the pneumocystogram. Note the complete distention of the bladder and the perfectly smooth walls. If such results can be obtained it will be a great inducement for patients to seek treatment early.

commonly recur after such treatment, therefore it has seemed to Dr. Bothe and ourselves that it would be advisable to give preliminary irradiation, then destroy the tumors and follow it with an additional moderate amount of irradiation (fig. 4).

In dealing with large and definitely malignant tumors, no rule can be established, but a general plan of treatment should be laid out at the very beginning. Such a plan can probably be best and most practically made if there is a conference with the family physician, the urologist and the radiologist, for all three of these physicians need to cooperate in order to obtain the best results for the greatest number of cures.

We believe that when dealing with an inoperable case it is advisable to begin the treatment with the thought of overcoming the disease completely by irradiation, for if one succeeds with such treatment the

results are ideal. The bladder walls are restored to normal, the patient is scarcely interrupted from work, and bladder functions are normal. In order to carry out such radiologic treatment it is necessary to use high voltage roentgen therapy and we have used 200 kilovolts constant potential, with 2 mm of copper filtration, usually at a distance of 50 cm, making use either of 2 or 4 milliamperes of current, so as to prolong the irradiation effect. The patient is treated daily, or preferably twice a day usually with about 200 roentgens. The amount of the dose will depend somewhat on the reaction of the patient to treatment. We aim to deliver from 3 000 to 5 000 roentgens into the tumor area. The pneumocystogram is especially useful in outlining and locating the extent of the growth. This then permits the radiologist to direct his beam of rays toward this disease and then there should be as much cross-firing as is practical, but one must be most cautious as to the dosage in the subcutaneous tissue. The subcutaneous tissue of the abdominal wall is not well supplied with blood vessels therefore heavy irradiation is more likely to be followed by fibrosis or necrosis.

In giving this radiation it is our aim to deliver into the tumor tissue a full erythema dose as rapidly as is consistent with the patient's general condition. This

As a result of irradiation, one commonly succeeds in arresting the hematuria, sometimes within a few days, generally within a few weeks. In the more sensitive group of tumors, one may expect the entire tumor to disappear (fig 2). By means of the pneumocystogram one is enabled to measure photographically the progressive reduction in the size of the tumor and, finally, to note its complete disappearance. It is also possible subsequently by means of the pneumocystogram to determine the absence of any tumor tissue in the bladder. The absence of a tumor in the bladder can be determined only if the work is thoroughly and skillfully done. In this work it is never economy to attempt to save on the use of films for it is not infrequent to find a tumor not showing at all in one position and yet showing very clearly in another position.

CONCLUSION

Tumors of the bladder varying from 1 cm to a large size can be demonstrated clearly by means of pneumocystograms.

The progressive enlargement or the progressive reduction can be shown and recorded photographically.

The method of examination is comparatively painless and harmless.

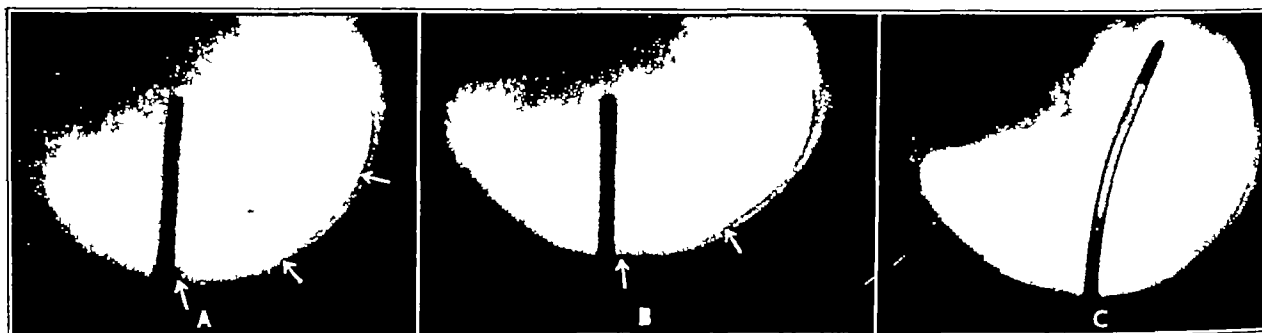


Fig. 4 (case 4)—A woman aged 43 referred by Dr. Albert Bothe on Oct. 26 1933 had hematuria six weeks following a fall with no pain. A cystoscopic examination and pneumocystograms show a sharply defined tumor approximately 2 cm in diameter located about 5 cm. to the left of the urethral orifice. This tumor has associated with it the shadow of a second smaller tumor which has double the density but which is still sharply defined. A second papilloma is located at the left border of the sphincter and approximately 0.5 cm. in diameter. A third papilloma is located about 8 cm. to the left of the sphincter. All these lesions have the appearance of being benign as determined both by cystoscope and by pneumocystogram. B Dec. 4 1933 these lesions were reduced in density and reduced in size approximately 50 per cent. The third lesion at the left wall of the bladder is entirely gone. Following this pneumocystogram Dr. Bothe destroyed the remainder of the tumors cystoscopically. C May 7 1934 the tumors were entirely gone and the bladder wall was smooth and healthy. The depression in the upper right border is due to the distended cecum.

usually requires from four days to a week. It is our aim then to keep the irradiation value in this tumor tissue up to the saturation value of an erythema dose, during a period of an additional three or four weeks. This requires a tremendous amount of treatment if it is carefully done. Under these circumstances the tumor may disappear completely (fig 2), or the tumor may be reduced in size (fig 3) and become more or less stationary. It may then be necessary to destroy the remainder by electrocoagulation cystoscopically, as has been done in association with William Mackinney. In giving these treatments it is not only advisable always to measure the saturation value in each portal of entry and the saturation value in the tumor tissue, but one must take account of the total value of irradiation given through any portal. When treatment is given through the abdominal fat some risk is involved when one exceeds a total of 300 per cent of an erythema dose. In certain parts of the body where the circulation in the subcutaneous tissue is good it would be possible to give a total of 600 per cent of an erythema dose in divided doses.

Under treatment by high voltage roentgen therapy one can record from time to time serially the progressive disappearance of the tumor.

1930 Chestnut Street

ABSTRACT OF DISCUSSION

DR. RUSSELL S. FERGUSON, New York. The pneumocystogram that the authors have described and stated the value of in following the regression of tumors in the bladder is used more widely by the urologist than the authors suspect apparently. In 159 of 902 cases in the Bladder Tumor Registry, pneumocystograms were made. The procedure was said to be of value in the diagnosis of bladder carcinoma in 108 of these. The thing that the urologist does not appreciate however, is the value of the x-rays in the treatment of bladder carcinoma. The x-rays were first used in this country by Gray in Richmond Va. in 1906. He had the bladder opened and treated the tumor through a cone inserted into the bladder. That method of course under the conditions existing at that time fell into immediate disrepute. The method has been revived recently by Rose in St. Louis who has devised a stabilizing tractor for the bladder and then treats it with low voltage x-rays 85 kilovolts without any filtration whatever and delivers

doses up to 2,000 roentgens at one sitting. This is most interesting. I await Rose's results with curiosity. A more favored technic and one that I feel deserves development at the hands of the urologist, is the divided dose technic in bladder carcinoma. I think that some definite policy must be adopted in the management of these cases. Bladder carcinoma on the average will not yield to a tissue dose of less than 8 or 10 erythemas. This is shown by the work of Dean and Qumby, who measured the tissue doses delivered in the treatment of a series of bladder tumors. If any such dose is to be delivered by external means of irradiation, it must be delivered by the divided dose technic. That can be done and has been done successfully in the institution in which I work within the last eighteen months by Dean. The best results, however, seem to be obtained when it is known in advance that the tumor is either a grade 3 or a grade 4 bladder carcinoma. Grade 1 and grade 2 carcinomas, especially those showing squamous pearls, are radioresistant and will not yield to the average dose that can be gotten into the bladder in this manner. I would therefore suggest to the radiologist that he urge the urologist to look more carefully into the possibilities of roentgen treatment of carcinoma of the bladder, adopt a policy of biopsy in every instance, utilize the Coutard technic or some modification of it in delivering tissue doses adequate to grades 3 and 4 bladder carcinomas, and avoid treatment of grades 1 and 2 tumors by that technic.

DR. B. S. BARRINGER, New York. Radiologists have used for many years the technic described by the authors. Stereoscopic pictures have been found to tell more than simple cystograms. I am inclined to think, from a urologic standpoint, that I can gain a better idea of the tumor from the pathologic examination and from an attempted grading of it than from the cystograms. I confess that in a certain number of cases I have been confused by the pictures and radiologists are not all as expert in reading the cystogram as are Drs. Pfahler and Vastine. I want to emphasize what Dr. Ferguson said about the treatment in the future by external irradiation of bladder tumors. Up to about a year ago there were two methods of treatment. I am now speaking of carcinoma, not papilloma. They were the only two methods that offered anything: one was removal by surgery and the other was radium applied suprapubically or through the cystoscope. I am biased. I have used radium. One can go further with radium than by operation. Tumors can be attacked that are quite inoperable with some chance of success by radium implants. However, there are certain tumors in the highest grade of malignancy, grade 4—fortunately they are rarely seen—that are not attacked by either operation or radium successfully. I have only one grade 4 tumor well eight years. Those tumors should be irradiated externally before anything is done after the specimen and the cystogram have been examined and then if that does not do the external radiation should be reinforced by some other form of internal radiation. Whether that is applicable to grade 3 tumors or not I don't know. I think that extensive grade 3 tumors difficult to remove or irradiate should be attacked by preliminary external irradiation. That is the next move for the future and I think that probably 5 per cent should be added to five year cures with the careful application of external irradiation.

DR. LEO DOLAN, Toledo, Ohio. In regard to advocating widespread usage of pneumocystograms, I would like to add a word of warning regarding the amount of air pressure used in the bladder. There exists the possibility of air embolism when considerable unmeasured pressure is used. The safer method of cystoscopy should be preferred to the possible dangers encountered in widespread uncontrolled pneumocystography.

DR. GEORGE E. PFAHLER, Philadelphia. One of the advantages of the pneumocystogram and of roentgen therapy is this. Urologists say that from 65 to 75 per cent of the carcinomas of the bladder are inoperable. Therefore radiologists certainly have plenty of material on which they should work and lives that they should try to save. Here is a method that can be used. The pneumocystogram may be of no particular value to the urologist. There is no thought of replacing cystoscopy, but if one has a picture of where that tumor is located and

its size and degree of infiltration and can follow its progression one can give more careful treatment and can direct the radiation better than one can by any description from the urologist. With regard to air embolism, I should like to know whether any one has produced an air embolism by this process. I haven't in approximately twenty-six years. Furthermore, I know that it is an accepted method of diagnosis to distend the pelvis of the kidney with air, as is done in the Schmieden clinic and in a number of others, and if there is no danger in distending the pelvis of the kidney with air or oxygen, certainly there is no danger in distending the bladder when the patient is conscious at all times and says "Doctor, that is hurting me."

CHANGES IN THE GASTRO-INTESTINAL TRACT IN DEFICIENCY STATES

WITH SPECIAL REFERENCE TO THE SMALL INTESTINE. A ROENTGENOLOGIC AND CLINICAL STUDY OF FORTY CASES.

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AND
ROBERT E. POUND, M.D.
NEW YORK

Deficiency disease may result from a defective dietary or from abnormal physiology of the gastro-intestinal tract. Defective absorption constitutes one of the outstanding features of sprue and in certain cases has been shown to condition the development of the deficiency factors of the disease.¹ This occurs without extensive pathologic changes in the structure of the small intestine apart from atrophy that is not disproportionate to the general wasting of the body and the viscera.² We have observed advanced deficiency disease in several severe cases of ulcerative colitis. This suggested the possibility of a similar mechanism and led to the detailed clinical and radiologic investigation of a large group of cases of chronic ulcerative colitis.

Evidence of deficiency states was found in 63 per cent of seventy-five cases studied. These conditions have presented the characteristics of partial deprivation of certain vitamins, of protein, and of important inorganic elements. The diagnostic criteria have been limited to the objective changes that have been shown to occur in deficiency diseases. The buccal and lingual mucous membranes have presented abnormalities analogous to those encountered in sprue, pellagra and pernicious anemia. The skin has shown changes similar to those reported in vitamin A deficiency³ and in pellagra. Nutritional edema has occurred in advanced cases without evidence of cardiac or renal insufficiency. Certain of the patients have presented abnormalities of the inorganic constituents of the blood, notably reduction of blood calcium and disturbance of the acid-base mechanism. One case showed peripheral neuritis similar to that occurring in beriberi.

The frequent occurrence of these deficiency states has led us to believe that they may play an important part in the pathology of chronic ulcerative colitis. They have been most numerous and most severe in advanced and serious cases of the disease, and less evident or

From the Departments of Roentgenology and Medicine, the Fifth Avenue Hospital, the New York Hospital and the Department of Public Health and Preventive Medicine, Cornell University Medical College.

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2. Mackie, F. P., and Fairley, N. H. The Morbid Anatomy of Sprue. *Indian J. M. Research* 16: 799-826 (Jan.) 1929.

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entirely lacking in the milder forms. It has seldom been possible to elicit a history of defective dietary. Consideration of possible etiologic factors suggested among others, too rapid passage of the food constituents through the intestinal tract or abnormalities of the small intestine producing defective absorption of the products of digestion.

Three cases of sprue and thirty-seven cases of chronic ulcerative colitis have been studied radiographically to



Fig. 1—Irregular size and shape of lumen and irregularities of mucosal pattern in a case of sprue. Barium collected in numerous irregularly spaced segments.

gather evidence on these points. The latter represent a wide variety of clinical and pathologic types. Nine patients who were seriously ill were hospitalized, the remainder were ambulatory. The colon lesions varied from the mild forms of localized proctitis to the advanced stage of extensive involvement of the entire length of this segment. The cases have been classified on the basis of the clinical observations. Clinical stage 1 includes all cases showing no evidence of deficiency disease, ten patients fall within this group. Clinical stage 2 comprises those presenting mild to moderate grades of such states, twenty-one cases are listed in this group. Clinical stage 3 is characterized by advanced deficiency states, six of the patients are included within this group.

Bacteriologic and serologic studies demonstrated infection by various strains of *B. dysenteriae* in nine of the thirty-seven cases of ulcerative colitis. Six others agglutinated stock strains of these organisms to diagnostic titer. The remaining patients fall within the classification of so-called nonspecific or idiopathic chronic ulcerative colitis.

The technic of the radiologic examination of the small intestine is as follows. A barium meal, four heaping tablespoonfuls of barium sulphate suspended in three fourths of an iced tea glass of water, is given to the patient about 9 o'clock in the morning, on a fasting stomach. In some of the first cases dextrose solution was used instead of water to determine whether or not

food value in the meal was necessary. This did not alter the conditions found.

Following the ingestion of barium sulphate, a 14 by 17 inch film is made of the abdomen in the posterior anterior direction with the patient prone, at intervals of five minutes, thirty minutes and one, two, four, six and twenty-four hours. These intervals are subject to variation. Each film is developed immediately after exposure, and as the changes appear the intervals may be varied to suit the individual case. We believe these to be the minimum number of examinations needed. After the six hour film or its equivalent the patient resumes his normal diet and no further fasting is required.

The voltage and milliamperage used should be adequate to secure clear sharp detail with a maximum exposure time of one-fourth second. One-tenth second is preferable. These short exposures reduce the possibility of motion. The Bucky diaphragm is not necessary and motion is more apt to occur when it is used.

The two main changes encountered in the small intestine are variation in the contour and size of the lumen, and alteration of the normal motor phenomena. They vary with the severity of the process. In the third or severe clinical stage the characteristic changes are invariably present and easily recognized. In the first and second stages the changes are usually present but of lesser intensity, and occasionally no abnormalities are found.



Fig. 2—Duodenal changes dilatation enlargement of the circular markings collection of gas upper jejunal coils filled showing some widening of the mucosal markings.

The duodenum shows a thickening or widening of the circular markings in almost all severe cases and in certain of the moderately severe ones. The lumen is frequently dilated and contains gas. The appearance resembles duodenitis except that no contracture or spasm has been noted in any of the cases in this series.

In the jejunum the valvulae conniventes are thickened and the spacings between them widened. The normal mucosal pattern is distorted by the irregularities in the size of the valvulae conniventes. In the partially

filled segments it is often bizarre in appearance. The lumen is frequently dilated and this dilatation may be confined to local groups of coils or isolated coils.

The barium usually passes very slowly through the jejunum and is apt to move by groups of coils. It tends to collect in a short segment while the segments proximal and distal are empty. The filled portion is dilated and smooth in appearance, and no peristaltic action is visible. All of the barium that has passed

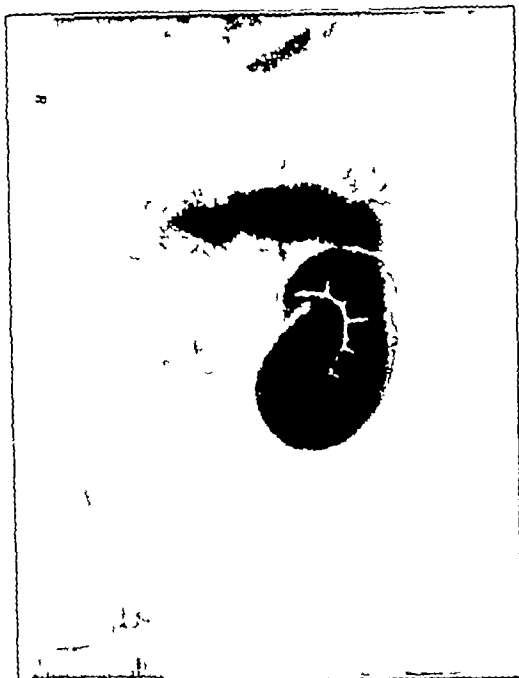


Fig 3—Collection of barium in isolated coils. Segments proximal and distal to the filled segments contain little if any barium referred to as pocketing.

into the small intestine may be collected in a small group of coils. The intestine proximal and distal to the filled area is empty. At the subsequent examination the distribution is similar but the filled group lies at a lower level. There is no intestinal gas in the groups proximal or distal to the filled groups. When this so-called group movement is present, the stomach empties spasmodically. The flow into the duodenum is interrupted, apparently to correspond to the local delay in the forward progress of the barium.

The changes in the ileum are quite similar to those noted in the jejunum. The grouping of the coils may be abnormal, and isolated coils frequently assume a sausage shape. When a group of these dilated coils is filled with barium, the appearance is suggestive of a cluster of bologna. The barium frequently will collect in a very short dilated segment presenting an appearance resembling a large diverticulum. The coils adjacent to this "localized pocketing" are empty. The lower ileum seems to be the site of most frequent and early involvement. Occasionally the barium passes rapidly through the terminal portion, but this is the exception rather than the rule. The course of the coils in this area is often straighter than normal suggesting a lack of pliability. No definite ulceration has been demonstrated in any of our cases roentgenographically. No contractures have been present.

The outstanding feature of the rate of progress of the barium meal through the small intestine is that the

rapidity is not increased over the normal. The rate of passage is subject to wide variation and does not necessarily conform to the clinical stage of the disease. The shortest emptying time was four hours. In five cases the small intestine was empty at the time of the last examination. In four cases more than six hours was required for the head of the barium column to reach the cecum. Twenty-four of the cases of ulcerative colitis and the three cases of sprue showed a definite twenty-four hour barium residue in the colon. This was distributed predominantly in the right half and occurred despite coexistent and active diarrhea. The barium enema in cases presenting the small intestine changes has shown no constant relationship between these abnormalities and the extent and the severity of the lesions in the colon. In numerous instances changes in the small intestine have been associated with a normal cecum and proximal colon. It is evident therefore that they are not the result of extension by continuity of the inflammatory process in the wall of the colon.

We have encountered identical changes varying only in degree, in the small intestine in three cases of sprue. One of these has been reported previously.⁴ Snell and Camp⁵ have recently noted similar phenomena in four cases of idiopathic steatorrhea or sprue.

These abnormalities in the small intestine we interpret to indicate varying degrees of edema of the mucosa, derangement of normal motor function and abnormal variations in tone of the intestinal musculature. They



Fig 4—Pocketing in ileum. All barium collected in a short segment in midline; no barium proximal or distal to filled segment; cessation of gastric peristalsis.

vary in intensity and in extent in the individual case from time to time. In several instances reexamination after the lapse of a few weeks has shown marked improvement, and in others an increase in the severity of the process.

The actual pathologic condition underlying the roentgenologic changes is not definite. To correlate the

4. Mackie T. T. Nontropical Sprue. *M. Clin. North America* 17: 165-184 (July) 1933.
5. Snell A. M. and Camp J. D. Chronic Idiopathic Steatorrhea. *Roentgenologic Observations*. *Arch. Int. Med.* 53: 615-629 (April) 1934.

phenomena visualized by x-rays with the structural changes occurring in the intestinal wall necessitates the study of biopsy specimens. The rapidity of post-mortem change renders autopsy material an uncertain criterion of living pathologic changes in these tissues. Tissue for examination has been obtained from only four of the cases studied. In three of these a section of terminal ileum was removed surgically. However, one of these patients had a previously performed ileo-

venously have been shown to exert a characteristic action on the intestinal tract of experimental animals. They produce edema, hemorrhage, necrosis and ulceration. These effects are most evident in the colon. Occasionally the ileum is similarly, though less acutely involved. Accompanying the swelling of the villi and the edema of the mucous membrane there are cellular exudation into the submucosa and degenerative changes of the muscular layers. It is improbable however that the changes which we have noted by roentgen and by tissue examination result from such a mechanism. The conditions found have been identical irrespective of the presence or absence of dysentery bacilli. There is a striking similarity in the roentgen changes found throughout the series, both ulcerative colitis and sprue.



Fig. 5—Collection of barium in groups of coils of the hologna type." Isolated pocketing. Irregular distribution in intestine. Changes in segment in left iliac fossa.

colostomy, which rendered interpretation of the changes uncertain although gross abnormalities of this segment had been noted at the original operation. In the fourth case the pathologic picture is complicated by an extensive inflammatory reaction in the serosa secondary to a terminal peritonitis following perforation. No sections of the upper part of the small intestine have been obtained for study during life, since surgical intervention in this region has not been indicated.

Microscopic examination of the sections demonstrated edema of the mucosa and submucosa, and slight infiltration by mononuclear wandering cells and round cells in all four cases. Specimens from two other cases, which were not examined radiologically, showed similar changes.

The nature of the processes leading to these phenomena is obscure. Three different mechanisms may contribute. They may result from actual infection of the intestinal wall, they may depend on local allergy, or they may represent an effect of the deficiency state.

Evidence of infection by *B. dysenteriae* was obtained in three of four patients from whom sections were secured. Bacteriologic studies of cases of dysentery examined post mortem have shown the bacilli to be present throughout the intestinal tract.⁶ Soluble products of certain of these organisms when injected intra-

Roentgen Observations in Small Intestine

Case	Clinical Stage	Chronic Ulcerative Colitis			
		Hours Required to Reach Cecum*	Barium Residue in Small Intestine	Mucosal Changes	24 Hour Barium Residue in Colon
1	3	1	7 hours	+	No
2	3	—6½	6½	+	Yes
3	3	—1½	7	+	No
4	3	6½	7	+	No
5	3	—6	7	+	Yes
6	3	3½	6	+	Yes
7	2	3	3	—	Yes
8	2	4½	7½	+	No
9	2	4½	7	—	Yes
10	2	4	6	—	Yes
11	2	5	7	+	No
12	2	1	6	+	Yes
13	2	4½	6	+	No
14	2	—	6½	—	No
15	2	3½	5½	+	Yes
16	2	5	6	+	Yes
17	2	3½	—1½	+	Yes
18	2	5	7	+	No
19	2	1	4½	+	No
20	2	1½	6½	+	Yes
21	2	2½	6	+	Yes
22	2	1½	4½	+	Yes
23	2	—1½	7½	+	Yes
24	2	—	6	—	No
25	2	6	7½	+	Yes
26	2	6	6	+	Yes
27	2	4	4	+	Yes
28	2	2	6½	—	Yes
29	1	4	5½	+	No
30	1	1	7	—	Yes
31	1	6	6	—	Yes
32	1	1	6 slight	+	Yes
33	1	4	6	+	Yes
34	1	6	7½	+	Yes
35	1	8	8	+	Yes
36	1	2½	6½	+	No
37	1	6	6	+	
Sprue					
1		4½	7½	+	Yes
2		6	7	+	Yes
3		3	5	+	Yes

* Minus signs indicate failure of barium to reach cecum at the designated time.

† No barium present in small intestine at the designated time.

irrespective of the bacteriologic background. This indicates that the alterations in the small intestine are not the result of a reaction to a specific group of bacteria. Furthermore, the type and the scantiness of the cellular exudate and the absence of degenerative changes do not imply an actively invading infection or excretion of an irritating necrotizing toxin.

Certain of the clinical phenomena suggest a sensitization of the intestinal tract to foreign protein. Sudden variation in symptomatology has occurred with alteration of diet or with autogenous vaccine therapy. Edema and smooth muscle spasm constitute the essen-

6 Thjotta, T. and Sundt, O. F. Toxins of *Bact. Dysenteriae* Group III. *J. Bact.* 6: 501-507 (Sept.) 1921. Flexner, Simon and Sweet, J. E. The Pathogenesis of Experimental Colitis and the Relation of Colitis in Animals and Man. *J. Exper. Med.* 8: 514-535 1906.

7 Olitsky, P. K. and Kligler, I. J. Toxins and Antitoxins of *Bacillus Dysenteriae*. Shiga, J. *Exper. Med.* 31: 19-33 (Jan.) 1920. Thjotta and Sundt.*

tial pathologic response to the so-called allergic reaction. Although such a process might explain some of the changes that we have described, it does not afford a complete explanation. Reduction in muscle tone rather than hypertonicity or spasm is one of the outstanding features revealed by x-rays in these cases. The clinical evidence also is contradictory. Many of the cases with advanced small intestine changes presented no indication of sensitization. Conversely, certain cases in which

that minor degrees of deficiency disease exist that find no place in current nomenclature.

Demonstration of the changes in the small intestine raises the two fundamental questions of their importance and their relation to the development of the deficiency syndrome. There is a definite correlation between the roentgenologic and the clinical observations in the clinical stage 3 cases. The parallelism, although less evident, continues in the second stage, but it is conspicuously absent in the cases still in stage 1.

It is evident from reference to the table that all cases of ulcerative colitis far advanced clinically show extensive changes in the small intestine. It is equally true, however, that there may be extensive involvement of this segment without demonstrable clinical evidence of deficiency disease. It is perhaps significant that identical changes were observed in the three cases of sprue although in two of them the disease was quiescent at the time of roentgen examination.

If these structural and functional alterations condition the development of deficiency states despite adequate diet, they must act either to inhibit normal elaboration of the diet substrate or to reduce absorption of the normal end products of digestion. In such an event the intestinal changes might be expected to occur before the functional impairment becomes evident clinically. Furthermore, in view of the storage capacity of the body tissues the appearance of clinical indications of deficiency disease need not coincide exactly in time



Fig 6—Movement by groups. Cessation of gastric peristalsis. Segments of intestine proximal and distal to filled area contain no barium. Mucosal irregularities in filled group.

such a process seemed to be operative showed no abnormalities on radiologic examination.

Abnormalities in the intestinal tract have been noted in experimental avitaminosis in animals. Gross⁸ found reduced motor activity in rats immediately after the withdrawal of vitamin B from the diet. Plummer⁹ reported that deficiency of this substance reduced the tone of the intestinal musculature and the amplitude, the rate and the length of time during which spontaneous contractions of an isolated segment occur. Similarly, Rose, Stucky and Cowgill¹⁰ observed diminished motor activity of the dog's stomach when the animals exhibited the effects of advanced deficiency of this vitamin.

The association of clinical evidence of deficiency disease and the changes noted roentgenographically suggests that a relative insufficiency of the antineuritic vitamin may underlie the reduction of tone and the depression of motor function in the intestine observed in these patients. The data at present available are insufficient to evaluate this possibility. The rarity of peripheral neuritis may be advanced as evidence against such a concept, yet it is becoming increasingly apparent



Fig 7—Irrregularities of mucosal pattern, isolated pocketing. Note pattern of transverse loop at level of fourth lumbar vertebra.

with development of the underlying phenomena. The occurrence of intestinal changes in cases not showing deficiency symptoms therefore is not a fundamental contradiction.

The six cases in clinical stage 2 without abnormal conditions in the small intestine are difficult to account for, since deficiency signs were quite evident clinically. However, there are several possible explanations. The alterations observed by roentgenologic examination have been found to vary from time to time in the same

⁸ Gross, L. The Effects of Vitamin Deficient Diets on Rats with Special Reference to the Motor Functions of the Intestinal Tract in Vivo and in Vitro. *J. Path. & Bact.* 27: 27-50 (Jan.) 1924.

⁹ Plummer, B. A. The Motility of the Intestinal Tract in Experimental Beri-beri (Rats) and Scurvy (Guinea Pigs). *Am. J. Physiol.* 50: 78-287 (April) 1927.

¹⁰ Rose, W. B., Stucky, C. J. and Cowgill, G. R. Studies in the Physiology of Vitamin B Deficient Dogs. *Am. J. Physiol.* 92: 83-91 (Feb.) 1930.

patient. In several instances, reexamination after the lapse of a few weeks has shown marked improvement, in others, progression of the process. In neither case have the intestinal changes been closely paralleled by obvious alteration of the clinical picture. It seems possible, therefore, that a temporary enteric derangement may be followed by delayed effects. Other variables probably enter into the production of the final result. Anorexia leading to reduction of the total food intake, fever and toxemia, which increase the physiologic requirements for specific substances, and the quantitative factor of reduction in intestinal function are all important in the production of contradictions.

It is impossible at the present time to state whether the small intestine changes are a factor in the production of the deficiency state or the result of such states. The association of the two in the same patient and the similar alterations observed in sprue suggest that these changes may impair absorption and thus contribute to the complex clinical picture of deficiency disease.



Fig. 8—Bizarre pattern of mucosal folds in duodenum and small intestine

CONCLUSION

1 Changes in the small intestine have been demonstrated roentgenographically in twenty-nine of thirty-seven cases of chronic ulcerative colitis and in three cases of tropical sprue.

2 The changes are those which could be produced by edema of the mucous membrane, disorganization of the normal motor activity, and reduction in tone of the intestinal musculature.

3 They are constantly present and most marked in the cases showing advanced deficiency states. In the milder cases the parallelism is not exact.

4 While the evidence does not warrant definite conclusions, the observations suggest that these changes in the small intestine are related to the deficiency states and perhaps play a role as a conditioning factor in their development.

16 East Ninetieth Street

ARTERIOGRAPHY

A ROENTGENOGRAPHIC STUDY OF THE PERIPHERAL ARTERIES OF THE LIVING SUBJECT FOLLOWING THEIR INJECTION WITH A RADIOPAQUE SUBSTANCE

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The chief function of arteries is the transportation of blood. As far as the arteries are concerned, this function is dependent entirely on the size of and the presence or absence of obstruction of the lumens. The adequacy respectively of the entire arterial circulation of an extremity, and of its component parts, requires separate consideration. The situation is analogous to that which exists in the heart, the myocardium may function normally, even if the valves are functionally insufficient. In the extremities the arterial circulation as a whole may be adequate, even when some of its component parts are badly diseased.

There are many methods for determining the sufficiency of the entire arterial circulation to extremities such as studies of the response of the temperature of the skin to artificially induced fever, spinal anesthesia, and block of peripheral nerves; analysis of symptoms; effect of posture on the color of the skin of the extremity, and palpation of the larger peripheral arteries. These and other methods leave little to be desired in determination of the efficiency of the arterial circulation as a whole. This situation is sharply in contrast to study of any of the component parts of the peripheral circulation. Arteries, except large arteries, are not ordinarily visualized roentgenographically unless there is calcification of the walls, and even then no information can be gained regarding their caliber. Palpation of pulsations in an artery furnishes valuable clinical evidence of its functional integrity, but pulsations can be felt only in a large artery such as the dorsalis pedis, posterior tibial, popliteal, femoral, radial, ulnar and brachial. Edema and obesity interfere with palpation of these vessels, and pulsation may be absent at the usual site of an artery because of congenital variations as well as disease. The surmounting of these difficulties, and of those regarding function of the component parts of the peripheral circulation, lies in visualizing the arteries by means of a radiopaque substance injected into the lumens. In addition, by its use, information may be gained regarding the nature of pathologic processes and regarding methods of compensation for arterial occlusion.

Arteriography is almost as old as roentgenology itself, for Haschek and Lindenthal¹ reported the roentgenologic visualization of the arteries of an amputated hand and forearm following intra-arterial injection of a radiopaque substance, about eleven weeks after Roentgen discovered the rays. However, it was not until 1923 that the procedure was carried out on living subjects.² Earlier work concerning arteriography of

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¹ Haschek, E., and Lindenthal, O. T. Ein Beitrag zur praktischen Verwertung der Photographie nach Röntgen. Wien klin. Wchnschr. 9: 63-64 (Jan. 23) 1896.

² Edwards, E. A. The Status of Vasography. New England J. Med. 209: 1337-1343 (Dec. 28) 1933.

peripheral arteries has been reviewed by one of us³ and by Edwards, in addition visualization of the abdominal aorta and cerebral arteries has been reported by Moniz⁴ and his associates, by Lohr,⁵ and by dos Santos and his associates⁶

SUBSTANCES FOR ARTERIOGRAPHY

The ideal arteriographic substance is one which can be injected into an artery without producing pain, or immediate or delayed toxic effects, and which is of good radiopacity in spite of the unavoidable dilution by the blood after injection. Various substances have been used: iodides and bromides of sodium, strontium, potassium and calcium, proteinated silver salts, iodized oil, skiodan, diotrast, neo-iopax, emulsified iodized oil and thorium dioxide sol.² In most of our studies we have used thorium dioxide sol which consists of from 19 to 20 per cent by weight of thorium dioxide. This substance is distinctly superior and meets the requirements for an ideal arteriographic substance, except for the possibility of an immediate or delayed deleterious effect. The immediate toxic effects of small amounts appear to be mild, of little importance, and to occur rarely. The substance is under suspicion chiefly because of the possibility of delayed effects due to radioactivity. As stated in a review by one of us, thorium is a heavy metal with some radioactivity, and thorium dioxide is extremely slowly excreted from the body, probably requiring years to be removed completely.³ The possibility of eventual harm due to radioactivity can best be summarized as "suspected but not proved." Radt,⁷ who has had extensive experience, observed animals and human beings respectively three and a half and two years after injection of thorium dioxide sol, harmful effects were not noted. He expressed the belief that the possibility of harmful effects is largely negligible, provided correct amounts are used and contraindications to the use of thorium dioxide sol are observed. Thorium dioxide sol has been used in many hundreds of cases for roentgenologic visualization of the liver and spleen and ordinarily for this purpose about 1 cc per kilogram of body weight is necessary, although Erickson and Rigler⁸ have reported satisfactory results with smaller amounts. Excellent visualization of the arteries of the upper extremity can be obtained following intra-arterial injection of only 5 to 12 cc of thorium dioxide sol, the average amount of which is about 10 per cent of that ordinarily used for visualization of the liver and spleen. We have limited our studies largely to visualization of the arteries of the upper extremities, as larger amounts are needed for arteriography of the lower extremities. The dose used by us appears to minimize greatly, if not entirely to obviate, the possibility of harm. Erickson and Rigler, who have made extensive study of the possibility of harmful radioactivity of thorium dioxide sol, consider that a greater amount than that which we use is distinctly harmless.

³ Allen E. V. Roentgenography of the Arteries of the Extremities with Thorotrast. Proc. Staff Meet. Mayo Clin. 8: 61-63 (Jan. 25) 1933.
⁴ Moniz, Egas Pinto, Amendo and Lima Almeida. Die Vorgehens des Thorotrast bei arterieller Enzephalographie. Röntgenpraxis 4: 90-93 1932.

⁵ Lohr. Darstellung der Gehirngefäße durch Thorotrastinjektion. München med. Wchnschr. 79: 735 (April 29) 1932.

⁶ Dos Santos, Reynaldo, Lamas A. C. and Caldas J. P. Artériographie des membres et de l'aorte abdominale. Paris: Masson et Cie 1931.

⁷ Radt, Paul. Zur Kontrastdarstellung von Leber und Milz (Hepato-Splenographie). Therap. d. Gegenw. 73: 348-351 (Aug.) 1932.

⁸ Erickson, L. G. and Rigler, L. G. Roentgen Visualization of Liver and Spleen with Thorium Dioxide Sol with Particular Reference to the Preoperative Diagnosis of Carcinomatous Metastases to the Liver. J. A. M. A. 100: 1758-1764 (June 3) 1933.

TECHNIC OF ARTERIOGRAPHY

The Upper Extremities—The patient lies on the roentgenographic table with the film under the outstretched supinated arm. An ordinary sphygmomanometer cuff is wrapped about the arm as near to the shoulder as possible. Under aseptic conditions the skin and the tissues around the brachial artery, just above the lacertus fibrosus, are anesthetized with 1 or 2 cc of solution of procaine, 0.5 per cent.

The brachial artery is then entered with an ordinary venipuncture needle attached to a syringe containing the radiopaque material, as soon as the point of the needle is well within the lumen of the artery, and bright red blood pulses forcibly into the barrel of the syringe, the sphygmomanometer cuff is rapidly inflated above the systolic blood pressure and the radiopaque material is injected. The needle is quickly withdrawn and as pressure is made over the point of puncture to stop any transient leakage, the first roentgenogram is made. The sphygmomanometer cuff is now quickly deflated to the level of the diastolic blood pressure for a period of two to four pulse beats, to permit the injected material to be carried more distally. Then the cuff is quickly reinflated to its previous pressure, and the second roentgenogram is made. The procedure is repeated for a third film. The cuff is now removed, and with a gauze sponge firm pressure is made over the point of puncture for a few minutes. Additional films, with the forearm in pronation or in the lateral position, may be made before the cuff is finally deflated.

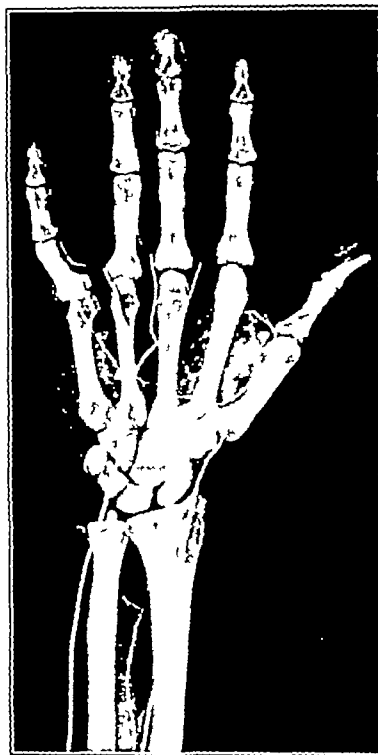


Fig. 1—Arteriogram showing the smooth outline and direct course of normal arteries. The collateral circulation is minimal.

The Lower Extremities—The skin and tissues about the femoral artery, just below the inguinal ligament, are anesthetized. The artery is punctured in the same manner as the brachial artery, the lumen is occluded above the point of puncture by pressure of an assistant's fingers, the medium is injected, and a film is exposed. The assistant lessens the pressure on the artery, allowing a small amount of blood to flow, and occludes it again by pressure while a second roentgenogram is made. The procedure is then repeated for a third film.

Difficulties of the Method—The radiopaque substance that is injected into the lumen of the artery is rapidly swept away by the blood, and adequate visualization of the arteries therefore depends on exposure of the film at the exact moment when the injected mate-

ring is present in the part of the artery that is to be studied. With some study and practice, the proper moment for exposure of the film can be determined accurately, and after some experience the technic of arteriography becomes relatively easy. Successful results demand the closest cooperation of the roentgenologist and completion of technical details with a minimum of delay, since the loss of a few seconds after the injection may result in failure. Difficulties arise when the arteries are small when they are deeply situated or when there is abnormal irritability of the artery, resulting in apparent spasm. Occasionally one feels pulsations disappear from an artery when the point of the needle comes in contact with it. Successful injection of the artery is difficult or impossible under these circumstances.

When the procedure is expertly carried out, the patient experiences little or no discomfort during the



Fig. 2—Smooth diminution in caliber of the ulnar artery and a similar increase to normal size due to spasm.

injection. A slight degree of soreness may occur in the injected area as the anesthesia wears away. A mild anodyne and the application of moist, warm dressings relieve this if necessary. Symptoms of a general nature are almost entirely lacking following the injection.

The patient experiences distress of any consequence only if some of the material is injected into the wall of or outside the artery. Considerable pain, redness and increased temperature occur locally. These symptoms and signs persist for from one to three days and are best treated by the application of hot, moist packs and an anodyne. No permanent effects have been noted, even when large amounts of the medium have been injected outside the lumen of the artery.

INTERPRETATION OF OBSERVATIONS

In the interpretation of roentgenograms of the peripheral arteries, one is concerned chiefly with (1) congenital variations from the usual formation of

the vascular system, (2) alterations in the lumens of arteries, consisting of irregularities in contour, diminution of caliber, and complete occlusion, and (3) the presence or absence of collateral circulation, and its situation and extent.

Care must be used in the interpretation of the roentgenograms, for apparent changes resulting from errors in technic of injection, or in timing of the exposure, may be erroneously considered as evidence of organic disease. The three roentgenograms made in the manner described should be studied together, for changes due to organic disease will be constant in each, while pseudodeficits due to technical errors will vary in extent and type in the various films.

As might be anticipated, normal variations in formation of the arterial system are many. Certain vessels that are sought by the clinician in the physical examination of patients suspected of vascular disease may be absent congenitally, or they may be smaller in caliber than usual. Information concerning their status, and also that of other arteries normally too small to palpate clinically, for example the digital arteries, is readily determined from the arteriogram and is of considerable assistance to the examiner in doubtful or borderline cases of arterial disease.

The normal arteriogram is characterized by (1) smooth and uninterrupted contour of the lumens of the injected arteries, (2) direct course of these vessels and (3) presence of no more than a minimum of collateral circulation (fig. 1). Ordinarily the lumen of an artery is fairly constant in size throughout its course except occasionally digital arteries, of which the caliber progressively diminishes distally. Not all digital arteries of the same patient are uniform in size, but usually they are approximately uniform. The size of the lumen varies in different subjects, and a small artery alone is not primary evidence of disease. Most normal arteries pursue a direct course, and any change in the direction of a normal vessel is ordinarily a gradual or rounded change in direction and not abrupt or angular. One common exception to this rule is the rather sharp angulation in the course of the digital arteries of individuals of middle or advanced age which we have interpreted to be evidence of arteriosclerosis, as it is not seen in normal arteries of younger subjects.

Spasm of a portion of an artery is characterized by smooth diminution in caliber to a point of complete or almost complete obliteration and an equally smooth increase in its size up to normal (fig. 2). This appearance may vary or disappear in subsequent films.

THE ROENTGENOGRAPHIC APPEARANCE OF DISEASED ARTERIES

Thrombo-Angitis Obliterans—The disease process, as shown roentgenographically in the upper extremities, is not uniform. Many phases of the process may be viewed in the same arteriogram, and arteries of normal appearance may be seen in close proximity to those that are extensively involved. There is no uniform tendency of the disease to progress in one direction, either proximally or distally, and one segment of an artery may be involved in a process varying from slight to extensive, whereas other segments of the artery may appear normal. A digital artery may fill normally while a companion artery is partially or completely occluded in the same comparative area. This patchy distribution of the changes is one of the characteristics

of the disease which most commonly involves the digital and palmar arteries. The disease occasionally may attack the distal portions of the ulnar and radial arteries, but the middle portion of these two vessels is infrequently involved.

Three phases of involvement of an artery, based on the degree of occlusion revealed by an arteriogram, may be noted. The primary phase is characterized by



Fig 3—Thrombo-angitis obliterans. The primary phase of involvement is revealed by a change in the smooth contour of the ulnar artery. The second phase is shown by marked reduction in the caliber and marked tortuosity of the lumen of the radial artery. As is frequently seen, a large collateral branch is given off from the radial artery above the point of occlusion. The final stage of involvement is illustrated by complete occlusion of the palmar arch.

a simple change in the contour of a segment of an artery. Instead of being smooth, the contour is irregular and the lumen varies in size. The filling defects are usually rounded in contour (fig 3). In the secondary phase the shadow is shaggy and moth eaten in appearance. The lumen, which is greatly reduced in size, pursues an irregular and rapidly changing course and widens and narrows in an irregular manner. The channel may be divided in places as an island divides a stream, or it may be fine and twiglike (fig 3). We do not know whether these appearances indicate a stage in progressive occlusion of the artery or recanalization of an artery once completely thrombosed. In the tertiary or final phase, complete occlusion of the artery has occurred. A distal or proximal segment may appear normal, or the entire artery may be occluded to the point of its usual termination. The point of occlusion is not abrupt, as if the artery had been ligated or cut across, but rounded, with the convexity toward the occluded portion. Occasionally a fine twig, or portion of diminished opacity, may extend a variable distance into the occluded portion (fig 3).

Collateral Arteries—The development of collateral arteries is an attempt to compensate for occlusion of the main trunks. The size, number and course of these

vessels is remarkable. Our roentgenologic studies give no indication of the origin of these collateral vessels, but we assume that they are smaller arteries not usually seen in the normal arteriogram, which have enlarged to carry on the function of the occluded main trunks. We cannot exclude their development *sui generis*. Small collateral arteries are usually characterized by an irregular, tortuous course, the larger arteries may proceed as directly as the main trunks. Either may arise from the main artery at a right angle. A collateral branch may run parallel to an occluded segment of a main artery and thus may connect the uninvolved portions of an artery. Collateral arteries seen in extremities, where occlusion of the radial or ulnar arteries has occurred, may pursue their course for several centimeters and may themselves become involved by the disease. In an area where there has been extensive diminution of the arterial supply, the collateral vessels appear as numerous fine twigs pursuing irregular criss-cross courses. When the lower ends of the radial and ulnar arteries are occluded, the interosseous artery usually extends into the palm of the hand.

Arteriosclerosis—We have not studied cases of occlusive arterial disease due to arteriosclerosis, because such a condition is rare in the upper extremities. In a case of advanced arteriosclerosis, the radial and ulnar arteries were found to have extremely irregular lumens

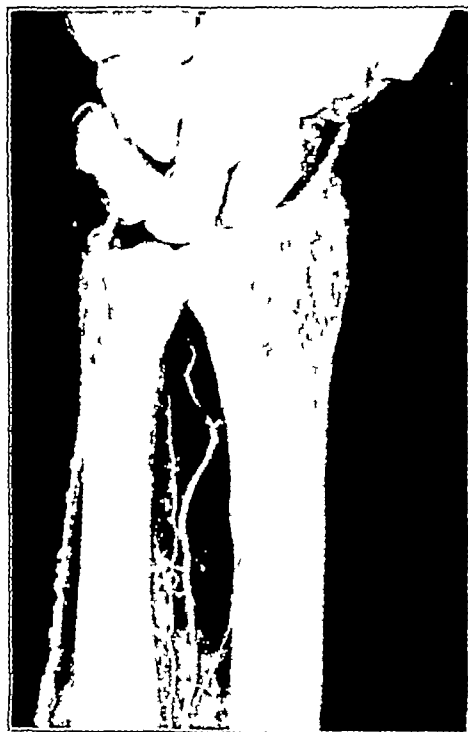


Fig 4—Arteriosclerosis. The radial and ulnar arteries are shaggy and moth eaten in appearance and the lumens are reduced in size.

which were moth eaten in appearance and reduced in caliber (fig 4). Distal to the wrist the radial, ulnar and digital arteries were normal in appearance, except for increased tortuosity of the last named.

Aneurysm—We have had the opportunity to study one case of aneurysm of the popliteal artery. In this case the aneurysm appeared in the arteriogram as a regular saccular dilatation, surrounded by a rounded, soft-tissue shadow of increased density, which we inter-

puted as thrombosis (fig 5). A few days after our study, the pulsating mass in the popliteal space increased in size and the pain increased in severity. At operation, a ruptured aneurysm of the popliteal artery was found.

Arteriovenous Fistula—One case of arteriovenous fistula of the digital arteries and one of the arteries of the palm of the hand were studied. The arteriograms in these cases had three features in common:



Fig 5—Arteriogram revealing an aneurysm (A) of the popliteal artery. A surrounding soft tissue shadow indicating thrombosis may be seen (T).

(1) dilatation of the arteries leading to the fistula, (2) absence of normal filling of the arteries distal to the fistula, and (3) "pooling" of the arteriographic medium in the region of the fistula (fig 6). The detail in the areas of "pooling" could not be determined, the increased opacity to roentgen rays was irregular in degree and extent, giving the appearance of wet snowflakes adherent to a window pane. This roentgenographic appearance has not been noted in other conditions and seems characteristic of arteriovenous fistula.

COMMENT

In the last eighteen months we have performed arteriography in 100 instances. Some of the arteries were normal although arterial disease was suspected.⁹ Examples of thrombo-angitis obliterans,¹⁰ arteriosclerosis, arteriovenous fistula,¹¹ popliteal aneurysm,¹²

arthritis, scleroderma, Raynaud's disease and hypertension, were also studied. Our experience with the procedure in these cases leads us to believe that roentgenographic visualization of arteries in the living subject has great possibilities, since it is the only direct method of acquiring information about the function of specific arteries. The time is apparently not far off when most of the arteries of the living human being can be visualized roentgenographically, and we can only hazard a guess as to the value of such a procedure. It is well known that accuracy in diagnosis of diseases, and understanding of the physiology of the digestive, urinary and biliary tracts, received great impetus with the advent of methods for accurate roentgenographic visualization of these tracts. We doubt that arteriography will prove to be as valuable, but the procedure opens a field for study which doubtless will lead to greatly enhanced knowledge of the pathologic and physiologic processes in arteries, and in the tissues which they supply with blood. We do not feel that the procedure has been of great diagnostic value in cases of thrombo-angitis obliterans, aneurysm and arteriovenous fistula, since careful clinical, physiologic and pathologic studies have proved satisfactory in high degree in this regard.

The chief value of arteriography, in our opinion, lies not in the direction of diagnosis but in that of patho-



Fig 6—Arteriovenous fistula. The increased size and tortuosity of the arteries leading to the fistula, pooling of the opaque substance in the area of the fistula, and absence of filling of the arteries distal to the fistula are well shown (previously published by Horton and Ghormley).

genesis. It gives information of inestimable value regarding the minutiae of arterial disease, information which can be secured in no other way. It is to be expected that the absence or presence of organic arterial change in Raynaud's disease, and the part played by disturbances in arterial circulation in scleroderma can be determined. In thrombo-angitis obliterans, the part played by collateral arteries and other adjustments to

9 Allen E. V. and Barker N. W. Roentgenologic Visualization of the Veins of the Extremities. Preliminary Description of a Method. Proc. Staff Meet. Mayo Clin. 9: 71-74 (Jan. 31) 1934.

10 Allen E. V. and Camp J. D. Roentgenography of the Arteries of the Extremities. Proc. Staff Meet. Mayo Clin. 7: 657-662 (Nov. 16) 1932. The Diagnostic Value of Arteriography with Report of Two Cases. Minnesota Med. 17: 167-170 (April) 1934. The Value of Arteriography. Radiology 22: 678 (June) 1934.

11 Horton B. T. and Ghormley R. K. Congenital Arteriovenous Fistula. Proc. Staff Meet. Mayo Clin. 8: 773-776 (Dec. 20) 1933.

12 Barker N. W. Spontaneous False Aneurysm of the Popliteal Artery. Report of a Case. M. Clin. North America to be published.

impaired circulation are portrayed in a manner that leaves little to be desired. The mode of progression of the disease, and the compensation for it, are clearly outlined. These observations appear to hold true for thrombo-arteriosclerosis obliterans, although our experience with arteriography in this condition has been distinctly limited. In addition, the situation, extent and nature of aneurysms, arteriovenous fistulas and arterial emboli can be determined accurately by arteriography. Whether or not the method will add information of value to knowledge of the pathogenesis of arthritis, hypertension and other conditions remains with the future to determine.

ABSTRACT OF DISCUSSION

DR. URBAN MAES, New Orleans. I welcome the opportunity to speak on the work that Drs Allen and Camp have just reported. Gangrene of the extremities is always an important problem in a large public hospital, if for no other reason than that it carries a mortality, to use my own figures of about 40 per cent. That mortality depends on two fundamental considerations, the length of time the disease has existed and the degree of arterial disease present. On that latter factor depend in turn, two considerations: whether or not amputation is necessary, and, if it is, at what level it must be done. The higher the amputation, the more certain is one to operate beyond the limits of the disease, but against that certainty must be set a mutilation that is frequently unnecessary and a mortality that increases the nearer one approaches the trunk. Aside from the question of mutilation, no factor that increases the mortality can be lightly passed over, particularly in patients whom senility and diabetes, alone or in combination, often make very poor surgical risks. It is most important, therefore, for the surgeon to be able to determine the degree of arterial disease present, and, although many tests have been devised for that purpose, none of them have been uniformly satisfactory. With the introduction of arteriography, however, direct visualization of the arterial tree is possible and the surgeon knows at least three things he did not know before: the size of the individual vessels, the contour of those vessels and the existence or absence of an adequate collateral circulation. Dr Veal in our clinic has used this method in 150 cases of vascular disease, and the results in gangrene have been very satisfactory. Again and again he has been able to tell the surgeon that he could safely amputate at a certain level and a study of the amputated limb, as well as clinical observation of the patient after operation, has proved that he was correct. Furthermore, while it is too early to make definite pronouncements, we are very hopeful that observation over a longer period of time will prove that the reduction in the mortality of the surgery of gangrene, which we have already noted in these cases, is due at least in part to the information we have gained from arteriography as well as to other factors. I would like to emphasize the apparent safety of stabilized thorium dioxide solution. We are using it in doses very much smaller than the dosage which the experience of others has proved to be safe. A series of experiments done in our school by Dr von Haam and Dr Tripoli has furnished us with laboratory confirmation of its safety. Their experiments show that the drug does affect the cells of the reticulo-endothelial system but that the cells which are destroyed are promptly replaced by normal cells, which function as perfectly as do the original cells.

DR. H. E. PEARSE, Rochester, N. Y. I don't think there is any doubt that the slides shown represent perfection in this method. Nor is there doubt of the desirability of arteriography. A discussion of the subject must center about the medium used. This involves consideration of its density, ease of administration and the harm that may result thereby. There are three types of substances available. The first is the unsaturated oils, such as iodized poppy-seed oil, which have the uniform disadvantage of possible fat embolism. The next group of compounds available are the soluble crystalline substances. It is universally true that the crystalline substances used for arteriography are in a hypertonic solution to secure sufficient density. One injects a strong hypertonic solution,

which invariably causes pain. It is in this group that Dr Warren and I have been particularly interested. We have tested many radiopaque substances of the crystalline group. We have been unable to obtain a substance that can be injected without pain. The third group is the insoluble particulate substances. These will affect the reticulo-endothelial system. I think this may be disregarded. There is ample experimental proof that one can inject particulate matter without influence on immunity. The factor of radioactivity is the one to be considered with thorium dioxide sol. It carries a negative electrical charge. It fogs a film if left for five or six days. If injected into a dog and the liver and spleen are taken out six months later, they in turn will fog a film. One may measure the radioactivity of this substance. The whole thing hinges on whether or not the amount used in arteriography is sufficient to cause delayed effects. That appears to be the salvation of the method. Thorium dioxide sol has a radium equivalent of approximately 125 micrograms per hundred cubic centimeters. How can one determine whether or not this will have a deleterious effect? The only comparable situation is that with the radium dial workers. A dose as low as 2 micrograms caused chronic poisoning. One introduces into the circulation a radioactive substance that will give internal irradiation over a long period of time. I think that the small amount used is the factor that makes the method safe. But this must be watched. One should not repeat the method sufficiently to raise the level of the dose up to that of the radium dial workers.

DR. IRVING WRIGHT, New York. At the Vascular Clinic of the Post-Graduate Hospital in New York we have had a limited but satisfactory experience with this method of diagnosis. Within the last several months a man aged 65, was in the wards with diabetes, with an acute infectious, rapidly spreading gangrene of the right first toe. The clinical experience would have indicated rather prompt amputation to save the patient's life, and the amputation would undoubtedly have been made high. Oscillometric readings showed no oscillations below the popliteal artery. There was considerable edema over the top of the foot, making it impossible to determine pulsation of the dorsalis pedis artery. We used the authors' technic and to our surprise found that the major arteries were open well down into the foot although they were somewhat narrow in the lower part of the leg at the point where the oscillometric readings could be made. On the basis of the major arteries being open and excellent collateral circulation being established, we had the courage to refrain from amputation for some time, and within a few days there was a sharp demarcation of circulation. We took care of the situation satisfactorily and the patient lost only the first toe. A second case illustrates a warning that might be uttered against too rapid amputation. This patient was seen by Dr Carl Green. There was occlusive arterial disease of the lower extremities. The arteriogram taken, according to the technic described here, showed apparently no opening of the major vessel below the femoral artery. The oscillometric reading was negative to that level. It was decided to repeat the arteriogram after first giving the patient spinal anesthesia and it was found that the vessels then showed clearly down to the level of the beginning of the dorsalis pedis artery. It seemed as though in that particular patient a reflex spasm upward had deceived us as to the exact level of the organic occlusion. If we had accepted the reading of the first arteriogram the chances are that the patient would have had amputation at a much higher level than was deemed necessary. Dr Allen and his co-workers are to be congratulated because, although other men have done this work abroad, they have been the men in this country who have interested us and inspired us to attempt this technic.

DR. E. V. ALLEN, Rochester, Minn. I am sorry that time did not permit an adequate review of the literature on the subject. The names of Drs Pearce and Warren are preeminent in this field, and their work has served as a model and as a stimulus. Experimental work that they have done has not been equaled so far as I know. Dr Maes and Dr Wright have brought out some of the clinical values of arteriography, which are extremely practical. Dr Pearce has stressed the point that the single contraindication to the use of thorium dioxide sol is a possibility of delayed radioactivity. Safety in the use of this substance appears to lie in the amount used.

In our studies we have used only about 10 per cent of that required for roentgenologic visualization of the liver and spleen, and from the best information we can obtain it would seem that this amount is entirely harmless. I am sure that all of us would be pleased if an arteriographic medium was available about which there was no question of possible harm following its repeated injection in the same patient. It is probable that such a medium will be produced in the future. When this is accomplished, I feel certain that the study of the peripheral circulation by the intra-arterial injection of a radiopaque substance will receive a great impetus.

THE RELIEF OF MENOPAUSE SYMPTOMS BY ESTROGENIC PREPARATIONS

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Therapeutic use of ovarian preparations for relief of the symptoms accompanying the menopause has met with varying and unpredictable success until within the last few years. The production of estrogenic preparations in biologically assayed form was the occasion for substantial improvement in clinical management of these patients. In 1929 the first American report of dependable treatment of the menopause with such material was published.¹ Corroborative reports have appeared by Bowman and Bender² in the field of psychiatry, by Hamblen³ in gynecology and by Werner and Collier⁴ in internal medicine. Experience with several standardized ovarian preparations is now so widespread among clinicians that there can no longer be the doubt of the efficacy of treatment expressed by King⁵ in 1928. The usefulness of the estrogenic substance has been shown to extend not only to the commoner types of climacteric symptoms but also to the not infrequent involutional disturbances with frank psychotic manifestations⁶ and to the cases that may be called pseudothyrotic.⁷ There are likewise women in the climacteric who complain of gastro-intestinal disturbances and who benefit by this treatment. The aspects of disturbed metabolism for which the climacteric may be to blame have doubtless not been exhausted by this listing.

Among the clinical problems of importance are the duration of treatment, the dosage required, the relative value of different methods of administering the hormone, the choice of commercial preparations with least cost to the patient, and contraindications to the use of estrogenic preparations. Data bearing on these questions are secured from the study of 115 cases that I have seen, ninety-five of which have been treated. Statistical treatment of the results is not warranted by

these numbers. Important clinical impressions may be secured, however, from these histories.

The results as well as the complaints are largely subjective, but clinical experience with estrogenic preparations for the menopause complaints has gone beyond the point at which their efficacy can be considered due to suggestion. Evidence of improvement is in the patient's report of relief, sometimes amplified by the observations of the family or friends as to return toward her previous mental and emotional status. In spite of this predominantly subjective nature of the material one must deal with it, for this is what patients continually ask relief from. Essential uniformity of relief by different preparations, given by different physicians and maintained after removal from contact with the physician, is hard to reconcile with any other explanation than an organic alteration in physiologic processes. The mechanism of the action cannot be explained with certainty. It seems increasingly probable that the fundamental factor is inhibition of action of the anterior pituitary, temporarily released from normal check by the ovary, until the time arrives when a stable balance of this and other endocrine glands has been reestablished.⁸

DURATION OF TREATMENT

The natural history of disturbances due to the climacteric—spontaneous or induced—apparently can include periods of autonomic, emotional and psychic instability varying from a few days to nearly two decades. There is no known way to predict the length of this period in a given case. Hence any statement that therapy alters the duration of the symptoms must be based on large numbers of cases, statistically analyzed, which is out of the question at this time. There is no control series available, but the experience of the past six years with this material has failed to reveal any woman who required treatment lasting longer than two and one half years. In a number of severely disturbed cases relief has been maintained following shorter periods. This encourages the belief that therapy not only reduces the symptoms but shortens the course of the disturbance. The history of a case will illustrate some of the features of this problem.

M. S., aged 24, had the removal of the last portions of ovarian tissue at the seventh laparotomy she had had for relief of appendiceal infection, adhesions, and follicular cysts of both ovaries. The menses never reappeared. Theelin was given, 50 units daily hypodermically beginning ten days after this operation, when typical climacteric symptoms were markedly in evidence. This was inadequate, but it was replaced successfully by 400 units of theelin orally each day. Another obstruction necessitated laparotomy and the therapy was interrupted for a few weeks, at which time symptoms were in abeyance. Return of the complaints led to resumption of the use of theelin, the dose of which was reduced gradually to 50 units daily. Then amniotin in oil solution was given in the same dosage with identical results. The doses were still further reduced to three and then two times weekly and stopped after nine months total therapy. Symptoms appeared again with summer weather about three months later, and the dose required to stop discomfort was 100 units of theelin or of amniotin oral. This was replaced shortly by 50 unit doses of amniotin in oil, injected hypodermically on alternate days. The dose was gradually reduced in frequency, replaced by amniotin oral and all therapy stopped twenty months after operation. There has been no significant return of menopausal complaints in the three months since, and the patient has been increasingly active during the past year.

In three other young women who have been subjected to complete oophorectomy the progress from

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need of large doses to freedom from symptoms without therapy has required from three to ten months. It is impossible to establish a rule from four such cases. It has been evident in all these women that progressive decreases in dosage were possible without sacrificing relief from discomfort. In four other women with an artificial menopause, three produced by irradiation, a similar decrease in dosage is being carried out, with promise that less than two years of continuous therapy will be required. As compared with the few patients who have not remained under treatment but who were temporarily relieved while still in the hospital, it appears that this type of endocrine therapy is responsible for abbreviating the disturbance of the artificial menopause. A similar gradual reduction of doses and amelioration of symptoms is observed regularly in those women with a spontaneous climacteric. It would be wrong to give the impression that a definite duration of symptoms or of treatment can be stated. However, the assurance that treatment has a finite period puts this endocrine therapy on an encouraging basis as compared with that necessary for myxedema, diabetes or adrenal insufficiency, i. e., the organism can reestablish a balance after the menopause.

DOSAGE REQUIRED

In the use of follicular hormone the dose must be made adequate for the effect desired. There is no way evident in which this may be predicted for a given patient. Occasionally 10 units daily by the hypodermic route will be adequate. Far more frequently the initial week will be only partly successful unless from 25 to 50 units is given each day. Larger doses have been required at first for the control of symptoms following immediately after oophorectomy in women younger than 40. As a guide to the adequacy of the dose, it may be suggested that results are to be expected in terms of days rather than of weeks. One need not be satisfied with anything short of complete relief of all the vasomotor and emotional disturbances. The amount may as well be increased promptly to this point of complete restoration of comfort, following which reduction is to be tried gradually during the following weeks. Reappearance of hot flashes, insomnia and the like calls for an increased prescription. If no symptoms appear for some time it may be well to omit treatment for a few days to determine whether it is still needed.

There is little evidence that two daily injections are more helpful than one. If in the early stages treatment is given less than once daily, relief may not be continuous, which indicates too infrequent administration of the preparation. Later it may be possible gradually to reduce the frequency to alternate days, twice weekly, and then to omit it entirely. Some women find that symptoms may remain quiescent for some weeks, to return under excitement or exposure to heat. Relief is secured within a day or two when daily use of the material is resumed.

RELATIVE VALUES OF VARIOUS PREPARATIONS

An attempt has been made to evaluate the different commercial preparations of standardized estrogenic substance in use in the United States.*

* Squibb's amniotin has been used in aqueous solution hypodermically, in hardened gelatin vaginal suppositories in oil solution orally and in oil solution hypodermically. Parke, Davis & Co's theelin has been given in aqueous hypodermic solution and in vaginal suppositories and theelol has been given in tablets and capsules orally. Progynon produced in Germany by Ashlbaum and imported by the Schering Corporation has been used only in the tablets orally. For much of this material I am indebted to Dr. J. F. Anderson of E. R. Squibb and Sons and to Dr. E. A. Sharp of Parke, Davis & Co. A preliminary supply of progynon was also furnished by the Schering Corporation.

In 1929 Sevringhaus and Evans¹ reported activity of the gelatin suppositories. These were as effective as the hypodermic injections if the dosage was about three times as large. This form of treatment has no longer anything to recommend it, since oral administration is possible at no greater cost.

Numerous comparisons of the results from hypodermic injection of amniotin or of theelin leave no doubt that they are interchangeable, unit for unit. Difficulty was encountered at first when the preparations were not so uniformly stable or always standardized by the usual technic. Since theelin is now standardized in the same way, it is directly comparable to amniotin.

Several women who have demonstrated their cooperativeness have been invited to try the various preparations to determine their relative value. They have not known the supposed equivalent figures but have been assisted in determining the minimum dose of each preparation that would duplicate the relief from symptoms achieved by previous materials. To avoid being misled by decreasing need for treatment it has been necessary to return occasionally to the previous form of treatment to check the need. The clinical details previously cited in the treatment of a case of artificial menopause showed the essential equivalence of theelol and amniotin oral, given by mouth. In the same case it was found that hypodermic administration of amniotin in corn oil was between four and six times as effective as the same number of units orally. A further protocol will illustrate the method of trials.

M. N. had two children, and following a few months after the second delivery, at the age of 20, a perfectly typical spontaneous menopause occurred. Symptoms had continued for seven years before she was referred for treatment. At that time she was in a moderately severe involutonal psychosis, unable to care for her children. Improvement was prompt and continuous, almost dramatic to the social workers who assisted. After two and a half years of continued treatment she has gone six months without caring for any further therapy and has for two years been responsible for all her home duties.

At first she received amniotin hypodermically, 20 units daily. After a number of weeks this was changed, and she found that 90 units of progynon orally was about as satisfactory. Theelol, 100 units daily, was a little more helpful. This suggests that the oral dose needs to be between four and five times the hypodermic dose. Next an attempt was made to stimulate her ovaries with antuitrin-S and with follutein (commercial preparations of the anterior pituitary-like gonadotropic stimulating substance from the urine of pregnancy), but no flow and little subjective benefit resulted.

Next a comparison of theelol and amniotin oral was made. At this stage she found that 400 units of theelol gave excellent results but that 200 was inadequate. She thought that 200 units of amniotin was inferior to the same dose of theelol, but at 300 units the judgment was reversed. Improvement began to be manifest, and the dose was reduced to 100 units. Comparisons of theelol and amniotin at this level and at 150 units were in favor of the theelol, but the advantage was found to be the tastelessness of the theelol tablet or capsule as compared with the unpleasant odor of amniotin which she could not easily disguise.

For some reason her requirement seemed to rise, and control was secured by from 200 to 300 units of amniotin oral. She then changed to the use of amniotin in oil given hypodermically. She was trained to give the injections herself. With this material she found that 50 units daily gave as much relief as 300 units of amniotin oral. This 6 to 1 ratio is probably significant of a slight advantage of the oil solution as compared with the aqueous hypodermics in the same patient earlier. After four months she began to reduce the frequency of doses and by the end of thirty months of total treatment she was able to stop all use of ovarian hormone.

Similar trials with other women have shown an advantage sometimes for one preparation, sometimes for another. It was evident at times that the disagreeable taste of amniotin oral was a handicap to the comparison. Some women disguised this readily in food and at times reported it as superior to theelin. In general, the impression is gained that there is no dependable difference in therapeutic efficiency between the same number of units of amniotin oral, of theelin and of progynon. Also the oral dose of these materials appears to be about five times as large as for the hypodermic administration. These impressions are gained from the treatment of ninety-five women, seven different preparations being used with an average of two preparations per patient.

The use of the oil solutions hypodermically is of interest. The only one tried was amniotin prepared in a refined corn oil. This caused no local pain and was apparently well absorbed even when used for a period of months in the case just cited. Two women who used it had an impression that it gave a more sustained effect throughout the day than they noted from single doses of aqueous hypodermic material. This is hardly sufficient evidence to be dependable, the difference is certainly slight. In one woman who used this material a severe local reaction developed at the site of injection and hay fever and asthma appeared simultaneously during the corn pollen season. She was then found to be allergic to corn pollen and knew that exposure to corn at certain times caused hay fever and asthma. A sample of the corn oil supplied by Dr. Anderson failed to give typical skin reactions, but there was an immediate and very transient reaction to the amniotin in skin testing. The entire episode was atypical in that local reaction to the oil injections did not appear until after several weeks of its use. In general the use of the oil solution has no obvious advantage, although it has less risk than is usually assumed.

COST TO THE PATIENT

It will be apparent that oral therapy is so dependable that it should be the method of choice. About five times as much needs to be given as by hypodermic injection. But in the case of amniotin the oral preparation is priced so that there is no differential to interfere with the oral use. Unfortunately, theelin costs at least 50 per cent more than the equivalent dose of theelin. There is only a little difference between the cost of the theelin and amniotin used hypodermically. But in the case of progynon the tablets cost much less than the equivalent dose of any other preparation. It is greatly regretted that the American products have not been available at prices that justify their preference or at least their being on a parity with the imported material.⁹ At the most recent quotations it would seem the duty of the clinician to protect the interest of his patients by prescribing the least expensive preparation. Cost of treatment is practically the only reason assigned by patients who have stopped treatment while symptoms persisted. Since there is no advantage to the use of hypodermic materials, the cost of professional service for their administration or the trouble of teaching the patient the technic should operate to secure the early and entire replacement of this method of medication by oral therapy.

⁹ Since this manuscript was prepared I have learned that the American products will be markedly reduced in retail cost shortly. Purchase may therefore well be made on a basis of cost per unit and type of medication desired.

CONTRAINDICATIONS

There are two situations that call for a reduction in dosage. One is the occurrence of a vaginal bloody flow. In several cases this has occurred during the therapy, as reported by Werner and Collier.⁴ There is no serious harm, but it is wise to reduce the dose. Control of symptoms has been achieved with doses less than enough to cause a repetition of bleeding. The other circumstance is the stimulation of libido to an uncomfortable degree. There is no doubt that the estrogenic principle is not only estrogenic in animals but also the important biologic factor arousing libido in women. One woman, aged 30, who had suffered oophorectomy at 21 and hysterectomy at 25, was doing very well while using 50 units of amniotin in oil hypodermically. During a trip she became conscious of an unpleasant increase of general sex interest and libido. Suspecting the medication as a possible cause she reduced the dose sharply, with much relief.

In addition (although this may appear paradoxical at first glance) it is probable that primary amenorrhea or any condition in which it is desired to reestablish absent menses should be a contraindication to the use of this hormone. The use of large doses of estrogenic substance is known to cause inhibition of the anterior pituitary factor normally responsible for stimulating gonadal development and activity. Therefore, although estrogenic preparations given in large doses may substitute for the ovary in stimulating a uterine development sufficient to be followed by a flow, this result is only temporary, and the ovaries themselves are left less active than before therapy. The commercial producers advocate the use of the material for these cases. There is reason, based on the results obtained in lower animals, to consider this entirely erroneous. Such cases really require stimulation of ovarian function through pituitary medication.

SUMMARY

Observations made in following the course of treatment of ninety-five women suffering from menopausal disturbances indicate that the sustained use of adequate amounts of estrogenic substance tends to shorten the course of the disturbance. In no case has therapy been needed longer than thirty months. The daily dose required varies and must be determined by trial. The criterion suggested is the minimum that secures complete relief from the autonomic and emotional disturbances. There is no clinically significant difference between the same number of units of the different preparations—amniotin, theelin and progynon—when they are administered by the same route. Oral therapy is so dependable that it may well replace hypodermic administration. The choice of preparation used may be made on a basis of cost, provided any one of the biologically standardized preparations is employed. Contraindications to the use of estrogenic preparations include reestablishment of menstrual flow after the menopause, undue increase of libido (both of these calling for reduced doses) and amenorrhea in cases in which it is desirable to restore menstrual function.

ABSTRACT OF DISCUSSION

DR. EMIL NOVAK, Baltimore. Many women pass through the menopause with scarcely any symptoms so that they need no treatment. In a large number the symptoms are rather mild, so that no treatment is necessary except an instructional and reassuring talk from the medical adviser as to the normality of the symptoms, their temporary nature, the importance of avoiding stress and anxiety and perhaps the administration of

some such simple nerve sedative as the bromides. In a minority of cases, however, the characteristic symptoms, and especially the vasomotor flushes and sweats are so pronounced and disturbing that efforts at organotherapy are called for and I know of no rational plan other than the employment of the only potent ovarian hormone available. I refer, of course, to the follicle hormone, usually in the form of theelin aminotin or progynon. Why is this plan rational? That the menopause is produced by the withdrawal of the ovarian secretions is universally accepted. That the ovarian hormone responsible is estrogenic substance is indicated by considerable evidence. For example, hormone studies, especially by Zondek have shown that the woman passing through the menopause goes first through a phase of excessive production of estrogenic substance, then through one of deficiency in estrogenic substance and finally through one of excessive production of the gonadotropic factor. In the first of these menstrual excess is common but, in my experience, women with such functional bleeding rarely suffer with vasomotor symptoms. It is in the stage of deficiency in estrogenic substance that vasomotor phenomena are most common. Although little is known of the mechanism of their production, it seems probable that the most characteristic symptoms, the flushes of the head neck and upper part of the thorax, must be in some way evoked through association between the endocrine organs and the nerve centers, probably in the hypophyseal region. That withdrawal of estrogenic substance is the immediate cause of menopausal symptoms is further indicated by the fact that the removal of certain tumors that produce it in large amounts and, so far as is known, only estrogenic substance, may produce characteristic menopausal symptoms even in elderly women. In other words, women who have passed through one menopause at the usual age may experience a second many years later. I have recently reported such a case, and others have been observed by Schulze and Dworzak. For such reasons as these I look on substitutional estrogenic hormone therapy as rational. I am in essential agreement with Dr Sevringhaus as to the matter of dosage. As to the route of administration, for the present I prefer the hypodermic method in most cases, although it seems possible that a lowering of the expensiveness of commercial preparations will make the oral method the popular one in the future. I have not been able to understand why the commercial preparations of the estrogenic hormone are so expensive in this country and so cheap in Germany.

DR. J. P. PRATT, Detroit. The author has presented logically the treatment of an important group of clinical cases. It remains to be seen whether he is dealing entirely with a cause and effect relationship or has underestimated his psychotherapeutic results. Nearly ten years ago just after Allen and Doisy standardized the estrogenic hormone and purified it to such an extent that it could be used for injection into human beings I was impressed with the analogy between the human castrate and the animal castrate. The logical deduction was that an estrogenic substance that would completely substitute for the function of ablated ovaries in animals would do the same in man, the typical human castrate being of course one in whom the ovaries were removed at operation or a woman at the menopause. At that time a number of patients were injected with a preparation furnished by Allen and Doisy. Only a few units of a hormone were used but in the first twenty five cases treated the results seemed satisfactory. Then it was realized that the human experiments were not analogous to the animal experiments, for the estrous cycle and the menstrual cycle are quite different and in the human being no controls were being used. When other inert injections were used such as salt solution or sterile water equally good results were obtained. In other words, the first effect must have been largely psychotherapeutic and to a very little extent a relation of cause and effect. This has led me to question similar results without adequate controls. It would seem that in presenting a problem of this sort a series of controls should be maintained and a group of ninety-five patients should be sufficient to provide ample controls. The author's attempt to increase knowledge of human endocrinology is highly commendable. The brilliant laboratory achievements resulting from carefully planned and controlled experiments are most stimulating. The clinician's task is difficult. He deals with few normals but

has a wealth of material illustrating aberrations of function. Information can be obtained only in fragments and pieced together as well as possible. Conservatism is necessary, that clinical endocrinology may be established on a sound basis.

DR. E. P. McCULLAGH, Cleveland. There seems little doubt that menopausal symptoms are largely a matter of disturbed body chemistry. The symptoms appear regularly, not only at the time of the natural menopause but after irradiation of the ovaries and after oophorectomy. In addition, the symptoms are accompanied frequently by certain anatomic changes such as weight gain with distribution of fat especially over the trochanters, and a tendency to hirsutism. There are still other changes, such as a lowering of the basal metabolic rate, and bioassays show that there is definite disturbance in the levels of the various hormones. The mechanism of the production of menopausal symptoms must still remain in doubt. In certain individuals, at least during a part of the menopausal cycle there is an excess of estrogenic substance in the blood and urine. In others there is a rather marked excess of the gonad stimulating factor in the blood and urine. For this reason I was inclined previously to look on the menopausal symptoms as caused by an increase in gonadotropic substance rather than due directly to deficiency of estrogenic substance. This, however, I have not been able to show in all instances, which may be due partially to inadequate methods of assay. The mechanism of the climacteric may be better understood after methods of assay have reached a higher point of accuracy. It seems probable that the pituitary gland plays a large part in the production of menopausal symptoms and that it is likely that other pituitary hormones in addition to the sex factors are markedly disturbed. The frequency of occurrence of hirsutism, of hyperthyroidism, and of diabetes mellitus at this age lends support to this belief. In the relief of menopausal symptoms, the treatment is chiefly a matter of dosage, and there seems to be no advantage in giving doses oftener than once a day or in some instances once every second day. I have not been able to determine that relief is obtained more quickly by more frequent administration provided the dose is adequate. I believe the relief will be attained in a matter of days rather than weeks. There are still a number of cases in which therapy with estrogenic substance does not produce adequate improvement. This still may be a matter of dosage, but in my experience, even with doses that are adequate in relatively severe cases some patients fail to respond. It is difficult to judge from the patient's symptoms the relative value of estrogenic substance in any form after one course of treatment. Some patients with relatively severe menopausal symptoms after treatment for a few days or weeks can be completely rid of symptoms for months or the symptoms may not return at all.

DR. J. I. HOFBAUER, Cincinnati. The menopause is characterized by a definite increase in the number of the basophils in the prehypophysis. In 1922 the treatment of menopausal symptoms by irradiation of the hypophysis was introduced. I am still inclined to consider this method the best, as far as the results obtained are concerned. My views are shared by the reports of a good many clinicians. J. A. Huet, *Bull. et mem. Soc. de radiol. med. de France* July 1933, the Mayo Clinic, Sahler et al. No harm is done to the brain by this type of irradiation. Following the irradiation of the hypophysis in cases that showed definite signs and symptoms of hyperthyroidism, these symptoms disappeared, and the thyroid showed a marked decrease in size (*Arch. f. Gynäk.* 120). Recently, I treated menopausal symptoms with insulin in several cases, with somewhat gratifying results. I am anxious to learn whether there has been any study made concerning the absorption of ovarian hormones from the intestinal canal, since my observations have shown that anterior pituitary preparations are quantitatively destroyed by pancreatic juice.

DR. CLMER L. SEVRINGHAUS, Madison, Wis. I have no data on absorption of estrogenic substance taken orally, but the material is effective orally in doses five or six times as great as those given hypodermically. This ratio may indicate poor absorption or partial destruction. Several diabetic women failed to get relief from menopausal symptoms by the use of diet and insulin alone. The addition of estrogenic material accomplished clinical relief. It appears that insulin is useful only for the control of the diabetes. Although on theoretical grounds

irradiation of the pituitary should give relief from menopausal symptoms, I do not favor its use because it is as yet impossible to control the dosage so that other structures and functions are not also endangered. The replacement therapy is more physiologic and less precarious. The resistant cases in my experience have been the younger women with artificial menopause. The requisite doses are very high, sometimes as high as 400 units daily by hypodermic injection for a few days until control is established. After that the requirement rapidly declines. So far I have not seen any patient in whom I was unable to secure fairly satisfying relief. This tendency to improvement under therapy makes it necessary, when comparing two preparations, to return to the original one at times to find whether the need has decreased. This has been done in my series when there was any evidence suggesting that one preparation was more successful than another. The matter of control observations has been dealt with in previous papers. Experience has also been had with the same clinical group with unstandardized ovarian materials in previous years, when results were sometimes secured but the therapy was not dependable. Trials of bromides and barbiturates to reduce costs have also served as a control on the effectiveness of the therapy. Psychotherapy is admittedly helpful in making an approach to these women, but it is far from a complete therapy. Principally it can reassure by emphasizing the temporary nature of the climacteric. The cost of treatment could not be a disturbing factor in the results I have reported because the materials were furnished for most of these patients free of cost. I maintain that, for extended therapeutic procedures like this, the lowest cost to the patient is the optimum for the physician. More patients will come under treatment because increased availability will make for wider benefits and hence larger demands. Eventually retail costs are further brought down by quantity use. It is fortunate that the American manufacturers are viewing the matter in this light and already reducing prices.

USE OF THE ELECTROSTETHOGRAPH FOR RECORDING HEART SOUNDS

PRELIMINARY REPORT

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AND

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Our purpose in this report is to record the use of a new device for photographing heart sounds. The electrostethograph,¹ designed by M. L. Lockhart, appears to have certain advantages over other types of apparatus used for this purpose. A brief presentation of the historical background in the development of this field of investigation may be of interest.

According to Hirschfelder,² the first method for recording heart sounds was introduced by Donders in 1856 and was revised by Martius in 1888. It consisted of beating the time of the sounds on a receiving tambour and recording the movements of the lever.

Hürthle in 1893, Einthoven and Geluk in 1894 and Holownski in 1896 were the first to employ methods in which the sounds were received by means of a microphone.³ Hürthle received the sounds by a stethoscope connected with a resonance apparatus, which magnified the amplitude of the vibrations, the enlarged vibrations acted on the handle of a wooden tuning fork, the latter being set into vibration in the same tempo. The vibra-

tions of the arms of the fork excited the microphone, which set in action an electromagnetic signal apparatus, the movements of which were transferred to a pantograph of Marey and registered. Einthoven and Geluk picked up the sounds with the stethoscope and conducted them through a rubber tubing to a microphone. The currents were then led through a capillary electrometer the movements of which were photographed

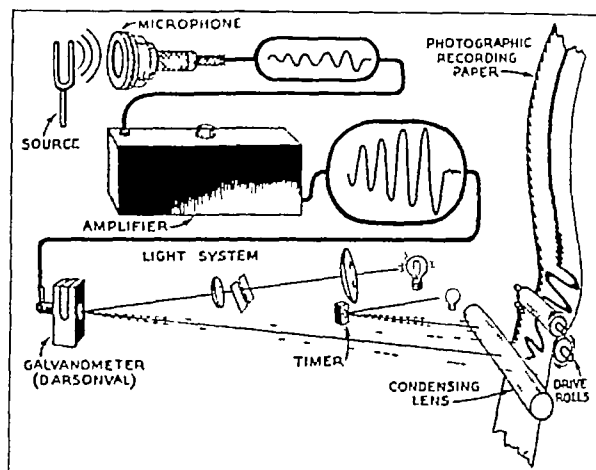


Fig 1—Schematic diagram of the electrostethograph

Holownski also used a microphone as a receiver of the heart sounds but recorded them with the aid of a so-called optical telephone. The method depended on an application of the interference rings of Newton, the changes in the rings being then photographed.

Marbe in 1907 and Roos in 1908 used an entirely different objective method for recording the heart sounds. They transferred the oscillations of a tambour activated by the heart sounds to a gas flame of great sensibility. They applied the tambour over the chest and then passed a paper through the sooty flame, recording the sounds on this paper. Weiss and Frank devised instruments in which no microphone was used but in which the vibrations of a membrane set in motion by the heart sounds are magnified and recorded photographically. Otto Weiss first reported his work with this apparatus in 1907, and in 1908 Weiss and Hofbauer reported photographing fetal heart sounds.

An important step in the photography of heart sounds was developed in 1903 by Einthoven, who at that time introduced the string galvanometer.⁴ Einthoven's work resulted in an apparatus of extreme sensitivity, and easily applicable to clinical and physiologic research.⁵ Since the introduction of the string galvanometer in place of the capillary electrometer, Einthoven's method has passed into everyday use and excellent records of normal and abnormal heart sounds have been obtained. Using this method, Einthoven, Eyster, Kahn, Lewis, Bull, Fahr and others have contributed many accurate studies of the time of onset, duration and crescendo or decrescendo character of the normal and pathologic heart sounds and murmurs and have described variations with rate, respiration, posture and exercise.

In 1910 S. G. Brown introduced a telephonic stethoscope that amplified the heart sounds about sixty times. It depended on passing the sound currents through a telephonic relay, thereby increasing their strength

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1 Arrangements have been made with the Cambridge Instrument Company, New York, for the manufacture of the electrostethograph.

2 Hirschfelder, A. D. *Diseases of the Heart and Aorta*. Philadelphia: J. B. Lippincott Company, 1918, p. 150.

3 Barker, L. F. *Electrocardiography and Phonocardiography*. Bull. Johns Hopkins Hosp. 21: 358 (Dec.) 1910.

4 Bierring, W. L. *Historical Developments in Diagnosis of Heart Disease*. Illinois M. J. 66: 115 (Aug.) 1934.

"Long distance" auscultation was then introduced and graphaphonic records were made that could be reproduced

In 1920 Dr H B Williams of New York⁵ used an electromagnetic transmitter and two stages of electrical amplification to record a cardiac murmur. Gen George O Squier of the U S Signal Corps at the same time amplified the heart sounds and reproduced them with a magnavox loud speaker for demonstration to assemblies and for long distance transmission. In an article published in 1922, M J Myres⁶ called attention to the use of the newly developed vacuum tube as a means of magnifying the electric waves of a telephone circuit and stated that in his opinion it was the beginning of a "microscope" for the ear.

In June 1923 Richard C Cabot⁷ reported the use of the electrical amplifying stethoscope, the result of three years of experimental work. The instrument was designed by the New York engineering department of the Western Electric Company and consisted of an

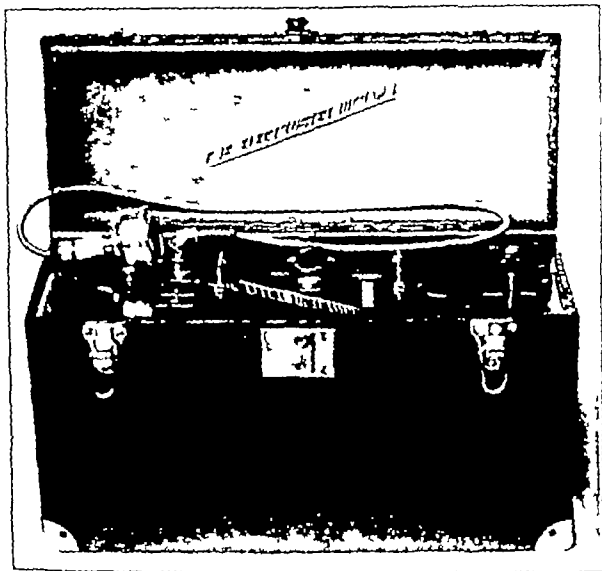


Fig 2—Complete electrostethograph unit

electromagnetic transmitter to pick up the sound, the current was then passed through three amplifying vacuum tubes, the last of which was the power or output tube. The current was then distributed to the receiving sets. The details of this device were published in 1924 by Gamble and Replogle.⁸ Later these workers used the electric filter⁹ to attain selectivity in the frequency of the vibrations introduced into the amplifying circuit. In February 1923 Jacobsohn⁹ of Germany reported using a similar amplifying stethoscope. More recently A Graham Asher¹⁰ of Kansas City has used the argon tube to record heart sounds. With this method the sounds are picked up by a microphone and after amplification the current is passed

through the argon tube, causing the glow of the tube to vary according to the current introduced. These variations in the intensity of the light are then recorded on photographic paper.

Valuable contributions on the subject of heart sound records and their interpretation have been made by Gerhartz, Battoerd, Joachim, Selenin, Hoogerwerf, Abbott, Duchosal, Wiggers and Paul D White.¹¹

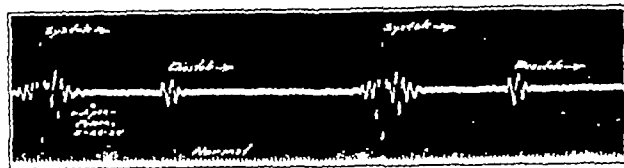


Fig 3—Normal heart sounds. Tracing on a man aged 32 no organic heart disease no audible abnormal sounds



Fig 4—Mitral regurgitation in a man aged 30 diagnosis rheumatic heart disease mitral regurgitation

number of these men as well as more recent workers have made simultaneous heart sound records and electrocardiographic records and have pointed out the advantages of taking the two records at the same time.

The electrostethograph was designed and built by M L Lockhart, it is illustrated in the accompanying schematic diagram (fig 1). This diagram shows sound waves being picked up by a microphone and amplified to the desired magnitude by a vacuum tube amplifier. These amplified sound waves, which have been changed to pulsations of electrical energy, are then fed into the moving coil of a d'Arsonval type of galvanometer. This coil, of course, follows each electrical pulsation trans-

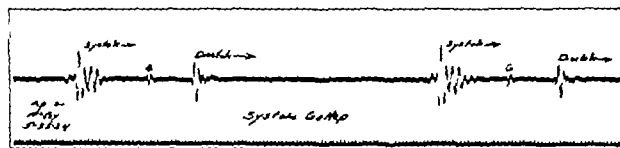


Fig 5—Systolic gallop rhythm in a man, aged 43. G is the extra sound. Diagnosis no organic heart disease

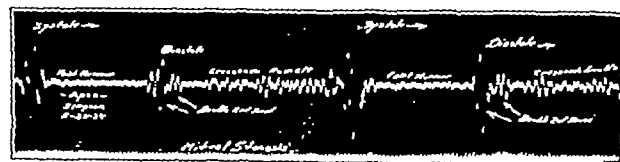


Fig 6—Mitral stenosis in a woman aged 53. Diagnosis rheumatic heart disease mitral stenosis partial decompensation

mitted into it. A tiny concave mirror attached to the moving coil in the galvanometer reflects light onto a moving photographic paper or film. Part of this reflected light is thrown on a ground glass screen, which enables the operator to observe the sound vibrations that are being photographed. Provision is made also to enable one to hear the sounds simultaneously as they are seen and photographed. A loud speaker may be used for group demonstration or classroom instruction.

⁵ Myres M J. The Clinical Application of the Audion Amplifier. *J A M A*. 78:100 (Jan. 14) 1922.
⁶ Cabot R C. A Multiple Electrical Stethoscope for Teaching Purposes. *J A M A*. 81:298 (July 28) 1923.
⁷ Gamble C J and Replogle D E. A Multiple Electrical Stethoscope for Teaching Purposes. *J A M A*. 82:387 (Feb. 2) 1924.
⁸ Cabot R C and Dodge H F. Frequency Characteristics of Heart and Lung Sounds. *J A M A*. 84:1793 (June 13) 1925.
⁹ Jacobsohn Leo. Amplified Audibility of Heart Sounds. *J A M A*. 80:493 (Feb. 17) 1923.
¹⁰ Asher A G. Graphic Registration of Heart Sounds by the Argon Glow Tube. *Arch Int. Med.* 50:913 (Dec.) 1932.

The electrostethograph is operated entirely from the ordinary 110 volt current. It weighs 33 pounds complete and measures 18 inches in length, 7 inches in width and 9 inches in height. It is, of course, portable.

Owing to the use of a new type galvanometer in a unique circuit design, the necessity for calibration, standardization and focusing has been eliminated. The machine is simpler to operate than a modern radio set. The procedure is as follows: After the machine has been connected to an electric plug, the microphone is placed on the chest over the heart and the volume increased to the desired magnitude by the turning of a dial. To take the picture the operator has only to press a button, thereby starting the electric motor, which drives the film or photographic paper past the beam of light and into a light proof container. The technique required in placing and holding the microphone is the same as that required in the proper use of the stethoscope. The viewing screen is 60 mm in width, the same as the film, this makes it possible to determine accurately the dimensions of the finished picture. Murmurs and other irregularities can be seen as well as heard and the volume increased to bring them out with the desired magnitude on the picture. The value of this viewing screen cannot be fully appreciated until one uses it.

In the clinical use of the electrostethograph we have been impressed with the accurate reproduction of both normal and abnormal sounds audible to the ear. In making tracings it was advisable to suspend respiration during the time a record was being taken. This precaution was quite essential to take a satisfactory record

improved the quality of the tracing, since the interval between the heart sounds would be maintained free from oscillations. With high amplification, some oscillations of the base line were unavoidable. Intestinal borborygmus caused a rather marked disturbance in tracings taken over the lower part of the chest. In some records, definite oscillations were present for which we were unable to offer an adequate explanation.

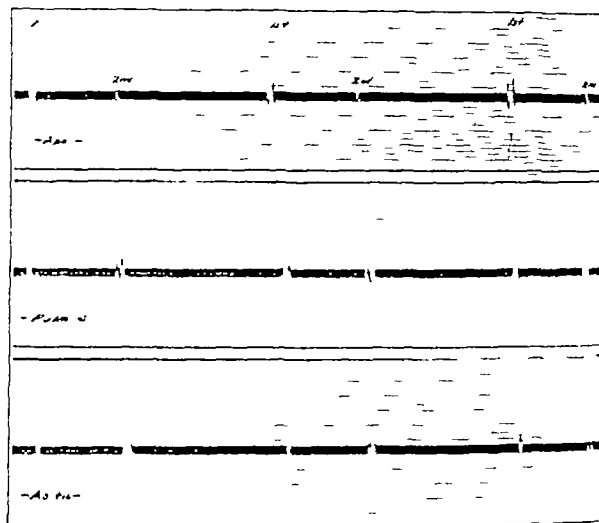


Fig 8—Record with improved apparatus showing normal heart sounds

Murmurs audible to the ear were adequately photographed on our record. The murmur of mitral regurgitation was often relatively high pitched and did not make as prominent an excursion on the tracings as the intensity of the sound to the ear would lead one to anticipate. Thomas Lewis¹¹ as well as others have previously made this observation. In some cases with mitral regurgitant murmurs a short presystolic oscillation of the base line was present when no distinct sound was audible to the ear. On the tracing it was easy to decide whether a murmur was systolic or diastolic in time even with increased heart rates. The oscillations in mitral and aortic stenosis were large and relatively widely separated, while those in the regurgitant murmurs were more likely to be small in amplitude and less widely separated.

In photographing the heart sounds, both normal and abnormal, the visible impulse on the screen was exceedingly valuable in helping the operator apply the microphone in the optimum location and with the proper degree of pressure to bring out the sounds to the best advantage. It was also of distinct aid to the ear in recognizing adventitious sounds, particularly those of short duration. The deflection produced by the sound might be perceived on the screen before it was heard by the ear. The relative length of time occupied by systole and diastole was usually appreciably different to the eye, so that by watching the impulse one might see that a murmur was definitely systolic or diastolic in time. Audible splitting or reduplication of the first or second sounds always appeared distinctly in the photographic record. In gallop rhythm the extra sound was always visible on the photographic record and its location in the cardiac cycle was evident. In one case

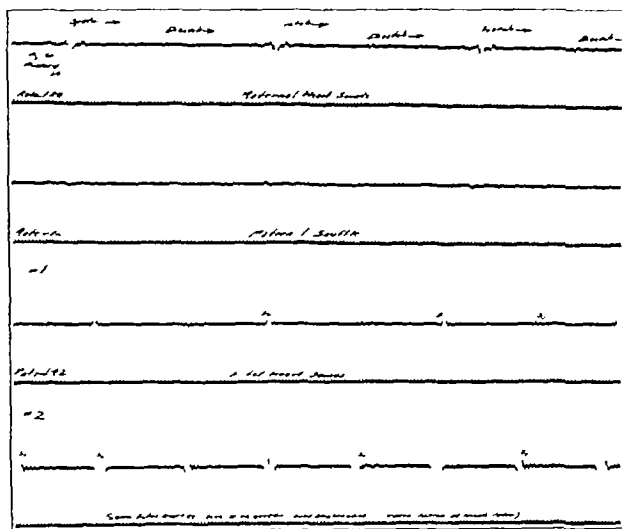


Fig 7—Maternal heart sounds, maternal souffle and fetal heart tones in a woman aged 38. Diagnosis pregnancy eight months

over the base of the heart. The degree of pressure with which the microphone face was applied to the chest wall was an important consideration. The lightest pressure with which it was possible to maintain adequate contact with the skin and keep out extraneous sounds was most desirable for obtaining good records. Relatively quiet surroundings were also desirable, but absolute quiet was not essential. Accurate application of the microphone to the area in which the sounds were best heard was also of importance. Low amplification

11 Lewis Thomas. Illustrations of Heart Sound Records, Quarterly J Med 6 441 1912 1913

a pericardial friction rub was photographed. Fetal heart tones and the maternal souffle were satisfactorily photographed in a number of instances. In one case in which there was a tachycardia and a heart rate of 240 beats per minute, a satisfactory tracing was taken showing the first and second sounds about 1 cm apart.

Figures 2 to 7 are illustrations of some of the sound tracings taken with the electrostethograph. Figures 8

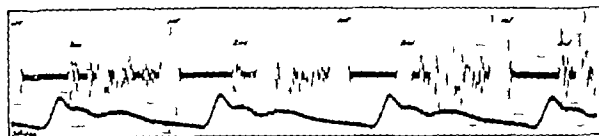


Fig. 9—Record with improved apparatus showing mitral stenosis

to 10 were taken with an improved apparatus developed by Mr. Lockhart and the Cambridge Instrument Company in accordance with suggestions of Dr. H. B. Williams.¹²

The electrostethograph offers a satisfactory method of photographing heart sounds and appears to have certain advantages over the other types of recording devices. It can be operated wherever 110 volt alternating current is available. It is a small, compact unit that is entirely portable. Its operation is very simple, inexpensive and requires no unusual skill. The use of the viewing screen, on which the vibrations can be seen at the same time one is listening to and photographing the sounds, aids greatly in obtaining the best photographic records. Careful observation of the screen is also of aid in detecting certain abnormal

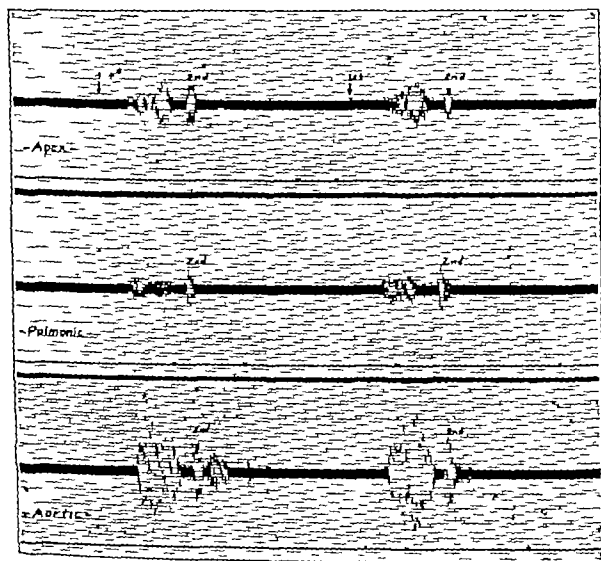


Fig. 10—Record with improved apparatus showing aortic stenosis with regurgitation

sounds and locating their position in the cardiac cycle, this feature should be of particular aid in training the student. The photographic record of heart sounds is of distinct aid as a supplement to auscultatory observations as well as providing a permanent graphic record. In our experience with the electrostethograph there have been some oscillations of the base line for which we were unable to account, further study will be required to determine their significance.

ARTHRITIS

A COMPARISON OF THE CYSTINE CONTENT OF THE FINGERNAILS WITH THE SEDIMENTATION REACTION OF THE BLOOD

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Sullivan and Hess,¹ using the Sullivan² cystine reaction, demonstrated that the cystine content of the fingernails in arthritis is, on the average, below normal and in many cases exceedingly low. This lowered cystine content of the fingernails was concluded to be an index of a toxic factor. Fischer³ and Westergren⁴ stated that the sedimentation reaction of the blood varies directly with the degree of intensity of the arthritic

TABLE 1—Results in the Eight Control Cases

Case	Cystine of the Fingernails	Sedimentation Reaction
A. J. W.	11.31	2
J. W. S.	11.90	3
J. M. H.	12.86	2
A. P. N.	10.38	3
A. M. H.	11.46	11
I. G. L.	13.02	2
W. C. H.	12.88	7
M. S. S.	12.00	8

TABLE 2—Results in Twenty-Two Cases of Arthritis

Case	Cystine Content of the Fingernails	Sedimentation Reaction
R. I. W.	11.15	8
I. W. S.	9.70	15
G. S. B.	12.20	16
I. B. C.	9.54	8
C. H. E.	11.60	14
E. H. J.	10.42	8
J. R. W.	10.10	20
S. S. S.	8.64	32
A. H. A.	11.80	16
A. G. F.	0.70	34
N. F. W.	7.54	35
B. C. B.	8.30	50
S. G. R.	8.10	30
S. R. R.	9.87	29
F. R. R.	9.61	26
T. H. F.	7.41	30
T. L. F.	9.29	20
U. H. F.	0.02	16
M. A. F.	8.10	17
T. H. F.	7.80	27
P. W. F.	9.20	29
	11.50	10

process. Therefore an effort was made to compare the results of these two reactions in twenty-two unselected cases of this disease.

The cystine content of the fingernails was determined, in each instance, by Sullivan² and the results are expressed in the percentage of cystine in the total amount of nail clippings examined. The Cutler⁵ method was adopted for the estimation of the sedimentation reaction. The results of this procedure are expressed in millimeter readings, made at the end of one hour, as it has been proved by Fischer³ that additional readings offer no greater value.

Eight normal individuals were selected as controls, and the results of the examinations in each instance are recorded in table 1.

1 Sullivan, M. N. and Hess, W. C. The Cystine Content of the Fingernails in Arthritis. *J. Bone & Joint Surg.* 16: 185-188 (Jan.) 1934.

2 Sullivan, M. N. Studies in the Biochemistry of Sulphur. IV. The Colorimetric Estimation of Cystine in Casein by Means of the Beta Naphthoquinone Reaction. *Pub. Health Rep.* 1929, supplement 78.

3 Fischer, A. Blutbefunde bei rheumatischen Erkrankungen. *Rheuma Problem* 1. Leipzig: G. Thieme, 1928.

4 Westergren, A. The Red Cell Sedimentation Reaction in Some Acute Infectious Conditions and in Diseases of the Joints. *Internat. Clin.* 1: 70-77 (March) 1928.

5 Cutler, J. W. The Practical Application of the Blood Sedimentation Test in General Medicine. *Am. J. Med. Sc.* 183: 643-657 (May) 1932.

¹² Department of Physiology, Columbia University.

The presence of pain, limitation of motion or tenderness in the joints, associated with ankylosis, swelling or muscular rigidity or characteristic roentgen changes or a combination of these symptoms and signs was considered sufficient to make a diagnosis of arthritis. No cases were included which could possibly be tuberculous or syphilitic in nature, but no attempt was made to differentiate the cases selected into a more specific group than that of chronic nontuberculous arthritis.⁶ It is true that some of the cases could have been classified as rheumatoid, others as hypertrophic, atrophic or mixed types, but for the purpose intended this differentiation seemed to be unnecessary.

Table 2 is a record of the results of the examinations in each of the cases of arthritis.

Table 3 shows a comparison between the high, low and average readings of each reaction.

TABLE 3—Comparison Between Various Readings

Cystine Sedimentation	Low		High		Average	
	Normal	Arthritic	Normal	Arthritic	Normal	Arthritic
	10.38	7.41	13.02	12.20	11.98	9.66
	2	8	11	55	7.70	22.68

TABLE 4—Comparison by Decades

Distribution of Sedimentation Reaction	Average Percentage of the Cystine Content of the Fingernails	Number of Cases
0-10	10.80	4
10-20	10.36	6
20-30	9.33	6
30-50	8.51	6

It is evident from these tabulations that in only one instance was the cystine content of the fingernails above the average normal, but in this case the sedimentation reaction was close to the average normal. In this one instance (G S) the disease process had been arrested and the patient was suffering from residuals of a previously active process. In no instance was the sedimentation reaction below that of the average normal sedimentation reaction.

Further analysis reveals that when the results of the sedimentation reaction of each case are grouped into decades and the average readings of the cystine content of the fingernails of each group are compared with that of the other groups, these readings vary in general, in inverse proportion to the sedimentation reaction of the blood. Table 4 demonstrates this fact.

COMMENT

Although the number of cases studied is small, the results are so definite that it seems logical to conclude that, at least on the average, an inverse ratio between the cystine content of the fingernails and the sedimentation reaction of the blood does exist in arthritis. This is not true, however, in every instance, when the individual case is considered. These aberrations from the foregoing conclusions might be explained by the fact that the duration of the disease varied in each instance and the changes in the fingernails would not take place as rapidly as the changes in the sedimentation reaction of the blood. Therefore in the early stages of the disease or during a recurrent attack a normal cystine content of the fingernails with a high sedimentation reaction might be expected. Such variations, however, do not seem to influence the end result when the averages are considered.

The explanation of this phenomenon is problematic. Sullivan and Hess¹ believe that the decrease in the cystine content of the fingernails "implies an intoxication factor which draws on the sulphur complexes, as for example, glutathione, and thus diverts sulphur from its normal channels." It has also been suggested⁷ that an increase in the sedimentation reaction of the blood is also associated with an intoxication factor. If these theories are true, the results would indicate a toxic etiology in all the cases of arthritis that were studied. Furthermore, the fact that the variation is inversely proportional would suggest that this variation is indicative of the degree of toxicity.

Sullivan and Hess¹ also stated that this low cystine content of the fingernails in arthritis suggests a method of therapy with sulphur. Because of the inverse proportionate variation between the cystine content of the fingernails and the sedimentation reaction in arthritis it seems logical to conclude that an increase in the latter would presuppose a decrease in the former and thus sulphur therapy could be instituted without resorting to the more elaborate procedure of estimating the cystine content of the fingernails.

SUMMARY

Twenty-two cases of arthritis were studied, in order to compare the cystine content of the fingernails with the sedimentation reaction of the blood. It was found that these two reactions varied in inverse proportion. It has been suggested that such variations from normal could possibly indicate a toxic etiology in all the cases studied and that the control of this toxicity might be induced by the institution of sulphur therapy.

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Clinical Notes, Suggestions and New Instruments

DIAGNOSTIC PROBLEM OF THE CAUSATION OF
DYSPNEA REPORT OF A CASE
WITH AUTOPSY

LEWIS M. GAINES, M.D., ATLANTA, GA.

On Oct. 23, 1931, there came to my office for the first time a man, aged 48, whose chief complaints were shortness of breath and a feeling of abdominal distention. The patient was white, was married and his occupation was assistant manager of an office building.

The patient's story was that about six weeks previously, while getting out some old blue prints, which were covered with dust he inhaled a good deal of the dust and began to have paroxysms of severe coughing, which had continued more or less constantly. After enduring these coughing attacks for about a month he consulted a physician, who prescribed various forms of treatment but with little success. About October 13, while under treatment for the cough, he suddenly developed dyspnea and a feeling of abdominal distention particularly above the umbilicus. He found it difficult to breathe when lying down or when standing perfectly erect, his most comfortable position being a slightly stooped one or when sitting in a chair. His sleep was greatly broken by these complaints.

The cough had been dry throughout and was not so severe as formerly but still continued. There had been no nausea or vomiting and no abdominal complaints except the feeling of distention. The bowels had been regular. The patient's own explanation was that he was suffering from gas on his stomach, the pressure of which caused his shortness of breath. The patient explained that he had never been ill before in his life.

6. Fischer, A. G. T. Chronic Nontuberculous Arthritis. New York, Macmillan Company, 1929.

7. Westergren, Cutler.

and that prior to the onset of his paroxysmal cough he did not have the slightest discomfort of any kind.

The dyspnea had been very distressing to the patient since its onset particularly on even such exertion as in walking from the street car on the level to the door of his home, a short distance away. The duties of his occupation have required going up steps and this has become impossible, owing to the extreme shortness of breath.

The patient was a large obese man, whose height was 6 feet 2 inches (188 cm) and weight 260 pounds (118 Kg). His face was rather pale but there was no evidence on inspection of either anemia or cyanosis. The pulse rate was 100 per minute, the blood pressure 126 systolic and 96 diastolic, the respirations 30, the temperature normal. Physical examination of the lungs revealed nothing abnormal. The heart did not appear to be enlarged, the sounds were rather distant though clear, and the rhythm was normal. The abdomen was pendulous and obese. There was a moderate amount of distention particularly above the umbilicus. Otherwise nothing could be found abnormal.

There was no edema in the extremities or elsewhere.

The patient was intelligent, cooperated and did not appear to be neurotic. He remarked apologetically that he hoped I would not think him a big baby for making so much complaint.

A specimen of urine examined at this time was completely negative.

Some simple remedies were prescribed pending further observation and examination.

The patient returned to the office, October 27, with his dyspnea somewhat more marked, and an account of sleepless nights. The pulse rate remained 100. An electrocardiogram was made, which showed an auricular rate of 100 and a ventricular rate the same. The PR interval was 0.19 second, the QRS interval 0.10 second, the RT interval 0.34 second. The rhythm was regular, the resistance 1,200 ohms. The electrocardiogram was made with the patient sitting. No therapy relative to the heart had been administered. In lead 1 QRS was low in amplitude, varied and there were marked slurring and notching. In lead 2 the amplitude of QRS was low, and there was slurring on the downward stroke. In lead 3 QRS was low in amplitude and there was marked slurring. With low electromotive force there was marked slurring and notching of QRS.

The clinical conclusion was that there had been myocardial damage.

Röntgen studies of the heart showed a small degree of dilatation of the aorta and apparent slight increase in the size of the heart but this was difficult to determine accurately because of marked abdominal distention.

Röntgen study of the lungs disclosed that the posterior mediastinum was apparently clear, though narrow in the center. The diaphragm appeared normal and the excursion was fairly good. There was marked increase of the hilus shadows particularly on the right. Shadow markings were general on both sides, with some mottling on the right, suggestive of small areas of consolidation.

Examination of the gastro-intestinal tract disclosed that a barium meal passed normally into the stomach. The gastric content was seen about 3 inches above the iliac crest, fairly movable at the pylorus. The anterior and posterior walls filled well. Peristalsis was slightly marked at the antrum. The cap did not fill smoothly. At the end of six hours the stomach was empty and the meal extended from the ileum to about midway of the descending colon, the greater portion of the meal having passed into the colon. A twenty-four hour study was not made.

After these studies it was felt that the only apparent explanation of the patient's disturbance was to be found in the myocardium. The patient was accordingly admitted to the Piedmont Hospital at once, October 27, and over a period of four days was given a total of 6 drachms (22.5 cc.) of tincture of digitalis when with the appearance of nausea it was omitted. On admission to the hospital the pulse rate was 108, the respiration 30 and the blood pressure 138 systolic, 88 diastolic.

The blood examination revealed red blood cells, 4,560,000; white blood cells, 7,800; hemoglobin 90 per cent. The differential count revealed polymorphonuclear neutrophils, 61 per cent, polymorphonuclear eosinophils, 1 per cent, small mononuclears,

32 per cent, large mononuclears, 6 per cent. All blood cells were normal in size and shape, 200 cells were counted.

The urine, October 27, was normal except for a trace of sugar, acetone and diacetic acid. A few days later these traces had disappeared, except for a remaining trace of acetone and the appearance of a rare hyaline cast.

Both the Kahn and the Wassermann reactions on the blood were negative.

The patient remained in the hospital from October 27 until November 8. At no time was there any rise of temperature. His pulse rate varied from a low of 80 to a high of 110, the average being approximately 90. The respirations as recorded by the nurses varied from 20 to 40, the average being about 28. The frequency of the respirations, however, failed to give an adequate idea of the labored type of breathing. The patient was constantly gasping for breath and his sufferings in this respect became more and more painful to witness. His favorite position was sitting in a chair with his head resting on the bed in front of him. In such an attitude he was able to obtain short periods of comparative but not absolute comfort. Under the influence of morphine or pantopon together with amylal he was able to get as much as an hour at a time of sleep curled up on the bed on his right side with his pendulous abdomen supported by a pillow. What was extremely striking was the fact that, until near the end, cyanosis was conspicuous by its absence; in fact, the lips looked unusually red.

The abdominal distention continued despite satisfactory elimination, although at times temporarily relieved.

Those of us who watched the patient soon abandoned the idea that the state of his heart was responsible for the symptoms so severe and so agonizing.

The record of November 5 gives some indication of the state of the patient. After a restless night, broken by orthopnea and coughing, he could eat but little breakfast, after which there was nausea but no vomiting, and marked restlessness, nervousness and labored breathing. The greater part of the day was spent in a chair and in searching, though in vain, for such an attitude or posture as would give him some modicum of relief. Despite these sufferings the patient maintained efforts at cheerfulness, smiling wanly and expressing appreciation and gratitude for the efforts being made in his behalf. Such was the day.

Matters thus went from bad to worse until on November 8 his condition of distress was truly pathetic and he developed very definite evidence of heart failure. There was marked edema of the legs and diminution of urine with increase of pulse rate. Although large doses of morphine were administered, the patient was unable to lie down, was bathed in cold sweat, was constantly struggling for breath, and at intervals vomited. Consciousness, perhaps somewhat dulled by morphine, was retained almost to the last breath. Cyanosis appeared only during the last day or two of life. He finally died on the night of November 8.

In summary, a man aged 48, who had never been ill before, began to suffer with a paroxysmal dry cough about the middle of September and about five weeks later with severe dyspnea, which gradually and persistently increased in severity until his death and yet was unaccompanied by any cyanosis until there was evidence of terminal heart failure. The examinations as made give somewhat scanty and quite elusive clues of the cause of his profound disturbances.

Autopsy was performed, the body being opened in the usual manner. Panniculus was abundant, about 2 inches in thickness. When the abdomen was opened there was an outpouring of milky fluid. There was no evidence of peritonitis. The pericardium contained about 3 ounces of clear fluid. There was no evidence of pericarditis. The heart was about normal in size and there were no lesions of the endocardium or myocardium. Each pleural cavity was filled with clear fluid, there being fully 500 cc. in each cavity. The lungs were quite firm, containing little air and being almost bloodless on section. There seemed to be marked atelectasis of each lung. In the right upper lobe there were some areas of edema and bronchial pneumonia. There were no cavities. There was marked enlargement of all bronchial and mediastinal lymph nodes, which were soft and not scirrhous. The liver was about three fingerbreadths below the costal margin and was quite firm throughout on section. There was evidence of passive congestion but otherwise no

abnormal change. The spleen was normal in size and there was a small accessory spleen, on section there were no changes but passive congestion. There was a large nodular mass of lymph nodules up to 4 or 5 cm in diameter around and in the pancreas, inferior vena cava, duodenum and stomach. This was removed *en masse*. There were no tumor nodules in the intestine, the appendix being apparently normal and about 7 cm in length.

The stomach showed numerous nodules over the lesser curvature, rather hemorrhagic in appearance, varying in size up to about 5 mm in diameter, slightly projecting above the mucosa. This was more marked over the lesser curvature of the stomach. There was no pyloric obstruction. Both kidneys were normal in size and appearance; they were normal on section except for passive congestion. There were numerous large lymph nodules all up and down the anterior surface of the spine. There was a lymph nodule palpable in the right groin.

On microscopic examination, sections of the upper lobe of the left lung showed marked engorgement, the alveoli were filled with cellular exudate, round cells and polymorphonuclear and red cells. In areas the lung tissue was practically destroyed and filled with this cellular exudate.

Sections of the lower lobe of the left lung showed a somewhat similar condition, throughout the lung there were numerous oval areas made up of large cells, with large round nuclei containing several deeply stained chromatin granules. There was practically no stroma present in these areas. These cells were arranged in alveoli and they showed marked mucoid degeneration.

Sections of the perigastric glands showed complete destruction of normal tissue, which was replaced by large round cells and large granules. Mitoses were frequent. There was a tendency to alveolar arrangement, as in the lung and also marked mucoid degeneration.

Sections of the pancreas showed a somewhat similar involvement of glands about the pancreas.

Sections of the stomach showed marked infiltration of the mucosa throughout the gastric wall.

Sections of the kidney showed passive congestion, with some cloudy swelling of the tubular epithelium.

Sections of the heart muscle showed no definite pathologic changes.

Sections of the mesentery glands showed the same condition as the other glands.

Sections of the liver showed marked fatty infiltration and cloudy swelling but otherwise were negative.

Sections of the spleen showed marked passive congestion but were otherwise negative.

The pathologic diagnosis was (1) gelatinous adenocarcinoma of the stomach with metastases to the lungs and to the mediastinal mesenteric and retroperitoneal lymph glands, (2) chylous ascites, (3) pulmonary atelectasis with early bronchial pneumonia, bilateral hydrothorax, (4) passive congestion of the liver, spleen and kidneys.

COMMENT

The outstanding clinical feature of this case was the extremely urgent dyspnea without cyanosis until shortly before death together with a remarkable paucity of positive changes on examination. There were no symptoms whatever in the past history or during the illness pointing to gastric involvement. The roentgen studies of the lungs showed shadows suggestive of small areas of consolidation, but the appearance was so faint as to make uncertain definite interpretation. As the sequel shows, this finding was of importance.

One is impressed with the fact that a far advanced carcinoma of the stomach may occur together with extensive metastases without gastric symptoms, without impairment of nutrition and without anemia. The first evidences may be those dependent on metastatic involvement, as in this case. The diagnosis may not be established definitely until the autopsy. In cases of severe progressive dyspnea this possibility should be kept in mind when other demonstrable causes of dyspnea are absent.

CEVITAMIC ACID (ASCORBIC ACID) IN THE TREATMENT OF INFANTILE SCURVY

ARTHUR F. ABT, M.D. AND I. M. EPSTEIN, M.D. CHICAGO

Not only is the isolation of a vitamin in crystalline form a matter of theoretical importance but such a discovery also has possibilities in practical clinical application. In 1928 Szent-Györgyi¹ isolated a chemical which he thought was hexuronic acid and which he believed to be identical with vitamin C. Well controlled experiments on laboratory animals with this substance demonstrated that it protected against scurvy and cured this disease when experimentally produced. Zilva² in 1932 and Waugh and King³ in the same year published the results of such work. In 1933 the name of the isolated acid was changed to ascorbic acid, as its chemical formula became better known and it was found not to be a hexuronic acid. More recently the Council on Pharmacy and Chemistry of the American Medical Association has designated cevitic acid as the approved nonproprietary name for this substance.⁴

Merck and Company, who have supplied us with the acid both in tablet and in crystalline form, have designated their product as Cebione. It is a white or slightly yellow white, odorless crystalline powder, which melts at 189 to 192 C. and is freely soluble in water, soluble in alcohol, but practically insoluble in ether. It oxidizes on exposure to air and light. Its chemical formula is $C_6H_8O_6$. The formula for hexuronic acid, with which it was originally confused, is $C_6H_{10}O_8$. Cevitic acid may be isolated from various vegetable and animal sources such as cabbage, paprika, orange and lemon juice and adrenal cortex. The product with which Merck and Company have supplied us has been isolated from vegetable sources. It is said that 10 mg. of crystalline cevitic acid corresponds to approximately 30 cc. of the active vitamin C in fresh orange juice.

Cevitic acid was first used in human beings by Schultzer⁵ in 1933. He gave 40 mg. of the crystalline acid by intravenous injection daily to an adult suffering with scurvy. As a result, the scurvy was cured. Four other reports have appeared in the literature of instances of human scurvy treated and cured with cevitic acid. Svendsgaard⁶ reported the cure of two cases (a 15 months old boy and a 10 months old girl baby) in which the crystalline vitamin was given by mouth. She gave 30 mg. daily to each infant. Neumann⁷ reported the cure of one case (a 10 months old infant) by giving orally six tablets of Cebione (60 mg.) daily. Brugsch⁸ reported the cure of a 13 months old infant by the oral administration of 30 mg. of cevitic acid daily. Bauke⁹ reported the cure of an adult by the intravenous administration of 100 mg. of crystalline Cebione daily.

Kramer¹⁰ in 1933 gave cevitic acid orally to a series of eighteen healthy infants. He gave it over periods of from one to six weeks. He concluded that premature infants tolerated 15 mg. daily, new-born infants from 20 to 25 mg. daily and healthy older nurslings from 25 to 50 mg. He reported no adverse results. On the basis of the chemical and laboratory animal work that had been done and the reported

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¹ Szent-Györgyi, A. Observations on Function of Peroxidase Systems and Chemistry of Adrenal Cortex. Description of New Carbohydrate Derivative. *Biochem. J.* 22:1387, 1928.

² Zilva, S. S. Nonspecificity of Phenolindophenol Reducing Capacity of Lemon Juice and Its Fractions as Measures of Their Antiscorbutic Activity. *Biochem. J.* 26:1625, 1932.

³ Waugh, W. A., and King, C. G. Isolation and Identification of Vitamin C. *J. Biol. Chem.* 97:325 (July), 1932.

⁴ Cevitic Acid and the Brand Cebione-Merck. Report of Council on Pharmacy and Chemistry. *J. A. M. A.* 104:121 (Jan. 12), 1935.

⁵ Schultzer, Paul. Treatment of Scurvy in Man with Intravenous Injection of Ascorbic Acid. *Lancet* 2:589 (Sept. 9), 1933.

⁶ Svendsgaard, Elizabeth. Infantile Scurvy Treated with Ascorbic Acid. *Lancet* 1:22 (Jan. 6), 1934.

⁷ Neumann, Ulrich. Heilung des Scurvysskorpbutts durch Kristallisiertes Vitamin C (Cebion Merck). *Deutsche med. Wchnschr.* 60:1203 (Aug. 10), 1934.

⁸ Brugsch, Herbert. Skorbuthheilung durch Cebion. *Deutsche med. Wchnschr.* 60:1203 (Aug. 10), 1934.

⁹ Bauke, E. E. Parenterale C Vitamin (Cebion). *Behandlung bei Scorbuto*, München. *Med. Wchnschr.* 81:1240 (Aug. 10), 1934.

¹⁰ Kramer, Eugen. Ueber die Verträglichkeit der Askorbinsäure (Kristallisiertes Vitamin C) im Säuglingsalter. *Deutsche med. Wchnschr.* 59:1428 (Sept. 15), 1933.

instances in which human scurvy had been treated, we felt that we might properly use cevitamic acid in the treatment of infants with scurvy. We have three such cases to report. Merck and Company have supplied us with cevitamic acid in tablet form, which we have used in our cases. The tablets contain 10 mg of the acid compounded with lactose and are for oral use. They are best given dissolved in from 10 to 20 cc of water and are of a not unpleasant taste. For parenteral use the crystalline acid must be used after having been properly neutralized with sodium bicarbonate.¹¹

REPORT OF CASES

Through the courtesy of Dr Edward W Beasley we were enabled to treat our first case, an 11 months old male infant who was admitted to the Provident Hospital Aug 22, 1934 with the clinical diagnosis of scurvy. The infant had had severe attacks of pylorospasm during the first few months of his life and had been on an evaporated milk water and sugar formula, with no orange juice. On admission the infant showed swelling and tenderness of the arms, legs and costochondral junctions of the ribs. Roentgenograms on admission showed the typical bony changes of scurvy including the raised periosteum with subperiosteal swellings. Attempts to administer the formula and orange juice to the infant during the first week of his stay in the hospital were most unsuccessful, owing to his vomiting everything offered by mouth. Saline and dextrose solution were given by hypodermoclysis, to combat dehydration. There was no improvement in the scurvy.

August 31, the treatment with cevitamic acid was begun by oral administration of one of the 10 mg Merck tablets three times daily. This oral dosage of 30 mg daily was continued for three weeks, and the tablets dissolved in from 20 to 30 cc of water, were successfully retained by the infant. Within forty-eight hours after the onset of treatment it was noted clinically that the infant exhibited a considerably lessened degree of tenderness and irritability. The course was complicated by superficial abscesses, which developed over the left humerus and right shoulder and which drained and healed slowly. One month from the onset of treatment the infant was discharged from the hospital with the scurvy cured and the secondary abscesses completely healed.

Roentgen examination, September 28, showed calcification of the subperiosteal hemorrhages. On admission the hemoglobin was 45 per cent, with 3.5 million red cells. September 20, the hemoglobin was 40 per cent, with 2 million red cells.

The other two cases were both treated at the Children's Memorial Hospital through the courtesy of Dr Joseph Brennemann. Irene P, aged 1 year, was referred to the hospital from the outpatient department with a diagnosis of scurvy, Oct. 24 1934. The essential physical changes were spongy, purple, bleeding gums about the erupted teeth, extreme tenderness of both legs, and some general swelling of the right leg. She had never had orange juice or tomato juice. Her entire diet prior to admission was a formula consisting of evaporated milk, water and Karo syrup and farina. The mother stated that until recently she had always had a boiled cow's milk formula. She had had small amounts of cod liver oil between the second and fifth months of life. The history of the present illness dated back two months, when the soreness of her gums was first noticed. For the last two weeks she had cried whenever she was touched.

The remainder of the history and physical examination was essentially negative. There was no anemia. The hospital diet was an evaporated milk, water and Mellin's food formula. Twenty mg of cevitamic acid was given orally each day for the first four days. After that 40 mg was given daily for ten days. There appeared to be less tenderness after twelve hours. There was definitely less tenderness and less swelling of the gums in twenty-four hours. After eight days the only remaining clinical evidence of the scurvy was the discoloration of the gums. Roentgen examination of the bones, October 25, was typical for scurvy. No subperiosteal hemorrhages could be identified.

The third patient, Stella R, aged 9 months was referred to the hospital from the outpatient clinic, Oct. 24 1934 with the

diagnosis of scurvy, aphthous stomatitis and laryngitis. The essential changes on admission were swollen, purplish spongy gums about the erupted teeth, hoarseness, and aphthous stomatitis. There was no localized tenderness. The stomatitis and hoarseness had been noticed six days previously. The other physical and laboratory examinations were negative except for hemoglobin 55 per cent red blood cells 3,200,000 and blood calcium 9.3 mg per hundred cubic centimeters. She had been on a diluted cow's milk formula since 1 month of age. One teaspoonful of orange juice a day had occasionally been given. No cod liver oil was used. She was given 20 mg of cevitamic acid orally each day for four days, then 40 mg daily for ten days. In two days the gums were less swollen and purple. Four days after admission there was practically no swelling of the gums. In eight days there was only slight discoloration. The hoarseness persisted throughout and was still present one month later. Roentgen examination of the long bones, October 25 was typical for scurvy. No subperiosteal hemorrhages were noted.

CEVITAMIC ACID CONTENT OF BLOOD SERUM

Besides being able to report the efficacy of cevitamic acid in the treatment of these three cases of infantile scurvy, we were enabled, in the last two cases to determine the cevitamic acid content of the blood serum, both before and after treatment. As far as we know, no such determinations have been previously reported in infantile or adult human scurvy.

The determinations of the cevitamic acid content of the blood serum were made by Dr Studeville in Dr Farmer's laboratory of Biological Chemistry at the Northwestern University Medical School. The method used for the test was that described by Tillman and based on the modifications of Harris and Ray.¹² In this method the cevitamic acid in the blood serum is deproteinized by means of trichloroacetic acid, and the protein free filtrate is titrated against an indicator, 2,6 dichlorophenol indophenol.

With this method, 4 cc. of blood from Irene P was withdrawn, October 26 before treatment with cevitamic acid was begun, and the serum was found to contain 0.97 mg of the acid per hundred cubic centimeters. November 1, after six days of treatment the cevitamic acid content of her serum had increased to 2.01 mg and on November 8, after fourteen days, it was found to be 1.97 mg.

The blood of Stella R was similarly examined. The initial examination, October 26, before treatment was started, showed her blood serum to contain 1.02 mg of cevitamic acid per hundred cubic centimeters. November 1, after six days of treatment, the blood serum value had risen to 2.08 mg and on November 8, fourteen days from the onset of treatment, the value was 2.06 mg.¹³

Attempts were also made to analyze the cevitamic acid content of specimens of urine from these two patients, but these examinations did not yield significant data.

COMMENT

Irrespective of the absolute values for the cevitamic acid content of the blood serum here presented, the marked increase in the serum following treatment must be considered significant. Comparing the analyses here given with the few serum values for apparently normal infants of approximately the same ages which we have been able to determine, it would appear that the cevitamic acid content of the blood serum in infants with acute scurvy is extremely low.

We conclude that, in the three cases presented, the oral administration of cevitamic acid seemed to cure infantile scurvy effectively. The dosage used was from 20 to 40 mg of cevitamic acid daily, given orally for from one to three weeks. We employed the 10 mg tablets made by Merck and Company and known by the trade name of "Cebione".

This method of treatment seems to be of especial value in those cases of infantile scurvy as in the first case here reported in which the infant failed to retain the orange juice offered in the way of treatment. In such cases in which severe

¹² Birch T W, Harris L J and Ray S W. Microchemical Method for Determining Hexuronic Acid (Vitamin C) Content of Food stuffs. *Biochem J* 27: 590-593, 1933.

¹³ These results should be taken as comparative rather than as absolute values. Estimations which we have since made indicate that these figures are probably too high.

¹¹ Fisher B H and Leske C D. The Parenteral Administration of Cevitamic Acid (Ascorbic Acid) Solutions. *J A M A* 103: 1556 (Nov 17) 1934.

nausea and emesis make difficult or impossible the retention of the usual fruit and vegetable juices containing vitamin C, the smaller amounts of cevitamic acid in solution may be retained when given orally and effect a rapid cure.

The cevitamic acid content of the blood serum appears to be extremely low in infantile scurvy and is definitely increased after treatment with cevitamic acid.

If the chemical methods here mentioned prove sufficiently accurate for the determination of cevitamic acid in blood serum and urine it might be possible to demonstrate definitely a pre-scorbutic state in infants and children who manifest no signs or symptoms of active scurvy.

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Special Articles

GLANDULAR PHYSIOLOGY AND THERAPY

THE LACTOGENIC FACTOR OF THE PITUITARY

OSCAR RIDDLE, PH D

COLD SPRING HARBOR N Y

NOTE.—These articles and those in the previous two numbers of THE JOURNAL are part of a series published under the auspices of the Council on Pharmacy and Chemistry. Other articles will appear in succeeding issues of THE JOURNAL.—Ed

In 1928-1929 Stricker and Grüter demonstrated that a factor essential to lactogenesis is associated with the anterior pituitary. They did not identify or find other associations of the lactogenic principle, but crude saline and alkaline extracts were shown to initiate milk secretion in suitable rabbits, bitches, sows and cows—some of which were previously castrated. Their results were soon confirmed and further extended to rats, guinea-pigs and goats by Corner, Evans and Simpson, Nelson and Pfiffner, Turner and Gardner, Asdell and others. Also in these confirmatory studies—and in those of Riddle and Braucher on the crop-gland response—simple extracts containing mixtures of anterior pituitary principles were employed and the identity of the lactogenic factor remained unknown.

In 1932 Riddle, Bates and Dykshorn¹ succeeded in isolating the lactogenic factor in a degree of purity quite sufficient to demonstrate its distinction and separateness from the growth, gonad-stimulating and thyrotropic factors. At that time many investigators considered that the status of a true and separate hormone had been demonstrated for only the growth and sex factors, although a score of responses to pituitary extracts were known. For this third distinct (lactogenic) principle we proposed the name "prolactin".² Later, Gardner and Turner,³ using in part the method of preparation of the aforementioned workers, obtained the lactogenic factor fairly free from gonad-stimulating hormone. Their preparations of the lactogenic factor, called by them "galactin," were not tested for the thyrotropic factor, and reliance was put on a final addition of 0.4 per cent tricresol to destroy the growth hormone.

The various methods of preparing prolactin—all involve its initial acid or alkaline solution (aqueous, or 60 per cent ethanol), its iso-electric precipitation in an aqueous medium, and repeated washing of this precipitate. Catchpole and Lyons⁴ and Collip⁵ have also confirmed the isolation of prolactin by these methods. As now prepared, prolactin doubtless contains some inert protein, since about 0.1 mg is required to give a detectable response (crop-gland). Salt free preparations at pH 8.0 withstand boiling for one hour, with relatively little loss of potency. It is completely destroyed by tryptic digestion⁶. In solution it is stable in the presence of tricresol and is completely soluble at pH 8.0. It can be obtained from the anterior pituitary only, beef glands yield larger amounts than do those of sheep or swine.

A knowledge of the various responses elicited by a hormone is necessary to a wise choice of a method for its bio-assay, and the "lactogenic" factor has proved to be more ancient than lactation. There are four known responses, or aspects of tissue response, to prolactin to consider for purposes of assay. These responses are lactation in mammals, growth of crop-glands in pigeons, broodiness in fowls and marked size diminution in active gonads of adult pigeons and fowl. The two last named responses are unsuitable for various reasons, but the crop-gland and lactation responses require consideration.

The crop-gland response in doves or pigeons was shown⁷ to be a reliable and practicable method of assay. Age and race of the test animal considerably affect the values found. For accurate assay five birds, either from one and a half to two months after hatching or nonincubating adult pigeons, are injected once daily for four days and killed ninety-six hours after the first injection. The weight of the two crop-glands after such dosage reveals the amount of new growth produced and thus the quantity of lactogenic factor injected. The "bird unit" was defined² as "the amount of prolactin which is equivalent to 1 mg of (their) preparation No 51, this being also the threshold dose per 150 grams body weight of immature doves and pigeons." The published data facilitate the calculation of this "unit" in any lactogenic preparation.

The induction of the lactation response in pseudo-pregnant rabbits has been used for a rough bio-assay (— to ++++) of the lactogenic factor, after various workers noted the unsuitability of rats and mice for this purpose. Gardner and Turner³ proposed such a "rabbit unit defined as that minimum amount of extract which injected during a period of seven days at daily intervals is required to induce a plus three (+++) or plus four (++++) response (appearance of dissected mammarys) in rabbits previously pseudopregnant for a period of twelve to sixteen days." Though satisfied with the crop-gland quantitative assay, Lyons and Catchpole⁸ report good qualitative tests from adult virgin guinea-pigs castrated during estrus and injected immediately.

There is no evidence that the development of mammary tissue is assisted in the slightest degree by the

From the Carnegie Institution of Washington Station for Experimental Evolution.

1 (a) Riddle, Oscar, Bates, R. W. and Dykshorn, S. W. Proc. Soc. Exper. Biol. & Med. 29: 1211 (June) 1932. (b) Anat. Rec. (abstr.) 34: 25 (Nov.) 1932.

2 Riddle, Oscar, Bates, R. W. and Dykshorn, S. W. Am. J. Physiol. 105: 191 (July) 1933.

3 Gardner, W. U. and Turner, C. W. Missouri Agriculture Experiment Station Research Bulletin 106: 160 (June) 1933.

4 Catchpole, H. R. and Lyons, W. R. Anat. Rec. 55: 49 (March) 1933.

5 Collip, J. B. Tr. Congr. Am. Physicians & Surgeons 15th Session 47: 1933.

6 Bates, R. W., Riddle, Oscar and Lahr, E. L. Proc. Soc. Exper. Biol. & Med. 31: 1223 (June) 1934.

7 Riddle, Bates and Dykshorn footnotes 1a and 2.

8 Lyons, W. R. and Catchpole, H. R. Proc. Soc. Exper. Biol. & Med. 31: 299 (Nov.) 1933.

lactogenic factor, and there is evidence⁹ that it has no such favoring effect. Some reports indicate that an unidentified pituitary factor favors mammary growth, but the lactogenic factor apparently acts on fully prepared mammary tissue solely to initiate and excite milk secretion. The mechanism by which prolactin is released, the reason for its impotence during pregnancy, the role of a uterine factor and of continued suckling or emptying of the milk ducts on the persistence of milk secretion, and still other topics in lactation physiology are very little known. Large amounts of prolactin—twice that found in adults—have been found in the pituitaries of fetal calves¹⁰. Similar amounts were obtained from the bull, steer and nonpregnant cow¹⁰.

A group of investigators at the University of Chicago have recently proposed the hypothesis, based on experimental observations, that the lactogenic factor of the pituitary is suppressed during pregnancy by estrogenic substance, normally produced in large amounts during this period. At the same time the estrogenic factor causes growth of the mammary glands. At parturition, with loss of the placenta, the level of estrogenic substance in the blood stream drops sharply, thus permitting the release of the lactogenic factor from the pituitary. The breasts, having been prepared in the meantime, then respond to this factor with secretion of milk. Riddle, Bates and Dykshorn showed that by first causing suitable growth of the mammary substrate, lactation may be produced even in males¹.

Kurzrok and his associates¹¹ treated twenty-nine women in whom lactation had failed to develop adequately by the sixth day post partum with from 75 to 400 units of prolactin. Within three to nine days the daily milk production increased by from 50 to 400 Gm in twenty-five of these cases. There were four failures, in three of which a total of 110 units or less was received. In eight additional women whose milk secretion was apparently normal, similar dosage probably induced no change. No adverse effect of clinical administration was observed. Further studies are needed. The dose of prolactin for subnormal human lactation was provisionally fixed at an initial 150 (bird) units, usually followed within twelve to twenty-four hours by 100 units.

CHROMATOPHOROTROPIC PRINCIPLE OF THE PARS INTERMEDIA OF THE PITUITARY

BERNHARD ZONDEK
JERUSALEM, PALESTINE

It has long been known that the hypophysis produces an active substance which exerts an influence on the chromatophores of cold-blooded animals. When one injects an extract of the posterior lobe of the pituitary into the lymph sac of a light colored frog (one previously exposed to light rays), the color of the skin becomes dark after a very brief interval. This change in color is due to the marked expansion of the melanophores². Swingle, as well as Allen, Atwell and Smith,

elicited a darkening of the skin in both normal and hypophysectomized tadpoles, by means of implantation of posterior pituitary tissue and by placing the animals into solutions of posterior pituitary extract. The expansion of melanophores can be elicited also by placing pieces of skin which have been cut from the animal into an extract of the posterior pituitary, the differing degrees of expansion have been used as a measure for quantitative standardization (Hogben and Winton, P. Trendelenburg, Loewe, Dietel, Jores). In employing this melanophore reaction in the isolated skin of frogs, it must be borne in mind that, whenever the solutions employed pass the neutral point and become acid, expansion occurs even in the absence of the specific principle, moreover, to obviate nonspecific reactions the solutions must remain isotonic. The reaction can be produced also by various nonspecific substances contained in organ extracts² and by quinine curarine, choline, acetylcholine, caffeine, and various preservatives (Trendelenburg, Di Mattei, Ehrhardt).

Krohn and I³ employed the erythrophore-reaction in a certain fish to demonstrate the presence of chromatophore-stimulating hormone. When one injects an extract of posterior pituitary into a certain minnow (*Phoxinus laevis*), which is from 7 to 9 cm long, a characteristic red coloration appears within half an hour at the point of attachment of the thoracic, abdominal and anal fins. The appearance of this red coloration is not dependent on exogenous factors, such as light, nor on the pH of the injected solution, it can be produced only by the chromatophore-expanding hormone and is, therefore, "hormone specific". That quantity of hormone which produces a deep red coloration of from 4 to 9 square millimeters at the point of attachment of the fin is designated as one Phoxinus unit⁴.

All authors agree that the chromatophorotropic substance is produced in the intermediate lobe of the hypophysis (Swingle, Hogben and Winton Allen, Atwell, Houssay and Unger, Trendelenburg, van Dyke). This is also evident in a curious phenomenon described by Bayer,⁵ who observed an individual frog (*Rana esculenta*) that was conspicuous by reason of its unusually light color, this persisted even when the animal was kept in the dark. Histologic examination showed that, in this animal, a parasite had destroyed the pars intermedia of the pituitary while the other portions of the gland were completely unaffected.

We analyzed the various lobes of pituitary glands of cattle and found that their hormone content was as follows

- 1 Pars intermedia, 80,000 Phoxinus units per gram of tissue
- 2 Posterior lobe, 11,904 Phoxinus units per gram of tissue.
- 3 Anterior lobe 2,857 Phoxinus units per gram of tissue

We call the hormone "intermedin"

Intermedin occurs in cold blooded as well as in warm blooded animals. In the pituitary gland of the minnow, we found 7 Phoxinus units, of the frog, 10 Phoxinus units, of the chicken, 75 Phoxinus units, of the rabbit, 200-300 Phoxinus units, of the sheep, 2,500 Phoxinus units, of cattle, 5,000-6,000 Phoxinus units, of the monkey (*Macacus rhesus*), 1,000 Phoxinus units and

⁹ Riddle Bates and Dykshorn⁹ Gardner and Turner⁹
¹⁰ Bates R. W. Riddle Oscar and Lahr E. L. Unpublished data
¹¹ Kurzrok R. Bates R. W. Riddle Oscar and Miller E. G. Jr
Endocrinology 18: 18 (Jan Feb) 1934
Translated from the German for the author by Marion B. Sulzberger
M.D. New York
¹ Hogben L. T. and Winton F. R. *Biochem. J.* 16: 619 1922
Proc. Roy. Soc. London B 93 318 94: 151 1922 95: 15 1923
Brit. J. Exper. Biol. 1 249 1924

² Jores A., and Helbron, O. *Arch. f. Gynak.* 154 243 1933
³ Zondek, Bernhard and Krohn Hans. *Naturwissenschaften* 8: 134, 1932 *Klin. Wchnschr.* 11: 405 (March 5) 849 (May 14) 1293 (July 30) 1932
⁴ Phoxinus unit is abbreviated P. U. and in German P. E. (Einheit)
⁵ Bayer G. *Endokrinologie* 6: 249 (April) 1930

of man, 4,000-7,000 Phoxinus units. Analysis of the hypophysis of human beings who died of various diseases showed no marked variation of intermedin content. In three pituitaries from Negroes, we found the same intermedin content as occurs in the glands of white men.

The hormone leaves the hypophysis by the path of the pituitary stalk. According to our investigations, it is demonstrable only in the walls of the third ventricle, where the vegetative centers are located, and nowhere else. In contradiction to this, Krogh and McLean,⁶ using the melanophore reaction, demonstrated the hormone in small quantities in the blood as well. Jores⁷ reports a content of from 0.5 to 1.5 units per liter of plasma, estimated on the basis of alkaline-Vogtlin standard.

In contrast to the changes in the case of the gonadotropic factors, we found no change in quantities of chromatophore-expanding hormone in pregnancy.

The question arises: Is the chromatophore-stimulating substance an independent hormone? Kamm, Aldrich, Grote, Rowe and Bugbee succeeded, as is well known, in the separation of the oxytocic factor ("Pitocin") and the pressor principle ("Pitressin").⁸ They believe that the melanophore-stimulating substance which is present in varying amounts in Pitressin is possibly a "derived hormone." They emphasize, however, that to date there is no proof of the presence of more than two hormones (i.e., Pitocin and Pitressin).

We are of the opinion that the chromatophoretropic substance must be a specific hormone, for the following reasons:

1. Intermedin is lacking in the suboccipital liquor, while Pitocin and Pitressin are present.

2. Intermedin can be demonstrated in the pituitary colloid, while Pitocin and Pitressin are absent (Cushing and Goetsch). Thus, intermedin occurs independently in the organism, i.e., it is present without the oxytocic and pressor factors.

3. The quantitative proportion of intermedin to the oxytocic and pressor factors is quite different in the different lobes of the pituitary.

Proof that the chromatophore-expanding substance is an independent hormone was finally brought when we succeeded in isolating intermedin. Lack of space prevents mention of further details. Mention need be made only of a few characteristics of the hormone. Intermedin is thermostable at boiling temperature, it is resistant to cold, it is very susceptible to the action of proteolytic ferments, and it is quickly inactivated by irradiation with ultraviolet rays. The hormone is insoluble in ether, acetone and acetic esters, and it is soluble up to 5 per cent in benzene and in chloroform. The hormone's solubility in alcohol increases with the purity of the preparation. Intermedin is easily adsorbed. Its susceptibility to the action of mineral acids is approximately parallel to that of Pitocin and Pitressin, while it is less susceptible to the action of alkalis. These differences were already indicated by the investigations of Hogben¹ and Gordon. We were able to produce intermedin as a fine, amorphous, white powder with a dry weight of 1 microgram (0.000001 Gm.) per Phoxinus unit.

In cold blooded animals (frogs, fishes), intermedin elicits the expansion of the chromatophores. After intravenous injections of large quantities of intermedin into warm blooded animals, we were able to recover only small traces (0.14 per cent) in the blood, after from one to three hours, but none could be demonstrated in the organs or in the urine.

Intermedin exerts no influence on the basal metabolic rate, on the blood pressure, or on the glycogen and fat contents of the liver. On the other hand, it is possible that it reduces the epinephrine content of the adrenals, although the variations are insignificant. It is worthy of mention that Jores attributes an importance to intermedin in the adaptation of the optic organs to darkness, in man as well as in animals.

It is now necessary to consider the question of the action of intermedin on water metabolism, and of its identity with the antidiuretic factor.

Marion B. Sulzberger of New York,⁹ employing an intermedin preparation obtained from me, achieved striking success in the treatment of two cases of diabetes insipidus. Both the fluid intake and the output were greatly reduced. A confirmatory observation was made by Harald Bark of Stockholm, who observed reduction of urine output from 5.0 to 1.5 liters, and an increase of specific gravity from 1.005 to 1.020.

Subsequent extensive investigations, which were undertaken at my suggestion in the Pharmacological Laboratory of Hoechst, I. G. Farbenindustrie, showed that fundamental differences exist between the action of intermedin and that of Pitressin in their action on water metabolism. The characteristic action of Pitressin consists in reduction of fluid output, combined with both relative and absolute increase of sodium chloride excretion. Intermedin, on the other hand, while it definitely influences fluid output, does not affect salt excretion, the exact manner of its action is as yet unknown.

It seems to me that these results suggest the possibility that intermedin may act only in certain types of diabetes insipidus and that, perhaps in this way, a differential diagnostic criterion may be formed which will help to distinguish between different forms of this disease.

The melanophore-stimulating hormone and the erythrocyte-stimulating hormone may be two different substances, or, perhaps, different forms (alkaline, acid) of the same hormone (Jores).¹⁰

9. Sulzberger, M. B. The Pituitary Hormone Intermedin. *J. A. M. A.* 100: 1928 (June 17) 1933.

10. Translator's Note: Further clinical experience with intermedin in the treatment of diabetes insipidus permits me to state that the antidiuretic effect of various intermedin preparations seems to be independent of and not to run parallel with their Phoxinus erythrocyte-expanding potency. It is therefore evident that one cannot employ the Phoxinus reaction to standardize a preparation for its antidiuretic effect in diabetes insipidus.

Furthermore, according to frog melanophore standardizations which were kindly carried out for me by Dr. Oliver S. Kamm, an intermedin preparation which had assayed high in Phoxinus erythrocyte-expanding activity was very low in frog melanophore stimulating action. And conversely, Phoxinus erythrocyte standardization kindly performed for me by Dr. Charles Spark at the Montefiore Hospital of New York City showed that a certain pituitary preparation which was high in frog melanophore stimulating activity had practically no demonstrable action on the Phoxinus erythrocyte. This potent frog melanophore-stimulating preparation (which Doctor Kamm was kind enough to send me) differed from intermedin in that it had no effect in controlling diuresis in my cases of diabetes insipidus.

These unpublished observations may be considered as supporting the suggestion contained in Dr. Zondek's last paragraph.

Moreover, it seems to me more than probable that there are at least three different principles to be considered:

1. A Phoxinus erythrocyte-expanding principle (present in intermedin).

2. A frog melanophore-expanding principle and

3. An antidiuretic principle active in diabetes insipidus in man (present in intermedin in varying quantity).

It remains undecided whether each principle is actually an independent hormone or whether these divergent effects are due to so-called derived substances.

6. McLean, A. J. *J. Pharmacol. & Exper. Therap.* 53: 301 1928.
7. Jores, A. *Ztschr. f. d. ges. exper. Med.* 87: 266 1933.
8. Kamm, O. *J. Am. Chem. Soc.* 50: 573 1928. Kamm, O., Grote, I. W. and Rowe, L. W. *Proc. Am. Soc. Biol. Chem.* *J. Biol. Chem.* 92: 191 (June) 1931. Rowe, L. W. *Endocrinology* 12: 663 (Sept. Oct.) 1928.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE.—In their elaboration these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics Dr Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The series of articles will be continued from time to time in these columns.—Ed

THERAPY OF ACNE AND ACNE ROSACEA OUTLINE BY THEODORE CORNBLEET, M.D.

ACNE

Local and systemic measures are used

Systemic Treatment — 1 Such predisposing disturbances as constipation and other gastro-intestinal abnormalities, or pelvic and menstrual derangements that may be present should be corrected. One should seek out and remove foci of infection.

2 Alcohol should be prohibited and tobacco, coffee and tea reduced to a minimum. Foods rich in sugar and fats and oils, particularly the vegetable fats, should be taken sparingly. Articles that frequently produce distress should be avoided. In this group may be included pickles, rich cheeses, pork and sausages. Those things which may cause congestion of the face, such as very hot soups or highly seasoned foods, should be excluded. The diet however, should not be so restricted or one sided as to fail to maintain good nutrition.

3 Tonics and alteratives may be employed as indicated e.g., Solution of Potassium Arsenite (from 0.5 to 1 cc three times a day) or, if there is hypochromic anemia, Ferrous Carbonate (0.3 Gm three times a day) with Strychnine Nitrate (1 mg) possibly, unless there is exaggerated reflex excitability. Diluted Hydrochloric Acid (1 cc in water after meals) may be of advantage in cases of hypochlorhydria. Yeast and liver are recommended by some, the laxative action of the former, and the hematonic action of the latter possibly determining the choice. Quinine sulphate 0.2 Gm three times a day and adrenal gland substance 0.25 Gm three times a day are much used.

4 Foreign protein and vaccines occasionally give brilliant results but often are failures. Some recommend autogenous vaccines, while others claim as much for stock vaccines. A combination vaccine of acne bacillus, staphylococcus and the colon bacillus ("mixed acne vaccine") is probably as good as any. The dosages should be built up to produce and maintain a local reaction. The intervals of administration, possibly four to seven days, should be so spaced as to get a rhythm of reaction and subsidence.

5 Some drugs, such as iodides and bromides, have a tendency to produce acne-like lesions or to aggravate an existing acne. To those with acne these drugs, including iodized salt, should not be given, or if such an eruption appears during their administration, they should be promptly withdrawn and the amount of sodium chloride in the diet increased.

Local Treatment — 1 Cleanliness. The ordinary use of soap and water is sufficient. Under the mistaken notion that blackheads are due to uncleanness, fanatic measures are sometimes employed to remove imagined dirt. Generally acne is associated with a skin that has enough oil. It is therefore generally unnecessary to use creams. Cleansing tissue and the multitude of beauty creams are not only a waste of money in this condition but often positively harmful. Indeed, the deceiving propaganda with which they are foisted on the gullible should be prohibited. Face powders containing heavy metals must be excluded.

2 Drainage. Comedones should be removed by an instrument for that purpose and not be squeezed. The skin should first be thoroughly softened by hot water soaks for from half an hour to a whole hour. It is best for the physician himself to extract the comedones and at the same time to have him carefully open pustules with a narrow bladed bistoury.

3 Keratolytics. These favor drainage by hastening the maturing of pustules and by producing epidermal exfoliation at the neck of the follicles in addition to producing a curative hyperemia. Much used are

(a) 'Lotio Alba' (prescription 1), which might be prescribed in double or even triple the strength in accordance with the reactivity of the skin. It is applied before retiring and permitted to dry on.

PRESCRIPTION 1—'Lotio Alba'

R	Zinc sulphate	5.00 Gm
	Sulphurated potassa	5.00 Gm
	Rose water to make	100.00 cc
M	Label: Shake well and apply two or three times a day after steaming face	

(b) Solution of Sulphurated Lime (Vlemmink's lotion), which must be diluted from eight to sixteen times with hot water, used for an hour on a gauze compress. A mild irritation manifesting itself after several days by hyperemia should be aimed at as the result of treatment with either preparation, and the concentration of the applications should be increased if this is not attained. After mild scaling and erythema appears, treatment is suspended and a soothing application such as Calamine Lotion or Calamine Liniment may be employed, the latter being used if the former is too "drying." Recovery from this irritation is followed by a resumption of the original lotion to induce mild irritation again.

(c) Peeling Paste, such as Lassar's Peeling Paste (in the National Formulary under the title of Betanaphthol Paste, containing Betanaphthal 10 per cent, Precipitated Sulphur 50 per cent, made into a paste by means of equal parts of petrolatum and soft soap). This is a still more powerful discutient appeal to the skin, of special value in indurated acne, and suitable only for individuals with an especially sluggish skin.

PRESCRIPTION 2—Resorcinol (1 Per Cent) Paste

R	Resorcinol	0.35 Gm
	Zinc oxide	
	Starch	of each 5.00 Gm
	Petrolatum	15.00 Gm
M	Label: Apply at bedtime	

It is applied liberally and washed off after fifteen thirty or forty-five minutes. As they are difficult to control, it is not advisable to put peeling pastes into the patients' hands. Their application must be carefully timed by the physician.

The different degrees of irritative effect secured by these three different methods of applying must be care-

fully adjusted to the requirements of the case. One should always start with the milder preparation and work up to the stronger only after the milder has proved not to be irritating.

4 **Rubefacients**—In cases in which keratolytic action is not required, the curative hyperemia may be induced most advantageously perhaps by very mild applications of *resorcinol* which, being colorless, is especially suitable for the face.

(a) **Resorcinol Pastes** are official in the National Formulary in two forms: the Mild Resorcinol Paste (containing 10 per cent) and the Strong Resorcinol Paste (containing 20 per cent). The latter is strong enough to be used as a peeling paste. Both are too strong to be advisable as an initial application to a skin whose irritability is unknown. Hence it is well to start, e. g. with 1 per cent of resorcinol (prescription 2) and gradually increase the strength until the desired degree of peeling effect has been secured.

PRESCRIPTION 3—Sulphur (2 Per Cent) Paste

R	Precipitated sulphur	0.50 Gm.
	Zinc oxide	
	Starch	of each 5.00 Gm.
	Petrolatum	15.00 Gm.
M	Label: Apply at bedtime	

(b) **Sulphur** is especially indicated by simultaneous existence of seborrhea. It is again best used in the form of a paste (prescription 3), starting possibly with 2 per cent strength and increasing to 5 and 10 per cent. Dark discoloration of the openings of the sebaceous glands and of the comedones is one of the unfavorable effects of sulphur in certain individuals that may make it impossible for them to use this agent.

All of these salves are, of course, suitable for application only at bedtime. During the day one might prescribe the use of sulphur added to the patient's favorite face powder (prescription 4).

PRESCRIPTION 4—Face Powder with Sulphur

R	Precipitated sulphur	3.00 Gm.
	Face powder	30.00 Gm.
M	Label: Apply to face during the day	

4 **Irradiation** (a) Roentgen therapy is the most valuable single agent to be used. It is helpful in a majority of cases but fails in some. The greatest care should be used in calculating dosage and none but an experienced operator should employ this measure. Fractions of an erythema dose (e. g., 75 roentgens of unfiltered rays weekly, eyes, ears, eyebrows, scalp and other hair, and the thyroid carefully shielded) are used at regular intervals. This should not be carried out indefinitely, but the total dosage limited. A visible erythematous reaction in the skin must never occur, and the development of skin atrophy must ever be kept in mind, most especially when one is tempted to employ roentgenization in recurrences. During the use of roentgen therapy no applications that are irritating, even mildly, may be employed. (b) In some patients who are resistant to γ -rays, ultraviolet rays are sometimes effective. These are used to the point of achieving a mild erythema and scaling. The dosage is increased according to tolerance to maintain this reaction. The applications are generally given at weekly intervals or as soon as the reaction subsides. Ultraviolet rays are also used to improve the appearance of the pits and scars from acne temporarily. To do this a severe enough reaction must be obtained to ensure thorough exfoliation.

ACNE ROSACEA

For the most part, the treatment of acne rosacea is the same as for acne itself. The earlier the treatment commences, the better are the results obtained. When the stage of permanent congestion is reached, it is difficult to ameliorate.

General Measures—These are of even greater importance in acne rosacea than in acne vulgaris.

1 Both the gastro-intestinal and genital tracts influence acne rosacea. Care of digestive disturbances and constipation is important. Dietary control as suggested in acne is necessary here, only more so. Foods that dilate the blood vessels of the skin should be avoided. These include steaming hot ones and those with many condiments. Alcohol and coffee must be excluded. Menstrual disorders and pelvic derangements should be corrected. Focal infections are searched for and removed.

2 If possible, occupations that subject the face to any irritations should be given up or modified. Exposure to rough weather and excessive heat is to be avoided.

Local Measures—1 **Keratolytic Lotions**. These are nearly always a part of the treatment. The two most important are, as with acne, the "lotio alba" and "Vlemmick's solution." By a judicious use of them, of the right concentrations to obtain and continue an almost imperceptible exfoliation, the congestion and pustules can in a large measure be removed. The local application of extremes of heat and cold should be carefully avoided in the treatment of acne rosacea.

2 **Irradiation** (a) Roentgen therapy is effective and is carried out in repeated fractional doses. As in acne, care should be exercised to give a small enough dose so as not to obtain an erythematous reaction at any time or to produce skin atrophy as an end result.

(b) Ultraviolet rays by means of the water-cooled quartz lamp are useful at times.

3 **Cryotherapy**. Carbon dioxide snow (dry ice) shaped into pencils not over 1 cm. in diameter may be applied with a fair degree of pressure for not more than one second at a spot. If this causes no reaction or improvement, the time of application may be gradually increased but always to a point short of an excessive reaction.

4 **Electrolysis** can be used to advantage to remove the dilated capillaries and venules, which often are associated with or remain after the general congestion is relieved. The needle, which is made the negative pole, is inserted into the venule and a current of from 1 to 2 milliamperes is applied until the area turns white.

PRESCRIPTION 5—Paraffin-Petrolatum Cerate

R	Paraffin	10.0
	Petrolatum	20.0
M	Label: Spread aseptically on sterile gauze and apply to raw surface	

5 **Surgery** to remove the redundant tissue of the nose in the stage called rhinophyma can accomplish a great deal cosmetically. A sharp scalpel or razor blade is used to pare away enough tissue to leave the original shape of the nose. Care must be taken not to cut or injure the cartilage. To guard against this, one should insert a finger into the nose to act as a director. Surgical diathermy may be used. The small excrescences can be conveniently coagulated and the larger ones

removed with the cutting current. The entire procedure may be carried out at one time or smaller areas treated at different sittings. A 2 per cent solution of procaine hydrochloride with epinephrine serves as an adequate local anesthetic. Hemorrhage is controlled easily with hot gauze compresses changed every two to four hours the first day and several times a day after that. The raw area may be treated as a burn and covered with paraffin-petrolatum cerate (prescription 5) gauze changed frequently enough to prevent the formation of hard crusts. Epithelization takes place readily from the islands remaining in the follicles and complete healing is a matter of from three to five weeks. The results are excellent.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary

ALURATE—Allylisopropylbarbituric acid—Allylisopropylmalonyl urea— $(C_2H_5)(C_2H_5)CCONHCONHCO$ Alurate

differs from barbital (diethylbarbituric acid) in that both of the ethyl groups of the latter are replaced, one by an allyl group and the other by an isopropyl group.

Actions and Uses—The actions and uses of alurate are essentially similar to those of barbital, but alurate is more active than barbital and is used in correspondingly smaller doses. Fractional doses are used as a sedative and larger doses as a hypnotic. Therapeutic doses act on the higher centers of the brain and are claimed not to exert any apparent injurious effect on the heart, circulation or kidneys.

Dosage—For mild cases of insomnia, 0.065 Gm (1 grain) may be administered at bedtime. In obstinate cases, 0.13 Gm (2 grains) may be given.

Manufactured by Hoffmann-La Roche, Inc., Nutley, N. J. U. S. patent 1,444,802 (Feb. 13, 1923, expires 1940). U. S. trademark 230,059.

Alurate Tablets 1 gr

Elixir Alurate—Each fluidrachm contains alurate $\frac{1}{4}$ grain (approximately 0.9 Gm per hundred cubic centimeters) in a palatable elixir containing alcohol 20 per cent.

Alurate occurs as a fine white, odorless crystalline powder with a slightly bitter taste, completely soluble in alcohol, chloroform and ether, very slightly soluble in cold water, insoluble in the paraffin hydrocarbons. A saturated aqueous solution is acid to litmus paper. Alurate melts at 138 to 142°C.

Place about 0.3 Gm of alurate in a glass stoppered cylinder, add a mixture of 1 cc of normal sodium hydroxide solution and 5 cc of water, shake the contents for one minute, filter through paper and divide into two portions. To one portion add 1 cc of mercuric chloride solution, a white precipitate results, soluble in an excess of ammonia water. To the other portion add 5 cc of silver nitrate solution, a white precipitate results, soluble in an excess of ammonia water. Boil about 0.5 Gm of alurate with 5 cc of a 25 per cent sodium hydroxide solution, it is decomposed with the evolution of ammonia. Dissolve about 0.1 Gm of alurate in 1 cc of sulphuric acid, not more than a slight yellow color results. Place about 1 Gm of alurate in a 25 cc glass stoppered cylinder, add 10 cc of water, shake the mixture for one minute, filter through paper and divide into two portions. To one portion add 1 cc of acetic acid and 0.5 cc of a saturated bromine water, an immediate discoloration occurs. To the other portion add 0.1 cc of tenth-normal potassium permanganate solution, a yellow color appears immediately, turning to brown.

Boil about 0.5 Gm of alurate with 50 cc of water for two minutes, no odor develops, cool and filter, separate portions of 10 cc each of the filtrate, yield no opalescence with 1 cc of diluted nitric acid and 1 cc of silver nitrate solution (chloride), no turbidity with 1 cc of diluted nitric acid and 1 cc of barium nitrate solution (sulphate), no coloration or precipitation on saturation with hydrogen sulphide (salts of heavy metals). Incinerate about 1 Gm of alurate, accurately weighed, there is not more than 0.1 per cent residue. Dissolve about 0.5 Gm of alurate, accurately weighed, in 25 cc of previously neutralized alcohol, dilute with an equal volume of water, previously boiled to remove carbon dioxide, and titrate with tenth-normal sodium hydroxide solution, using thymolphthalein as an indicator, the amount of tenth-normal sodium hydroxide solution consumed corresponds to not less than 98.5 per cent nor more than 101.5 per cent allylisopropylbarbituric acid.

SODIUM ALURATE—Sodium allylisopropyl barbiturate— $Na(C_2H_5)(C_2H_5)CCONHCO NCO$ —The monosodium salt

of allyl isopropyl barbituric acid. Sodium alurate differs from soluble barbital U. S. P. (sodium diethylbarbiturate), in that both of the ethyl groups of the latter are replaced, one by an allyl group and the other by an isopropyl group.

Actions and Uses—The same as those for alurate. The soluble sodium salt is intended for oral or rectal administration, particularly as preanesthesia medication. Sodium alurate may also be used in other cases in which large individual doses are required.

Dosage—The average preoperative dose is 1 grain for each 15 pounds of body weight (10 mg per kilogram). One third of the calculated dose is given ten or twelve hours prior to operation, (usually the evening before), the remainder, two hours before operation. Experience is necessary in the use of these large dosages, as the amount of the drug must be adjusted to the individual patient in order to avoid undesirable reactions.

Manufactured by Hoffmann-La Roche, Inc., Nutley, N. J. U. S. patent 1,444,802 (Feb. 13, 1923, expires 1940). U. S. trademark 230,059.

Capsules Sodium Alurate $\frac{3}{4}$ grains—The content of each capsule is equivalent in potency to approximately 3 grains of alurate.

Sodium alurate is a white microcrystalline, hygroscopic, odorless powder with a slightly bitter taste, very soluble in water, very slightly soluble in alcohol, practically insoluble in ether. An aqueous solution of sodium alurate is alkaline to litmus.

Dissolve about 0.5 Gm of sodium alurate in 100 cc of water, add an excess of diluted hydrochloric acid, collect the resultant allyl isopropyl barbituric acid on a filter, wash and dry at 90°C, it melts at 139 to 140°C. Incinerate about 1 Gm of sodium alurate, the residue responds to tests for sodium carbonate. Boil about 0.5 Gm of sodium alurate with 5 cc of a 25 per cent sodium hydroxide solution, it is decomposed with the evolution of ammonia. Dissolve about 0.3 Gm of sodium alurate in 10 cc of water and divide into two portions, to one portion add 1 cc of mercuric chloride solution, a white precipitate results, soluble in an excess of ammonia water, to the other portion add 5 cc of silver nitrate solution, a white precipitate results, soluble in an excess of ammonia water.

Dissolve about 0.5 Gm of sodium alurate in 50 cc of water, add 5 cc of diluted nitric acid and filter through paper, separate portions of 10 cc each of the filtrate, yield no opalescence on the addition of 1 cc of silver nitrate solution (chloride), no turbidity on the addition of 1 cc of barium nitrate solution (sulphate). To about 0.2 Gm of sodium alurate in 25 cc of water, add 1 cc of diluted hydrochloric acid, filter through paper, the filtrate yields no coloration or precipitation on saturation with hydrogen sulphide (salts of heavy metals). Add about 1 Gm of sodium alurate to 1 cc of sulphuric acid, the solution is colorless (readily carbonizable substances). Transfer about 1 Gm of sodium alurate, accurately weighed, to a glass stoppered cylinder, add 50 cc of anhydrous ether, stopper and shake for ten minutes, decant the supernatant liquid through filter paper and repeat twice, using 25 cc and 15 cc portions, respectively of ether, utilizing the same filter, evaporate the combined filtrates to dryness in a tared beaker and dry to constant weight at 90°C, the residue does not exceed 0.2 per cent (uncombined allylisopropyl barbituric acid).

Dry about 1 Gm of sodium alurate, accurately weighed, at 90°C, for forty-eight hours, the loss in weight should not be less than 4.5 per cent nor more than 7.5 per cent. Transfer about 0.5 Gm of sodium alurate, accurately weighed, to a suitable Squibb separatory funnel, add 50 cc of water, followed by addition of 10 cc of diluted hydrochloric acid, extract with eight successive portions of ether of 25 cc each, evaporate the combined ethereal extractions to dryness in a stream of warm air and dry to constant weight at 90°C, the amount of allylisopropyl barbituric acid corresponds to not less than 90 per cent nor more than 91 per cent, calculated to the dried substance. Transfer the acidulated aqueous portion from the foregoing immiscible solvent extraction to a tared platinum dish and evaporate to dryness on a steam bath, to the residue obtained, add 5 cc of sulphuric acid, heat cautiously until the excess of sulphuric acid has been volatilized, repeat twice, using portions of 1 cc each of sulphuric acid, each time, add about 0.5 Gm of ammonium carbonate, ignite to constant weight and weigh as sodium sulphate, the percentage of sodium corresponds to not less than 9 per cent nor more than 10 per cent when calculated to the dried substance.

DIOTHANE (See THE JOURNAL, Dec 8, 1934, p 1777)

The following additional dosage form has been accepted

Diothane Ointment 1% in Ophthalmic Tube—Collapsible tubes containing an aqueous solution of diothane 1 per cent in an oxycholesterin base.

NEO-SYNEPHRIN HYDROCHLORIDE (See THE JOURNAL, June 16, 1934, p 2024)

The following additional dosage form has been accepted

Neo-Synephrin Hydrochloride Jelly—Neo-synephrin hydrochloride 0.5 per cent incorporated in a jelly like bland base composed of tragacanth, chondrus, glycerin and water. Sodium benzoate 0.5 per cent is present as preservative. The product is supplied in collapsible tube containers.

DILAUDID (See THE JOURNAL, June 16, 1934, p 2024, Dec 1, 1934, p 1708)

The following dosage form has been accepted

Dilaudid Compounding Tablets $\frac{1}{4}$ Grain—Each tablet contains dilaudid one-half grain. These tablets each many times the average dose are for use in compounding only.

ALABAMA			NAME	ADDRESS	TYPE OF SERVICE
NAME	ADDRESS	TYPE OF SERVICE	Capp Charles S	939 S Lake St	Radiology
Anniston			Carlier Ray A	1400 N State St	Roentgenology
Levi Irwin P	931 Noble St	Roentgenology	Costolow Wm F	1407 S Hope St	Roentgen therapy
Birmingham					
Barbed Carter M	1929 1st Ave N	Roentgenology	Davis Kenneth S	2131 W 3d St	Roentgenology
Isomodel Earl F	1023 S 20th St	Radiology	Goin Lowell S	1930 Wlshire Blvd	Roentgenology
Meadows James A	1023 S 20th St	Radiology	Johnson Clayton R	1200 N State St	Diagnostic roent.
Sorrell Lewis E	2001 16th St	Roentgenology *	Karshner Holla G	510 S Lucas Ave	Roentgenology
Dothan					
Ellis John T	814 S St Andrews St	Roentgenology	Kibby Sydney V	417 S Hill St	Roentgenology *
Fairfield					
Troje Oscar R	Tenn Coal Iron & R R Co Employee's Hosp	Radiology	Miljedahl Limer V	1211 Shatto St	Roentgenology *
Mobile					
Cravlee I M	1252 Springhill Ave	Radiology	MacColl Douglas R	2007 Wlshire Blvd	Diagnostic roent.
Montgomery			Findell Merl Lee	078 S Ferris Ave	Radiology
Boswell F P	201 Montgomery St	Radiology	Snure Henry	1414 S Hope St	Roentgen therapy
			Solland Albert	1407 S Hope St	Radium therapy
			Stafford Owen R	520 W 7th St	Roentgenology
			Taylor Raymond C	1212 Shatto St	Radiology
			Witter Calvin D	511 S Bonale Brac St	Roentgenology *
ARIZONA					
Phoenix			Oakland		
Goss H I	125 W Monroe St	Roentgenology	Blissell Frank S	1624 Franklin St	Roentgenology
Watkins W Warner	15 E Monroe St	Radiology	Bowen Carl B	1624 Franklin St	Roentgenology
Tucson			Julie S A	200 Grand Ave	Radiology
Hayden Edward M	Desert Sanatorium and In stitute of Research	Diagnostic roent	Litch Phillip H	428 17th St	Roentgenology *
			Peters Chas E	400 29th St	Roentgenology *
			Sargent Wm H	1024 Franklin St	Roentgenology *
			Siefert Alfred C	411 30th St	Radiology
ARKANSAS					
Fort Smith			Palo Alto		
Brooksher W R	602 Garrison Ave	Radiology	Powers Robert A	261 Hamilton Ave	Roentgenology
Hot Springs			Starks Dorothy J		Radiology
Nims Chas H	236 Central Ave	Radiology	Pasadena		
Little Rock			Chapman John Frye	65 N Madison Ave	Roentgenology *
Rhinehart Barton A	701 Main St	Roentgenology	Parker Carl H	65 N Madison Ave	Roentgenology *
Rhinehart D A	701 Main St	Roentgenology	Pomona		
Zell A M	2000 Main St.	Radiology	Swearingen F C	586 N Main St	Radiology
Monticello			Redlands		
Wilson J S			Folkins F H	47 E Vine St	Roentgenology
CALIFORNIA					
Alameda			Riverside		
Lum Wm. T	1301 Park St	Roentgenology *	Thurston Paul F	3770 12th St	Diagnostic roent.
Bakersfield			Sacramento		
Fox L H	2025 18th St	Roentgenology	Briggs Rowland S	1014 8th St	Radiology
Berkeley			Cook Orrin S	1127 11th St	Roentgenology *
Heald E Schulze	3000 Regent St	Roentgenology	Graham Ralph S	2830 L St	Roentgenology *
Van Auys R G	2490 Channing Way	Radiology	Lawson John D	928 Jay St	Radiology
Eureka			Zimmerman Harold	1027 10th St	Radiology
Woolford Joseph S	350 E St	Roentgenology	San Bernardino		
Fresno			Owen C. C	393 6th St	Roentgenology *
McGehee W H	1257 Thorne Ave	Diagnostic roent	San Diego		
Milbolland W G	1015 Fulton St	Roentgenology	Kinney L C	1831 4th St	Radiology
Ruff Frank R	1234 S St	Radiology	Weiskotten W O	233 A St	Diagnostic roent.
Glendale			San Francisco		
Christ David M	143 N Brand Blvd	Radiology	Bryan Lloyd	450 Sutter St.	Roentgenology *
Jones L. L.	229 N Central Ave	Roentgenology *	Crow Lloyd B	1400 Fell St	Roentgenology *
Hollywood			Donovan Monica	450 Sutter St	Radium therapy
Sherman Benj H	6777 Hollywood Blvd	Roentgenology	Fulmer Chas C	27th and Valencia Sts	Roentgenology *
Stewart Chas W	1680 N Vine St	Roentgenology	Garland L Henry	450 Sutter St	Roentgenology *
Warren J W	1322 N Vermont Ave	Radiology	Hunsberger H S	450 Sutter St	Diagnostic roent.
Long Beach			Ingber L S	490 Post St	Radiology
Heylman H H	115 Pine Ave	Diagnostic roent.	Leef Edward	2361 Clay St	Radiology
Mayfield Claude	115 Pine Ave	Diagnostic roent.	Levitin Joseph	516 Sutter St	Radiology
Los Angeles			Newell Robert R	2361 Clay St	Radiology
Abowitz Jacob	4933 Fountain Ave	Roentgenology	O'Neill John R	2200 Hayes St	Roentgenology *
Bailey Cornelius O	727 W 7th St	Radiology	Rehlfisch John M	450 Sutter St	Roentgenology *
Blaire Edward S	727 W 7th St	Roentgenology	Rice Frank M	2000 Van Ness Ave	Radiology
Bonoft Earl M	1930 Wlshire Blvd	Roentgenology	Rodenbaugh F H	490 Post St	Roentgenology *
			Ruggles Howard E	384 Post St	Roentgenology *
			Stone Robert S	Paradise and 3d Ave	Radiology
			Williams A J	450 Sutter St	Radiology
			Williams Francis	870 Market St	Radiology
			San Jose		
			Broomser Milton A.	311 S 1st St	Radiology
			Bullitt James B	241 E Santa Clara St	Radiology
			Richards Charles M	241 E Santa Clara St	Radiology

NAME	ADDRESS	TYPE OF SERVICE	NAME	ADDRESS	TYPE OF SERVICE
San Pedro			Miami		
Allen Albert	410 W 6th St	Diagnostic roent	Cleghorn Charles D	168 SE 1st St	Röntgenology Radium therapy
Santa Barbara			Lucian Joseph H	168 SE 1st St	Röntgenology *
Clark Daniel M	1520 Chapala St	Diagnostic roent	Pearson Nelson T	168 SE 1st St	Röntgenology
Geyman M J	320 W Pueblo St	Radiology	Rapp Gerard	168 SE 1st St	Diagnostic roent Radium therapy
Ullmann H J	1520 Chapala St	Radiology	Miami Beach		
Ware James G	1515 State St	Röntgenology *	Payton Frazier J	St Francis Hospital	Röntgenology Radium therapy
Santa Monica			Ocala		
Hopkirk C C	710 Wilshire Blvd	Diagnostic roent.	Moore J N		Diagnostic roent
Stockton			Orlando		
McGurk Raymond T	242 N Sutter St	Röntgenology *	Plies John A	108 F Central Ave	Röntgenology *
Sheldon F B	242 N Sutter St	Radiology	Weed Walter A	307 S Orange Ave	Radiology
COLORADO			St Petersburg		
Colorado Springs			Feaster O O	11th St and 7th Ave N	Radiology
Brown L Gordon	707 N Cascade Ave	Radiology	Herring John A	342 3d Ave N	Diagnostic roent
Denver			Tampa		
Allen K D A	227 16th St	Röntgenology *	Allen Bundy	700 Franklin St	Röntgenology *
Bouslog John S	227 16th St	Radiology	Brown Harold O	215 Madison St	Röntgenology *
Brandenburg H P	227 16th St	Radiology	Dickinson J C	700 Franklin St	Röntgenology *
Childs S B	227 16th St	Radiology	West Palm Beach		
Crosby L G	227 16th St	Radiology	Herpel Fredk K	Good Samaritan Hospital	Diagnostic roent
Diemer Frederick E	1616 Tremont Pl	Diagnostic roent.	GEORGIA		
Newcomer Elizabeth	1616 Tremont Pl	Röntgenology *	Americus		
Newcomer N B	1616 Tremont Pl	Radiology	Pendergrass R C		Röntgenology *
Schmidt Ernst A	4200 E 9th Ave	Röntgenology	Atlanta		
Stephenson F B	227 16th St	Röntgenology	Clark James J	478 Peachtree St N E	Röntgenology *
Watson W W	227 16th St	Röntgenology	Hall O D	450 East Ave	Radium therapy
Weeks Paul R	227 16th St	Röntgenology	Lake Wm F	384 Peachtree St N E	Röntgenology *
Wilthers Sanford	1612 Tremont Pl	Radium therapy	Landham J W	139 Forrest Ave N E	Röntgenology Radium therapy
Longmont			Rayle Albert A	36 N Butler St	Röntgenology
Matlack J A		Diagnostic roent.	Stewart Calvin B	904 Peachtree St	Radium therapy
Sterling			Augusta		
Daniel J H		Röntgenology	Holmes L P	753 Broad St.	Röntgenology
Woodmen			Savannah		
Forney F A.		Diagnostic roent.	Cole Wm. A	24 E Taylor St	Röntgenology
CONNECTICUT			Corson Eugene R	10 W Jones St	Röntgenology *
Bridgeport			Drane Robert	Liberty and Drayton Sts	Röntgenology Radium therapy
Groark Owen J	881 Lafayette St	Diagnostic roent.	McGee H H.	346 Bull St	Röntgenology
Lockhart R. Harold	144 Golden Hill St	Radiology	Thomasville		
Parnelee B M	144 Golden Hill St.	Radiology	Collins J J		Radiology
Hartford			IDAHO		
Butler Nicholas G	50 Farmington Ave	Röntgenology	Boise		
Climan Max	242 Trumbull St	Diagnostic roent	Genoway Charles V	105 N 8th St	Röntgenology *
Hoffman Charles C	700 Main St	Diagnostic roent	Lewiston		
Ogden Ralph T	179 Allyn St	Radiology	Johnson Paul W		Röntgenology *
Roberts Douglas J	179 Allyn St	Radiology	Batavia		
Van Strander W H.	179 Church St	Radiology	Mostrom H T		Diagnostic roent. Radium therapy
Meriden			Belvidere		
Otis Fessenden N	165 W Main St	Röntgenology	Algulre Alden		Diagnostic roent
Middletown			Bloomington		
Murphy James.	101 Broad St	Radiology	Cantrell Thomas D	310 E Jefferson St.	Radiology
New Britain			Grote Henry W	219 N Main St	Radiology
Grant Arthur S	55 W Main St	Röntgenology	Chicago		
Loud Norman W	92 Grand St	Diagnostic roent	Anspach, Wm E	1150 N State St	Radiology
New Haven			Arens Robt A.	2839 Ellis Ave	Radiology
Bergman A. P	27 Elm St	Diagnostic roent	Bauer August A	1303 E 63d St	Röntgenology
Goldman George	201 Park St.	Diagnostic roent.	Bellin David S	411 Garfield Ave	Radiology
Scott Clifton R	215 Whitney Ave	Röntgenology *	Blackmarr Frank H	25 E Washington St	Röntgen therapy Radium therapy
Wheatley Louis F	420 Temple St.	Röntgenology *	Brams Julius	55 E Washington St.	Radiology
Norwalk			Braun Benjamin D	25 E Washington St	Radiology
Perkins Charles W	520 West Ave.	Röntgenology *	Brown Wm. L	55 E Washington St	Radium therapy
Waterbury			Case James T	180 N Michigan Ave	Radiology
Atkins Samuel M	111 W Main St	Röntgenology *	Challenger Chester J	3117 Logan Square	Röntgenology
Harvey Joseph L.	64 Robbins St	Röntgenology *	Cook Carroll E	30 N Michigan Ave	Radiology
Wilmington			Culpepper Wm L	1180 E 63d St.	Röntgenology
Allen B M.	909 Washington St	Diagnostic roent.	Cushway B C	7752 S Halsted St.	Radiology
Burns Ira	912 Jefferson St	Radiology	Cutlera, Peter	501 N Halsted St.	Diagnostic roent.
McElpatrick G C	1024 W 8th St.	Diagnostic roent.	Damiani Joseph	767 Milwaukee Ave	Röntgenology
DELAWARE			Davis H. E	180 N Michigan Ave	Radiology
District of Columbia			Dick Paul G	65 E Washington St.	Röntgenology
Washington			Foley Joseph M	1439 S Michigan Ave	Röntgenology *
Bierman M. I	1801 Eye St. NW	Diagnostic roent.	Ford Charles	8017 Luella Ave	Röntgenology
Caylor C C	1029 Vermont Ave NW	Diagnostic roent	Gilmore Wilbur H	185 N Wabash Ave	Röntgenology
Christie A C	1835 Eye St. NW	Radiology	Grubbe Emil H	6 N Michigan Ave	Röntgen therapy
Coe Fred G	1835 Eye St. NW	Radiology	Hartung Adolph	25 E Washington St	Radiology
Elbridge W W Jr	St. Elizabeths Hosp	Röntgenology *	Herman Edward R	6319 S Halsted St.	Röntgenology *
Edward Joseph F	1726 Eye St NW	Röntgenology	Hodges Paul C	950 E 59th St	Radiology
Groover T A	1835 Eye St NW	Radiology	Hubeny M J	25 E Washington St.	Röntgenology
King Cecil V	Gallinger Municipal Hosp	Radiology	Jenkinson David L	1931 Wilson Ave	Röntgenology *
Lattman Isidore	1835 Eye St NW	Radiology	Jenkinson E L.	1439 S Michigan Ave	Radiology
Leibell Casimir	2d and D Sts SE	Radiology	Kaplan Maurice I	3837 W Roosevelt Rd.	Radiology
McPeak Edgar M	1835 Eye St NW	Radiology	Kitterman Peter G	6319 S Halsted St	Röntgenology
Merritt E A	1835 Eye St NW	Radiology	Landau George M.	680 Groveland Park	Röntgenology
Moore A B	815 Connecticut Ave.	Röntgenology	Larkin A James	180 N Michigan Ave	Radium therapy
Moore Claude	1835 Eye St. NW	Radiology	Ledoux Alfred C	950 E 59th St	Röntgenology *
Otell, L. S	1103 16th St NW	Röntgenology	Litschgi Joseph J	551 Grant Pl.	Röntgenology
Sappington E F			Maier Roe J	7752 S Halsted St.	Radiology
FLORIDA			McClure C F	25 E Washington St	Röntgenology
Fort Lauderdale			Olin Harry A.	6058 Drexel Blvd	Röntgenology
Hendricks E. M	314 Sweet Bldg	Radiology	Orndoff B H.	2561 N Clark St	Radiology
Jacksonville			Potter Hollis E	122 S Michigan Ave.	Röntgenology
Cunningham Lester W	117 W Duval St.	Röntgenology *	Richman Samuel H	6205 Ingleside Ave	Röntgenology *
McEuen H B	126 W Adams St	Röntgenology *	Rose Cassie Belle	1753 W Congress St	Radiology
Shaw W McL.	117 W Duval St	Röntgenology *	Royer Don J	841 E 63d St	Röntgenology
			Simpson Frank E	58 E Main St	Radium therapy

NAME	ADDRESS	TYPE OF SERVICE	NAME	ADDRESS	TYPE OF SERVICE
Tettelbaum Meyer D	2839 Ellis Ave	Radiology	South Bend		
Tichy L S	3200 W Cermak Rd	Röntgenology	Fisher Lawrence F	105 E Jefferson Blvd	Röntgenology *
Trostler J S	25 E Washington St	Radiology	Terre Haute		
Walt Harold Nathan	3821 Washington Blvd	Röntgenology	Pierce H J	627 Cherry St	Radiology
Wanninger W J	9116 Exchange Ave	Röntgenology	Union City		
Warden R H	1044 N Francisco Ave	Radiology	Reld Robert W		Röntgenology
Warfield C H	Wood and Harrison Sts	Röntgenology	Valparaiso		
Willy R G	2749 W Foster Ave	Röntgenology	DeWitt C H		Diagnostic roent.
Danville			Vincennes		
Archibald James S	St Elizabeth Hosp	Röntgenology	Moore Robert G	21 N 3d St	Röntgenology
Dunham L H	41 N Vermillion St	Radiology			
Decatur			IOWA		
Flinn Fauntleroy	220 S Webster St	Radiology	Anamosa		
Deerfield			Rawson E G		Diagnostic roent.
Davis Charles J		Röntgenology	Atlantic		
East St Louis			Greenleaf W S		Röntgenology
Echternacht A C	234 Collinsville Ave	Radiology	Belle Plaine		
Evanston			Newland Don H		Diagnostic roent.
Conley Bernard M	353 Ridge Ave	Röntgenology	Boone		
Crowder Earl R	2650 Ridge Ave	Röntgenology *	Whitaker B T	703 8th St	Radiology
Perry Centz	636 Church St	Radiology	Cedar Rapids		
Highland Park			Erskine Arthur W	120 3d Ave SE	Radiology
Jacks R R	2 N Sheridan Rd	Diagnostic roent	Clinton		
Jacksonville			Knudsen Hubert K	638 Bluff Blvd	Röntgenology *
Brouse Ivan E	316 W State St	Röntgenology *	Lenaghan Robt T	122 Main Ave	Röntgenology
Joliet			Council Bluffs		
Houston Alfred M	106 N Chicago St	Röntgenology	Hawkins Emmet L	420 W Washington Ave	Radiology
Lincoln			Des Moines		
Hagans Frank M	400 Broadway	Radium therapy	Burcham Thos A	410 6th Ave	Radiology
Mattoon			Dubuque		
Morgan Chas E	213 S 17th St	Röntgenology	Ericksen Lester G	1506 Delhi St	Röntgenology
Mount Carmel			Eagle Grove		
Elkins Harold A		Röntgenology	Christensen John R		Röntgenology
Mount Vernon			Iowa City		
Smith Elmer M	1001½ Broadway	Röntgenology	Gilles Carl J	University Hospital	Radiology
Oak Park			Kerr H Dabney	University Hospital	Radiology
Ronayne Frank J	518 N Austin Blvd	Radiology	Ryplins Edwin L	University Hospital	Radiology
Olney			LeMars		
Weber James A		Diagnostic roent	Larsen W W		Röntgenology *
Ottawa			Marshalltown		
Pettit Roswell T	728 Columbus St	Radiology	Talley Louis F	Main St and 3d Ave.	Röntgenology
Peoria			Ottumwa		
Decker Fred H	410 Main St	Radiology	Spilman H A	103 S Market St	Diagnostic roent.
Goodwin P B	530 N Glen Oak Ave	Radiology	Webb Harold H	119 E Main St	Röntgenology *
Magee H B	408 Main St.	Radiology	Sioux City		
Quincy			Cibbon W H	423 Sixth St	Radiology
Belrne H P	648 Hampshire St	Röntgenology	Waterloo		
Perley Arthur E	508 Maine St	Radium therapy	Britt Otis W	525 Sycamore St	Radiology
Svanberg Harold	508 Maine St	Radiology	Kestel John L	525 Sycamore St	Radiology
Rockford			KANSAS		
Ackemann H W	321 W State St.	Radiology	Beloit		
Springfield			Vallette H B		Diagnostic roent.
Hilt Lawrence M	105 S 5th St.	Röntgenology *	Eldorado		
O'Hara F S	403 E Capitol Ave	Radiology	Dinsmore W S	324 W Central Ave	Diagnostic roent.
INDIANA			Fort Scott		
Evansville			Prichard J R	209 S Main St.	Radiology
Cleveland W R	22 N W 4th St	Radiology	Kansas City		
Meyer Keith T	600 Mary St	Diagnostic roent	Allen Lewis C	905 N 7th St	Radiology
Fort Wayne			Tice Galen M	4158 Eaton St	Radiology
Rodriguez Juan	2902 Fairfield Ave	Radiology	Lawrence		
Van Bushirk E M	347 W Berry St.	Radiology	Jones H. T	107 E 8th St.	Diagnostic roent.
Frankfort			Salina		
Chittick A. G	206 E Walnut St	Röntgenology	Brittain O R	105 S 7th St	Röntgenology
Gary			Topska		
Dietrich Paul H	540 Tyler St	Röntgenology	Finney Guy A	901 Kansas Ave	Röntgenology
Sagel Jacob	1600 W 6th Ave	Radiology	Floersch M A	700 Kansas Ave	Röntgenology
Hammond			Owen Arthur K.	901 Kansas Ave.	Röntgenology
Rauschenbach C W	5245 Hohman Ave	Röntgenology	Wichita		
Indianapolis			Frost E J	227 E Douglas Ave	Radiology
Beeler Raymond C	23 E Ohio St	Radiology	Swope Ople W	105 N Main St.	Radiology
Collins James N	23 E Ohio St	Radiology	Webb J A H	106 N Main St	Radiology
Lochry R L.	Fall Creek Blvd and Mill nols St.	Röntgenology	KENTUCKY		
Smith Lester A	23 E Ohio St	Radiology	Ashland		
Stayton Chester A.	23 E Ohio St	Röntgenology *	Cooper John Ralph	1540 Winchester Ave	Röntgenology *
Wright Cecil S	1076 W Michigan St	Radiology	Lexington		
Kokomo			Harding Donnan B	190 N Upper St.	Radiology
Ferry Paul W	224 N Main St.	Diagnostic roent.	Lewis John C	159 W Main St	Röntgenology
LaFayette			Thompson J Campbell	207 N Upper St.	Röntgenology
McClelland D C	308 N 8th St.	Röntgenology *	Louisville		
Schler Harper G	2400 South St	Röntgenology	Bell J C	332 W Broadway	Radiology
Michigan City			Enfield Chas D	332 W Broadway	Radiology
Martin F V	501 Pine St.	Radiology	Fugate I. T	608 S 4th St	Radiology
Muncie			Herrmann Henry C	321 W Broadway	Röntgenology
Moore P D	Jackson and High Sts	Radiology	Johnson Sydney E	101 W Chestnut St	Röntgenology
New Castle			Keith D Y	412 W Chestnut St.	Radiology
Herman Geo E	1319 Church St.	Röntgenology	Keith J P	412 W Chestnut St.	Radiology
Plymouth			Martin William C	321 W Broadway	Röntgenology
Knott Harry		Röntgenology	Owensboro		
Shelbyville			Gillem P D	415 St Ann St	Röntgenology
Inlow Herbert H	18 W Washington St	Diagnostic roent.	Shelbyville		
			Bayless B W		Röntgenology
			Winchester		
			Browne I H	31 N Main St	Diagnostic roent.

LOUISIANA			NAME		ADDRESS	TYPE OF SERVICE
NAME	ADDRESS	TYPE OF SERVICE	Brookton	Packard Ioring D	305 Prospect St	Roentgenology
Alexandria			Brookline			
Barker H O	327 3d St	Roentgenology	Hogan Isabel K	193 Aspinwall Ave		Roentgenology
Baton Rouge			Dalton			
Williams Lester J	221 3d St	Radiology	Sullivan P J			Roentgenology
Hauma			Fall River			
St. Martin T I		Roentgenology	Tennis M N	538 Prospect St		Radiology
Mansfield			Fitchburg			
Curtis H P D		Roentgenology	Jennings Curtis H	82 Mechanic St		Roentgenology
Monroe			Haverhill			
Moore Daniel M	128 De Siard St	Roentgenology	Popoff Constantine	26 Summer St		Roentgenology *
New Orleans			Sproull John	50 Merrimack St.		Radiology
Ané J Norrell	921 Canal St	Roentgenology	Holyoke			
		Radium therapy	Harrington Elmer J	199 Chestnut St		Roentgenology *
Bowle E R	3503 Prytania St	Radiology	Lawrence			
Fortier L A	2000 Tulane Ave	Radiology	Burgess Charles J	37 Whitman St		Radiology
Gately T T	2000 Tulane Ave	Radiology	Leary Alfred J	475 Essex St		Roentgenology
Granger Amédée	210 Baronne St	Roentgenology				Radium therapy
Magruder L W	1327 Plue St	Radiology	Lowell			
Menville L J	921 Canal St	Radiology	Stewart Ralph C	226 Central St		Roentgenology
Rodick John C	3500 Prytania St	Roentgenology *	Malden			
Samuel E C	3503 Prytania St.	Radiology	Warren Alva H	82 Beltran St		Roentgenology
Shreveport			New Bedford			
Anderson Johnson R	1130 Louisiana Ave	Roentgenology *	Bonnar James M	90 Hillman St		Roentgenology
Barrow S C	624 Travis St	Radiology	North Adams			
Edwards H G F	624 Travis St	Radiology	Bunce James W	85 Main St		Roentgenology
Harwell W R	624 Travis St	Radiology	Crawford J W	191 E Main St		Radiology
Rutledge C P	1030 Highland Ave	Radiology	Northampton			
Thomas A Jerome	624 Travis St.	Roentgenology	James Benjamin F	211 Elm St.		Roentgenology
MAINE			Pittsfield			
Auburn			Cox Michael J	74 North St		Roentgenology *
Cunningham C H	66 Goff St	Diagnostic roent.	Quincy			
Bangor			Altman Wm. S	26 Adams St.		Radiology
Ames Forrest B	490 State St.	Roentgenology	Salem			
Hunt Barbara	224 State St	Radiology	Tirman Paul E	76 Washington St		Roentgenology
Portland			Somerville			
Cummings Edson S	12 Pine St.	Diagnostic roent.	Blake Allen H	81 College Ave W Som		Roentgenology
Lamb Frank W	131 State St.	Diagnostic roent	Springfield			
Thaxter Langdon T	22 Arsenal St	Roentgenology	Davis Ernest L	20 Maple St.		Roentgenology *
Waterville			Horrigan A J	20 Maple St.		Roentgenology *
Goodrich John P	214 Main St.	Diagnostic roent	Jackson Howard L	146 Chestnut St		Roentgenology
Lubell Moses F	Sisters Hospital	Roentgenology	Powers Richard T	25 Maple St.		Radiology
MARYLAND			Solomon Bennett	115 State St.		Roentgenology
Baltimore			Van Allen Harvey W	19 Maple St.		Radiology
Ashbury Howard E	101 Read St	Roentgenology *	Webster			
Burnam Curtis F	1418 Eutaw Pl	Radiology	Bragg Leslie R	260 Main St		Diagnostic roent.
Frans John	101 Read St	Roentgenology	Worcester			
Feldman Maurice	2425 Eutaw Pl	Diagnostic roent.	Cook Philip H	27 Elm St		Roentgenology
Flror Waltmer B	1100 N Charles St	Roentgenology *	Langill Morton H	36 Pleasant St.		Radium therapy
Hill Eben C	3 W Franklin St	Roentgenology *				Roentgenology
Kahn Max	2 W Read St	Roentgenology *				
Ostro Marcus	1810 Eutaw Pl	Roentgenology *				
Peterson J W	1107 St Paul St	Roentgenology *				
Sax Benjamin J	2237 Eutaw Pl	Diagnostic roent.				
Walton Henry J	104 W Madison St	Roentgenology *				
Waters Charles A	1100 N Charles St.	Roentgenology *				
Wright Harold E	101 Read St	Diagnostic roent.				
Crisfield						
Collins C E		Roentgenology				
Cumberland						
Conherd F G	123 S Centre St	Roentgenology				
Easton						
Hammond William T		Roentgenology				
Frederick						
Derr John S	35 E Church St	Roentgenology *				
Hagerstown						
Koffmeier F N	King and Antietam Sts	Roentgenology				
Salisbury						
Williams Jack K	203 W Church St	Roentgenology				
MASSACHUSETTS			MICHIGAN			
Boston			Adrian			
Blackett Chas W	35 Bay State Rd	Roentgenology	Chase A W	130 Toledo St		Diagnostic roent.
Butler P F	30 Bay State Rd	Radiology	Ann Arbor			
Cleaves Edwin A	370 Marlborough St	Diagnostic roent.	Donaldson Samuel W	326 N Ingalls St		Roentgenology
Coffin W K	438 Marlborough St	Roentgenology	Hodges Fred J	University of Michigan		Roentgenology
Friedman Harry F	270 Commonwealth Ave	Radiology	Jacox Harold W	1116 Lincoln Ave		Radiology
George Ariel W	43 Bay State Rd	Roentgenology	Pelce Carleton B	1313 E Ann St		Radiology
Hampton A O	Massachusetts General Hosp	Radiology	Battle Creek			
Healy Thomas R	370 Marlborough St	Roentgenology *	Gorline C S	25 W Michigan Ave		Roentgenology
Holmes Geo W	265 Charles St	Radiology	Kolroord Theodore	25 W Michigan Ave		Roentgenology
Leonard Ralph D	43 Bay State Rd	Roentgenology	Upson W O	North Ave and Emmett St		Roentgenology
Lerene George	82 Concord St	Roentgenology *	Bay City			
MacMillan A S	493 Beacon St.	Roentgenology	Zillak Alois L	200 Tuscola Rd		Roentgenology *
McCarthy H L	479 Beacon St.	Roentgenology	Detroit			
McPee William D	41 Bay State Rd	Roentgenology	Berris J M	10 Peterboro St.		Diagnostic roent
Meachen John W	47 J Commonwealth Ave	Roentgenology *	Birkelo Carl C	23 W Adams Ave		Roentgenology
Moloney Albert M	47 Bay State Rd	Radiology	Bloom Arthur R	5037 Woodward Ave		Roentgenology
Morrison Sidney L	370 Marlborough St	Roentgenology *	Chene George C	1851 Woodward Ave		Roentgenology
O'Brien Fredk W	46, Beacon St	Radiology	Dempster Jas H	5761 Stanton Ave		Diagnostic roent
Osgood Herman A	144 Commonwealth Ave	Roentgenology *	Dickson B B	337 W Grand Blvd		Roentgen Therapy
Ott George J	344 Commonwealth Ave.	Roentgenology	Doub Howard P	2799 W Grand Blvd		Radiology
Perkins Roy S	520 Commonwealth Ave.	Roentgenology	Eakins F J	1551 Woodward Ave		Roentgenology
Riffo Max	485 Commonwealth Ave	Radiology	Elsen Paul	208 S Algonquin St		Roentren therapy
Robins Samuel A	636 Beacon St.	Roentgenology				Radium therapy
Sosman M C	721 Huntington Ave	Roentgenology *	Erans Wm. A	10 Peterboro St.		Radiology
Vance R C	264 Beacon St	Roentgenology *	Ford Frances A	432 E Hancock Ave		Radium therapy
Vogt E G	300 Longwood Ave	Roentgenology	Grace Joseph M	14729 St Marys St		Radiology
Watts Henry F R	6 Monadnock St Dor	Diagnostic roent	Hall E Walter	10 Peterboro St		Radiology
Wheatley Frank E	620 Beacon St	Roentgenology	Hasley Clyde K	1551 Woodward Ave		Radiology
Whelan Charles	395 Commonwealth Ave	Radiology	Jarre Hans A	1551 Woodward Ave		Radiology
			Kenning J C	1551 Woodward Ave		Roentgenology
			Leucutia Trahan	10 Peterboro St		Radiology
			Minor Edward G	3001 W Grand Blvd		Roentgenology
			Reynolds Lawrence	10 Peterboro St		Radiology
			Sanderson S E	5037 Woodward Ave		Radiology
			Shore O J	3001 W Grand Blvd		Roentgenology
			Stevens Rollin H	1551 Woodward Ave		Radiology
			Ulbrich Henry L	1122 E Grand Blvd		Roentgenology *
			Weaver Clarence E	113 Martin Pl.		Roentgenology
			Wilcox Leslie F	10 Peterboro St		Radiology
			Wilmer E R	3839 Brush St.		Radiology
			Flint			
			Chitt Myron W	901 Begole St		Radiology
			Macduff R Bruce	112 W Kearley St		Roentgenology *

NAME	ADDRESS	TYPE OF SERVICE	NAME	ADDRESS	TYPE OF SERVICE
Grand Rapids			St. Louis		
Menees Thomas O	Wealthy St. and Plymouth Rd	Radiology	Allen Wm E Jr	City Hospital No 2	Röntgenology
Moore Vernor M	110 E Fulton St	Radiology	Frust Edwin C	3720 Washington Ave	Radiology
Muller John H	26 Sheldon Ave	Radiology	McCutchen L G	3120 N Kingshighway	Röntgenology *
Smith Richard L	Butterworth Hospital	Diagnostic roent	Moore Sherwood	510 S Kingshighway	Radiology
Stonehouse Garnet G	26 Sheldon Ave S E	Radiology	Mueller Wilbur A	607 N Grand Blvd	Röntgenology
Williams Alden H	26 Sheldon Ave	Radiology	Peden Joseph C	674 N Grand Blvd	Röntgenology *
Jackson			Sante, L R	634 N Grand Blvd	Radiology
Cooley R M	524 Lansing Ave	Röntgenology	Spinzig Edgar W	509 N Grand Blvd	Röntgenology
Kugler J C	1907 Croredale Ave	Röntgenology	Titterington I R	503 N Grand Blvd	Röntgenology
Porter H W	1020 E Michigan Ave	Radiology	Zink Oscar C	5035 Delmar Blvd	Röntgenology
Kalamazoo			Springfield		
Crane A W	420 S Rose St	Röntgenology *	Cole Paul F	200 Pershing Ave	Radiology
Jackson John B	420 S Rose St	Röntgenology *	MONTANA		
Lansing			Billings		
Davenport Carroll S	1210 W Saginaw St	Röntgenology *	Bridenbaugh J H	205 N Broadway	Radiology
Huntley Fred M	908 N Capitol Ave	Röntgenology	Watkins C F	115 N 28th St	Radiology
Monroe			Great Falls		
Moll T M	120 Maple Blvd	Diagnostic roent	Wallner Dora	503 1st Ave N	Röntgenology
Muskegon			NEBRASKA		
Holly Island E	876 N 2d St	Radiology	Beatrice		
Plainwell			Lenner H G	117 S 5th St	Röntgenology *
Hudnutt O D	124 E Bridge St	Röntgenology	Rush Weaver A	Medical Arts Bldg	Radiology
Pontiac			Grand Island		
Church J E	35 W Huron St	Röntgenology	Woodruff R C	306½ N Locust St	Röntgenology
Pool H H	35 W Huron St	Röntgenology	Hastings		
Saginaw			Rork Lee W	131 N Hastings Ave	Röntgenology *
Anderson Wm K	316 S Porter St	Diagnostic roent	Lincoln		
St. Johns			Kall Carl	4410 South St	Röntgenology *
Ho T Y	Clinton Memorial Hosp	Diagnostic roent	Rove Edward W	128 N 13th St	Radiology
St. Joseph			Smith Roscoe L	1307 N St	Radiology
Ianman Everett L	1821 Niles Ave	Röntgenology	Omaha		
Traverse City			Fouts Roy W	107 S 17th St	Radiology
Minor E B	208½ E Front St	Diagnostic roent.	Hardy Clyde C	101 S 17th St	Röntgenology
Ypsilanti			Harris T T	407 S 16th St	Röntgenology
Pillsbury Chas B	23B N Washington St	Diagnostic roent	Hunt Howard B	36th and Cumling Sts	Radiology
MINNESOTA			Kelly J F	107 S 17th St	Radiology
Duluth			McArin James S	42d and Dewey Ave	Radiology
Clement Gage	915 E 1st St	Radiology	Overgaard A I	107 S 17th St	Röntgenology *
McNutt John R	324 W Superior St	Röntgenology	Ross W J	407 S 16th St	Röntgenology
Mankato			Tyler Albert F	107 S 17th St	Radiology
Wentworth A J	Main and Broad Sts	Radiology	Scottsbluff		
Minneapolis			Pfehn Frank W	1818 Broadway	Röntgenology
Allison R G	74 S 9th St	Röntgenology *	NEVADA		
Fleming A S	900 Nicollet Ave	Radium therapy	Reno		
Harrington Chas D	78 S 9th St	Radiology	Hershall C E	120 N Virginia St	Radiology
Nordin G T	74 S 9th St	Röntgenology *	NEW HAMPSHIRE		
Rigler Leo G	412 Delaware St S E	Diagnostic roent	Concord		
Sundt Mathias	87 S 7th St	Röntgenology	Evelth Fred S	12 Court St	Röntgenology
Ude Walter H	74 S 9th St	Röntgenology *	Dover		
Rochester			Chesley Harry O	507 Central Ave	Röntgenology
Bowling Harry H	102 2d Ave S W	Röntgenology	Hanover		
Camp John D	Mayo Clinic	Radium therapy	Sycamore Leslie A	2 Maynard St	Radiology
Desjardins A U	Mayo Clinic	Diagnostic roent	Manchester		
Fricke Robert E	Mayo Clinic	Röntgen therapy	Merrill A S	814 Elm St	Röntgenology
Kirklin B R	Mayo Clinic	Radium therapy	Nashua		
Leddy Eugene T	Mayo Clinic	Diagnostic roent.	Davis S C	168 Main St	Röntgenology
Sutherland Charles G	Mayo Clinic	Radium therapy	Rock T F	77 Main St	Diagnostic roent.
Weber Harry M	Mayo Clinic	Diagnostic roent	NEW JERSEY		
St. Cloud			Asbury Park		
Kern M J	St. Cloud Clinic Bldg	Röntgenology *	Herrman William G	501 Grand Ave	Radiology
St. Paul			Atlantic City		
Aurelius J R	330 St. Peter St	Röntgenology *	Bradley Robert A	1616 Pacific Ave	Radiology
Schons Edward	25 W 4th St	Radiology	Knighn Charles B	905 Pacific Ave	Röntgenology
MISSISSIPPI			Bayonne		
Greenville			Larkey C J	700 Avenue C	Diagnostic roent
Beals John A	301 Washington St	Diagnostic roent.	Beachwood		
Gulfport			Swan Guy Howard		Röntgenology *
Van Ness Edwin B	Durham Bldg	Röntgenology	Camden		
Houston			Roberts Joseph E.	403 Cooper St	Röntgenology
Williams J Rice		Röntgenology *	East Orange		
Jackson			May Ernst A	157 Harrison St	Radiology
Henderson W F	739 N State St.	Radiology	Reitter George S	144 Harrison St	Radiology
Laurel			Elizabeth		
McCormick H G	531 7th St.	Röntgenology	Vogel Herbert A	1000 E Jersey St	Diagnostic roent.
McComb			Ward Leo J	137 W Jersey St	Radiology
Ratcliff Marion D	Maryland and 4th Sts	Diagnostic roent	Englewood		
Natchez			Edwards J Bennett	330 Engle St	Röntgenology *
Beekman Marcus	307 Franklin St.	Diagnostic roent.	Flemington		
MISSOURI			Tompkins G B		Diagnostic roent.
Holden			Hoboken		
Thompson Wm G		Radiology	Brooser Henry V	105 Newark St.	Röntgenology
Joplin			Jersey City		
McGaughey H D	607 Main St.	Radiology	Mayer William W	532 Bergen Ave.	Röntgenology *
Kansas City			Perlberg Harry J	921 Bergen Ave.	Röntgenology *
Dann David S	306 E 12th St	Röntgenology	Montclair		
Deweese E R	904 Grand Ave	Röntgenology	Schlimmelfennig R. D	Mountainside Hospital	Röntgenology
Donaldson Clyde O	1103 Grand Ave	Radiology	Newark		
Lockwood Ira H	304 E 12th St	Radiology	Baker Charles F	198 Clinton Ave	Röntgenology *
McCandless O H	308 E. 12th St	Röntgenology	Devlin Frank	617 Broadway	Radiology
McDermott J L	1103 Grand Ave.	Radiology	Furst Nathan James	190 Johnson Ave	Röntgenology *
Skinner Edward H	1103 Grand Ave.	Radiology	Gelber Louis J	41 Lincoln Ave	Röntgenology
Virden C. E	1103 Grand Ave.	Radiology	Henle Carye-Belle	671 Springfield Ave	Röntgenology
St. Joseph			Hood Philip G	19 Lincoln Park	Diagnostic roent
McClothian A B	824 Edmond St.	Röntgenology *	Marquis W James	198 Clinton Ave	Röntgenology *
Ravold Henry J	401 N 6th St.	Radiology	Pomeranz Raphael	31 Lincoln Park	Röntgenology
			Reissman Ervin	31 Lincoln Park	Radiology
			Wyatt Joseph H	135 Clinton Ave	Radiology

NAME	ADDRESS	TYPE OF SERVICE	NAME	ADDRESS	TYPE OF SERVICE
New Brunswick			Elmhurst		
Avery Philip S	Albany and Somerset Sts	Radiology	Staritz Irving S	40 10 Gleane St	Roentgenology *
Klein Wm	87 Bayard St	Radiology	Elmira		
Passaic			Bennett John A	222 W Church St	Roentgenology
Terhune Percy H	171 Paulison Ave	Diagnostic roent	Endicott		
Pateron			Ford G R	600 High St	Roentgenology *
Colding, Harry A	180 Carroll St	Roentgenology	Far Rockaway		
Hoemer Jacob	213 Broadway	Radiology	Lenoff Morris J	856 Central Ave	Roentgenology *
Perth Amboy			Rivkin Hyman	918 Cornaga Ave	Roentgenology *
Klein Edward F	136 Market St	Radiology	Glen Falls		
Plainfield			Birdsall Edgar	140 Glen St.	Roentgenology
Boyes James G	744 Watchung Ave	Roentgenology *	Gloversville		
Rochelle Park			Denham H C	12 Prospect Ave	Roentgenology
Tallen C. de S		Radium therapy	Hampstead		
Skillman			Robin Nathaniel H	131 Fulton Ave	Roentgenology
Pigott Albert W	New Jersey State Village for Epileptics	Diagnostic roent	Williams P A	131 Fulton Ave	Roentgenology *
Succasunna			Hudson		
Plume C A		Diagnostic roent	Harris Rosslyn P	427 Warren St	Diagnostic roent
Summit			Ithaca		
Blabrow G Ward	103 Morris Ave	Roentgenology	Larkin Leo P	114 N Toga St	Radiology
Tidaback John D	342 Springfield Ave	Roentgenology	Mechanicville		
Trenton			Green Geo A		Diagnostic roent
Harison R Winthrop	205 W State St	Radiology	Middletown		
West New York			Schultz Walter A	18 Highland Ave	Roentgenology
Goldstone Karl H	16 18th St	Radiology	Walton James W	60 Prospect Ave	Roentgenology
NEW MEXICO			Mount Kisco		
Albuquerque			Anshau F E		Diagnostic roent
Johns E W	221 W Central Ave	Roentgenology	Newburgh		
Van Atta J R	221 W Central Ave	Radiology	Miller Raymond A	212 Grand St	Diagnostic roent
Warden M R	St Joseph Hospital	Diagnostic roent	Reed Charles B	205 Liberty St	Roentgenology
NEW YORK			New Rochelle		
Albany			Chilko Alexander J	41 Halcyon Terrace	Roentgenology *
Cross Warren G	New Scotland Ave	Roentgenology	Duckworth Willard D	421 Huguenot St	Roentgenology *
Howard W I	46 Willett St	Roentgenology	New York City		
Murmane I J	New Scotland Ave	Radiology	Abbott Hodson A	622 W 168th St	Roentgenology
Prentice B D	247 State St	Radiology	Abraham Adolph	829 Park Ave	Radiology
Amsterdam			Arous Istidore	667 Madison Ave	Radium therapy
Wilson David	150 Guy Park Ave	Roentgenology	Baum S M	136 E 64th St	Radium therapy
Auburn			Bendick Arthur J	2 E 77th St	Radiology
Austin Sedgwick E	54 E Cenesco St	Roentgenology	Bernstein J H	106 E 85th St	Radiology
Bull Harry S	11 Williams St	Diagnostic roent	Besser Herman	114 E 54th St	Roentgenology
Bay Shore			Boone Wm H	428 W 59th St	Roentgenology *
Cohoon Carl Wm	72a S Clinton Ave	Roentgenology	Bower Jacob	103 E 88th St	Roentgenology
Binghamton			Busby Archibald H	133 E 71st St	Diagnostic roent.
Kann Ulysses S	69 Walnut St	Radiology	Cameron William H.	611 Fifth Ave	Radium therapy
Shaw Terry H	93 Main St	Diagnostic roent	Carly John R	525 E 68th St	Roentgenology
Brooklyn			Cole Lewis Gregory	36 E 61st St	Roentgenology *
Bayles William H	1601 Bedford Ave	Diagnostic roent	Dietschbach W H	50 Central Park West	Radiology
Bell A L Loomis	340 Henry St.	Radiology	Dixon Geo S	1150 5th Ave	Diagnostic roent
Blaser Homer S	437 Orington Ave	Diagnostic roent	Duffy James J	424 Park Ave	Radium therapy
Cramp George W	506 8th St	Roentgenology	Ehrlich David Ernest	27 W 86th St	Radiology
Curran Francis W	1130 Dean St	Radiology	Fairchild C W	11 E 48th St	Diagnostic roent
Donnenberg Max	1404 Eastern Parkway	Roentgenology	Ferguson A B	420 E 59th St	Roentgenology *
Eastmond Charles	483 Washington Ave	Roentgenology *	Fierstein Jacob	1018 E 103d St.	Roentgenology *
Ehrenpreis B	576 Eastern Parkway	Roentgenology	Fineman Solomon	133 E 58th St.	Diagnostic roent.
Elliot F E	122 76th St	Radiology	Fox Elsie	384 E 149th St	Roentgenology
Forbe Geo	291 Hancock St	Roentgenology	Francis William J	121 Madison Ave	Roentgenology
Friedman Asa B	41 Eastern Parkway	Radiology	Fried Jacob R	1049 Park Ave	Radiology
Gold Louis	833 Woughby Ave	Diagnostic roent	Fried, Herman	320 W 87th St	Roentgenology *
Goldfarb Louis	608 Ocean Ave.	Diagnostic roent	Friedland Henry	2021 Grand Concourse	Diagnostic roent.
Goodman Moses	2100 68th St	Radiology	Friedman Lewis J	315 E 18th St	Roentgenology
Held Louis Arthur	255 Eastern Parkway	Roentgenology *	Friedman Max	1940 Grand Concourse	Diagnostic roent
Homes William F	152 Clinton St	Roentgenology	Friedman Milton	309 W 103d St	Radium therapy
Ingraham Ruth	121 Dekalb Ave	Diagnostic roent	Friedmann Joseph	53 W 73d St	Radiology
Kaufman Julius	201 Eastern Parkway	Roentgenology	Froehlich Eugene	28 W 74th St	Roentgenology
Krupp D Dudley	178 Pennsylvania Ave	Roentgenology *	Glassman I	128 E 30th St	Diagnostic roent.
Lewine Isaac	1219 40th St	Diagnostic roent	Goldberg N J	400 E 138th St	Diagnostic roent
Liherson F	612 Eastern Parkway	Diagnostic roent.	Golden Ross	622 W 168th St	Roentgenology
Masterson John J	401 76th St	Roentgenology *	Gottlieb Charles	210 W 79th St	Roentgenology
Mendelson Emanuel	132 Parkside Ave	Radiology	Groschel L B	911 Park Ave	Radiology
Nathanson Louis	700 Ocean Ave	Roentgenology	Harris Wm	70 E 77th St	Roentgen therapy
Reudtch Richard A	114 Remsen St	Roentgenology	Herendeen Ralph E	30 E 40th St	Roentgenology *
Schenck Samuel G	115 Eastern Parkway	Radiology	Hirsch Henry	2488 Grand Concourse	Radiology
Schiff Charles H	1000 Park Pl	Diagnostic roent	Hirsch I Seth	136 E 64th St	Radiology
Sevall L Martin	4701 13th Ave	Roentgenology *	Horvath Rudolph J	1083 Park Ave	Diagnostic roent.
Silverstein I S	315 New York Ave	Roentgenology	Howard J Campbell	40 E 61st St	Roentgenology *
Strahl Milton I	255 New York Ave	Diagnostic roent	Huer Frank	30 E 40th St	Roentgenology *
Taormina Louis J	1093 Gates Ave	Roentgenology	Illick H Earl	111 E 76th St	Roentgenology
Teperson H I	744 Eastern Parkway	Radiology	Imboden Harry M	30 W 59th St	Radiology
Van Winkle LeRoy F	120 Rogers Ave	Diagnostic roent	Jacob Leopold	100 E 94th St	Radiology
Wach Milton C	871 Park Pl.	Radiology	Jacobs Alexander W	40 W 72d St	Roentgen therapy
Weinstein Samuel	1138 Eastern Pkwy	Roentgenology *	Johnson Redford K	30 E 40th St	Radium therapy
Westing Siegfried W	180 Lenox Rd	Diagnostic roent	Kaplan Ira I	55 E 80th St	Diagnostic roent
Buffalo			Kaplan Morris		
Darnes John M	875 Lafayette Ave	Roentgenology	Kasabach Halg H	130 Henry St	Diagnostic roent.
Buytts J W	472 Delaware Ave	Roentgenology *	Kassow Israel O	622 W 168th St.	Radiology
Catter Stephen A	1457 Abbott Rd	Roentgenology	Kean Albert	1840 Grand Concourse	Diagnostic roent.
DeGraff Ralph M	131 Linwood Ave	Diagnostic roent	Klein Isadore	100 E 94th St	Radiology
Clau Franceschi J S	610 Niagara St	Diagnostic roent	Kraft Ernest	100 Central Park South	Radiology
Heimulak M J	929 Fillmore Ave	Diagnostic roent	Kurz, Bernard	97 Central Park West	Roentgenology *
Koenig Edward C	180 High St	Roentgenology *	Landman J J	1235 Grand Concourse	Diagnostic roent
Lape C Henry	183 Oxford Ave	Diagnostic roent	Lapman Charles	391 E 149th St	Diagnostic roent.
Lery Sidney H	23 Allen St	Diagnostic roent	Law Frederick M	2754 Grand Concourse	Diagnostic roent.
Lery Lester	40 North St	Roentgenology	Lefrak Louis	140 E 54th St.	Diagnostic roent.
Mattick Walter L	113 High St	Radiology	Lenz Maurice	251 F Broadway	Diagnostic roent
Moses Chester D	333 Linwood Ave	Diagnostic roent	Levin Isaac		
Orr Clifford H	1093 Ellicott St	Roentgenology *	Lewis Raymond W	57 W 57th St.	Radium therapy
Schreiner B F	117 High St	Radiology	Massaro Alfonso F	115 E 61st St.	Diagnostic roent
Smith B B	333 Linwood Ave	Roentgenology	Merrill E Forrest	457 W 163d St	Diagnostic roent
Thompson A W	133 Linwood Ave	Diagnostic roent	Meyer William Henry	30 W 58th St	Roentgenology *
Cooperstown			Ossip Abraham	303 E 20th St.	Roentgenology *
Crutenden Harry L		Radiology	Levin Isaac		
McFar Charles C		Roentgenology *	Lewis Raymond W	57 W 57th St.	Radium therapy
Cortland			Massaro Alfonso F	115 E 61st St.	Diagnostic roent
Eornberger Frank F	16 Church St	Roentgenology	Merrill E Forrest	457 W 163d St	Diagnostic roent

NAME	ADDRESS	TYPE OF SERVICE	NAME	ADDRESS	TYPE OF SERVICE
Springfield			Johnstown		
Brubaker E R	8 W Main St	Radiology	Scharmann Frank C	218 Franklin St	Diagnostic roent
Ultes Will	E High St and Burnett Rd	Roentgenology *	Stewart H M	406 Main St	Radiology
Steubenville			Lancaster		
Miller J E	401 Market St	Radiology	Davis Henry B	530 N Lime St	Roentgenology
Toledo			Snoke Paul O	120 College Ave	Radium therapy
Goodrich Murray E	Sta C Box 74a	Roentgenology *	Swab Robert D	23 E Walnut St	Radiology
Kahn Dalton	237 Michigan St	Roentgenology			Roentgenology
Murphy John T	421 Michigan St	Radiology	Lebanon		
Warren			Boger John D	341 Cumberland St	Diagnostic roent
Gauchat Paul C	107 W Market St	Roentgenology	Lewistown		
Simpson D G	775 Mahoning Ave N W	Roentgenology	Weaver O M.	12 S Main St	Roentgenology
Waukeon			Lock Haven		
Maddox Wm H	120 Depot St	Roentgenology	Green Geo D		Roentgenology
Youngstown			Mahansy City		
Bachman M H	314 N Phelps St	Roentgenology *	Kapo Peter J	211 W Center St	Radiology
Baker Edgar C	Youngstown Hospital	Radiology	McKeesport		
Heberding John	151 W Hayen Ave	Roentgenology	Snedden A R	522 Walnut St.	Roentgenology
Heeley J A	275 W Federal St	Roentgenology	Meadville		
Meyer N N	233 Central Square	Diagnostic roent.	Gingold Joseph R	476 Pine St	Roentgenology
Tamarkin Saul J	1026 Belmont Ave	Roentgenology *	Mount Lebanon		
Zanesville			McCullough Thos L	431 Beverly Rd	Roentgenology
Holston J G F	620 South St	Roentgenology	New Castle		
Loebell Maurice A	531 Market St	Roentgenology *	Cooper J R	111 E North St	Radiology
OKLAHOMA			New Kensington		
Marlow			Brown Prentiss A	901 5th Ave	Roentgenology
Talley C N		Diagnostic roent	Norristown		
McAlister			Campbell Raymond E	514 Swede St	Diagnostic roent.
Johnston James C	210 1/2 E Choctaw Ave	Roentgenology	Old Forge		
Oklahoma City			Corcoran Wm J	512 Main St	Roentgenology *
Heasley John E	118 N Broadway	Diagnostic roent.	Perkasie		
Myers Ralph Emerson	1200 N Walker St	Radiology	Strouse O H		Roentgenology
Roland Marion M	110 N Broadway	Radiology	Philadelphia		
Oklmulgee			Alexander F K	883 1/2 Germantown Ave	Radiology
Ming Charles M	220 S Morton Ave	Roentgenology	Barker Walter C	N E Cor Chestnut and 20th Sts	Radiology
Shawnee			Bertin Elmer J	54th St and Cedar Ave	Roentgenology
Hughes J E	14 E 9th St	Diagnostic roent	Bird G C	1415 W Erie Ave	Roentgenology
Sulphur			Bishop Paul A	8th and Spruce Sts	Radiology
Annadown P V		Diagnostic roent	Borzell Francis J	4040 Penn St	Roentgenology
Tulsa			Bowen David R	8th and Spruce Sts	Radiology
Larrabee W S	108 W 6th St	Roentgenology	Bruck Samuel	2104 Pine St	Roentgenology
Lierline Morris B	108 W 6th St	Diagnostic roent.	Carpenter Samuel A	2265 N 16th St	Roentgenology
Stuart Leon H	108 W 6th St	Roentgenology	Chamberlain W J	3401 N Broad St	Radiology
OREGON			Howes E F	Jeanes Hospital	Radiology
Eugene			Edelken Louis	1832 Spruce St	Radiology
Barnett Arthur F	130 E Broadway	Roentgenology	Evans Harry D	1120 N 63d St	Roentgenology *
Portland			Farrell John T Jr	235 S 15th St	Roentgenology *
Butler Frank F	1020 SW Taylor St	Roentgenology	Feldstein Sidney L	1601 Walnut St	Roentgenology
Haworth Wallace	193 11th St	Roentgenology	Frank Jacob W	1730 Spruce St	Roentgenology *
Palmer Dorvlu I	1130 Morrison St	Radiology	Cershon Cohen J	255 S 17th St.	Roentgenology *
Rees Sherman E	2014 N W Glisan St	Roentgenology *	Henry Robert W	708 S 15th St.	Roentgenology *
Wight Otis B	833 S W 11th Ave	Radium therapy	Hutton Frederick C	1409 N 15th St	Roentgenology *
Woolley Ivan M	1020 SW Taylor St	Roentgenology *	Koenig Carl F	1734 Harrison St	Roentgenology
PENNSYLVANIA			Kornblum Karl	1818 Lombard St	Radiology
Allentown			Manges Willis F	235 S 15th St	Roentgenology *
Smyth Thos J	111 N 3th St	Radiology	Merchant Albert K	3401 N Broad St	Roentgenology *
Troxell Wm C	941 Hamilton St	Radiology	Newcomet W S	3501 Barling St.	Radiology
Altoona			O Boyle Cyril P	4930 Walnut St	Roentgenology *
Alleman George E	1121 13th Ave	Roentgenology	Ostrum H W	1729 Pine St	Radiology
Bilas Gerald D	1220 13th Ave	Radiology	Pancoast Henry K	3400 Spruce St	Radiology
Ashland			Pendergrass Eugene P	3400 Spruce St	Radiology
Mulligan P D		Roentgenology	Perclval M F	Broad and Wolf Sts	Radiology
Bethlehem			Pfalder George E	1930 Chestnut St	Radiology
Leibert H F	Creek Road R D 4	Roentgenology	Post Joseph W	1930 Chestnut St.	Roentgenology
Bryn Mawr			Rieger Chas L W	230 N Broad St	Roentgenology *
Bromer Ralph S	Bryn Mawr Hospital	Roentgenology	Rosenbaum George	1521 Spruce St	Radiology
Chester			Schmidt Wm Henry	1001 Walnut St	Radiology
Egbert Walter E	601 F 13th St	Roentgenology *	Sander Arthur C	1911 W Allegheny Ave	Roentgenology
Sharpe A. Maxwell	708 Sprout St	Roentgenology *	Solis Cohen Leon	1923 Spruce St	Roentgenology
Clearfield			Spackman E W	1824 Chestnut St	Radiology
Relley W E		Radiology	Stecher Wm R	250 S 18th St	Radiology
Coatesville			Stull H Tuttle	3260 N Broad St	Roentgenology
Perkins J A	307 Chestnut St.	Diagnostic roent	Sturr Robert P	1823 Spruce St	Roentgenology
Conshohocken			Vastine Jacob H	1830 Chestnut St	Radium therapy
Burrill Holmes E		Diagnostic roent.	Wildmann B P	250 S 18th St	Radiology
Danville			Willey Louis R	1512 N 15th St	Roentgenology
Hawley S J		Roentgenology *	Zulick J Donald	2008 Walnut St	Roentgenology
DuBois			Philipsburg		
Gala G W	49 E Long Ave	Roentgenology	Beuson Andrew L		Roentgenology
McCormick A F	Maple Avenue Hospital	Roentgenology	Pittsburgh		
Easton			Alley Reuben G	4800 Friendship Ave	Diagnostic roent
Parry Leo D	32 N 3d St	Radiology	Caldwell C S	520 S Alken Ave	Diagnostic roent
Quincy James J	309 Bushkill St	Radiology	Fisher J W	500 Penn Ave	Radiology
Erie			Goldsmith Maurice F	3459 Fifth Ave	Roentgenology *
Putts B Swayne	117 W 8th St	Radiology	Gordinkell Julius	3401 5th Ave	Roentgenology
Greensburg			Grier G W	500 Penn Ave	Radiology
McMurray H A	107 S Main St	Roentgenology	Grimm Homer W	500 Penn Ave	Radiology
Hanover			Johnston Zoe A	500 Penn Ave	Roentgenology
Bortner C E	123 York St	Diagnostic roent	Langer Heinz	4800 Friendship Ave	Röntgen therapy
Harrisburg			McCullough John F	500 Penn Ave	Radiology
Ritzman A Z	234 State St	Roentgenology *	Ray, William B	110 E Stockton Ave	Roentgenology *
Hatboro			Robinson Ralph V	500 Penn Ave	Radiology
Shoemaker Robt III		Roentgenology	Schaefer Charles A	500 Penn Ave	Radiology
Hazleton			Schumacher F L	500 Penn Ave	Roentgenology
Dessen Louis A	4 W Broad	Roentgenology	Sierrett William J	110 Stockton Ave	Roentgenology *
Huntingdon			Reading		
Heichline John M		Radiology	Meter Edward G	230 N 5th St	Roentgenology *
			Travis Richard C	230 N 5th St.	Roentgenology
			Rochester		
			McCauley F H		Radium therapy
			Scranton		
			Jackson Byron H	327 N Washington Ave	Radiology
			Milkman Louis A	327 N Washington Ave	Roentgenology *
			von Foswik Gisela	217 Jefferson Ave	Roentgenology

NAME	ADDRESS	TYPE OF SERVICE	NAME	ADDRESS	TYPE OF SERVICE
Shippensburg Stewart Alexander		Roentgenology	Coriscana Curtis Richard C	409 W 6th Ave	Roentgenology
Tamaqua Hinkel William H	243 E Broad St	Roentgenology	Dallas Beaver N B	1719 Pacific Ave	Radiology
Trucksville Howell G L	48 Main St	Roentgenology	Martin Charles L	3701 Junius St	Radiology
Uniontown Hess George H	104 Morgantown St	Roentgenology	Martin J M	3301 Junius St	Radiology
Upper Darby Clagett A H	Long Lane Ct Apt	Roentgenology	Spangler Davis	4105 Live Oak St	Radiology
West Chester Pennell Howard Y	Chester County Hospital	Roentgenology	Eastland Caton J H		Roentgenology
Wilkes Barre DesJardins A	N River and Auburn St	Roentgenology *	El Paso Cathcart J W	114 Mills St	Radiology
Rogers Lewis L	38 N Franklin St	Roentgenology	Mason C H	114 Mills St	Radiology
Wilkinsburg McAdams Edward C	9040 Frankstown Rd	Roentgenology	York M A	303 Texas St	Roentgenology
McGregor William J	312 Penn Ave	Roentgenology	Fort Worth Bond Tom B	600 W 10th St	Radiology
Williamsport Wurster L E	410 Pine St	Roentgenology	Hyde Y R	600 W 10th St	Radiology
York Bennett John H	1253 W Market St	Radiology	Jagoda S	1212 W Lancaster St	Radiology
Landes L S	414 W Market St	Diagnostic roent	O Bannon R P	1028 5th Ave	Radiology
Lutz J Fletcher	141 E Market St	Roentgenology	Galveston Johnson Jesse B	2201 Avenue D	Radiology
RHODE ISLAND			Houston Durrance Fred Y	1215 Walker Ave	Roentgenology
Pawtucket Unger Oscar M	109 Broadway	Diagnostic roent.	Harris C I	1625 Main St	Roentgenology *
Providence Albert Simon	126 Waterman St	Roentgenology *	McLeod W C	1215 Walker Ave	Roentgenology *
Bathelder Philip	188 Waterman St	Roentgenology	McHenry R A	1215 Walker Ave	Roentgenology
Benjamin Emanuel W	485 Broadway	Radiology	Lubbock Smith Jerome H	1301 Broadway	Roentgenology
Boyd James F	195 Angell St	Radiology	Mineral Wells Yeager Robt L		Roentgenology
Cerber Isaac	126 Waterman St	Radiology	San Antonio Barron Wm Marshall	705 E Houston St	Roentgenology *
Kelley Jacob S	153 Smith St	Diagnostic roent	Hamilton W S	705 E Houston St	Diagnostic roent.
McVally D Raymond	256 Olney St	Roentgenology	Ostendorf W A	507 1/2 E Houston St	Roentgenology
West Warwick Farrell John T	Brookfield Hills	Diagnostic roent	Sherman Henschen G F	500 N Highland Ave	Roentgenology *
Woonsocket Garrison Norman S	38 Hamlet Ave	Radiology	Temple Ciles Roy G	Scott and White Clinic	Roentgenology *
SOUTH CAROLINA			Lowell Eugene A	304 S 22d St	Radiology
Wrenn Frank	620 N Fant St	Radiology	Wilson R T	Scott and White Clinic	Roentgenology *
Charleston Rudisill Hillyer Jr	Lucas and Calhoun Sts	Radiology	Waco Jenkins J Warner	425 Austin Ave	Radiology
Taft Robert B	100 Rutledge Ave	Radiology	Wichita Falls Wilcox Clark A	1300 8th St	Roentgenology *
Columbia Pitts Thomas A	1515 Marion St	Radiology	UTAH		
Rodgers Floyd D	1417 Hampton St	Radiology	Salt Lake City Coray Q B	50 E South Temple St	Roentgenology
Florence Hay Percy D Jr	111 W Chaves St	Radiology	Kerby James P	9 Exchange Pl	Roentgenology *
Greenville Judy W S	107 E North St	Radiology	VERMONT		
Spartanburg Sheridan William M	120 W Main St	Radiology	Burlington Caldwell Nathan R	266 Main St	Roentgenology *
Walker Howard M	120 W Main St	Roentgenology *	Robinson Carl F	266 Main St	Roentgenology *
SOUTH DAKOTA			Wilson S A	135 College St	Roentgenology *
Pierre McLaurin A. A		Roentgenology	Rutland Cook Benjamin F	46 Nichols St	Diagnostic roent.
Sioux Falls Nessa Nellus J	301 S Minnesota Ave	Roentgenology	VIRGINIA		
Watertown Koren F	Broadway and Kemp Ave	Roentgenology *	Harrisonburg Canter Noland V		Roentgenology
TENNESSEE			Lynchburg Spencer Hunter B	Allied Arts Bldg	Radiology
Chattanooga Bogart F B	544 McCallie Ave	Roentgenology	Newport News Davis, R. A	Buxton Clinic	Roentgenology
Frere John Marsh	707 Walnut St	Roentgenology *	Norfolk Eley Clayton W	Wood and Church Sts.	Roentgenology *
Marchbanks S S	546 McCallie Ave	Radiology	Hunter James W Jr	142 W York St	Radiology
Johnson City Hankins John L	920 W Maple St	Roentgenology	Petersburg Barker W Allen	30 Franklin St	Radiology
Knoxville Abercrombie Eugene	603 W Main Ave	Roentgenology	Clarkson Wright	30 Franklin St	Radiology
McC Campbell H H	614 Walnut St	Radiology	Richmond Flanagan E Latane	116 E Franklin St	Roentgenology
Reaves Hugh G	601 Walnut St	Roentgenology *	Hodges Fred M	1000 W Franklin St	Radiology
Memphis Betha W R	899 Madison Ave	Roentgenology *	Mandeville Frederick B	1201 E Broad St	Roentgenology *
Coley Steve W	1265 Union Ave	Roentgenology *	Snead Lawrence O	1000 W Franklin St	Radiology
Hancock Charles H	20 S Dunlap St	Radiology	Tabb J Lloyd	115 E Franklin St	Roentgenology *
Herring J H	915 Madison Ave	Roentgenology	Talley Daniel D Jr	501 E Franklin St	Roentgenology *
King J Cash	915 Madison Ave	Roentgenology	Whitehead L J	501 E Franklin St	Roentgenology *
Lawrence W S	248 Madison Ave	Radiology	Roanoke Armentrout John F	30 1/2 Franklin Rd	Radiology
Palne Robert	248 Madison Ave	Radiology	McKinney Joseph T	30 1/2 Franklin Rd	Roentgenology *
Robinson W W	1291 Union Ave	Roentgenology	Peterson C H	30 1/2 Franklin Rd	Roentgenology *
Murfreesboro Overall J Clyde		Roentgenology	University Archer Vincent W		Roentgenology *
Nashville McClure C C	706 Church St	Radiology	WASHINGTON		
Shoulders H S	706 Church St	Roentgenology	Bellingham Chiley Earl T L	1155 State St	Radiology
TEXAS			Exner Frederick B	1210 Jersey St	Radiology
Amarillo Van Sweringen Walter	301 Polk St	Roentgenology	Hogus McCarthy E D		Roentgenology
Vaughan John H	724 Polk St	Radiology	Longview Hayes Richard	Columbia Clinic	Roentgenology
Beaumont Barr Richard E	388 Pearl St	Radiology	Seattle Bouras Frank S	509 Olive St.	Radiology
Ledbetter L H	388 Pearl St	Radiology	Dwyer Maurice F	1116 Terry Ave	Radiology
White C M	585 Orleans St	Roentgenology	Garhart Manch N	1305 4th Ave	Radiology
Corpus Christi Crain Carroll F	416 Chaparral St	Radiology	Holtz Kenneth J	820 2d Ave	Roentgenology
			Koenig Carl E	509 Olive St	Roentgenology
			Nichols H L	1215 4th Ave	Roentgenology

NAME	ADDRESS	TYPE OF SERVICE	NAME	ADDRESS	TYPE OF SERVICE
Snirely J Howard	600 Olive St	Roentgenology *	Eau Claire		
Stephens Lorenzo L	1215 4th Ave	Radiology	Baird J C	401 S Barstow St	Roentgenology
Thompson H B	1305 4th Ave	Radiology	Green Bay		
Thomson Curtis H	1305 4th Ave	Roentgenology *	Olmatz Austin O	205 E Walnut St	Radiology
Ward Chas B	803 Summit Ave	Radiology	Shewalter G M	305 E Walnut St	Roentgenology
Spokane			Troup R L	308 Cherry St	Roentgenology
Aspray J Melvin	407 Riverside Ave	Radiology	Janesville		
Betts Arthur	407 Riverside Ave	Radiology	Kuegle F H	10 S Main St	Roentgenology
Tacoma			Kenosha		
Fishel C R	740 St Helena Ave	Roentgenology	Bowling Irwin E	625 57th St	Roentgenology
Walla Walla			Sokow Theodore	723 58th St	Radiology
Johannesson C J	1 W Main St	Roentgenology *	LaCrosse		
Yakima			McLoone J E	310 Main St	Roentgenology
Cornett Geo W	321 E Yakima Ave	Roentgenology *	Madison		
WEST VIRGINIA			Pills Iran G	720 S Brooks St	Roentgenology
Charleston			Yittig Lawrence A	927 Mound St	Roentgenology
Lambert A C	240 Capitol St	Roentgenology	Pohle E A	1300 University Ave	Radiology
Fairmont			Sisk J Newton	10 S Henry St	Roentgenology
Francis Charles T	200 Gaston Ave	Roentgenology	Marshfield		
Holidays Cove			Potter R P		Roentgenology
Davis Geo H		Diagnostic roent	Milwaukee		
Huntington			Altenhofen A R	152 W Wisconsin Ave	Roentgenology
MacKenzie A R	955 4th Ave	Roentgenology *	Dorr A M	161 W Wisconsin St	Roentgenology *
Parkersburg			Epperson Paul S	324 F Wisconsin Ave	Roentgenology
Bolce Ralph Homer	717 Ann St	Roentgenology	Habbe John Edwin	271 W Wisconsin Ave	Roentgenology
Rose Lonzo O	510 1/2 Market St	Radiology	Mackoy F W	Sacred Heart Sanitarium	Diagnostic roent
Wheeling			Morton S A	3321 N Maryland Ave	Roentgenology
Bippus E S	77 16th St	Roentgenology	Podlasky Harry B	425 E Wisconsin Ave	Roentgenology
Clarks C H	2000 Eoff St	Radiology	Zmyslony W P	931 W Mitchell St	Diagnostic roent
Haislip, Norrell L	40 4th St	Radiology	Nearnah		
Kalbfelsch W K	59 16th St	Roentgenology	Greenwood S D		Radiology
Quimby Will A	1401 Market St	Radiology	Salem		
WISCONSIN			Fletcher Wm		Roentgenology
Annapolis			Superior		
McGrath E F	114 W College Ave	Radiology	Saunders Geo	1507 Tower Ave	Roentgenology
Beloit			Waukesha		
Wilson Russell F	431 Olympian Blvd	Radiology	Peterson Geo E	821 N Grand Ave	Roentgenology
			WYOMING		
			Cheyenne		
			Conyers Chester A	1720 Carey Ave	Radiology

PHYSICIANS SPECIALIZING IN RADIOLOGY IN GOVERNMENT SERVICE

UNITED STATES ARMY			NAME	ADDRESS	TYPE OF SERVICE
NAME	ADDRESS	TYPE OF SERVICE	Noble Harry J	U S Naval Hospital	
Bowen Albert Maj	Station Hosp San Antonio Texas	Roentgenology	Lt Comdr	Chelsea Mass	Roentgenology *
Carroll Wm J Maj	Sternberg Gen Hosp Manila P I	Roentgenology *	Owen John P	U S Naval Medical	
Favour R Jr Maj	Army and Navy Gen Hosp Hot Springs Ark	Roentgenology	Comdr	Supply Depot	
Grady Henry W Maj	Fitzsimons Gen Hosp Denver Colo	Roentgenology *	Perry Wendell H	Brooklyn N Y	Roentgenology
Kellogg D S Capt	Station Hosp Schofield Barracks Hawaii	Roentgenology *	Lt Comdr	U.S.S Chicago	
Lowry R H Jr Maj	Station Hosp Fort Sam Houston Tex	Roentgenology	Pinner Wm E,	New York City	Roentgenology
McCaw Wm W Maj	Army Med School Army Medical Center Wash- ington D C	Roentgenology *	Lt	U S Naval Hospital	
Moore H C. Maj	Hdqs 9th Corps Area Presidio of San Francisco San Francisco Calif	Roentgenology	Ralson T W	Bremerton Wash	Roentgenology
Moore John J	Letterman Gen Hosp San Francisco Calif	Roentgenology *	Capt	Naval Medical Supply De pot Mare Island Calif	Radiology
UNITED STATES NAVY			Spalding Otis B	U S Naval Hospital	
Farrlor John B,	U.S.S Ramapo	Roentgenology	Lt Comdr	San Diego Calif	Roentgenology *
Lt Comdr	Bremerton Wash		Stowe Irving E	U S Naval Hospital	
Fort Walter A	U S Naval Hospital	Roentgenology *	Lt Comdr	Portsmouth N H	Roentgenology *
Lt Comdr	Mare Island Calif		Whitehead Ely L.	U S Naval Hospital	
Harvorth R W	U S Naval Hospital	Roentgenology *	Lt Comdr	Canacao P I	Roentgenology *
Lt Comdr	Washington D C		Whitmore Wm H	Norfolk Naval Hospital	
Hutchinson R W	U S Naval Disp	Roentgenology	Lt Comdr	Portsmouth Va	Roentgenology
Lt Comdr	Coco Solo Canal Zone		UNITED STATES PUBLIC HEALTH SERVICE		
Jacobs Irving W	U S Naval Hospital	Roentgenology *	Booth J H R	U S Marine Hospital	
Comdr	Brooklyn N Y		Mayoral Antonio	Baltimore Md	Roentgenology *
Keener Harry A	U S Naval Hospital	Roentgenology *		U S Marine Hospital	
Lt Comdr	Mare Island Calif			New Orleans La	Roentgenology
Larson Gilbert H	U S Naval Hospital	Diagnostic roent	VETERANS ADMINISTRATION		
Lt Comdr	Philadelphia Pa		Beaudet E A	Livermore Calif	Diagnostic roent
Maher Paul P	U S Naval Hospital	Roentgenology *	Frank C Harold	Milwaukee Wis	Diagnostic roent
Lt Comdr	Pearl Harbor Hawaii		Glickman L Grant	Milwaukee Wis	Roentgenology *
Muller F W	U S Naval Hospital	Roentgenology *	Criswold Charles M	Danville Ill	Diagnostic roent
Lt Comdr	Depot Brooklyn N Y		Hynes Wm P	2650 Wisconsin Ave N W	
				Washington D C	Diagnostic roent
			McClanahan C W	West Los Angeles Calif	Radiology
			Minehart V L	130 W Kingsbridge Rd	
				New York City	Radiology
			Moxness B A	Northampton Mass	Roentgenology
			Murray R S E	Lyons N J	Roentgenology *
			Nather Frederick B	Fort Harrison Mont	Diagnostic roent
			Shawhan Rezin C	Oteen N C	Diagnostic roent

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, FEBRUARY 23, 1935

HOUSE OF DELEGATES ADOPTS POLICIES ON SICKNESS CARE

The special session of the House of Delegates called at the request of the Board of Trustees met in Chicago, February 15 and 16. As will be apparent from the minutes of the House, to be published in *THE JOURNAL* next week, the session opened with a statement by the Board of Trustees, giving the record of the Association in relationship to this subject and propounding to the House of Delegates six questions of moment. After much general discussion, the speaker of the House of Delegates referred the entire discussion on these six questions to a reference committee, which then brought in a report to the House. This report was unanimously adopted by the House after suitable correction and amendment. It is important that every member of the American Medical Association read carefully this statement of policies and support it to the utmost with his patients and with representatives in state legislatures and in the federal government. The report of the reference committee opens with a preamble stating in general the point of view of the American Medical Association and its right to speak for the medical profession on this subject.

The American Medical Association, embracing in its membership some 100,000 of the physicians of the United States, is by far the largest medical organization in this country. The House of Delegates would point out that the American Medical Association is the only medical organization open to all reputable physicians and established on truly democratic principles, and that this House of Delegates, as constituted, is the only body truly representative of the medical profession.

The House of Delegates commends the Board of Trustees and the officers of the Association for their efforts in presenting correctly, maintaining and promoting the policies and principles heretofore established by this body.

The primary considerations of the physicians constituting the American Medical Association are the welfare of the people, the preservation of their health and their care in sickness, the advancement of medical science, the improvement of medical care, and the provision of adequate medical service to all the people. These physicians are the only body in the United States qualified by experience and training to guide and suitably control plans for the provision of medical care. The fact that the quality of medical service to the people of the United States today is better than that of any other country in the world is evidence of the extent to which the American medical profession has fulfilled its obligations.

The first question propounded by the Board of Trustees to the House of Delegates was "Shall or shall not the American Medical Association reaffirm its opposition to compulsory sickness insurance?" The House of Delegates replied to this question in no uncertain terms. It said:

The House of Delegates of the American Medical Association reaffirms its opposition to all forms of compulsory sickness insurance whether administered by the federal government, the governments of the individual states or any individual industry, community or similar body. It reaffirms also its encouragement to local medical organizations to establish plans for the provision of adequate medical service for all the people, adjusted to present economic conditions, by voluntary budgeting to meet the costs of illness.

The medical profession has given of its utmost to the American people, not only in this but in every previous emergency. It has never required compulsion but has always volunteered its service in anticipation of their need.

The second question propounded was based on the fact that the Committee on Economic Security, appointed by President Roosevelt, in its report to Congress on January 17 had stated tentatively eleven principles which it believes fundamental to its plan of compulsory health insurance and which apparently would form the basis of the further report on this subject to be a part of the message sent to Congress by the President on March 1.

The Committee on Economic Security, appointed by the President of the United States, presented in a preliminary report to Congress on January 17 eleven principles which that committee considered fundamental to a proposed plan of compulsory health insurance. The House of Delegates is glad to recognize that some of the fundamental considerations for an adequate, reliable and safe medical service established by the medical profession through years of experience in medical practice are found by the committee to be essential to its own plans.

However, so many inconsistencies and incompatibilities are apparent in the report of the President's Committee on Economic Security thus far presented that many more facts and details are necessary for a proper consideration.

The Wagner bill for economic security has been discussed in previous issues of *THE JOURNAL*. It is an act which provides for unemployment insurance and old age pensions. It also provides federal subsidies to the individual states and additional funds for maternal and child welfare, for the care of the crippled and for the United States Public Health Service. In making the bill effective, it provides for setting up a social insurance board in the Department of Labor. The House of Delegates of the American Medical Association recognized that its primary concern must be with those aspects of the measure concerned in the field of medicine and the public health. It recognized, however, that the original drafts of the Wagner bill indicated that sickness insurance also would be placed under the social service board already mentioned. Therefore the House of Delegates said:

The House of Delegates recognizes the necessity under conditions of emergency for federal aid in meeting basic needs of the indigent, it deprecates, however, any provision whereby federal subsidies for medical services are administered and controlled by a lay bureau. While the desirability of adequate

medical service for crippled children and for the preservation of child and maternal health is beyond question, the House of Delegates deplores and protests those sections of the Wagner bill which place in the Children's Bureau of the Department of Labor the responsibility for the administration of funds for these purposes.

The House of Delegates condemns as pernicious that section of the Wagner bill which creates a social insurance board without specification of the character of its personnel to administer functions essentially medical in character and demanding technical knowledge not available to those without medical training.

Recognizing the fact that the individual states are immediately concerned with the bill for sickness insurance now being proposed by the American Association for Social Security, the House of Delegates voiced its strong condemnation of this measure. In a brief statement *THE JOURNAL* called attention a few weeks ago to many of the features of this legislation which place it utterly beyond any kind of consideration from a medical point of view. The House of Delegates said:

The so-called Epstein bill, proposed by the American Association for Social Security, now being promoted with propaganda in the individual states, is a vicious, deceptive, dangerous and demoralizing measure. An analysis of this proposed law has been published by the American Medical Association. It introduces such hazardous principles as multiple taxation, inordinate costs, extravagant administration and an inevitable trend toward social and financial bankruptcy.

Throughout the country there seems to be some demand for presentation by the American Medical Association of a plan whereby county medical societies and the medical profession generally may be able to arrange with the public for a better distribution of medical service. More than ten years ago the House of Delegates recognized the desirability of such plans and authorized county medical societies, with the approval of state medical organizations, to put into effect various schemes for enabling the public, particularly in the lower income levels, to obtain adequate medical service at costs that were within their means. At the special meeting of the House of Delegates, several of these plans were brought specifically to the attention of those present. The reference committee gave careful consideration to all these plans and also to an account of some 150 plans already in operation which have been analyzed by the Bureau of Medical Economics. After this consideration, the reference committee reported:

The committee has studied this matter from a broad standpoint, considering many plans submitted by the Bureau of Medical Economics as well as those conveyed in resolutions from the floor of the House of Delegates. It reiterates the fact that there is no model plan which is a cure-all for the social ills any more than there is a panacea for the physical ills that affect mankind. There are now more than 150 plans for medical service undergoing study and trial in various communities in the United States. Your Bureau of Medical Economics has studied these plans and is now ready and willing to advise medical societies in the creation and operation of such plans. The plans developed by the Bureau of Medical Economics will serve the people of the community in the prevention of disease, the maintenance of health and with curative care in illness. They must at the same time meet apparent economic factors and protect the public welfare by safeguarding to the medical profession the functions of control of medical stand-

ards and the continued advancement of medical education requirements. They must not destroy that initiative which is vital to the highest type of medical service.

In the establishment of all such plans, county medical societies must be guided by the ten fundamental principles adopted by this House of Delegates at the annual session in June 1934. The House of Delegates would again emphasize particularly the necessity for separate provision for hospital facilities and the physician's services. Payment for medical service, whether by prepayment plans, instalment purchase or so-called voluntary hospital insurance plans, must hold, as absolutely distinct, remuneration for hospital care on the one hand and the individual, personal, scientific ministrations of the physician on the other.

Your reference committee suggests that the Board of Trustees request the Bureau of Medical Economics to study further the plans now existing and such as may develop with special reference to the way in which they meet the needs of their communities, to the costs of operation, to the quality of service rendered, the effects of such service on the medical profession, the applicability to rural, village, urban and industrial populations, and to develop for presentation at the meeting of the American Medical Association in June model skeleton plans adapted to the needs of populations of various types.

The importance of this special session of the House of Delegates cannot be overemphasized. It represents clearly the point of view of the medical profession as announced through its delegates elected on a truly democratic principle. Physicians who wish to preserve to the medical profession the right to say how medicine shall be practiced, their initiative in diagnosis, treatment and investigation of disease, and the intimate personal relationship that must exist between doctor and patient for the best results, will place behind these policies all the individual support they are able to muster.

THE STEROLS OF BLOOD PLASMA

Sterol, it is now generally assumed, is excreted in human feces mainly in the form of coprosterol. This is accompanied by smaller quantities of dihydrocholesterol (beta-cholestanol) and cholesterol¹. In recent years, Schönheimer and his co-workers have confirmed the early observation of Boehm that the dihydrocholesterol is excreted by the wall of the large intestine. The coprosterol of the feces is assumed to be produced by bacterial reduction of cholesterol in the intestine. Furthermore, it has been definitely established that both dihydrocholesterol and coprosterol, when administered orally, are not absorbed from the intestine. Still another sterol, allocholesterol, an isomer of cholesterol, has been considered of importance in sterol metabolism. The significance attached to this compound arises from the fact that the latter yields coprosterol when subjected to catalytic reduction *in vitro*. Furthermore, allocholesterol has been reported as the only sterol other than cholesterol that produces a significant increase in bile acid production when fed to experimental animals. However, in view of the fact that this sterol is not known to occur in nature, the evidence for its importance may merely be fortuitous.

¹ An extensive review of the physiology of the sterols is given by B. F. C. *Physiol. Rev.* 15:1 (Jan.) 1935.

In view of the roles that have been suggested for these various sterols in the metabolism of this class of compounds, it is surprising to find that only cholesterol has been definitely identified in body fluids. However, the similarity in properties of the substances of the sterol group makes a chemical separation and identification of other individual members a difficult problem. Schönheimer's group has evolved a method for the estimation of dihydrocholesterol in the presence of cholesterol and has applied this procedure to establish the occurrence of the former substance as a contaminant of gallstone cholesterol.

Investigators in London² have recently reported a preliminary investigation of the sterols of plasma in which an attempt was made to obtain evidence for the presence of sterols in addition to cholesterol, that appear to be of metabolic significance. With cholesterol obtained from human blood, a meticulous search was made for dihydrocholesterol and for allocholesterol. The results were negative, however the authors were led to believe that the methods employed particularly that for the identification of dihydrocholesterol are inadequate when applied to the examination of small quantities of material. It is likely that a reinvestigation of the chemical nature of the sterols of blood plasma with the employment of larger amounts of blood sterol may yield valuable information to augment the rapidly accumulating chemical and physiologic evidence of the metabolic importance of this class of lipids.

REFERRED PAIN FROM THE STOMACH

Studies of visceral and referred pain progress slowly. The factors involved are such that research demands painstaking effort and lacks the dramatic quality of some other types of medical investigation. Only occasionally do long and objective observations produce such satisfying results as those of Capps.¹ Perhaps for these reasons the study of referred pain does not occupy the important position in clinical medicine to which it is entitled.

Bolton,² whose long interest in the subject warrants special attention, has recently discussed this question in relation to the stomach. Since it has become possible to localize the majority of gastric and duodenal ulcers with the roentgen rays, he points out and to palpate them during the screen examination less has been heard of referred pain than before. The radiographer, however, employs a considerable pressure, far different from that used by the clinician when testing the abdominal wall for tenderness by lightly palpating it against the elastic resistance of the abdominal contents. The presence of painful and tender areas of the abdominal wall has been previously determined. The first and

most important objective of his investigations was to determine definitely the relation of the positions of these tender areas to the positions of the ulcers as seen by the roentgen rays. The series investigated comprised twenty-five cases of gastric ulcer, thirteen of duodenal ulcer and thirteen of painful gastric neurosis. Roentgenograms had been made of all the patients and the ulcers had been displayed on the films. All the ulcers were said to be tender to deep pressure. In the cases of neurosis the stomach was proved to be normal by roentgenograms and was free from tenderness to deep pressure.

The superficial tender areas were first determined by light palpation and marked on the surface of the skin in the upright and supine positions. In every instance these two positions were exactly the same. A glass screen made especially for this purpose was placed on the front of the body and the outline of the costal margin, the position of the umbilicus and the tender areas were marked on it with a colored pencil. Roentgenograms were then taken of the stomach in the supine and erect positions immediately after a barium meal had been given so that the stomach was full. The umbilicus was marked with a piece of metal and the ulcer which was found to be tender on screening, was shown in each position of the patient in relation to the midline and the umbilicus. The films were then placed under the glass screen so that the shadow of the umbilicus on the film and the central line of the spine corresponded with the same positions that had been marked on the glass screen and the positions in which the ulcer was seen were then marked on the glass screens. The distances of the ulcer from the midline and above or below the umbilicus in the supine and erect positions were measured in centimeters.

For the patients with gastric ulcers the tender areas as determined by light palpation, with two exceptions, were situated in the central sterno-umbilical line. In each case the area involved had a diameter of about 2.5 cm. Regardless of exact location, the points were constant in position whether the patient was erect or supine. The tenderness might be relieved or increased by contraction of the recti. In the erect position the abdomen may bulge out and increase the length of the sterno-umbilical line, but the tender point in such cases always occupied the same relative position in the line by measurement.

In eleven of the thirteen cases of duodenal ulcer the tender areas were situated in the central sterno-umbilical line. In four the tenderness was situated in the middle of this line in four in the upper part below the xiphoid process in two in the upper and middle positions and in one the whole central line was tender, the maximum point being in the upper part. The area at the ninth right costal cartilage was tender in three of the eleven and it alone was involved in two cases.

Certain types of functional disturbance of the stomach give rise to pain indistinguishable in all particular-

² Gardner, J. A. and Gainsborough, Hugh. *Biochem. J.* **28**: 1635 (No. 5) 1934.

¹ Capps, J. A. *An Experimental and Clinical Study of Pain in the Pleura, Pericardium and Peritoneum*. New York: Macmillan Company, 1933.

² Bolton, Charles. *Observations in Referred Pain*. *Brain* **57**: 211 (Oct.) 1934.

from that of an ulcer. In this group of thirteen cases the roentgenographer reported that there was no ulcer or tenderness in any part of the stomach or duodenum. All, however, showed tender areas in the anterior abdominal wall in exactly similar positions to those described in the cases of ulcer and indistinguishable from them. They are thus situated in similar well defined areas which are constant in occurrence, are fixed and immobile, and are associated with the same type of pain although the actual source of gastric irritation is different. The tender areas thus refer to the segment of the stomach irrespective of the nature of the irritant upsetting its mechanism. They are independent of any change of position of the patient and have no relation whatever to the position of the stomach. They have, therefore, the characters of referred pain and tenderness due to abnormal impulses originating in the viscus, which are conveyed to the spinal cord by its afferent sympathetic nerves, and their positions are determined by the distribution of these muscular and cutaneous nerves in the body wall, which enter the same segment of the cord as receive the afferent sympathetic fibers from the stomach.

The resulting certainty that in conditions of gastric irritation true visceral referred pain appears does not exclude, Bolton emphasizes, the probable occurrence of splanchnic pain of a different type as defined by Head, and it is certain that the tenderness obtained by the roentgenologist by heavy palpation of the ulcer also demands further investigation.

VIOSTEROL PREPARATIONS AND GALLSTONES

The widespread clinical administration of viosterol preparations has raised problems concerning several possible late effects and side actions. Among these questions is that of the formation of gallstones. Since calcium is concerned in their formation, an increase in the calcium content of the bile might predispose to gallstones. This problem is perhaps particularly acute in pregnancy, in which the incidence of gallstones is already high.

Jones and Laing¹ have recently undertaken to ascertain whether the current use of viosterol preparations might lead to an increased output of calcium in the bile in dogs. Twenty-five dogs were used in their experiments. The gallbladder was removed and the common duct or cystic duct cannulated and the flow into the cannula brought externally and collected. The dogs were kept on a standard diet with the addition of viosterol. Two concentrations were used: either the viosterol in oil, a preparation containing not less than 9,000 units (U. S. P. X. Revised, 1934) of vitamin D or a special preparation not commercially available, 100 times as potent as the former.

One hundred and ninety-three analyses of bile calcium before the administration of a viosterol preparation were made and seventy-three after the daily administration of from 5 to 10 cc of viosterol in oil, which is a dose from four to eight times larger than that ordinarily recommended as the maximum therapeutic dose for man. The data obtained were treated statistically and it was found that the mean value of normal bile calcium was 13.64 ± 0.14 mg per hundred cubic centimeters, with a standard deviation of 2.90 ± 0.10 . After the administration of viosterol the mean was 14.44 ± 0.13 , with a standard deviation of 2.57 ± 0.09 . The difference, then, calculated between the lower limit of mean after administration of the viosterol preparation and the upper limit before was only 0.53 mg per hundred cubic centimeters of bile—an essentially negligible factor. The blood calcium and bile output were not essentially modified in the experiments.

The Northwestern investigators also gave 1 cc of the special preparation before mentioned to three dogs intravenously for three or four days in succession. After this the blood calcium and bile calcium contents were increased and the output of bile was definitely decreased. It was therefore evident that doses of viosterol preparations considerably larger than would ordinarily be used in clinical practice do not raise the bile calcium concentration or modify bile output in the dog. Doses of viosterol preparations large enough to increase definitely the blood calcium level will increase the bile calcium concentration and decrease the output of bile.

Clinical confirmation of these interesting experimental conclusions is desirable. Jones and Laing hoped to obtain this confirmation on patients with chronic biliary fistulas but had not yet been able to do this. When and if confirmation is obtained, one more possible danger of viosterol administration will be eliminated.

Current Comment

THE AUTOMOBILE AND DIABETES MELLITUS

The improved high speed highways in the United States are constantly becoming more hazardous to life and limb. This is especially emphasized once a year when the total fatalities from automobile accidents are published. The shock from the ever increasing number of deaths then subsides and the slaughter of human beings goes on. Perhaps additional emphasis can be brought to bear when it is understood that the death rate from automobile accidents is now equal to that of diabetes, a disease the incidence of which has also been on the increase, even though it has been some fourteen years since Banting and his associates discovered a therapeutic preparation that would control its manifestations. The death rate in the registration area of the United States from automobile accidents in 1932 and the death rate from diabetes mellitus were the same, 21.9 per hundred thousand of population. This figure does not include deaths that followed collisions of auto-

¹ Jones, K. K., and Laing, G. H. The Effect of Viosterol on the Calcium Content of Dog's Bile. *Am. J. Physiol.* 110: 471 (Dec. 1) 1934.

mobiles with railroad trains and street cars. It is astonishing to note in the official figures of the Bureau of the Census that in 1910 the death rate from automobile accidents was only 1.8. By 1920 it had increased to 10.4, and from then each year it increased, to reach 25.2 in 1931. The excessive speed of modern cars and the fact that many persons are permitted to drive who are handicapped by temperament or character, or physical disabilities, will continue to make the total deaths a large figure. To a large extent the responsibility rests on educators, legislators and police officers.

Association News

MEDICAL BROADCASTS Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45 central standard time. The next three broadcasts will be delivered by Dr. W. W. Bauer. The titles will be as follows:

- February 28 Protecting the Heart
- March 7 Headache
- March 14 Physical Defects

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15 central standard time. The next three broadcasts will be as follows:

- February 26 Health and Education Morris Fishbein M.D.
- March 5 Surgery in Diabetics, Leland S. McKittrick M.D. who will speak from the National Broadcasting Company's studios in Boston by special arrangement
- March 12 Food and Drug Law Revisions Paul N. Leech Ph.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Bill Enacted—H. 30 has been enacted as chapter 49, Laws, 1935, prohibiting cities and towns of from 16 to 18 thousand population from collecting occupational taxes from physicians practicing within their jurisdictions.

Bills Introduced—H. 170 and S. 82 to amend the workmen's compensation act, propose to make the following occupational diseases compensable: (1) poisoning from lead, mercury, phosphorus, arsenic, wood alcohol, benzol, carbon bisulphide, nitrous fumes, nickel carbonyl, tetrachloromethane, radium, methyl chloride, carbon monoxide, phosphoric, sulphuric, hydrochloric or hydrofluoric acid; (2) dermatitis; (3) bursitis or synovitis; (4) compressed air illness; (5) miners' disease; (6) anthrax.

ARKANSAS

Bill Introduced—H. 281 proposes to provide a system of compensation for workmen injured by accident arising out of and in the course of their employments. An employer is to furnish an injured workman reasonable medical, surgical and hospital services and medicines not to exceed \$250 in value.

Bill Enacted—S. 126 has become a law, supplementing the medical practice act by requiring licentiates of the eclectic medical examining board to register annually with that board and to pay at that time a registration fee of \$2. Failure of an eclectic licentiate to register within the time stated will suspend automatically his right to practice, and a failure to register for three consecutive years will automatically cancel his license to practice.

A Dinner Meeting—Dr. Tergus O. Mahony, El Dorado president of the Arkansas Medical Society, was guest of honor at a dinner meeting, recently, of the Pulaski County Medical Society. Others in attendance were the following past presidents of the state society: Drs. Edward E. Barlow, Dermott, Robert Caldwell, Little Rock, Leonce J. Kosminsky, Texarkana, Herbert Moulton, Fort Smith, Frank Vinsonhaler, Little Rock, William T. Wootton, Hot Springs National Park, Darmon A. Rhinehart, and President-Elect Melvin E. McCaskill, both of Little Rock. It was said that this was to become an annual function of the Pulaski County Medical Society. Speakers were Drs. Warren H. Cole on "Causes of Failure in the Surgical Treatment of Gallbladder Disease," and Robert Elman "Reduction of Mortality in Intestinal Obstruction." Both physicians are assistant professors in surgery at Washington University School of Medicine, St. Louis.

CALIFORNIA

Personal—Dr. Albert J. Supple has been appointed health officer of South Pasadena—Oliver Peebles Jenkins, Ph.D., emeritus professor of physiology at Stanford University, died January 9, aged 84—Dr. Wilbur C. Batson, Greenville, has been appointed health officer of Plumas County, succeeding Dr. Bert J. Lasswell, Quincy.

Lectures in San Francisco—Dr. Karl Lindner, chief of the eye clinic in Vienna and successor to Prof. Ernst Fuchs, who died in 1931, will be in San Francisco, March 10, to deliver a series of five lectures and demonstrations under the auspices of Stanford University School of Medicine. Further information may be had from Dr. Hans Barkan, Stanford University Hospital, San Francisco.

Eyesight Swindlers Active Again—The California State Board of Medical Examiners reports that eyesight swindlers are active again in California. Mrs. Frances Rasmussen, San Jose, paid \$850 for a fake eye treatment with alleged radium to two men who gave the names J. O. Miles and John Doe Avery, Nov. 13, 1934. She did not report the matter to the police, however, until December 10. Two days later, December 12, a similar episode was reported to the California board from authorities in Skagit County, Wash., where the "eye specialists" fleeced an aged couple out of \$750, their life savings, by a fake cataract operation and the sale of an electric belt. A receipt for payment in full was obtained in the Rasmussen case, giving the signature "J. O. Miles, Box 417, Chicago." The names used in this case were Richard Roe alias Dr. Avery and William McBride, alias S. Clark, alias Dr. Miles, alias H. J. Pierce. These swindlers are apparently the same whose irregular activities have frequently been reported in THE JOURNAL.

Society News—A joint meeting of the Los Angeles County Medical Association and the Public Health League, January 17, was devoted to a review of the activities of the public health league; the speakers were Mr. Ben H. Read and Drs. Harry H. Wilson, Glenn E. Myers, Clarence G. Toland and John W. Crossan.—Dr. Willard J. Stone, Pasadena, among others, addressed the Clinical and Pathological Society, in Los Angeles, January 24, on "Infectious Biliary Cirrhosis with Marked Atrophy of Liver"—The Society for Neurology and Psychiatry of Los Angeles, January 16, was addressed by Drs. George H. Patterson, Los Angeles and William A. Edler, Pasadena, on "Third Ventricle Tumors" and "The Law versus Psychiatry," respectively. Otto Rank, Ph.D., Paris, France, discussed "Self-Inflicted Illness" before the society, February 15.—Dr. Arthur D. Bevan, Chicago, addressed the Los Angeles Surgical Society, February 8, on "The Present Status of the Appendicitis Problem." Dr. George W. Pierce, San Francisco, addressed the society Dec. 14, 1934, on "Reconstruction Surgery After Burns." Dr. Alfred E. Gallant was elected president at this meeting.

Bills Introduced—S. 468, to amend the medical practice act, proposes (1) to authorize courts on the application of the state board of medical examiners to enjoin the unlicensed practice of medicine and (2) to amend the title of the act so as to eliminate reference therein to osteopathy. S. 473, in effect, proposes to permit corporations and persons to qualify under the insurance laws of the state to issue medical and hospital service insurance, which "includes the contracting by way of insurance for the furnishing or procuring of hospital, medical or related professional services permitted by law and required by reason of illness, injury or disablement of the prevention thereof." S. 474 to amend the laws relating to insurance proposes that a medical and hospital service insurer, referred to in S. 473 shall not transact medical and hospital service insurance unless it has paid-in capital of at least \$25,000. In determining paid-in capital

the unexpired portion of all premiums, dues or other payments received and to be received on business then in force is to be considered as a liability. A 784 proposes to limit the retail sale or distribution of prophylactics and contraceptives to licentiates of the state board of medical examiners, of the state board of osteopathic examiners and of the state board of health. A 946, to amend the chiropractic nutritive act, approved by the electors, Nov 7, 1922, proposes, among other things, to define chiropractic as "the art and science of locating and adjusting by hand to restore to normal any abnormal anatomic relation for the purpose of removing interference with the transmission of nerve force, and also includes all natural, drugless, mechanical, hygienic, and sanitary measures incident to the care of the body when administered previous to or subsequent to an adjustment." The bill proposes also to eliminate the specific prohibition contained in the present law against the use by chiropractors of any drug or medicine now or hereafter included in materia medica. A 990 to amend the dental practice act proposes to define the following acts as unprofessional conduct in addition to the acts now specified by law: (1) advertising of a character tending to deceive or mislead the public; (2) advertising professional superiority; (3) advertising fixed prices for services; (4) advertising by means of any sign containing the representation of a tooth, bridge work or any portion of the human head; (5) employing advertising solicitors or press agents; (6) advertising free dental work or free examination; (7) advertising to guarantee any dental service; and (8) advertising to perform any dental operation painlessly. S 499, to amend the dental practice act, proposes to authorize courts on the application of the board of dental examiners to restrain the unlicensed practice of dentistry. S 512, to amend the pharmacy practice act, proposes to permit employees of a proprietor of a pharmacy, who is himself a registered pharmacist or who has a registered pharmacist regularly employed in the pharmacy to sell such drugs and medicines as general dealers in rural districts, licensed by the board of pharmacy, are permitted to sell. S 534 proposes to prohibit the admittance of any person to a private psychopathic institution, or any institution for the care or treatment of persons mentally ill or deranged without a written statement from at least two licensed physicians that they have examined the patient and that he should be admitted for care or treatment. Any person in an institution for the care or treatment of the mentally ill must be permitted to communicate at any time with whomsoever he desires. Any institution violating the provisions of this bill is to have its license revoked.

COLORADO

Bill Introduced—H 138 proposes to repeal the laws regulating the sale, distribution or possession of narcotic drugs and to enact what apparently is the uniform narcotic drug act.

Health in Denver—Telegraphic reports to the U S Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended February 9, indicate that the highest mortality rate (23.1) appears for Denver, and for the group of cities as a whole, 13.1. The mortality rate for Denver for the corresponding period last year was 12.6 and for the group of cities, 12.2. The annual rate for eighty-six cities for the six weeks of 1935 was 13.1, as compared with a rate of 12.5 for the corresponding period of the previous year. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

Society News—Dr Charles H Boissevain, Colorado Springs addressed the Fremont County Medical Society, Dec 17, 1934 in Canon City, on "Public Health with Special Reference to Irrigation with Contaminated Water."—At a meeting of the San Luis Valley Medical Society in Alamosa Dec 15 1934, Drs Constantine F Kemper and George B Kent, Denver discussed "Practical Endocrinology" and "Surgery of the Thyroid," respectively.—Speakers before the Medical Society of the City and County of Denver January 15, were Drs Hamilton I Barnard on "Open Reduction of Fractures," Ralph H Verploegh "Convalescent Serum in Pediatrics," Osgoode S Philpott, "Use of Serum in the Treatment of Erysipelas" and Leonard Freeman Jr, "Drainage of the Stomach and Small Intestine."

CONNECTICUT

Dr Mendel Awarded the Conné Medal—Lafayette B Mendel LL.D., Sterling professor of physiological chemistry, Yale University School of Medicine, New Haven will be awarded the 1934 Conné Medal of the New York Chemists Club the New York Times reported February 16 in recognition of his outstanding chemical contributions to medicine.

Dr Mendel who received the doctor of philosophy degree from Yale in 1893, has been associated with the institution since 1892. He has held his present position since 1921. A member of many scientific societies, Dr Mendel is the author of "Childhood and Growth", "Nutrition—The Chemistry of Life," and "Changes in the Food Supply and Their Relation to Nutrition" and an editor of the *Journal of Biological Chemistry*. In 1927 he was awarded the gold medal of the American Institute of Chemists.

Bills Introduced—S 222 and S 458 to amend the law requiring the licensing of institutions for the treatment and care of insane persons or persons suffering from other abnormal mental or nervous conditions, propose to authorize the state department of health, rather than the governor, to license such institutions annually, to prescribe a sanitary code for the government of such institutions and to revoke licenses for stated causes. S 452 proposes to authorize the pharmacy commission to adopt rules and regulations concerning the granting to stores, not licensed pharmacies, of permits to sell proprietary and patent medicines. S 456, to supplement the pharmacy practice act, proposes that in a store not a licensed pharmacy, which has been licensed to do so by the commission of pharmacy, proprietary and patent medicines may be sold if they are in sealed containers labeled and accompanied with directions for use and with the name and address of the manufacturer or distributor. Such patent and proprietary medicines, however, must not contain alcohol in excess of the amount necessary for use as a solvent or preservative and must not contain more than 2 grains of opium, nor more than $\frac{1}{4}$ of a grain of morphine, nor more than $\frac{1}{8}$ of a grain of heroin, or 1 grain of codeine. H 845 to amend the law requiring licensed physicians, osteopaths, chiropractors, naturopaths, chiroprudists and nurses to register annually and to pay a \$2 fee, proposes to eliminate the annual fee required. H 848 proposes to prohibit the retail sale or other retail distribution of barbitol and other hypnotic or somnifacient drugs except on the prescription of a licensed physician, dentist or veterinarian. The prohibited drugs are barbitol, malonylurea, sulphonethylmethane (trional), sulphonmethane (sulphonol), diethyl-sulphone, diethyl-methane (tetralol), paraldehyde and chloral or chloral hydrate or chlorbutanol. H 852 proposes to repeal the laws regulating the sale, distribution and possession of narcotic drugs and to enact what apparently is the uniform narcotic drug act. H 850 proposes to amend the law prohibiting the use of any drug, article or instrument for the purpose of preventing conception. The bill proposes that nothing in that law shall apply to a licensed physician nor to any patient acting under his advice when in his opinion pregnancy would be detrimental to the patient's health or to the child of such patient. H 1165, to amend the medical practice act, proposes to eliminate the requirement that an applicant for a license to practice medicine must be a citizen of the United States.

DELAWARE

Bill Passed—S 37 has passed the senate, proposing to make it the duty of physicians and midwives in attendance at childbirth (1) to use either a 1 per cent solution of silver nitrate, a 10 per cent solution of argyrol, or a 1 per cent solution of protargol, or their therapeutic equivalent, as a prophylactic against inflammation of the eyes of the new-born, (2) to make a record of the prophylactic used, and (3) to endorse the details thereof on every birth certificate.

Bills Introduced—H 95 proposes to permit licensed physicians, employees of the state board of health designated for the purpose, employees of the state board of education designated for the purpose, and any person designated by an accredited organization for the teaching of social hygiene to give lectures or instruction with respect to sex hygiene including the prevention of disease. H 94 proposes to permit licensed physicians and registered nurses to give information respecting contraception and to prescribe or supply any medicine or article adapted for the prevention of conception.

DISTRICT OF COLUMBIA

Medical Bills in Congress—S 31 and H R 4996 have passed the Senate and the House, providing for the issuance of a license to practice the healing art in the District of Columbia to Dr Chester C. Groff.

IDAHO

Society News—Dr Charles R Scott Twin Falls addressed the Southwest Idaho District Medical Society at Boise, Id. 15, 1934 on economic questions and public relations. Dr Rob F E Stier, Spokane, Wash., spoke on allergic diseases. Dr Paul H Herron, Spokane, Wash., diseases of children.

ILLINOIS

Bill Introduced—H 236 proposes to accord to physicians dentists, drugless practitioners, nurses and hospitals treating persons injured through the negligence of others, liens on all rights of actions, claims, judgments, settlements or compromises accruing to the injured persons by reason of their injuries.

Society News—Dr Andrew C Ivy, Chicago, spoke before the Rock Island County Medical Society, February 12, on "Applied Physiology of the Biliary Tract"—At a meeting of the Will-Grundy County Medical Society, February 13, Dr Jerome R Head, Chicago, discussed "Surgical Treatment of Pulmonary Tuberculosis"—A symposium on the socialization of medicine was presented before the Eleventh Councilor District Medical Society, February 14 speakers were Drs Rollo K. Packard, Chicago, Harold M Camp, Monmouth, and John R Neal, Springfield.

Chicago

University News—Dr Wingate Todd Henry Willson Payne professor of anatomy Western Reserve University School of Medicine in Cleveland, addressed the Society of Sigma Xi, at the University of Chicago, February 20 on "A Study in Child Development"—Dr Gaus E. Harmon, recently appointed epidemiologist of the Chicago Board of Health has been named professorial lecturer in epidemiology and vital statistics in the department of hygiene and bacteriology, in the Division of Biological Sciences University of Chicago. He plans to give a special course in epidemiology during the spring quarter.

Society News—The Chicago Medical Society was addressed, January 30 by Dr Russell L Haden, professor of medicine, Cleveland Clinic Cleveland on "The Recognition and Differentiation of the Anemias" and Dr Richard H Jaffe "The Reticulo-Endothelial System"—Speakers before the Chicago Surgical Society, February 1 included Drs Alexander Brunschwig on "Large Doses of Calcium in Treatment of Metastases to Bone" Hilger Perry Jenkins "Delayed Pedicle Skin Grafts," and Harold C Voris, "Surgery of the Frontal Lobes"—At a meeting of the Chicago Laryngological and Otological Society, February 4, Drs I Davidsohn and John A. Cavanaugh discussed "Infectious Mononucleosis" and "Sphenoid on Parade," respectively—Dr Charles F Geschickter, Baltimore, addressed the Chicago Orthopedic Society, February 8, on "Tumors of the Bone."

INDIANA

Personal—Dr Herman W Smelser has been made health commissioner of Connersville and Fayette County—Dr Myron L Habegger has been appointed health officer of Berne succeeding Dr Daniel D Jones.

Bill Passed—H 211 has passed the house, proposing to authorize counties, cities and towns to supply insulin free of charge to citizens who are in need of insulin for treatment for diabetes and who are financially unable to purchase the drug.

Reciprocity Reestablished with Illinois—The state department of registration ratified a plan January 8, which reestablishes reciprocity licensure with Illinois. A resolution was adopted at this meeting which provides that clinical examinations will be required of licentiates from those states which require clinical examinations together with credentials. A fee of \$10 will be charged these licentiates to cover the cost of examination. The first clinical examination was given in Indiana, January 9. Three or four clinical examinations will be given annually. Reciprocity with Illinois was rescinded March 13, 1931, because Indiana applicants were required to take a clinical examination in Illinois, although licentiates from Illinois were not compelled to fill this requirement in Indiana. All members of the board were reelected at this meeting.

Bills Introduced—S 130, to supplement the pharmacy practice act, proposes to denominate stated drugs as "poisons" and to require pharmacists to keep a designated record of such drugs, showing the name of the person to whom sold, his address, and the purpose for which sold. The provisions of the bill however, are not to apply to drugs dispensed on the prescription of a licensed physician, dentist or veterinarian. S 185 proposes to prohibit any private hospital from denying any member of the immediate family of any patient access to the patient's room at any time. No person employed by a private hospital is to change or refuse to administer the treatment prescribed by the patient's physician. The board of health is to be authorized to investigate the management, facilities, accommodations and rules of any private hospital which are alleged to be discriminatory and any other practice which, in

the judgment of the board, is not conducive to the comfort, convenience or necessary privacy of patients. After a hearing, the board may make such orders as it deems necessary to correct the conditions complained of. If such a hospital shall refuse to carry out the orders of the board, the secretary of state is to revoke the authority of the hospital to transact business.

Society News—The Jay County Medical Society was addressed in Portland, January 4, by Dr Homer G Hamer, Indianapolis, on "The Essentials of Urinary Diagnosis"—Dr Carleton B Peirce, Ann Arbor, Mich, discussed chest diagnosis before the Muncie Academy of Medicine in Muncie, January 8—At a meeting of the Wabash County Medical Society in North Manchester, January 9, Dr Eugene B Mumford, Indianapolis, spoke on conditions of the knee joint—Dr Eric Oldberg, Chicago addressed the Lake County Medical Society, January 10 in Gary, on "Head Injuries"—The Tipton County Medical Society was addressed in Tipton, January 21, by Dr Edward T Stahl, Lafayette, on fractures—At a meeting of the St Joseph County Medical Society in South Bend, January 22, Dr Robert B Acker, South Bend, discussed "Malignancies of the Bones"—Dr Lyman T Rawles Fort Wayne, spoke before the Whitley County Medical Society in Columbia City, January 15, on sickness insurance—Dr Roy D Arn, Springfield, Ohio, discussed "Management of Fractures of the Skull and Intracranial Damage" before the Henry County Medical Society in Newcastle, January 17—The Wayne-Union Counties Medical Society was addressed January 10, by Dr George J Garceau, Indianapolis on backache—At a meeting of the Indianapolis Medical Society January 29, Dr Norman M Keith, Rochester, Minn. discussed "Types of Renal Disease and Their Clinical Significance."

IOWA

Medical Referee for Emergency Relief—Dr Thomas C Denny, Des Moines, has been appointed medical referee in handling emergency relief in Iowa. The position was created on the recommendation of Dr Knox E Miller of the U S Public Health Service, following his survey of medical relief problems in Iowa. One of the first duties of Dr Denny will be to coordinate county, state and federal relief agencies through the establishment of an organization to handle medical relief. Dr Denny graduated from Jefferson Medical College in 1912. For the past several years he has served in various capacities with the Central Life Insurance Company of Iowa, holding the presidency from 1927 to 1932. He was president of the Des Moines Chamber of Commerce in 1933. Recently he was presented with the Des Moines Tribune's Community Service Award for 1934 for his services to civic and community enterprises over a period of several years.

Society News—Dr Homer W Scott, Fort Dodge, addressed the Calhoun County Medical Society in Rockwell City, Nov 21, 1934, on "Treatment of Acute Gonorrhea in the Male"—At a meeting of the Carroll County Medical Society in Carroll, Nov 15, 1934, Drs Harry A Collins and Lester D Powell, Des Moines, discussed peptic ulcer—Dr Frank E. Burch, St Paul, discussed conditions of the eye before the Cerro Gordo County Medical Society, Nov 13, 1934, in Mason City—At a meeting of the Emmett and Dickinson county medical societies in Estherville, Nov 15, 1934 Dr Herman O McPheeters, Minneapolis, discussed "Injection Treatment of Varicose Veins"—Speakers before a joint meeting of the Pottawattamie and the Omaha-Douglas county (Nebraska) medical societies in Council Bluffs, Nov 22, 1934, were Drs Louis D McGuire on "Surgical Diseases of the Spleen", Frank M Conlin, Hereditary Factor in Disease, with Particular Reference to Diseases of Metabolism," and John A Borghoff, "Eczema"—The Linn County Medical Society was addressed, February 14, by Drs Arthur F Bratrud, Minneapolis, on "Ambulatory Treatment of Hernia," and Guy S Van Alstyne, Chicago, "Diagnosis of Hypertrophic Pyloric Stenosis, with History Preoperative Preparation, the Operation, the Postoperative Management and Weight Curve." The society was addressed January 10, by Drs William H Olmsted St Louis on "Vascular Diseases of the Extremities" and Louis G Herrmann, Cincinnati, on "The Passive Vascular Exercise Method of Treating Obliterative Arterial Diseases of the Extremities."

KANSAS

Bill Introduced—S 280 proposes to repeal the present workmen's compensation act and to enact a new workmen's compensation act. An employer is to furnish to an injured workman such medical and surgical care as may be reasonably necessary to cure and relieve him from the effects of his injury,

but the cost thereof is not to exceed \$300 and the period of time during which such care must be furnished is not to exceed sixty days from the date of the accident

MAINE

Bill Introduced—H 1190 limits the retail sale or other retail distribution of sanitary or prophylactic rubber or other articles for the prevention of venereal or other diseases and infections to persons licensed by the state bureau of health

MARYLAND

Personal—Dr Arthur M Shipley has resigned from the staff of the Baltimore City Hospitals because of the increase of his duties as professor of surgery at the University of Maryland School of Medicine, Baltimore—Dr George C Halley, Easton, has been appointed health officer of Talbot County, succeeding Dr Arthur L Osilar, resigned

Tularemia—Twenty-one cases of tularemia were reported to the state department of health during the first three weeks of December as compared with seventeen during the same period of 1933 Of the twenty-one cases, twelve with three fatalities occurred in Baltimore City Since 1928 when tularemia was made a reportable disease in Maryland, 148 cases have been reported with eighteen deaths

Society News—Speakers before the Baltimore City Medical Society, February 15, were Drs Louis H Douglas 'Modern Aspects of Obstetrical Care', Samuel McLanahan 'Carcinoma of the Large Intestine, Some Conclusions from a Recent Survey,' and George McLean, 'An Unusual Case of Zinc Chloride Poisoning'—Dr Frank G Boudreau of the Health Section of the League of Nations Geneva, Switzerland gave a public lecture at the School of Hygiene and Public Health of Johns Hopkins University, January 8, on 'Medical Care Here and Abroad'

Bills Introduced—H 166 to amend the osteopathic practice act, proposes, in effect, to authorize osteopaths to make and sign death certificates H 85 proposes to authorize the issuance of a divorce if either spouse becomes incurably insane and has been committed to an institution for more than five years H 145 proposes to prohibit the retail sale and distribution of barbitol and other hypnotic and somnifacient drugs except on the prescription of a licensed physician dentist or veterinarian. The drugs mentioned are to include barbituric acid, sulphonethylmethane (trisonal), sulphonmethane (sulphonol) diethyl sulphone, diethyl methane (tetronal), paraldehyde, and chloral or chloral hydrate or chlorbutanol

Another Public Health District—A new health district will be set up in the western section of Baltimore in the vicinity of the University Hospital of the University of Maryland School of Medicine by the Baltimore City Health Department it is reported This district will be similar to one established in the eastern section in 1932, comprising the sixth and seventh wards, and financed by a grant from the Rockefeller Foundation through the School of Hygiene and Public Health of Johns Hopkins University (*THE JOURNAL*, July 9, 1932, p 140) In this district the training of public health workers is carried on with a full time physician in charge as director of a branch of the city health department It was pointed out that, like the eastern health district, the new district will be organized on a basis of political divisions, including as many as are required to provide about 100,000 persons Headquarters will be established either in old hospital buildings or on adjacent hospital property It is planned to divide the entire city eventually into public health districts

MASSACHUSETTS

Institute for Tuberculosis Workers—The National Tuberculosis Association sponsored an institute for tuberculosis workers at the Hotel Statler, Boston February 4-9 Dr Frederick T Lord, Boston, president, Massachusetts Tuberculosis League, gave the opening address Other speakers included Drs Henry D Chadwick, Newton John B Hayes 2d Boston, Alton S Pope, Boston, and Nahum R Pillsbury, Braintree, and Philip P Jacobs, Ph D, New York

Radiologic Conference—The New England Roentgen Ray Society held a radiologic conference at the Hotel Statler Boston, January 25-26 Members of the staffs of Massachusetts General Boston City and Peter Bent Brigham hospitals participated in the program which covered a wide range of radiologic subjects At the dinner, Friday evening Dr Percy Brown Egypt, was toastmaster Speakers were Dr John D Camp Rochester Minn on Value of Arteriography in Periph-

eral Vascular Disease,' and Dr Merrill C Sosman Boston, 'X-Ray Conference'

Bills Introduced—H 756 proposes to amend that provision of the medical practice act which requires an applicant for a license, among other things, to have attended courses of instruction for four years of not less than thirty-two school weeks in each year in one or more legally chartered medical schools by permitting an applicant who has attended 'courses which in the opinion of the board are equivalent thereto' to be also eligible for licensure H 1629 proposes to make it a ground for divorce for either spouse to be incurably insane and to have been confined to an institution for a period of ten years or more

Society News—Dr Reginald Fitz Boston addressed the Plymouth District Medical Society January 17, on 'Present Status of Medical Economics'—The New England Ophthalmological Society was addressed in Boston, January 15 by Drs Alexander Marble Boston, on 'Studies of Blood Fat in Two Cases of Lipemia Retinalis,' and Alfred A Bielschowsky department of research in physiologic optics Dartmouth Medical School Hanover, N H, 'Congenital and Acquired Anomalies in Fusion'—Dr Elliott P Joslin Boston, addressed the Harvard Medical Society January 8 on 'Forty Years of Diabetes'—The Springfield Academy of Medicine was addressed in Springfield February 12 by Drs Rosco G Leland director Bureau of Medical Economics, American Medical Association Chicago, on 'Current Medical Problems' and Nathan B Van Etten, New York, 'An Economic Program for 1935'

MICHIGAN

New District Health Department—The counties of Luce Schoolcraft and Mackinac were organized into a new district health department, January 1 Grants from the U S Public Health Service and the Children's Fund of Michigan made the establishment of the new district possible This brings the total to thirty-five counties having either full time county or district health department service in the state

Society News—Dr Edgar A Kahn Ann Arbor, addressed the St Clair County Medical Society in Port Huron, Dec 4, 1934, on 'Injuries and Tumors of the Brain and Cord'—Dr Arthur W McGarrah Detroit, addressed the Tuscola County Medical Society at Cass City, Dec 13 1934, on 'Conization of the Cervix'—Dr Frederic Schreiber discussed intracranial injuries before the East Side Physicians Association January 10, in Detroit

Lectures for the Public—Dr Thurman B Rice professor of bacteriology and public health Indiana University School of Medicine, Indianapolis gave a public lecture at the Book-Cadillac Hotel Detroit, January 11 on 'Common Sense in the Health Program' This was the first lecture in a series of three arranged by the public relations committee of the women's auxiliary to the Wayne County Medical Society Dr Frank L Rector, Evanston, Ill, field director of the American Society for the Control of Cancer, presented the second lecture, February 8, on 'The Nature, Curability and Prevention of Cancer'

Personal—Dr Carl F Moll, Flint, has been named physician to the Michigan School for the Deaf to succeed Dr James K Sutherland, it is reported—Dr Ferris Smith, Grand Rapids, was to address the annual session of the Royal College of Medicine, London February 1 on 'Management of Sinus Diseases'—Dr James L McCartney formerly psychiatrist and director of the classification clinic, New York State Department of Corrections at Elmira Reformatory and recently director of the Northwest Retreat Portland, Ore a guest home for convalescent or psychoneurotic persons, has been appointed on the neuropsychiatric staff of the Battle Creek Sanitarium

MINNESOTA

Bill Introduced—H 574 to repeal the laws regulating the sale distribution or possession of narcotic drugs proposes to enact what apparently is the uniform narcotic drug act

MISSOURI

Bill Passed—H 148 passed the house proposing to prohibit the sale or other distribution of marijuana

Dinner to Dr Morfit—The St. Louis Medical Society gave a dinner in honor of Dr John C Morfit, January 24 at the Missouri Athletic Association and presented him with a testimonial of esteem signed by members of the society, and a silver service Dr Morfit recently finished a term as president of the society This was the second time he had held the office, the first having been in 1907 Dr Morfit's reelection

tion was the first time in forty-eight years that a physician had been recalled to the presidency of the society. Records of the society show, however, that five other ex-presidents had been elected two or more times (THE JOURNAL, Jan 13, 1934, p 140)

Bills Introduced—H 327, to amend the chiropody practice act, proposes to define chiropody as 'the local, medical or surgical treatments [sic] of the ailments of the human foot, except amputation of the foot or toes, or the use of anesthetics other than local, or the use of the drugs or medicines other than local antiseptics.' H 388 proposes to require "all persons practicing medicine or surgery in any of its departments, professing to cure or attempting to treat the sick and others afflicted with bodily or mental infirmities, or engaging in the practice of midwifery or chiropody," to register annually with the state board of health on or before January 31 and to pay at that time a fee of \$2. If any practitioner fails to register by May 1, the board is authorized to revoke his license to practice.

Society News—The St. Louis Medical Society and the Missouri Social Hygiene Association held a joint meeting February 19, the speaker was Dr. Paul A. O'Leary, Rochester, Minn., on "The Types of Neurosyphilis in Which Malaria Therapy is Indicated." Dr. Rosco G. Leland, Chicago, addressed a special meeting of the St. Louis Medical Society February 18 on "Present Status of Social Security in Relation to Medical Economics and Health Insurance."—The Jackson County Medical Society was addressed, January 22 in Kansas City, by Dr. Richard L. Sutton Jr., on "Pathological and Clinical Aspects of Early Skin Cancer." "The Immunology of Osteomyelitis" was discussed by Drs. Paul F. Stookey, James B. Weaver and Louis A. Scarpellino.—Dr. Edward H. Skinner, Kansas City, discussed "Prevention and Cure of Cancer" before the Nodaway County Medical Society February 6 and Dr. Harold P. Kuhn, Kansas City, "Management of the Complications of Gallbladder Surgery."—At a meeting of the Caldwell-Livingston County Medical Society in Chillicothe January 29, Drs. Louis A. Scarpellino and Ernest Kip Robinson, Kansas City, discussed the diagnosis and treatment of diphtheria and cancer of the cervix respectively.

MONTANA

Bill Introduced—H 190, to amend the workmen's compensation act, proposes to make the following occupational diseases compensable: anthrax, silicosis and poisoning from lead, mercury, zinc, arsenic, phosphorus, radium, roentgen rays and carbon monoxide.

Bills Passed—S 53 has passed the senate proposing to amend the law prohibiting the production, distribution or possession of marijuana by making a violation of the act a felony punishable by imprisonment in the penitentiary for from one to five years and/or fine of from \$500 to \$1,000. H 86 has passed the house, proposing to amend the chiropractic practice act so as (1) to define chiropractic as "the science that teaches that disease results from anatomic disrelation and teaches the art of restoring anatomic relation by adjustment by hand and the use of such other physical, thermo, and electrical methods and modalities as are necessary to the restoration of proper anatomic relation," and (2) to require a chiropractic licensee to show as a condition precedent to his right to annual reregistration that during the past year he had attended a postgraduate course in a recognized chiropractic college or has attended at least one of the "educational" programs as conducted by the Montana Chiropractic Association.

NEBRASKA

Bills Introduced—S 100, to amend the dental practice act, proposes that the following acts, in addition to the acts now stated in the law, shall constitute "unprofessional conduct" for which a licensee's license may be revoked: (1) advertising in a manner tending to deceive or mislead the public, (2) advertising professional superiority, (3) advertising prices for professional service, (4) advertising by means of large displays, glaring light signs, (5) advertising free dental work or free examinations, (6) advertising to guarantee any dental work and (7) advertising to perform any dental operation painlessly. H 219, to supplement the law authorizing the sterilization of certain socially inadequate inmates of state institutions, proposes to authorize the sexual sterilization of feeble-minded persons who are not inmates of state institutions. H 406 proposes to require a physician examining any plaintiff who has pending a court action for damages for personal injuries to file with the clerk of the court, at least thirty days prior to the trial of the case, a written report of his findings. Any

physician failing to make such a report is to be prohibited from testifying in the case and is not to be entitled to a physician's lien on any judgment rendered in the case. H 477, to amend the chiropractic practice act, proposes (1) to define chiropractic as "the science of locating and correcting interference with nerve transmission and expression between brain cells and tissue cells," (2) to permit persons who have practiced chiropractic for at least seven years and who have participated in at least twenty-five deliveries, after examination by the chiropractic board, to practice obstetrics and (3) to permit chiropractors to practice physiotherapy. H 587 proposes to prohibit the retail distribution or sale of barbitol or other hypnotic or somnifacient drugs, except on the prescription of a licensed physician, dentist or veterinarian. The term "barbitol" as used in the bill is to include the salts of barbituric acid. The term "other hypnotic or somnifacient drug" is to include sulphon-ethyl-methane (trional), sulphonmethane (sulphonal), diethylsulphon diethylmethane (tetronal), carbromal, paraldehyde and chloral or chloral hydrate or chlorbutanol. H 433 and S 218 to amend the workmen's compensation act, propose to make occupational diseases compensable. H 441 proposes to require the state to reimburse hospitals treating indigent persons injured in motor vehicle accidents. H 472, to amend the law relating to divorce, proposes to authorize a divorce if either spouse is incurably insane and has been confined in a hospital or asylum for at least ten years.

NEW YORK

Bill Introduced—A 1009 proposes to accord to charitable hospitals and to governmental hospitals, treating persons injured through the negligence of others, liens on all rights of action, claims, judgments, compromises or settlements accruing to the injured persons by reason of their injuries.

New Superintendent at Willard Hospital—Dr. Harry J. Worthing, Ogdensburg, has been appointed superintendent of the Willard State Hospital for mental patients, Willard, to succeed Dr. Robert M. Elliott, who retired Dec. 31, 1934. Dr. Elliott had been head of the institution for thirty years and in the state service for forty-five years. Dr. Worthing was formerly head of the St. Lawrence State Hospital at Ogdensburg.

Thirty-Four Deaths from Poison Alcohol—Thirty-four persons are reported to have died from alcohol poisoning in Utica and Gloversville recently. According to newspaper accounts the victims were seized with cramps, became blind, had convulsions and died in intense pain. The *Chicago Tribune* reported, January 7, that three men had been arrested and charged with first degree murder. Police said that the men who were found in Brooklyn were peddlers who had gone into the bootlegging business in Utica with a fruit store as a blind.

Society News—Dr. George E. Slotkin, Buffalo, addressed the Ontario County Medical Society at its quarterly meeting in Canandaigua, January 8, on "Nephropotosis—A Resurrected Disease."—Dr. Robert H. Halsey, New York, addressed the Medical Society of the County of Nassau, January 29, on "Diagnosis and Treatment of Coronary Thrombosis."—Dr. Ralph Traver, Albany, discussed "Mammoth Ovarian Cyst" at a meeting of the Medical Society of the County of Albany, January 23 and Dr. Harold A. Peck, Albany, the Friedman 'rabbit' test.

Campaign Against Chiropractic Schools—The state department of education is conducting a campaign against chiropractic schools on the charge of having issued degrees without authority from the legislature or the regents, in violation of the education law. One case against the Eastern Chiropractic Institute, was disposed of Dec. 28, 1934, in the court of special sessions of New York County, when three defendants received sentences of thirty days' execution of the sentences being suspended. Similar actions are in progress against the New York School of Chiropractic and the American School of Naturopathy. Supplementing these prosecutions, an active campaign is also under way against individual chiropractors. Chiropractors are not licensed in New York and the court of appeals has held that the practice of chiropractic is the practice of medicine and that those who engage in it do so illegally.

New York City

University News—Dr. Walter Reginald Bett, London, has been appointed librarian of the College of Physicians and Surgeons of Columbia University. He is a former medical superintendent of the Princess Elizabeth of York Children's Hospital according to the *New York Times*.

Cancer Facilities—A sixteen months survey of cancer facilities in Brooklyn, recently made public by the Welfare Council, disclosed that thirty-nine borough hospitals with 8,744

beds had only twenty free beds available for cancer patients and these are all at the Brooklyn Cancer Institute. Of twenty-nine outpatient departments, only the clinic of the cancer institute made special provision for cancer patients, it was said.

Research in Child Neurology—A division of child neurology endowed by the Friedman Foundation has recently been organized at the Neurological Institute of Columbia-Presbyterian Medical Center, it was announced January 22. Dr. Bernard Sachs is director, Drs. Frederick Tilney and Louis Casamajor are associate directors. The new division will be devoted to the promotion of research on the nervous and mental disorders of childhood. The Friedman Foundation was instituted by the late Col. Michael Friedman, president of B. Altman and Company.

Society News—Dr. William Houston Toulson, Baltimore, addressed the Brooklyn Urological Society, Dec. 11, 1934, on "Resection of the Hypogastric Plexus for Urinary Bladder Disorders."—A symposium on "The Facts About X-Ray and Radium Therapy" was presented at the stated meeting of the New York Academy of Medicine, February 7, by Drs. George T. Pack, Howard C. Taylor, Jr., Anthony C. Cipollaro and Cornelius G. Dyke. Dr. Lucy D. Porter Sutton delivered the twelfth Friday afternoon lecture, February 1, on "Carditis in Children," Dr. Harold M. Marvin, New Haven, Conn., the thirteenth, February 8, on "Recent Advances in Cardiology," and Dr. Arthur M. Wright gave the fourteenth, February 15, on "Tumors of the Breast."

NORTH DAKOTA

Bill Passed—H. 8, to amend the chiropractic practice act, has passed the house. The bill proposes to define a chiropractor as one who examines, diagnoses and treats abnormal nail conditions, excrescences occurring on the feet including corns, warts, callosities, bunions and arch disorders, or one who treats medically, mechanically or by physiotherapy in a chiropractic manner the human foot.

Bills Introduced—S. 111 proposes to repeal the laws regulating the sale, distribution or possession of narcotic drugs and to enact what appears to be the uniform narcotic drug act. S. 142 proposes to permit any person to practice naturopathy who files with the recorder of deeds in the county in which he proposes to practice a diploma issued by any legally chartered school or college of naturopathy. The bill defines naturopathy "to mean the practice of the healing art as follows: The adjustment of the articulation of the human skeleton by hands or by any movements and mechanical appliances and the use of any physical forces such as air, light, water, pressure, vibration, heat, electricity, hydrotherapy, including the use of mineral salt baths and any other means or systems of therapeutics and dietetics correlated with the above therapeutic measures including nontoxic herbs and their essential oils, gums and resins applied, administered and prescribed, but shall not include the administration of drugs, the application of radium or surgery." H. 150 proposes to require all hospitals exempted from taxation to receive for treatment "any patient who desires to be treated by any system of known and generally recognized healing art to be employed at the request of the patient."

OKLAHOMA

Bill Passed—H. 46 has been passed by the house, proposing to require every hospital or physician treating a patient suffering from an injury caused by the discharge of a gun to report the facts to the proper police authorities.

OREGON

State Board Election—Dr. Robert L. Benson, Portland, was elected president of the state board of health at the annual meeting in January, succeeding Dr. Albert Mount. Oregon City, Drs. Joseph P. Brennan, Pendleton, and Frederick D. Stricker, Portland, were reelected vice president and executive secretary, respectively.

Bill Enacted—H. 112 has become a law. The bill amends the medical practice act so as (1) to permit the medical examining board to hold meetings for examinations whenever it deems it advisable, provided such meetings are held at least twice a year, the present law requiring that meetings for examination be held on the first Tuesdays of January and July; (2) to permit the board to suspend licenses as well as to refuse to issue or to revoke them for the causes now stated in the law, and (3) to add to the conduct which shall be deemed to be "unprofessional and dishonorable conduct" the obtaining of any fee through fraud or misrepresentation.

Bills Introduced—H. 241, to amend the chiropractic practice act, proposes to make a chiropractor's right to annual registration depend on his having attended in the preceding year at least one of the "educational" programs as conducted by the Oregon Association of Chiropractic Physicians, Inc., or on his having attended a postgraduate course in a recognized chiropractic college. H. 348 proposes to limit the sale and other distribution of appliances, drugs or medicinal preparations intended or having special utility for the prevention of conception and/or venereal diseases, to licensed physicians and to licentiates of the state board of pharmacy. H. 244, to amend the naturopathic practice act, proposes (1) that the naturopathic board of examiners be appointed by the governor from lists of naturopathic physicians submitted by the Oregon Naturopathic Association; (2) to require applicants for licenses to be graduates of a school or college of naturopathic therapeutics, which teaches a resident course of not less than three years of ten months each of not less than 4,000 hours and which teaches in addition to the subjects now enumerated in the act the subjects noted below and for the minimum number of hours noted: bacteriology, 100 hours; embryology, 100 hours; jurisprudence, 35 hours; laboratory, technique of diagnosis, 75 hours; herbology, 100 hours; biochemistry, 100 hours; (3) to deny annual registration to licentiates who in the preceding year have not attended one or more postgraduate courses held under the direction of the Oregon naturopathic association or have not attended courses in a recognized school or college of naturopathy, and (4) to authorize naturopaths "to sign any and/or all certificates requiring the signature of a physician."

PENNSYLVANIA

Bill Introduced—H. 494 proposes to regulate the practice of chiropractic and to create a chiropractic board of examination and licensure in the department of public instruction. Chiropractic is defined as "the examination of the human spine by observation, palpation or x-ray and the adjustment of any or all misalignments of vertebrae or adjacent bones or tissues through the use of the hands."

Social Welfare Conference—At the annual Pennsylvania Conference on Social Welfare in Pittsburgh, February 19-23, physicians who participated in the program were Drs. Alexander H. Colwell, Pittsburgh, president-elect of the Medical Society of the State of Pennsylvania, who took part in a discussion of socialized medicine; Moses Behrend, Philadelphia, president of the state society; and Harold A. Miller, Pittsburgh, state director of emergency medical relief, in a discussion of one year's operation of the relief plan, and Charles H. Frazier, Philadelphia, president of the Public Charities Association of Pennsylvania, administration of public welfare services.

Society News—Drs. Holbert J. Nixon and Herbert Lund, Uniontown, addressed the Fayette County Medical Society, Uniontown, February 7, on "Hyperchromic and Hypochromic Anemias of Pregnancy" and "Physiology of Blood Clotting," respectively. Dr. Edward I. Steinberg, Erie, addressed the Crawford County Medical Society, Titusville, Dec. 5, 1934, on diseases of the skin. Dr. Ashley W. Oughterson, New Haven, Conn., addressed the Lackawanna County Medical Society, Dec. 4, 1934, on surgical treatment of pulmonary tuberculosis. The Lawrence County Medical Society at a meeting in New Castle, Dec. 6, 1934, adopted resolutions stating its disapproval of all forms of compulsory health insurance and protesting against encroachments by the state on the practice of medicine, among other matters. Speakers before the Montgomery County Medical Society, Abington, February 6, in a joint meeting with the staff of the Abington Memorial Hospital, were Drs. Roland D. Porter, Abington, George Morris Piersol, Philadelphia, and William D. Stroud, Philadelphia, in a symposium on high blood pressure.

Philadelphia

Personal—Dr. Louis D. Englerth has been appointed visiting surgeon to the Philadelphia General Hospital, succeeding the late Dr. Harvey M. Righter. Dr. Elwood R. Kirby has been appointed by the mayor a member of the Board of Health of Philadelphia to fill the vacancy caused by the recent resignation of Dr. Alexander C. Abbott after thirty-one years' service.

Thomas Oration in Urology—The Philadelphia Urological Society of the American Urological Association presented the B. A. Thomas Annual Oration, January 28, given by Dr. William E. Lower, Cleveland, on "The Control of Benign Prostatic Hypertrophy: An Experimental Review and a Clinical Prediction." Drs. Maurice D. Friedman and Alexander Randall discussed the paper.

Hatfield Lectures—Dr William H Park, Herman M Biggs professor of preventive medicine, University and Bellevue Hospital Medical College, New York, and Michael Heidelberger, Ph D, associate professor of biologic chemistry, Columbia University, delivered the Nathan Lewis Hatfield Lectures of the College of Physicians of Philadelphia, February 6. Dr Parks' subject was "Certain Clinical Aspects of Immunology" and Dr Heidelberger's, "Chemical Aspects of Antigens, Antibodies and Their Interaction."

Pittsburgh

Society News—Dr William C Bryant presented a paper on cystitis before the Pittsburgh Urological Association, February 11.—Speakers at a meeting of the Pittsburgh Academy of Medicine, February 12, were Drs Joseph S Baird on "Preventive Aspects of Some of the Acute Infectious Diseases," Paul R Sieber, "Treatment of Fracture of the Os Calcis," and Andrew B Fuller, "Basis of Symptoms in Arteriolar Disease."—Speakers who addressed the Allegheny County Medical Society, Pittsburgh, January 15, were Drs Robert C Hibbs on "Gonorrheal Arthritis," Paul Titus "Treatment of Sterility," and Rosario Charles Nucci "Carcinoma of the Cervix."

TEXAS

Bills Introduced—S 220 proposes to make it the duty of every physician or midwife, required by law to register births, to affix to the registration blanks required by law the fingerprint and the footprint of any infant which he or she delivered. H 448 proposes to render inadmissible in evidence in any civil suit any testimony concerning an autopsy unless it be shown that the nearest living relative or surviving spouse of the deceased consented to its performance and that a physician of his or her own choice was present thereat.

UTAH

Bill Introduced—H 87 proposes to make it a felony for any person to sell or furnish a narcotic drug in any form to a person under 21 years of age. The provisions of the bill, however, are not to apply to the furnishing of any narcotic on the prescription of a licensed physician.

VERMONT

Bill Introduced—S 24 proposes to create a state board of naturopathic examination and registration and to regulate the practice of naturopathy, which the bill does not define.

VIRGINIA

Personal—Dr Letcher E Trent, psychiatrist on the staff of the Veterans' Administration, has been appointed chief medical officer of the new Veterans' Facility at Roanoke. He is now director of the facility at Perry Point, Md.—Dr Charles Howe Eller, health officer of Bernalillo County, N M, with headquarters in Albuquerque, has been appointed health officer of Charlottesville and Albemarle County to succeed Dr Edwin L McQuade. Dr McQuade resigned last September to become director of rural health in the state health department.—Alfred Chanutin, Ph D, professor of biochemistry, University of Virginia Department of Medicine, Charlottesville, recently was awarded the Gibbs Prize of the New York Academy of Medicine for research on disease of the kidneys. The prize has a value of \$750 and is limited to research in that field.—Dr William A Brumfield, Farmville, has been made director of a new health district including the counties of Rockingham, Shenandoah, Page, Rappahannock, Madison and Greene, with headquarters at Harrisonburg.

WASHINGTON

Personal—Dr Arthur C Crookall, Seattle, has resigned as executive chairman of the Public Health League of Washington after many years' service. Dr Frank J Clancy, Seattle, is his successor.

Bill Passed—H Joint Memorial No 19 has passed the house, memorializing President Roosevelt and Congress to amend the Harrison Narcotic Act so as to permit narcotic addicts to be cared for through a clinic system under the direction of the United States Public Health Service acting in cooperation with city, county and state health boards.

Society News—Drs George H Anderson and Edwin J Barnett, Spokane, addressed the meeting of the Chelan County Medical Society with the Central Washington Dental Society, Dec 12 1934 at Wenatchee, on "Relation of Dental Infections to Systemic Disease" and "Dental Caries in Children," respectively.

—Dr Donald V Trueblood, Seattle, addressed the Clallam County Medical Society, Dec 12, 1934, at Port Angeles on lesions of the skin.—At a meeting of the Pierce County Medical Society, Tacoma, Dec 11, 1934, Dr Edgar F Dodds reviewed modern methods of resuscitation.—Drs Clarence L Lyon and Alphonso N Codd, Spokane, addressed the Yakima County Medical Society, Yakima, Dec. 10, 1934, on "Present Status of Thymic Hypertrophies" and "Bronchoscopy and Esophagoscopy," respectively.—Drs Torleif Torland and Irvin A Weichbrodt addressed the King County Medical Society, Seattle January 21, on "Vaginal Hysterectomy by the Clamp Method" and "Malpractice," respectively. Dr Paul J Hanzlik, San Francisco, addressed a special meeting of the society Dec. 28, 1934, on intravenous medication.—The annual meeting of the Tacoma Surgical Club, March 30, will be devoted to discussion of obstetric and gynecologic pathology, with Dr Otto H Schwarz, professor of obstetrics and gynecology, at Washington University School of Medicine, St Louis, as guest speaker.

Bills Introduced—S 148 proposes to repeal the laws regulating the sale, distribution or possession of narcotic drugs and to enact what apparently is the uniform narcotic drug act. H 278 proposes to make it unlawful for any "tax and charitable supported and tax-exempt hospital to deny any 'physician surgeon, doctor or practitioner of Allopathy, Homeopathy, Sanipractic, Osteopathy, Chiropractic Food Science, Psycho-Therapy or Mechano-Therapy' the right to practice within the confines of such hospital." H 216 proposes to authorize the director of licenses to appoint an examining committee for applicants for licenses to practice naturopathy and to regulate the practice of naturopathy. Apparently applicants for such a license would be subject to the existing basic science act. The bill gives no indication of the scope of a license to practice naturopathy and apparently grants to licentiates the right to report and certify to births and deaths and all other matters pertaining to public health and requires that all such reports and certificates must be accepted as legal. S 129 proposes to regulate the practice of sanipractic. Applicants for a license to practice sanipractic need not pass the basic science examination and are examined only by an independent board of sanipractic examiners, to be appointed by the governor. Licentiates are to have the right to report births and deaths and all matters pertaining to public health and such reports must be accepted as legal. The bill defines sanipractic as "the science and art of applied prophylactic and therapeutic sanitation, which enable the physician to direct, advise, prescribe or apply food, water, roots, herbs, light, heat, exercises, active and passive manipulation, adjusting tissue vital organs, and anatomical structure by manual mechanical or electrical instruments or appliances or other natural agency, to assist nature restore a psychological and physiological interfunction for the purpose of maintaining a normal state of health in mind and body." Apparently licentiates are to have the right to practice obstetrics. S 137 proposes to authorize two or more adjacent counties to establish a sanatorium for the care and treatment of persons suffering from tuberculosis.

WISCONSIN

Bill Introduced—A 195 proposes to repeal the law requiring applicants for marriage licenses to present certificates from licensed physicians that they are free from venereal and contagious diseases.

Society News—The Central Wisconsin Society of Ophthalmology and Otolaryngology held a meeting in Marshfield recently, at which guest speakers were Drs Cecil S O'Brien and Dean M Lierle, Iowa City, on "Choice of Operation in Cataract Surgery" and "Nasal Allergy," respectively.—Drs John Edwin Habbe and Norbert Enzer addressed the Milwaukee Roentgen Ray Society Nov 16, 1934 on "Present Trends in Cardiac Roentgenology" and "Pathogenesis in Human Silicosis," respectively.

ALASKA

Inspection of Health of Indians—Dr Vance B Murray, medical director, Alaskan Medical Service under the office of Indian Affairs, department of the interior, plans three aerial trips this year to investigate the health of Indians in every isolated spot, according to the *Chicago Tribune*. Nearly 30,000 natives in small and isolated settlements will be visited. Dr Murray is said to be sponsoring a program for inducing resident physicians to accept appointments as bureau deputies for part time employment by the government in treating natives in their districts. A plan whereby hospitals will accept a specified number of native patients each year at government expense is also under consideration.

GENERAL

Medical Library Meeting—The Medical Library Association will hold its annual session in Rochester, N. Y., June 17-19, with headquarters at the Sagamore Hotel. Sessions will be held at the Rochester Academy of Medicine and the University of Rochester School of Medicine.

The Birth Control Bill—The judiciary committee of the House of Representatives has tabled the bill introduced by Representative Pierce of Oregon, H. R. 2000, to relax the restrictions of the criminal code relative to the distribution of information concerning contraception and of means for accomplishing that end. The National Committee on Federal Legislation for Birth Control, of which Mrs. Margaret Sanger is chairman, has sent out an appeal asking that endorsers of its efforts send protests against this action to the chairman of the judiciary committee, Hon. Hatton W. Summers, House of Representatives, Washington, D. C. It is also asked that letters be written to the Senate judiciary committee, before which a similar bill, S. 600, is pending, urging favorable action.

Medical Fellowship at Geneva—The Institute of International Education announces that a fellowship for graduate study in the medical faculty of the University of Geneva, Switzerland is available with a stipend of 3,000 Swiss francs. The stipend does not cover steamship passage and incidental expenses, matriculation and semester fees (amounting to 60 francs) or laboratory fees. A candidate must be an American citizen, a graduate of an approved medical school or the holder of a masters or doctors degree in a science related to the medical field and must have a thorough command of the French language, both written and spoken. Nominations will be welcomed. Applications must be filed before March 15 with the Secretary, Student Bureau Institute of International Education, 2 West Forty-Fifth Street, New York.

Society News—Dr. William Warner Watkins Phoenix, Ariz., has resigned as editor of *Southwestern Medicine* after twelve years' service and has been succeeded by Dr. Orville Harry Brown, Phoenix. At the annual meeting of the American Association of Oral and Plastic Surgeons in Ann Arbor, Mich., January 18-19, officers were elected as follows: Drs. Joseph Eastman Sheehan, New York, president; Gordon B. New, Rochester, Minn., vice president; and Ernest Fulton Risdon, Toronto, Ont., secretary. The program consisted of clinics, demonstrations and papers. Following a dinner at the Michigan Union, Drs. Frederick A. Collier and Albert C. Furstenberg, Ann Arbor, made addresses on "Anatomic Aspects of Infections of the Face" and "Acute Infections of the Neck," respectively. The second day's meeting was held in Detroit, with clinics at Harper Hospital.

Reduction in Death Rates in Diphtheria, 1920-1933—The U. S. Bureau of the Census has made public a summary of the deaths and death rates from diphtheria in the registration area of continental United States for the years 1920 to 1933. In 1920 there were 13,395 deaths from diphtheria and the next year the number rose to 15,683. Thereafter it steadily declined except for a slight rise in 1927, until in 1933 there were 4,937 deaths. The rates per hundred thousand of estimated population follow the same general trend. In 1920 the rate was 15.3 and rose in 1921 to 17.6 falling thereafter except for 1927, to 3.9 in 1933. In 1920 states with the highest rates were Michigan with 23.8, Rhode Island, 21.2, and Pennsylvania, 19.8. By 1933 these had been reduced to 2.3, 1.3 and 2.4, respectively. In 1933 Kentucky had the highest death rate, 16 per hundred thousand, the next highest being West Virginia, with 10.9, Texas, 10.8, and Oklahoma, 10.6. New Hampshire had the lowest rate in 1933, with 0.4. The following states also had rates less than 1: Oregon, Utah, Vermont, Wisconsin and Wyoming.

Medical Bills in Congress—S. 1834, introduced by Senator Walsh, Massachusetts, and H. R. 4990 introduced by Representative Guyer, Kansas, propose to authorize the Reconstruction Finance Corporation to make loans to publicly and privately controlled colleges, universities and other institutions of higher learning. S. 1841, introduced by Senator Tydings, Maryland, proposes to provide medical services after retirement on annuity to former employees of the United States disabled by injuries sustained in the performance of their duties. S. 1850, introduced by Senator Sheppard, Texas, and H. R. 5179, introduced by Representative Buchanan, Texas, propose to amend an act entitled "An Act to recognize the high public service rendered by Major Walter Reed and those associated with him in the discovery of the cause and means of transmission of yellow fever by including Roger P. Ames among those honored by the act." H. R. 5278 introduced by Representative Underwood, Ohio, proposes to establish a Bureau of Veterans' Affairs in the Department of the Treasury, to repeal all exist-

ing laws relating to veterans, with the exception of those relating to insurance, and to enact an entirely new veterans' act. H. R. 5370, introduced by Representative Higgins, Massachusetts, proposes to amend existing law relating to the mailing of articles, information and devices for the prevention of conception or for producing an abortion, etc., by providing a penalty for any one who "shall knowingly cause the same to be delivered by mail according to the direction thereon, or at the place at which it is directed to be delivered by the person to whom it is addressed." H. R. 5495, introduced by Representative Collins, California, proposes to provide for entry on public lands for the purpose of establishing "health habitations." H. R. 5497, introduced by Representative Dunn, Pennsylvania, proposes to provide for the establishment of unemployment, old age and social insurance. The bill would direct the Secretary of Labor to provide for the immediate establishment of social insurance to provide compensation for all workers and farmers who are unable to work because of sickness, old age, maternity, industrial injury, or any other disability. H. R. 5600 introduced by Representative Pierce, Oregon, proposes to authorize the dissemination of information relating to the prevention of conception and articles, instruments, substances, drugs and medicines designed, adapted or intended for the prevention of conception (1) for use by any physician legally licensed to practice medicine in any state, territory or the District of Columbia, or by his direction or prescription (2) for use by any druggist in filling any prescription of a licensed physician (3) for use by any medical college legally chartered under the laws of any state, territory or the District of Columbia or (4) for use by any hospital or clinic or governmental agency chartered under the laws of the United States or licensed under the laws of any state, territory or the District of Columbia. H. R. 5693, introduced by Representative Arnold, Illinois, proposes to erect a veterans' hospital in Illinois.

Government Services

U. S. Public Health Service

Passed Asst. Surg. Walter L. Barnes relieved at Hongkong, China, and assigned at Cebu, P. I.
Passed Asst. Surg. Eddie M. Gordon Jr. relieved at Manila, P. I., and assigned at Hongkong, China.
Passed Asst. Surg. Alfred B. Geyer, relieved at San Francisco and assigned at Manila, P. I.

Positions Open for Pharmacologists

The United States Civil Service Commission announces open competitive examinations for five pharmacologists for various grades of service with the Food and Drug Administration. Entrance salaries range from \$2,600 a year for the assistant grade to \$5,600 a year for the principal grade, subject to deduction not to exceed 5 per cent during the present fiscal year, as a measure of economy, and also to a deduction of 3.5 per cent toward a retirement annuity. Applications must be on file not later than March 11. Full information may be obtained from the civil service board at the postoffice or customhouse in any city that has a postoffice of the first or second class, or from the commission at Washington.

New Pharmacologist in Food and Drug Administration

Dr. Erwin E. Nelson, associate professor of pharmacology, University of Michigan Medical School, Ann Arbor, has been appointed principal pharmacologist in charge of the drug division of the Food and Drug Administration. Dr. Nelson will investigate the pharmacologic action of drug and food preparations and will furnish critical advice on policies involving the effects of drugs and foods, or their ingredients or adulterants on the health of consumers. He will also act as consulting expert on formulating policies for the enforcement of the Food and Drugs Act. Dr. Nelson received the degree of doctor of philosophy from the University of Missouri and a medical degree from the University of Michigan.

CORRECTION

Corpus Luteum Hormone—In a Query and Minor Note entitled "Multiple Miscarriages" in THE JOURNAL, January 26, page 339, the words "estrogenic substance," which are the last two words on the page, should have read "the hormone of the corpus luteum (progesterin)."

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 2, 1935

The Colossal Expenditure on Social Services

An official return, recently published, giving completed figures up to the end of the financial year 1932, shows the enormous strain to which Great Britain is subjected in the effort to ameliorate the conditions of the poorer section of the population. In the year 1931-1932 the expenditure on social services amounted to \$2,450,000,000. This includes sums raised both by taxes and by rates and amounts to well over half the total raised for all purposes in the country. Expenditure on social services has been steadily and rapidly rising in recent years. Even in 1929-1930, when world depression began to make itself felt, the total was \$2,340,000,000. In 1909-1910 it was only \$315,000,000, less than one seventh of the last published figure. Figures for the years subsequent to 1931-1932 are not yet available. During these years there has been some improvement in unemployment, economy measures, necessary after the disastrous expenditure of the socialist government, have been in force, and the automatic decrease in the cost of war pensions has been in progress. But now political pressure has led to the restoring of the cuts, many social services, such as housing and school feeding, are being expanded, the system of poor relief is being revised, and automatic increases are taking place in many services, such as widows' and old age pensions. It therefore seems unlikely that the taxpayer will receive any relief from his tremendous burden. Wealthy persons are taxed to the extent of about half their incomes, and persons with moderate incomes to a less but still an oppressive degree. The defense forces have been reduced to an extent unparalleled in other countries and, in the opinion of experts to a dangerous extent. This was done as an example to other countries in pursuance of a peace and disarmament policy. But the colossal increase of the cost of the social services has supplied another cause. It has not left sufficient money for the defense services. The greater part of the enormous expenditure on the social services is spent on the wage earner. When his child is born he receives a grant, free education is provided for his children and free or cheap food, medical and unemployment benefit and old-age pensions are supplied largely at the expense of the taxpayer. Yet the socialist party continues to clamor for more expenditure and pretends that the dangerous financial crisis produced by its prodigality in 1931 was simply engineered by the capitalist classes. The trouble is that in this time of universal suffrage even the conservative party has to dance to the tune of socialism. The only difference is that it tries to avoid doing it to a dangerous extent. *The Times* points out that only a tremendous effort in 1931 averted a catastrophe from which the poor would have suffered most and that, if the socialist party should be returned to power again, a similar successful effort might not be possible. At the present moment the government is spending large sums on housing and improving the administration of the unemployment dole, which far exceeds any grant to the unemployed made in any other European country. Yet it receives from the labor party leaders nothing but a shower of detraction and abuse. The inevitable hard cases, which can occur under any system, and which every effort is made to avoid, furnish an easy basis for attack and exaggeration by persons with no regard for the dangers and waste attending the distribution of public money.

International Neurological Congress

The second International Neurological Congress will be held in London from July 29 to August 2, under the presidency of Dr. Gordon Holmes. Sir Charles Sherrington was elected

president at the program conference of delegates, held in 1933, but has been compelled to resign because of ill health. At the first morning session Prof. O. Marburg will preside over a discussion on the epilepsies, their etiology, pathology and treatment. The discussion will be continued in the afternoon under the chairmanship of Prof. O. Rossi. Other subjects are the physiology and pathology of the cerebrospinal fluid, under the chairmanship of Prof. O. Foerster, the functions of the frontal lobe, under the chairmanship of Prof. H. Claude, and the hypothalamus and the central representation of the autonomic system, under the chairmanship of Prof. H. Bronwer. The afternoons will be occupied with miscellaneous papers, which will be grouped systematically under various headings as far as practicable. The triennial Hughlings Jackson lecture will be delivered during the congress by Prof. O. Foerster. The secretary of the congress is Dr. S. A. Kinnier Wilson, 14 Harley Street, London, W. 1. All neurologists, neurosurgeons, psychiatrists and any physicians or surgeons interested in neurology may become active members on paying the fee of \$7.50. Applications should be addressed to the secretary or through one of the national committees.

Cancer Research at the London Hospital

At the court of governors of the London Hospital, a report stated that while the committee was reluctant to refer to cancer research, lest false hopes be raised, it was only fair that the governors should be aware of the work that was being carried on in the cancer research laboratories. Dr. Lumsden has been working at the hospital for four years on the lines of evolving a specific body that would damage the cancer. The difficulty has been to discover an agent that would kill the cancer cells but not injure normal cells. Dr. Lumsden has evolved a serum with these properties. It has been obtained by implanting cancerous cells into an animal of a different species and obtaining serum from the blood of that animal. A stage has been reached in which the serum kills cancer cells removed from the human body without damage to normal cells similarly treated. A step further is that it is possible to implant cancer cells from one animal in another of the same species. The serum will kill the cancer so implanted. Further, it raises the resistance of the animals treated so that, the cancer having been cured, it is impossible to infect those animals again with cancer. At present the research workers are engaged in refining the serum and extracting the nonessential elements. But they emphasize that the cancer serum is only in its experimental stage and has not reached a point at which it can be tried on human beings.

Balconies for Babies in Apartment Houses

The Royal Institute of British Architects has issued a memorandum on the importance of including at least a small private balcony in working class and middle class apartment houses, large enough to take a cot for infants up to 2 years. The memorandum was submitted to the minister of health, who suggested its publication. It points out that the baby is essentially an outdoor creature and should start outdoor life to fit it for a partially indoor life. The critical years are from birth to 2 years. Fresh air is one of the first and essential preventives against colds, bronchitis, pneumonia, tuberculosis and rickets. The prevention of rickets is rendered more difficult in apartment houses without balcony accommodations. The balcony enables the mother to be within easy reach of the child and even to see it, while the roof or ground does not fulfill this requirement and the mother is therefore worried. The south is the best aspect, but east or west or even north is nearly as good. Direct sunshine is not essential and is sometimes too strong. High solid balconies are not desirable. Open wrought-iron balconies on a small plinth are the best. Some protection from cats and inclement weather is needed.

PARIS

(From Our Regular Correspondent)

Jan 10, 1935

The Crisis in the Medical Profession of Paris

The city of Paris forms the most important part of the department of the Seine, which has a population of nearly four million. The interests of the medical profession are looked after by an association to which all of the 4,000 physicians belong. In an address delivered Dec 7, 1934, the president of this association stated that the medical profession of the department of the Seine was suffering in an unbelievable manner from the effects of the depression. From day to day receipts decrease while expenses increase. The private hospitals, of which there are a large number in Paris, laboratories of all kinds and physicians in private practice find that they are unable to balance their budgets. Some say that there are too many laboratories and private hospitals, dispensaries and foundations of every variety, which are exempted from taxes and which compete in an unfair manner with the practitioner. A form of medical poverty is developing as the result of too much state and private medical paternalism, which results in forcing many to abandon private practice and accept merely a living wage from the state. The property of six physicians has been sold to pay taxes, and five others, poverty stricken, committed suicide. The medical profession of the smaller cities and countryside is trying its best to encourage its colleagues in Paris to maintain their rights and to insist that state and private efforts to "starve out" the practitioner must be fought with every resource at their command.

At the same meeting at which this presidential address was delivered, Dr Senechal stated that the defective social insurance laws were ruining the moral independence of the medical profession and dragging down to a condition of servitude the physician who tries to continue to carry on private practice.

The Budget of the Public Health Department

The budget for 1935 permits the department of public health of France to spend about 70 million dollars, of which 6 million represents costs of administration. The money in the budget can be divided into four groups. The first includes expenditures above 7 million dollars, such as 20 millions for aid to the aged infirm and incurable, and 15 millions for encouragement of parents to raise large families. The former of these outlays cannot be reduced. Among the second group are included expenditures between 66 thousand dollars and 7 million dollars, which are distributed for such items as aid for orphans for mothers who nurse their offspring, for dependents of soldiers, for maternity cases, for those who cannot pay for medical treatment, for the fight against tuberculosis, for premiums for births, for aid for tuberculous patients and for combating venereal disease. The other two groups include such items as aid to mothers and young children, better housing, vacation camps, physical education, nursing schools, cancer centers and inspection schools.

This list shows how complex is the present-day organization of a department of public health in a state in which many more persons receive government aid than is at present the case in the United States.

Can Finger Prints Be Changed?

Prof L. Ribeiro, director of the bureau of identification at Rio de Janeiro, Brazil, in a paper read before the Paris Academy of Medicine, Dec 18, 1934, reported his observations of changes in finger prints of lepers and those suffering from scleroderma and radiodermatitis. From a medicolegal and police point of view the Bertillon method of identification can still be considered infallible for all individuals except those included in the foregoing group of skin diseases. Ribeiro found

that in 80 per cent of 200 cases of leprosy in both sexes there was more or less change in the papillary design. One can easily understand why this should occur in leprosy patients having involvement of the nerve trunks with ankyloses and secondary atrophies, ulcerations, scar formation or mutilating deformity of the fingers. But such alterations of print design is seen also without any apparent lesion of the hand or fingers in leprosy. Microscopic study of the skin of such patients revealed active lesions with presence of the typical bacilli of leprosy of Hansen. Examination of finger prints of lepers taken several years before at the bureau of identification of Rio de Janeiro failed to show any alteration before the individual was infected. In some cases finger prints which show the typical leprosy changes become normal again after treatment.

Another disease that causes changes in finger print designs is scleroderma. During his visit in Paris, Professor Ribeiro found similar changes in cases of dermatitis due to roentgenographic work in older radiologists. He warns that one must always be on the watch for such changes in finger prints, owing to the fact that there are more than five million lepers in the world.

Blood Groups and Their Clinical Limitation

In a recent symposium before the Society of Comparative Pathology, Kossovitch said that human serum contained antibodies, termed agglutinins with respect to antigenic substances termed agglutinogens, contained in the human red corpuscles. Rode stated that the phenomenon of iso agglutination had enabled the grouping of the blood in human beings. A study of these phenomena of agglutination (iso-agglutination in the same species and hetero agglutination between different species) in wild animals may throw light on the disputed question of species. Anthropoid apes present several blood groups related to the classic ones found in the human being. Other apes show blood groupings that are alike in the same species but are less related to those of man. Domestic mammalia with their many species, all show the phenomenon of iso-agglutination. The studies made of wild animals show that their blood is much more homogeneous than that of man or of the apes. Several species belong to the same blood group. As the result of the cross breeding and acquired variations that have given rise to domestic animals, the blood acquires properties of agglutination which were not present in their savage ancestors. Troisier enumerated the arguments, which show that the blood groupings are inflexible. There are four groups, which ought to be distinguished by letters to avoid confusion. One should speak of groups O, A, B and AB. Group O does not possess any globular agglutinin, whereas group A possesses an agglutinin A, and group B an agglutinin B. Group AB, which is rare contains both agglutinin A and B. The agglutinins (in the serum) ought to be designated by the Greek letters alpha (that of group A) and by beta, the agglutin of group B. Both of these (alpha and beta) agglutinins are found in group O, but they are absent in group AB. Blood groups do not change as the result of physical or pharmacologic influence. Certain patients followed for years retain the same grouping. One of the best arguments in favor of the permanence of groups is that the properties A and B of the red corpuscles are predominant, being subject to the mendelian laws of heredity. There is an average permanence of groups in human beings all over the world. From thirty to a hundred days after transfusion of blood of a donor belonging to a different group into a recipient of another group, one cannot distinguish any longer the red blood corpuscles of the recipient from those of the donor.

Emile-Weil and Lamy had never observed a change from one group to another. The Beth-Vincent method is almost

universally used to determine the group, by ascertaining whether or not the red corpuscles are agglutinated on a slide by two known serums. This method is not at all infallible, because of pseudo-agglutination and the possibility of overlooking true agglutination, which is slight. Such errors occur as the result of low temperatures, the presence of micro organisms and insufficient dilution of the serum. One should use only serums that have been comparatively recently obtained and whose activity has been controlled. One should never be content to employ only two serums but should take three belonging respectively to group A (Moss group 2) group B (Moss group 3) and group O (Moss group 4). By using the serum of the last named group one can verify the activity of the other two groups and thus avoid the most common source of error.

Tzanck believed that transfusion accidents are the result of faulty technic, because the blood groups themselves never change. The slight or less frequently the more serious reactions are not explained by the use of universal donors, of anticoagulants or of various forms of apparatus. In a certain number of cases the only explanation is that of an innate or acquired hypersensibility of the recipient. This is especially true when the blood of the same donor has been previously employed without any reaction. Such exceptions do not invalidate the law of the permanence of blood groups. The Beth-Vincent method still seems to be the best. Pseudo agglutination can be excluded by the Falgairolles kaolin or the Lattes lecithin tests.

Pamisset stated that groups are observed in domestic animals but it has thus far been possible to identify only four groups in horses. Georges Rosenthal was of the opinion that the property of agglutination which is the basis of blood grouping, can present some variations even though this may rarely occur. Vignes maintained that accidents even in the absence of blood grouping are infrequent. His observations are based on a large number of transfusions, without grouping in cases of obstetric hemorrhages and in those seen in the new-born. Servantie found that even though citrated blood had been kept in a refrigerator for eight to twelve weeks there was no change in the blood grouping.

Opening of International Chemical Building in Paris

The opening of the International Chemical Building took place Dec. 2, 1934, in the presence of some of the most distinguished chemists and representatives of the French government. At the time of the celebration of the one hundredth anniversary of the birth of the French chemist Marcelin Berthelot, Oct. 25, 1927, committees were appointed in all countries to raise funds for the construction of a building instead of a monument to commemorate the services of this benefactor of humanity. Nearly a million and a half dollars was contributed, of which nearly \$700,000 is credited to the efforts of foreign members of the profession of chemistry. Great Britain and the United States contributed the major portion of the amount raised outside of France. The object of the construction of the building is to have it serve as an international center for chemists. It does not contain any laboratories but will serve only as a meeting place. In addition to committee rooms there are rooms for conferences large enough to seat 500 persons, a banquet hall with a capacity of 450 and a large auditorium with a seating capacity of 800. The organization includes five sections: reference library, publication, scientific and technical information, economic information and a section for chemical research questions. All branches of chemistry will be represented in the organization of the work of the institution. The committee in charge of the foundation includes representatives of the Institute of France, International Chemical Society and Academy of Medicine.

BERLIN

(From Our Regular Correspondent)

Dec 17, 1934

Vaccination Incisions and Smallpox Immunity

In Germany, the demand that vaccination incisions be shortened and their number reduced gave rise to an order by the federal minister of the interior in April 1934 to the effect that, instead of four incisions under 1 cm in length, only two shallow incisions 3 mm long should be made. But the least annoyance to the person vaccinated is not the only consideration. It is important that the immunity of the population to smallpox be adequately preserved. There are two sets of opposed opinions. According to one opinion, the slightest vaccinal infection produces complete immunity to smallpox. The other opinion is that, within certain limits, the degree of the immunity depends directly on the intensity of the vaccinal infection. Interesting experimental data on this question are obtained if one studies revaccination in a group of people in whom the intensity of the first vaccination is known. Professor Groth, director of the Bavarian Landesimpfanstalt in Munich, and Dr. Münsterer proceeded in this manner. They chose the school children of Munich who must be vaccinated at the age of 12 years so that about ten years intervene between the first vaccination in early childhood and the revaccination at age 12. In 1932 approximately 9,300 school children were examined. In 1933 7,800. Their investigation revealed that with the increasing number of scars from the first vaccination, the reactions from the revaccination of the first vaccinal type decrease, the early reactions increase, and the revaccination index is lowered. The natural conclusion is that the vaccinal immunity—the protection against infection with variola—in the 12 year old children is less, the fewer scars from the first vaccination are present. The investigations revealed plainly how weak the protection was in children who presented only one scar. These investigations brought out also that vaccinal immunity increases with increasing length and greater surface of the scars. The immunity is especially poor in children presenting very small scars, but there are slight or no differences in the degree of immunity afforded by the middle values as to length and surface area. The degree of variolous and vaccinal immunity depends to a greater extent on the number of pustules than on the size of the pustular surface. With a given length of scar or extent of scar surface, a greater vaccinal immunity is obtained the more separate incisions and separate surfaces there are. On the other hand, no relations between distinctness of the first vaccinal scars and the degree of vaccinal immunity could be established. It appeared that shallow incisions just penetrating the surface of the skin induced the same degree of immunity as was induced by the deeper incisions, provided the necessary number of insertions and the required pustular area are preserved.

These observations reveal the incorrectness of the view that the number of the vaccinal incisions does not influence the degree of immunity and that one or two vaccinal pustules have the same immunizing effect as several pustules. The variolous and vaccinal protection is inadequate with a first vaccinal scar and a total scar surface of less than about 4 cc. on the smallpox patient and the revaccinated person. The securing of a reliable smallpox immunity demands at least three vaccinal incisions from 3 to 5 mm long for the first vaccination and from 5 to 8 mm long in revaccinated persons. According to this research, these specifications constitute the lower limit beyond which the infecting vaccinal dosage, measured by the number and length of the incisions, may not be reduced without endangering the immunity of the population against smallpox. Increasing the number of incisions to that formerly required

in Germany (four) would not, to be sure, increase the number of general vaccinal disturbances, nor would it increase the immunity of the population to smallpox. Reduction of the number of incisions to two leads to a decrease of immunity, while it does not lessen the number of untoward symptoms. Reduction of the incisions to one, the authors state, is not to be considered, in spite of the fact that the course of the vaccination would be less severe, for the reason that the immunity conferred would be entirely inadequate.

Stations for the Treatment of Hydrophobia

According to the federal bureau of health, the year 1933 showed a marked increase in the frequency of bites by hydrophobic and suspected animals. In 1933 the number of bite injuries was twice that of 1932 (132 as against 64 in 1932). There were two fatal cases, neither of the patients having received Pasteur treatment. Likewise the number of treatments at the Pasteur stations increased (153 as compared with 97 in 1932). The bite injuries for which treatment was instituted were thus distributed in part: 105 cases (69 per cent) from dogs, thirty cases (20 per cent) from cats and one case each from ruminants and miscellaneous animals. In seven cases the persons concerned were not actually bitten but had come in contact with the saliva of a person who died from hydrophobia and received protective treatment as a precaution. The incidence of bite injuries caused by cats increased by 10 per cent.

In thirty-six animals (25 per cent) the presence of hydrophobia was shown experimentally and in six animals (39 per cent) only clinically. In seventy animals (46 per cent) there was only a suspicion of hydrophobia, and in forty-one the suspicion was afterward proved to be unfounded. Hence, in only 27 per cent of the persons bitten was there any serious danger of infection. In 116 cases the bite affected merely the skin. In eighty-three persons, treatment was instituted during the first four days after the injury. As a rule, the Högyes Phillips method is employed for the protective inoculation, and in one institute the Semple method is used. None of the persons receiving specific treatment contracted hydrophobia, which shows the effectiveness of such treatment when properly applied. No evidence of paralysis or other sequels developed as a result of the inoculations, as was likewise the case in the persons treated the previous year.

BUDAPEST

(From Our Regular Correspondent)

Jan 21, 1935

Regulating the Cosmetic Industry

The Hungarian ministry of commerce has issued an order in regard to the cosmetic industry, defining the sphere of activity of the industry as the care of the beauty of the healthy skin, the glossing over of its defects and the stopping of these defects, with certain restrictions. Cosmeticians must not deal with skin manifestations that point to some disease, for instance, they must not treat rashes, pustules, swellings, herpes, facial paralysis or skin and scalp diseases. They must not perform any intervention consisting of the penetration into or passing through the skin, e. g., removal of superfluous hairs, warts, moles or freckles, they must not use x-ray apparatus, ultraviolet rays or diathermy apparatus. Cosmeticians who were licensed prior to the publication of this law may continue to use their galvanic current sets or their quartz lamps, but exclusively for the removal of superfluous hairs and warts. The enactment emphasizes that barbers and manicures may carry on activity into the sphere of the cosmetic industry only if they obtain a special license. Cosmeticians must not use the doctor's title or any designations pointing to this even if

this title is legally due them. In the offices of cosmeticians, medical consulting rooms must not be maintained.

The Public Health in Hungary

Professor Dr. Cornelius Scholtz, chief of the Hungarian public health department, read a paper at the recent meeting of the Royal Medical Society on the progress made in public health affairs in the years following the war. He said that Hungary's progress is enormous. At present 83 per cent of all childbirths take place with the assistance of well trained midwives. Fifty-four per cent of all midwives take postgraduate studies. Since the war tuberculosis dispensaries have been established even in the most remote places, their number has grown from twenty-five to seventy-three. Nine new venereal disease dispensaries have been opened. The number of hospital beds has increased to 40,000 and outpatient treatment has made considerable progress in consequence of the introduction of the sanitary nursing service. Physicians in abundance are in all parts of the country, there being a decided overproduction of physicians, the detrimental effects of which are already manifesting themselves. The mortality rate has decreased from 23.3 to 15.3 per thousand and the mortality rate of tuberculosis has fallen from 3.2 to 1.9 per thousand.

Restrictions on the Advertising of Ethical Preparations

The new medical practice act forbids advertising to the public of ethical pharmaceutical preparations. Drugs and fine chemicals listed as official drugs must not be advertised in lay journals or on posters or leaflets distributed to the public, they can be advertised only in the professional press. The publication of communications that contain the results of experimentation with a new drug or with a new therapeutic method is regarded as an offense against medical ethics, be it laudatory or critical. Interviews must not be given about the action of new drugs under experimentation for newspapers. Reports on new preparations should be made by the clinic, to wit, only once, at the time of the introduction of the preparation in question, and only in professional journals. Exception may be made in sensational discoveries, in such cases leaders of clinics, when interviewed by the lay press, may give information, but even then without mentioning any individual names.

A Play Based on the Life of Semmelweis

In Vienna, a play has been produced with the title, 'Dr Semmelweis,' from the pen of Hans Refisch. The plot was taken from the life of the immortal physician. The drama deals with his struggles and the misjudgment of him by his colleagues. This drama has been produced only in Vienna, which failed to appreciate Semmelweis, seeing in this benefactor of humanity only a charlatan and driving him away. The play as a literary work is not well done, because it consists of long dialogues and tedious scientific disputes. Nevertheless the audience liked it. The leading literary reviews of western Europe have dealt with it meritoriously.

Prof Vilmos Tauffer

Prof Vilmos (William) Tauffer, a teacher of obstetrics and gynecology at the University of Budapest died in his eighty-third year. Tauffer was the first in Hungary to perform an operation for appendicitis and the first to propagandize social ideas in connection with the problems of maternity. He was the first surgeon anywhere to sew together successfully a severed ureter. During his retirement he prepared the draft of the law on the protection of maternity. Professor Tauffer had rectal cancer. His friends recommended an operation and under persuasion from his family he seemingly consented, but, knowing that his case was hopeless, he put an end to his life with a revolver.

BELGIUM

(From Our Regular Correspondent)

Jan 14, 1935

Regulating the Sale of Drinking Waters

The *Monteur belge* has published the new regulations pertaining to the control of the sale of drinking waters. With a view to preventing, in the interest of public health, various deceptions and adulterations, the government authorities are empowered to control (1) the collection, the treatment the preparation and, in general, all the operations concerned in the exploitation of mineral waters and drinking waters, (2) the manufacture of artificial drinks and artificial ice, and (3) the trade in artificial ice and natural ice.

The importation of the products mentioned may be subjected to conditions to be determined by royal decree.

Unless previous authorization of the government is secured, no one will be permitted to designate a brand of drinking water by the name of the locality whence the water originates nor may any designation formed from such name be employed.

The representatives of the government charged with the enforcement of this law and of the decrees promulgated in this connection shall have at all times, ready access to the sources of supply and to the places of manufacture and sale.

Longevity of Physicians

In *Bruxelles-medical* M. Schachter takes up the subject of the longevity of physicians. Statistics based on necrologic reports concerning eminent physicians show that they are as a class, long lived. Not long ago Maurice Genty pointed out that whereas the average age of members of the Academy of Medicine in 1852 was 58 years in our day the average has increased to 69 years, which appears to indicate that the great physicians derive a profit from their art in the form of prolonged lives.

The author has collected biographic data of 2582 physicians, all of them well known through the medical literature.

Distribution of the 2,582 Physicians According to Age Groups, and the Number and Percentage of Deaths in Age Groups

Age Groups	No. of Deaths in Group	Percentage of Deaths in Group
21-30 years	51	1.97
31-40 years	143	5.53
41-50 years	274	10.61
51-60 years	481	18.62
61-70 years	639	24.63
71-80 years	648	25.44
81-90 years	311	12.04
91 years and above	35	1.35

The table shows the distribution of the 2582 physicians according to age groups, and the number and percentage of deaths in age groups. Adding together the percentage of the age groups comprising the years 60 to 90 a total of 61.84 per cent is obtained, which demonstrates the frank longevity of physicians.

The Oldest Medical Society of Belgium

In celebrating the centenary of the Société royale de médecine of Ghent, the oldest medical society of Belgium, the physicians of Ghent pointed out the vitality of Flemish medicine during the course of the nineteenth century. In a comprehensive address, Mr. Van Cauwenbergh, president of the society, recalled the many changes brought about by science in the art of medicine during the nineteenth century. He then spoke of the modifications brought about by the times, the usages and the mechanical inventions, in the life of the physician particularly the rural physician.

THE FUTURE OF SURGERY

In his address, Professor Leriche of Strasbourg discussed the modern trends and the future of surgery. At the basis of the modern trends of surgery lies the fact that Pasteur's law

and the discipline morganienne, which governed medicine in the nineteenth century, are no longer valid in all parts of the immense domain of pathology. In many cases a disease is neither the result of a microbic invasion nor the manifestation of an anatomic lesion of an organ. It is the clinical eruption, so to speak, of an old modification (scarcely abnormal) of some mechanism of habitual regulation.

Vasomotor disorders—slight peripheral nervous lesions without apparent importance—may disturb the organs. Associated with the ligaments of the knee, for example—which appear to be only a means of holding bones in place—there is an abundance of nerve fibers. Traumatism need only bruise slightly these nerve terminals, and almost immediately there appear rigidity, local increased temperature, functional weakness, muscular atrophy, rarefaction of the bones and articular effusions, all of which have been engendered by the excitations carried to the sensory apparatus of the joints.

Physiology shows how interdependent all the phenomena of life are. In the human organism, reciprocity is the watchword. A given organ does not function properly from the motor point of view unless its humoral surroundings are to its liking, and that in turn depends on the adjacent organs. A disturbance brought about in one organ, even for an instant, may produce in another organ a profound change in the secretory rhythm.

If one will analyze carefully pathologic phenomena from a physiologic point of view one will discover that most pathologic processes are at the start, diseases of the tissues or systemic diseases and not diseases of the organ.

Gastric ulcer and vesicular lithiasis before manifesting themselves clinically have had a long mute stage. It was the disordered function that created gradually the organic disease. A suitable therapy should be able to modify this mute stage.

Surgery of the sympathetic nervous system is not a term covering the technic of a few exceptional operations, it may be applicable to all diseases in which vasomotor phenomena and the disorders of nutrition of the tissues play a predominant part. It has a magnificent future. With its aid one can at least favorably modify most types of Raynaud's disease, most sclerodermias, the hyperhidroses, all the causalgiias (for which there was previously no remedy), angina, and 50 per cent of the cases of asthma. With its help the long sequels of post-traumatic disorders, without fractures, can be suppressed, certain types of arthritis can be cured, the more grave symptoms of facial paralysis can be relieved, certain spasticities can be diminished, the condition of children affected with megacolon can be transformed and the like. From the results secured thus far one may judge of the future.

Surgery of the sympathetic nervous system is destined to become endocrinonervous surgery. It will be utilized in the therapy of diseases of the tissues and of diseases of nutrition. It will open up a new branch—surgery of the connective tissue and the elastic tissue.

Eye Complications, Tryparsamide and Trypanosomiasis

Addressing the Société belge de médecine tropicale, Vandenbranden and Appelmans reported that examination of their statistics of trypanosomiasis cases treated with tryparsamide revealed that about 20 per cent present eye complications, and that these conditions are especially frequent in patients with changed cerebrospinal fluid. The discovery of eye symptoms necessitates the discontinuance of arsenical treatment, as they are due to the fixation of arsenic in a nervous system sensitized by endotoxins resulting from the destruction of trypanosomes. With atoxyl the disorders are more grave with tryparsamide the cessation of treatment checks the eye complications. The visual apparatus should therefore be closely watched during treatment.

MADRID

(From Our Regular Correspondent)

Dec 28, 1934

Second Centennial of the Academy of Medicine

The Academia Nacional de Medicina of Madrid celebrated recently its second centennial. The festivities included several meetings during the medical week and an exhibition of the books of the library, which has, among other books of great importance the *Codex scientiae medicinae* of Avicenna in five large volumes, the *Regiomonte tabule directionum*, printed in 1504, *El uso de los anteojos para todo genero de vistas*, a book written by Daza Valdes, and one by Martin Martinez, and a collection of books written by Hipolito Ruiz on American plants, which for more than three centuries were a source of information for botanists and designers from all over the world.

Dr Ara, professor of anatomy of the Faculty of Medicine of Madrid, spoke on the progress of anatomy, especially in Spain, during the sixteenth to the eighteenth century which was due to the work of Servetus and Vesalius. The eighteenth century was remarkable in its progress, thanks to the devotion of anatomists to dissection, which then was a cult of ambitious workers, who were misunderstood and persecuted by the populace. Workers who wanted to see a dissection paid for an entrance fee to the dissecting room, and the fee was higher if genital organs were to be dissected. The first illustrated anatomy published was that of Juan de Arfe de Villafane. The magnificent anatomic slides made in Spain by Crisostomo Martinez and by Antonio Palomino de Velasco are still considered a prize by the libraries that have them. Palomino used to say that the application of anatomy to painting and sculpture should be moderate, in order to retain the naturalness of the pictures produced. Piquer, Virgili, Gimbernat and Bonells y Lacaba are great figures in the progress of anatomy in Spain at the last quarter of the eighteenth century. The anatomy written by Bonells y Lacaba was published at the closing of the eighteenth century. Ramon y Cajal had a favorable opinion of this anatomy.

Dr Garcia del Real, professor and academician of the Academia Nacional de Medicina, spoke on the foundation of the Colegio de San Carlos, now the school of medicine of Madrid, which was established in the epoch of Gimbernat, a scientist whose renown was as well earned as that of Michael Servetus and Ramon y Cajal. Military surgery had been so badly neglected in Spain during the eighteenth century that foreign surgeons had to be hired during military activities. Fortunately by that time Pedro Virgili took courses in universities in other European countries, returned to Spain and established a college of surgery in Cadiz, another in Barcelona, and later a college in Madrid.

Dr Marañon academician of the Academia Nacional de Medicina and successor of Ramon y Cajal in the Academia de Ciencias delivered a lecture on the medical, political and social conditions of Spain in 1734, at the time of the foundation of the academy. The eighteenth century produced great scientists elsewhere in Europe but few in Spain. Dr Marañon deplored the fact that Spaniards do not devote themselves seriously to science, although they have the ability. He said that the cooperation of scientists rather than the isolated contributions of a few mark the progress of science. That is why scientific associations, meetings and especially reunions are of value for the unfolding of new ideas and the review of old ones. There is a stimulation to present subjects worthy of discussion at meetings, and during the discussions every member endeavors to prove views aiming toward the progress of medicine.

The closing session was presided over by Martinez de Velasco, representing the government, and attended by the ambassadors

of Argentina, Austria, Belgium, Brazil, Chile, Czechoslovakia, Denmark, England, France, Germany, Italy, Mexico, Peru, Portugal, Switzerland, the United States and Venezuela. Dr Mariscal, secretary of the academy, the official speaker, reviewed the evolution of the academy, which helps the government and the city to solve problems of hygiene, medicine, prevention and control of epidemics, expert testimony in medicolegal cases, and many others. The academy also administers donations given to it for scientific or philanthropic purposes, such as the establishment of prizes for special work, of chairs for certain subjects not supported by the income of the municipality, and of scholarships both for the study of medicine in the country and of postgraduate courses abroad, as well as for the establishment of pensions for retired physicians, for widows and for minor orphans of physicians. The speaker recalled that, during the occupation of Madrid by the army of Napoleon, the physicians of the French army requested admission into the academy. Their request was granted and Larrey, Napoleon's physician, read before the academy a paper on the origin of colic in Madrid which was shown to be caused by plumbism, as lead pipes were used to carry the water supply. Larrey's article is still in the files of the academy. When Dr Mariscal ended his speech, two academicians, the youngest among the group presented the ambassadors with the diplomas of honorary academicians conferred on the scientists of their respective countries as follows: Drs Avelino Gutierrez and Bernardo A. Houssay of Buenos Aires, Annes Dias of Rio de Janeiro, Menkeberg of Santiago, Tomas Gutierrez Perrin of Mexico, Honorio Delgado of Lima, Walter Bradford Cannon of Harvard University and Rudolph Matas of New Orleans and Rafael Gonzalez Rincon of Caracas. The ambassadors made speeches acknowledging the honor conferred on their fellow citizens.

In connection with the celebration, two events deserve special mention, the first of which was the unveiling of a memorial plate in the house in which the academy was first established, which at that time was at 19 Montero Street. The plate reads: "This is the house of Dr Jose Ortega Hernandez, where the Academia Medica Matritense was established, Sept 13, 1734. The same academy, which now has the name of Academia Nacional de Medicina in commemoration of the second anniversary of its foundation unveils this memorial plate, Sept 13, 1934." The second event was a controversy in the press between a member of a national scientific center and the members of the academy with regard to the years of existence of the academy. The Academia Nacional de Medicina was established in the eighteenth century by Philip V to obtain aid in solving problems of alimentary hygiene, in the selection of places to found settlements in foreign possessions of Spain, and to solve other problems. Dr Jose Cervera, the first president of the academy, was appointed by the king. Since then the academy has had in its membership the most brilliant intellects in Spain.

Dr Florestan Aguilar

The odontologist Dr Florestan Aguilar of Madrid died recently. He was educated in the United States and on returning home to practice spent his life doing good for others. When Russian dentists were in distress after the revolution, a fund was collected in several countries, especially in the United States, by the League for the Relief of Russian dentists and their families. Dr Aguilar was appointed by the league to distribute that money and he went to Russia to fulfil his duty. He was the dentist to the royal family and was the founder of the University City of Madrid and of the Sociedad Odontologica Española and of the Escuela Nacional de Odontologia. He was an academician of the Academia Nacional de Medicina of Madrid and honorary member of societies of odontology all over the world, and the founder of several dental journals.

Marriages

JOHN STEWART HOWE, Deadwood, S D, to Miss Myra Gerichs Hicks of Dickerson, Md, in Washington, D C, Dec 26, 1934

LELAND POMAINVILLE, Wisconsin Rapids Wis, to Miss Margaret Currier of Port Edwards, at Sauk City, Nov 24, 1934

IRWIN GRIER LINTON, Washington D C to Miss Nancy McMorries Moffatt of Due West, S C, Dec 29, 1934

WILLIAM ALBERT PRIDEAUX JR, Claysville Pa, to Miss Thelma Taring of Aberdeen Md, Oct 31 1934

FLOYD SHOCK FRANKLIN, West Haverstraw, N Y, to Miss Katherine Denovelles of Haverstraw, January 5

ARTHUR CLAYTON SINTON JR to Mrs Virginia Chesterman Wickham both of Richmond, Va January 15

THOMAS PRESTON MCKEE, Saltville, Va, to Miss Rose Clifton of Clarksburg W Va, January 12

GERALD BERNARD HARRIGAN New York, to Miss Dorothy Atkinson, in Harrison, N Y, January 31

HENRY SHIRLEY VILLET, Brooklyn, to Miss Annie Ostrom Alexander, of New York, February 11

RALPH M FISHER, Weston W Va, to Miss Dorothy Mae Johnson of Perry, Iowa, recently

HENRY JOHN ZIMMER, Mishawaka, Ind, to Miss Ruth L Gyg of South Bend, January 16

GLEN V RYAN to Miss Virginia Gayle Wilson, both of Indianapolis Sept 23, 1934

SAM GILMORE SANDERS to Miss Katherine Easley, both of Loudon, Tenn January 17

EDWIN J DE COSTA to Miss Mari Helene Bachrach, both of Chicago January 5

JOHN E DEES to DR MARTA SUSAN COONS, both of Baltimore, January 7

CHARLES E VESTLE to Miss Alma Baskett, both of Holton, Kan, recently

Deaths

John Edwards Summers ☉ Omaha College of Physicians and Surgeons Medical Department of Columbia College, New York, 1881, following graduation he entered the army as acting assistant surgeon and was on duty at frontier posts in Wyoming nearly two years, professor of clinical surgery, University of Nebraska College of Medicine, past president of the Nebraska State Medical Association and the Medical Society of Missouri Valley member and past president of the Western Surgical Association member and in 1916 vice president of the American Surgical Association, fellow and member of the board of governors of the American College of Surgeons, formerly surgeon in chief and senior surgeon to the Clarkson Hospital and for many years chief surgeon to the Douglas County Hospital on the staffs of the Immanuel and Wise Memorial hospitals, author of "Modern Treatment of Wounds", aged 77, died, February 7, of heart disease

Roger Herbert Dennett ☉ New York, Harvard University Medical School Boston, 1902, professor of clinical pediatrics, New York Post-Graduate Medical School, member of the American Academy of Pediatrics, director of the pediatric service and attending pediatrician to the Post-Graduate Hospital, attending pediatrician to the Reconstruction Hospital Unit, consulting pediatrician to the Willard Parker, West Side and Broad Street hospitals, New York the Passaic (N J) General Hospital and the Hackensack (N J) Hospital, trustee to St Lawrence University, Canton aged 58, died, February 3, of heart disease

Alexander Dunbar McKelvey ☉ Toronto Ont Canada University of Toronto Faculty of Medicine 1908, member of the Massachusetts Medical Society American Academy of Ophthalmology and Oto-Laryngology and the New England Otological and Laryngological Society, fellow of the American College of Surgeons, on the staffs of the Wellesley Hospital, St John's Hospital for Women and Toronto East General Hospital aged 49, died, January 6, of heart disease.

Gottlob Augustus Neuffer, Abbeville S C, Medical College of South Carolina, Charleston 1884 member and past president of the South Carolina Medical Association past president of the Abbeville County Medical Society, formerly

member of the state legislature, on the staff of the Abbeville County Memorial Hospital, trustee to his alma mater, aged 73, died, January 2, of coronary thrombosis

Timothy Francis Donovan, Buffalo, Columbia University College of Physicians and Surgeons, New York, 1909, served during the World War, formerly instructor in surgery, University of Buffalo School of Medicine, at various times on the staffs of the City Hospital and the Millard Fillmore Hospital, aged 50, died, January 31, in a hospital at New York, of gastric ulcer and pneumonia

Harold Jolly Beard ☉ Youngstown, Ohio, Kentucky School of Medicine, Louisville, 1901, past president of the Mahoning County Medical Society, member of the American Academy of Ophthalmology and Oto-Laryngology, aged 54, on the staff of the Youngstown Hospital, where he died, January 30, of dilatation of the heart and cerebral hemorrhage

Andrew Watson Goodwin ☉ Raleigh, N C, Bellevue Hospital Medical College, New York, 1887, formerly professor of diseases of the skin and genito-urinary system, University of North Carolina School of Medicine, demonstrator and professor of anatomy, Leonard Medical School, aged 71, died, Dec 15 1934, of endocarditis and influenza

Anthony J Giordano ☉ New York, Fordham University School of Medicine, New York, 1920 member of the American Academy of Ophthalmology and Oto-Laryngology, aged 37, on the staffs of the Sexton Hospital and Columbus Hospital Extension, New York, and St Joseph's Hospital, Yonkers, where he died, January 23, of pneumonia

James Davidson Bozeman, Fort Worth, Texas, University of Alabama School of Medicine, 1910 member of the State Medical Association of Texas served during the World War vice president of the staff and resident to the Arlington Heights Sanitarium, aged 47 died in January of peritonitis as the result of a ruptured appendix

Louisa Teresa Black, Denver, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1895, secretary-treasurer of the Colorado Society of Clinical Pathologists for many years, aged 68, for many years on the staff of the National Jewish Hospital, where she died, January 8, of pulmonary embolus

Charles Edwin Durant ☉ Haverhill, Mass, Harvard University Medical School, Boston, 1885 fellow of the American College of Surgeons, formerly member of the school board for many years on the staff of the General Stephen Henry Gale Hospital, aged 72, died, January 19 of heart disease

Cornelius Thomas Devine, Redondo Beach, Calif, University of California Medical Department, San Francisco, 1907, served during the World War, at one time on the staff of the Providence Hospital and the Highland Hospital, Oakland, aged 54, died, January 21, of angina pectoris

Justin Guy Ballou ☉ Oak Harbor, Ohio, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905, past president of the Ottawa County Medical Society, mayor of Oak Harbor, served during the World War, aged 52, died, January 29, of pneumonia

Alfred Ashton Johnson, New York University and Bellevue Hospital Medical College, New York, 1925, member of the Medical Society of the State of New York, clinical assistant and visiting surgeon to the Bellevue Hospital, aged 32 died, January 21, of heart disease

Heber Olney Tucker ☉ Santa Barbara, Calif, Johns Hopkins University School of Medicine Baltimore, 1929, served during the World War on the staffs of the Cottage Hospital and St Francis Hospital, aged 38, died, Dec 19, 1934, of bronchopneumonia

Marion O Fulcher, Wavnesboro, Ga, University of Georgia Medical Department, Augusta, 1892, member of the Medical Association of Georgia veteran of the Spanish-American War, aged 64, died suddenly, January 16, of carcinoma of the esophagus

George Bowman, Irwin, Pa, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1901 member of the Medical Society of the State of Pennsylvania, aged 60, died, January 24 in the Mercy Hospital, Pittsburgh, of pneumonia

George Moses Davis, Manchester, N H, Dartmouth Medical School Hanover, 1889, member of the New Hampshire Medical Society formerly on the staff of the Sacred Heart Hospital aged 70 died, January 14, of cerebral hemorrhage

George Benson Kelso, Bloomington, Ill, University of Michigan Homeopathic Medical School, Ann Arbor, 1886 member of the Illinois State Medical Society, aged 74, died January 27, in St. Petersburg, Fla, of coronary thrombosis

Henry R Diessner, Waconia, Minn., Hahnemann Medical College and Hospital, Chicago, 1883, formerly member of the state legislature, aged 81, died, January 11, in St Barnabas Hospital, Minneapolis, of arteriosclerosis and heart disease

Frank Abbott Dwight, Filer, Idaho, Jenner Medical College, Chicago, 1897, member of the Idaho State Medical Association, aged 65, died, Dec. 27, 1934, in the Twin Falls (Idaho) General Hospital, of chronic myocarditis and uremia

Truman G Burris, Conway Springs Kan Northwestern Medical College, St Joseph 1893, member of the Kansas Medical Society, aged 64, died, January 10, in a hospital at Wellington, of pulmonary and cerebral emboli

Joseph A Kowalewski, Barling, Ark Kansas City (Mo) College of Medicine and Surgery, 1923 served during the World War, aged 44, died, January 17, as the result of injuries received in an automobile accident

Stanley James Tilghman @ Easton, Md University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1921, aged 36, died, January 14 as the result of an automobile accident.

Edwin Kilyan Dunkel, Jersey City N J Jefferson Medical College of Philadelphia, 1899 aged 70 died Dec 7, 1934 in the New Jersey State Hospital, Greystone Park, of cerebral arteriosclerosis and myocarditis

Frederick Byron Stellwagen, Weehawken N J Albany (N Y) Medical College 1894 aged 68 was killed January 9, in Las Vegas, Nev, when the automobile in which he was driving overturned and burned

Virgil Lynn Pascoe, Newark, Ark., Vanderbilt University School of Medicine, Nashville, Tenn, 1893, member of the Arkansas Medical Society, aged 63, died, January 28, of lobar pneumonia

Wilbur M L Beatty, Centerburg, Ohio, Starling Medical College, Columbus, 1890 aged 73, died, January 30 in the Mount Vernon (Ohio) Hospital-Sanitarium, of cardiovascular-renal disease.

Kenneth Gordon Mowat, Buffalo, University of Buffalo School of Medicine, 1924, on the staff of the Millard Fillmore Hospital, aged 49, was found dead in bed, January 13, of heart disease.

Charles Clifton Tucker @ Blackstone Va., University College of Medicine, Richmond, 1903, on the staff of the Southside Community Hospital, Farmville, aged 59, died, January 28, of arthritis

Clarence Henry Dobson @ Brookline, Mass Hahnemann Medical College and Hospital of Philadelphia, 1897, served during the World War, aged 65, died, February 1, of coronary thrombosis

John Oatley Caldwell, Sharon, Mass Middlesex College of Medicine and Surgery, Cambridge, 1921 member of the Massachusetts Medical Society, aged 49, died, January 19, of pneumonia.

Leigh Maupin, Hodgenville, Ky, Hospital College of Medicine, Louisville, 1897, member of the Kentucky State Medical Association, aged 62, died suddenly, January 12, of heart disease.

Merle K. Scott, Pittsburg, Kan, University Medical College of Kansas City, 1901, member of the Kansas Medical Society, aged 56 died, Dec 10, 1934, of carcinoma of the rectum

William Wallace Kirtz Beasley, Windsor, Ont, Canada, University of Western Ontario Medical School, London 1931, aged 30, died, January 26, as the result of a fall from a train

Clarence Delos Crutcher, Los Angeles University of Nashville (Tenn.) Medical Department, 1886 aged 74, died Dec. 12, 1934, in the Los Angeles County Hospital, of uremia

Walter Brooks Brouner, New York, College of Physicians and Surgeons, Medical Department of Columbia College New York 1891 aged 65, died, January 1, of cardiorenal disease

David Perkins Oldham, Mount Juliet, Tenn. University of Tennessee Medical Department, Nashville 1901 aged 73 died, January 22, of carcinoma of the liver and gallbladder

John Nelson Coolidge, Ottawa, Ont, Canada Harvard University Medical School Boston 1894 member of the Massachusetts Medical Society, aged 68 died, January 8

William Emmett Allen, Harrodsburg Ky Hospital College of Medicine Louisville, 1903 aged 54 died Nov 2 1934 of shock following an operation for intestinal obstruction

Franklin Leeds Leister, Rochester, Minn., American Medical College St Louis, 1897 served during the World War, aged 65, died, January 12 of carcinoma of the throat

William Jacob Baumgartner, Philadelphia, Jefferson Medical College of Philadelphia, 1893, also a pharmacist, aged 64 died Dec 9, 1934, of cerebral hemorrhage

George Henry McGuffin, Cooksville, Ont, Canada, University of Western Ontario Medical School, London 1930 aged 28 was killed Dec 24, 1934, in a train wreck.

Frederick Earl Cole, Denver, Denver and Gross College of Medicine Denver 1908 formerly on the staff of St Anthony's Hospital aged 50 died, January 7, of pneumonia

John Wilson Strother, Graysen, Ky, Miami Medical College Cincinnati 1876, bank president aged 83, died, January 8 in the Stovall Memorial Hospital, of senility

Charles Daniel Toole, Detroit University of Michigan Homeopathic Medical School Ann Arbor 1915, aged 49, died suddenly, Dec. 12, 1934, of heart disease.

Mac Crellous Price Sporman, Manatee, Fla Atlanta College of Physicians and Surgeons, 1913, aged 42 died, January 1, of a self-inflicted bullet wound

Ezekial Z Hurst, Alma, Ga, University of Georgia Medical Department, Augusta, 1917, aged 41, died, January 5, of chronic nephritis and myocarditis

Bayard Knerr, Philadelphia Hahnemann Medical College and Hospital of Philadelphia, 1898, aged 58, died, January 9, of a self-inflicted bullet wound

Chalkley Justice Kille, Moorestown, N J University of Pennsylvania School of Medicine Philadelphia 1878 aged 79 died Dec. 25, 1934, of nephritis

Samuel Patenaude, Lowell Mass University of Vermont College of Medicine, Burlington, 1884, aged 72, died, January 10 of lobar pneumonia

Arthur Irvine McCalla, Calgary, Alta., Canada University of Toronto Faculty of Medicine, 1911, aged 48, died, January 16 of pneumonia

Talbot Jones, Pasadena, Calif Bellevue Hospital Medical College, New York 1878, aged 84, died, Dec 2, 1934, of mitral stenosis and hypertension.

John Peak Sobey, Mentor, Ohio Homeopathic Hospital College, Cleveland, 1877, also a pharmacist, aged 84, died January 9, of pneumonia.

Jacob Gomber, Goodman Wis Wisconsin College of Physicians and Surgeons, Milwaukee, 1905 aged 60, died January 23, of carcinoma

William V Hausherr, Florence, Wis, Michigan College of Medicine and Surgery, Detroit, 1898, aged 63 died January 22, of pneumonia

Marcenos H Cole, Newfane N Y University of Buffalo School of Medicine, 1874, aged 89, died, Nov 30, 1934, of cerebral hemorrhage.

Samuel Ellsworth Ambrose, Rural Valley Pa Baltimore Medical College 1898 aged 70 died, January 4, of myocarditis and chronic nephritis

Charles F Hitchner, Elmer N J Jefferson Medical College of Philadelphia, 1867, aged 90, died, Dec. 15 1934 of coronary thrombosis

Green Alexander Cain, Chicago Meharry Medical College Nashville Tenn., 1893, aged 62 died recently, of intestinal obstruction

Thurman Gillespy, Huntington W Va Jefferson Medical College of Philadelphia, 1907 aged 55, died Nov 21, 1934, of heart disease

Marshall G Smith, Arnold, Md., University of Maryland School of Medicine, Baltimore, 1887, aged 70, died, January 21, of influenza

Albert Henry Kleiser, Orlando Fla, Pulte Medical College, Cincinnati, 1900, aged 75 died, Dec 27, 1934 of hypostatic pneumonia

Guy W Allison, Fort Scott, Kan, Meharry Medical College, Nashville, Tenn, 1908, aged 48, died, Dec. 1, 1934 of septicemia

Hensel Joseph Hodges, Mansfield Ark. Kentucky School of Medicine, Louisville, 1879, aged 84, died, January 18, of carcinoma

William Thompson, Morrisonville, Ill, Missouri Medical College St Louis 1881, aged 76, died recently, of lymphatic leukemia.

J Eugene Baker, Marion, Ohio, Miami Medical College, Cincinnati, 1883 aged 77 died, January 25 of heart disease

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted, on request.

RECENT ADVANCES IN ARTHRITIS

To the Editor—A woman aged 65 appears to have arthritis deformans. She is of slender build and is in good health otherwise, except for a mild mucous colitis for years. The first two joints of the index finger are now deformed and the second joints of the middle fingers have the shooting pains that are the forerunners of the deposits there. I have heard that injections of cevitamic (ascorbic) acid will cure this condition. Have you any information as to this? If so what route, frequency and dosage are recommended? What are the toxic symptoms of overdosage? I understand that Dr. Szent-Györgyi, the director of the Institute of Medical Chemistry Szeged University, Hungary has been working on this problem. What results has been obtained in arthritis deformans treated with this acid? What other treatments are well regarded or have produced cures of this disease? Would you consider thyroid extract favorably as an auxiliary measure? What about diet? (I have no reference books to speak of at hand.) Please omit name and address. M D Washington

ANSWER—Those who do not subscribe to one of the variants of the theory of infection in relation to chronic arthritis generally argue that it is the result of some metabolic derangement or defect in alimentation. The exact nature of this derangement, if such exists, has never been demonstrated. It has been suggested that arthritis is the result of a metabolic disturbance that is related chiefly to carbohydrates or proteins, sulphur or calcium, and so on. Recently (reflecting the trend of medical investigation in general) it has been suggested that a deficiency in vitamin might be the cause of, or at least prepare the soil for, chronic arthritis.

In 1921 McGarrison (Studies in Deficiency Disease) reported the production of atony of the intestine and degeneration of the intestinal mucosa in the colons of monkeys by feeding diets that were high in carbohydrates and that previously had been placed in the autoclave. Rowlands (Rheumatoid Arthritis, Is It a Deficiency Disease? *Proc Roy Soc Med*, Sec. Compar. Med. 20 41 [April] 1927), noting that intestinal atony was a feature in certain cases of arthritis, propounded the question "Is rheumatoid arthritis a deficiency disease?" Fletcher of Toronto has extended this view and is inclined to believe that a lack of vitamin B may be responsible (The Nutritional Factor in Chronic Arthritis, *J Lab & Clin Med* 15 1140 [Aug] 1930).

None of these investigators, however, have conclusively produced experimental arthritis in animals by the use of a diet that was deficient in vitamins. In the absence of particular data, it has become the fashion of some to give arthritic patients diets that are rich in all vitamins, stressing chiefly vitamin B, which is given in yeast and in wheat germ. The intake of carbohydrate is reduced to enhance the utilization of vitamin B.

The chemical nature of vitamin C (cevitamic acid, introduced as ascorbic acid) apparently has been identified as a "hexuronic acid", it is available both in natural and in synthetic forms. This substance is present in the adrenal glands and in certain varieties of paprika (*Capsicum annum*). Szent-Györgyi and his colleagues have kept guinea-pigs, on experimental diets, practically free from scurvy by the administration of the juice of paprikas. They also have noted that cevitamic acid readily disappears from the adrenal glands of animals that are on a vitamin C-free diet (Svirbely, J. L., and Szent-Györgyi, Albert. The Chemical Nature of Vitamin C, *Biochem J* 27 279, 1933. Szent-Györgyi. Die medizinische Bedeutung des Vitamines C, *Deutsche med Wchnschr* 60 556 [April] 1934).

Cevitamic acid is too new to warrant many of the exaggerated therapeutic claims that have been made for it. Investigators have reported striking benefits from its use in pyorrhea (when due to vitamin C deficiency), certain types of hemophilia ("not the hereditary type"), certain forms of hemorrhagic nephritis, the disfiguring discoloration of Addison's disease, and several other diseases. These require further clinical confirmation. Arthritis is not mentioned in the preliminary press reports (*Science News Letter* Sept. 22, 1934, *Time* 24 34 [Sept. 17] 1934).

For current concepts on the diagnosis and treatment of the various types of chronic arthritis, the correspondent is referred to "A Primer on Rheumatism and Chronic Arthritis," which has been prepared by the American Committee for the Control of Rheumatism, published by the American Medical Association. This booklet can be obtained for 15 cents from the offices of the American Medical Association.

TREATMENT OF MISSED ABORTION

To the Editor—A patient aged 20 years, three months pregnant had labor pains because of severe overexertion. I was able to stop them for four or five days with morphine. Then they became severe and the water broke. After that I tried to complete the miscarriage by using quinine and small graduated doses of solution of pituitary but every thing quieted down and now for two weeks there have been no changes. In the face of the ruptured membranes what would be your plan of procedure in this case? Would there be any possibility of the membranes closing up again and holding water? What is the danger to the mother and to the fetus? Please omit name.

M D, Indiana.

ANSWER—Most likely this is a case of missed abortion, that is, the fetus is most likely dead but has not been expelled. One way to verify the death of the fetus is to perform an Aschheim-Zondek or Friedman test. If these tests are negative it is almost certain that the fetus is dead. However, if these tests are positive, it is by no means certain that the fetus is alive, because, if the chorionic villi are normal and active, these biologic tests are nearly always positive. The chorionic tissue often continues to live for a time after the fetus perishes. Of course, clinical evidence of the death of the fetus will be obtained if the uterus fails to grow larger. After death of an ovum the uterus usually diminishes in size and becomes firmer. It is possible for a fetus to continue its existence even after the membranes have ruptured. Occasionally the opening in the membranes is closed over, more liquor amni forms, and the fetus continues to grow to term. More rarely, after the liquor has drained away the fetus continues its development outside the membranes. In such cases deformities may result. In most cases of missed abortion, especially where fetal death is of only a few weeks duration, it is advisable to wait until a spontaneous abortion takes place. Generally the nausea that may have been present ceases and the breasts become smaller. Occasionally disagreeable symptoms arise after fetal death and among them are a foul vaginal discharge, malaise, loss of weight, and slight elevation of temperature. If the patient is upset mentally by the condition it may be best to empty the uterus, provided it is certain that the fetus is dead. Usually a three months pregnancy can be removed by means of a dilation and curettage. Occasionally, however, the cervix is rigid and a vaginal hysterotomy becomes necessary. Frequently bleeding is excessive after a curettage for missed abortion, because the uterine musculature does not contract properly, hence one should be prepared to pack the uterine cavity after the operation. In the present case it is safe to wait, but while waiting to see whether the uterus will continue to soften and grow or become harder and smaller, coitus should be forbidden.

INFECTIVITY OF SYPHILIS

To the Editor—What textbooks I have speak of the man but little of the women as to the time that must elapse to the point where she will not be liable to infect any one with syphilis. I am speaking of cases that have received little or no treatment in women. Textbooks say that a man can be infected and after a period of five years even if untreated may marry and reproduce healthy children and not infect his wife that is probably will not. Textbooks state (which one can see is the truth) that a woman may be infected early in life and if untreated, the disease will lead to abortions or cause the patient to give birth to syphilitic children through her reproductive period in life. Here is the question I wish to ask your opinion on. Is there any period in the life of women who have contracted syphilis and have received no treatment (say like the male after a period of five years) in which she would not infect the male? For example A woman aged 60 was married but separated from her husband and divorced him fourteen years ago owing to his bad habits with other women. They had two children in their early married life who are living and in good health she had no abortions. This woman came under the care of a physician recently suffering from what she thought was rheumatism in the legs the physician suspected tabs and the report from two different laboratories indicated the blood four plus. She could give no history of any primary or secondary symptoms she has lived a clean life which leads one to think that she has been infected from fourteen to twenty years. For example if she had married five years ago and her husband was free from syphilis, could she have infected her husband? Please omit name.

M D, Illinois

ANSWER—The question of the infectivity of syphilis in both the male and the female is still far from conclusively answered. This is especially applicable, of course, to untreated cases. The observations that have been made on the infectivity of the semen have thrown a good deal of question into the so-called five year rule. The problem is even more difficult to evaluate in women, and the question as to just when a woman ceases to be able to infect her sexual partner cannot be categorically answered at this time. None the less, a large body of clinical evidence tends to show that, even after the second year of the untreated disease, infectivity begins to decline quite rapidly and between the fifth and the tenth year syphilis is comparatively seldom transmitted in the ordinary circumstances of life.

The occurrence of fetal infection is hardly an exactly parallel case, for the risks assumed in sexual exposure, even though repeated, can hardly compare with the risk to which the fetus is subjected in its direct contact with the maternal circulation. It is certainly true that the closest students of the question hesitate to name a time at which a woman with untreated syphilis can become pregnant without a significant possibility that she will infect her child.

ALLERGIC CONJUNCTIVITIS

To the Editor—I have been perplexed in the treatment of what I believe to be a case of simple chronic conjunctivitis. The patient is a young adult whose work takes him in and out of doors. His general health is very good. He is not troubled with any intranasal or paranasal disease. He has complained of burning and grittiness of both eyes for the last three years. The condition is usually worse toward evening when there is an associated slight photophobia. There have been some periods when he has had comparative amelioration of the symptoms; this is noted more especially in the summer months. An examination of the eyes reveals some congestion of the conjunctival vessels with occasional strands of fibrin lying low in the sac. The redness is most marked in the palpebral conjunctivitis. At times there is some evidence of actual warmth in the eyelids. He has a small refractive error (slight astigmatism in one eye and slight hypermetropia in both eyes) which is corrected with glasses. The following treatment has been rigorously adhered to during the course of the disease: at first, frequent boric lotion washes later combined with small amounts of zinc sulphate instillations; sodium hydrocarbonate also used later with no better effect. Silver preparations have not been resorted to. Will you kindly suggest further lines of treatment? Please omit my name. M D, New York.

ANSWER—It is possible that the case in question is one of allergic conjunctivitis and it would be well to subject the patient to intradermal tests in the hope of finding the common substances to which he is sensitive. Subsequent withdrawal one by one of these substances, without changing the local therapy, would furnish absolute proof. If this course is not feasible, massage of the anesthetized conjunctiva with a glass rod is suggested. This should be performed from one to three times a week, followed each time by adequate flushing of the conjunctival sac with physiologic solution of sodium chloride or boric acid solution. The persistent use of silver nitrate or any of the colloidal silver salts is to be deprecated. Mild astringents, such as 0.5 per cent zinc sulphate or 2 per cent resorcinol will be found to be of greater value.

PSEUDOMUCINOUS CYSTADENOMA OF OVARY

To the Editor—A woman, aged 30, has a pelvic tumor, diagnosed after considerable study in a university hospital in 1930 as pseudomucinous cystadenoma of the ovary. Previous to this date two laparotomies were performed and tumor masses removed. During the past five years considerable high voltage roentgen therapy has been given. The general nutrition and general physical condition are as good today as in 1930. The lower part of the abdomen and pelvis contains a large tumor mass fixed to the abdominal wall and surrounding structures. What is the prognosis of the case, considering the diagnosis as correct? How much roentgen treatment can be given and at what intervals? Kindly omit name.

M D Wisconsin

ANSWER—Pseudomucinous cystadenoma of the ovary is generally regarded as a benign lesion. The two important complications of this disease are implantation metastasis and malignant degeneration. In most instances the recurrence is benign and represents a direct, local implantation rather than a true metastasis. This complication is reported to occur in from 15 to 67 per cent of cases observed by various authors in the literature. In some cases microscopic examination of recurrences has failed to reveal any epithelial cells but only gelatinous material. The more important but less frequent complication consists of malignant degeneration. Recurrences as late as twenty-one years after operation have been recorded. Hofmeier has observed that the incidence of recurrence after the removal of one ovary is 4.9 per cent, after removal of both ovaries, 1.9 per cent.

The inability to determine from clinical examination whether carcinomatous degeneration has occurred renders it important to irradiate the lesion as if it were carcinoma. It is impossible to state with any degree of accuracy the prognosis in this case. Much would depend on whether the present mass represents an unremoved portion of the original growth or an entirely new growth. In the latter instance the prognosis would be much more serious than in the former. It is also impossible to outline the course of roentgen therapy without a knowledge of the response or lack of response to previous treatment, nor is it possible to state what dosage can be given without a knowledge of all the detailed factors of the previous irradiation. In general it is advisable to administer the radiation in divided daily doses to the extent that the condition of the skin will permit.

TRAUMA SYPHILIS AND OPTIC ATROPHY

To the Editor—A Negro aged 23, was hit on the left temporal region and over the left eye and also on the occipital regions of the head with a gun during a holdup. He was unconscious, his left eye swelled up and closed completely and the left supra-orbital region was lacerated. He was removed to a hospital where he remained for ten days. Roentgen examination revealed a questionable fracture of the left parietal area. The left eye remained swollen for two or three weeks and then loss of vision set in. The ophthalmologist said that there was an injury to the optic nerve. For several months, previous to the trauma the patient was receiving arsenphenamine therapy for syphilis. His Wassermann reaction was 4+. His vision before the accident was good because he had passed his vision test for a chauffeur's license. Is the loss of vision a result of the trauma per se? Is it the result of the syphilitic condition per se? Could the trauma have activated a latent or dormant syphilis of the optic nerve? Would the patient have lost his vision on account of the syphilis had not the trauma supervened at this time? In toto did the trauma or the preexisting disease, namely syphilis, cause the loss of vision? Please mention references. Kindly omit name.

M D New York

ANSWER—This case is not described fully enough to permit of an absolute answer. Knowledge of the condition of the optic nerves and the visual fields is essential. Judging from the description, it is most probable that the skull fracture involved either the orbit or the margins of the optic foramen and that as a result of that fracture there was a hemorrhage into the orbit, probably within the sheaths of the optic nerve, with resultant pressure and atrophy of the nerve. It is unlikely that a primary optic atrophy, due to syphilis, could be initiated by the trauma, although interstitial keratitis of syphilitic origin may be instituted by trauma. Much can be found on this subject in "Injuries of the Eye," second edition, by Würdemann, and the Kurzes Handbuch der Ophthalmologie, volume 4, by Cramer.

EPHEDRINE IN DYSPNEA

To the Editor—I am interested in the employment of ephedrine intramuscularly in the treatment of allergic paroxysmal dyspnea. Suppose that a physician wished to use one-fourth grain (0.016 Gm.) of ephedrine hydrochloride. I wish to know: 1. What is the effective dose? 2. Can it be used safely after epinephrine? 3. Suppose that the patient is a child aged 4 years with a severe asthmatic attack and one to which one is planning to give epinephrine chloride from 4 to 6 minims: what amount of the ephedrine given intramuscularly would be an equivalent therapeutically? I am aware that the hyporemic dose is stated to be one-sixth grain (0.01 Gm.) in Gutman. R F CRITTENDEN, M D, Los Angeles.

ANSWER—1. The effective dose depends on the age of the patient and the severity of the paroxysm just as the dose of epinephrine must vary. An average dose of ephedrine hydrochloride intramuscularly will range from 0.01 to 0.03 Gm. (one-sixth to one-half grain). Dosage and repetition of dosage will depend on the effect on the asthmatic attack and on the occurrence of any of the usual, well known untoward reactions on the part of the patient.

2. It may be used after epinephrine but it is not advisable because the bad effects will be prolonged. Furthermore, there would be no necessity for administering ephedrine when the favorable effect of epinephrine has been secured.

3. There is no ephedrine equivalent to epinephrine in time of response. The dose of ephedrine comparable with the dose of epinephrine stated would be about 0.016 Gm. (one-fourth grain) therapeutically and about 0.02 Gm. (one-third grain) posologically.

It must be remembered that from 25 to 30 per cent of individuals are unable to tolerate ephedrine. If treatment with ephedrine is desired, it is best to mix epinephrine solution 1:1000 and ephedrine 3 per cent solution in the proportion of 1:2 and give this mixture in the usual epinephrine dosage. There is a decided disadvantage in giving ephedrine when epinephrine is subsequently found necessary because the synergistic effect that may occur even several hours later may cause severe headaches and other disagreeable reactions in a large percentage of individuals.

TACHYCARDIA—FUNCTIONAL APPRAISAL OF HEART

To the Editor—1. What is the significance of paroxysmal tachycardia occurring in a man, aged 34, without other evidence of heart disease and in general good health? 2. What is the value of Tjörsteds's cardiac efficiency factor (pulse pressure/systolic pressure)? Does a coefficient above 40 indicate a worse prognosis than one below 20? 3. For practical purposes, what tests will give the most accurate information concerning the functional capacity of the heart?

C F BARBER, M D, Felicity, Ohio

ANSWER—1. Paroxysmal tachycardia in a man of 34, without other evidence of heart disease almost always is a benign although occasionally a troublesome arrhythmia. There is no known cause for it, although it is regarded as neurogenic.

The prognosis for life is excellent. When attacks occur rarely, no treatment is indicated. When the attacks are frequent, constant digitalization, or the constant administration of 0.2 Gm (3 grains) of quinine sulphate, three times daily, may be helpful.

2 It is not established that any of these methods of calculation are of much help in prognosis.

3 There are no practical tests of the functional capacity of the heart that are as good as the ordinary appraisal obtained by an intelligent history and careful physical examination.

ALIMENTARY GLYCOSURIA OR DIABETES

To the Editor—The other evening just by chance I happened to examine my own urine. I found that the Benedict's solution turned green (test for sugar). This specimen was passed about one hour after my evening meal which consisted of two slices of pork chops two buttered potatoes one tomato (sugar on it for sweetening) three slices of rye bread two patties of butter one cup of coffee (with two teaspoonfuls of sugar) and eleven canned cherries with the syrup. Two hours after the meal I tested the urine again but there was no change in the Benedict's solution. It remained blue. Nevertheless I got rather scared at finding this sugar in the first specimen. On the following evening I cut down on the carbohydrates somewhat but there was still a faint green color with Benedict's solution. Could this be a case of alimentary glycosuria? I have noticed a moderate degree of polyuria lately likewise a polydipsia. My mother who is 68 years old has some sugar in the urine. What should I do to rule out diabetes in my own case? In what way can alimentary glycosuria be differentiated from diabetic glycosuria? Two hours after my evening meal I do not find a change in the Benedict's solution i. e. it stays blue. Physicians are advised to test urines within two hours after a hearty meal. In this case how can one differentiate an alimentary from a diabetic glycosuria? M D Pennsylvania

ANSWER—So called alimentary glycosuria cannot be distinguished from mild or early diabetes mellitus and, indeed may occur in moderate diabetes when the kidney threshold for sugar is raised. However, before deciding that this is really an 'alimentary glycosuria' one should identify the reducing substance that appears in the urine as dextrose (fermentable sugar). One should also determine the blood sugar both in the fasting state and after food, in order to rule out the possibility of a lowered kidney threshold for sugar (renal diabetes). When the renal threshold is only moderately lowered glycosuria may occur only after meals and thus simulate an alimentary glycosuria. The fact that the correspondent has recently noticed moderate degrees of polyuria and polydipsia, and the fact that the mother exhibits glycosuria, both favor the diagnosis of diabetes mellitus.

READING MATERIAL IN PSYCHONEUROSES

To the Editor—I have had occasion to treat several cases of psychoneurosis. I have often felt that recommending some reading material in certain of these cases might help considerably from the standpoint of psychotherapy—from the standpoint of helping these patients gain some insight into their mental maladjustments. In 'The Treatment of Psychoneurosis in General Practice' (THE JOURNAL Oct 13 1934) Dr Lauren H. Smith of Philadelphia speaks of the study and reading a patient does in connection with special written material on mental hygiene. Would you please send me some suitable references? M D New York.

ANSWER—What the patient reads and studies in relation to acquiring more knowledge about mental hygiene or in relation to working out personal problems is not as important as the way in which he studies and what help he has in getting some understanding about the reading. There are countless numbers of books and articles many of which are good, some of which are bad but few of which do not contain some material of value. The following books are a few that have been used with different patients. They are not all suitable for all personalities and one must be familiar with each book to know how adequate or safe it is for any one patient. They are books however which can be recommended unquestionably and which are used constantly.

Discovering Ourselves by Strecker and Appel published by the Macmillan Company

Just Nerves and Intelligent Living by Austen Fox Riggs.

Outwitting our Nerves by Dr Josephine Jackson

Other books that can be used in part or in whole, depending upon the patient, are

The Wholesome Personality by Dr William Burnham

Understanding Human Nature by Dr Felix Adler

Fear by Dr John Rathbone Oliver

What Men Live By by Dr Richard Cabot

How to Be Happy Though Human and Nervous Breakdown by Dr W. Beran Wolfe

Isolated reading without discussion with the patient as to the relation of the reading to personal problems, or without certain interpretations can confuse instead of help a patient.

ALOPECIA AREATA—DERMATITIS FROM DEODORANTS

To the Editor—I A farmer, aged 37 whose general health is excellent and whose past history is essentially negative shaves himself. One month ago he noticed a small area the size of a dime (18 mm. in diameter) located just to the left of the midline on the lower jaw that was hair free. This area has increased in size and now is the size of a quarter (24 mm in diameter). The area is smooth surrounded by normal beard growth. The change is abrupt. The bearded portion next to the bare area is perfectly normal. Apparently the roots of the beard are gone. 2 Are either Deodo or Odorono capable of producing a dermatitis? Please omit name M D, New York.

ANSWER—1 The appearance of a smooth area, devoid of inflammation, in which the hair is absent and the patch is surrounded by a normal hair growth, is the picture seen in that type of hair loss known as alopecia areata.

2 Deodo and Odorono are both capable of producing a dermatitis or folliculitis of varying degree in individuals with sensitive skins. The reaction is most probably due to the aluminum salts contained in these preparations.

SEXUAL INTERCOURSE TO FREE VESICLES OF GONOCOCCI

To the Editor—What truth is there to the following statement: In the declining stages of gonorrhea sexual intercourse (with the use of a condom to prevent transmission of the disease) is not only harmless but of some value in that it empties the seminal vesicles and prostate gland very much like a rectal massage does. Please omit name and address. M D California

ANSWER—The general consensus among urologists seems to be that gentle massage of the prostate and seminal vesicles is preferable to sexual intercourse during the declining stages of a gonorrheal urethritis. The possibility is always present that the patient may still harbor gonococci and that the condom may break with resultant infection of the partner. Therefore it is much better to massage these patients than to recommend sexual intercourse.

BASEBALL FINGER

To the Editor—A young woman has a 'baseball finger' with the usual drop or flexion of the distal portion. What can be done to remedy this some four weeks after injury? Please omit name. M D Washington

ANSWER—Four weeks is a long period. The simplest and best treatment is immobilization in the overcorrected position—that is hyperextension of the distal phalanx of the affected digit. This can be accomplished by plaster of paris, a wood splint or preferably a splint like one described by Dr Lewin in THE JOURNAL Oct 3 1925 page 1059, and June 30, 1928, page 2102. This splint is made of aluminum, is light, is easily adjusted, is permeable to x rays, can be immersed in water and is inexpensive. The pattern of the finger is made and sent to the brace maker, who molds and fits the splint.

NO FOOT AND MOUTH DISEASE IN UNITED STATES

To the Editor—In Queries and Minor Notes in THE JOURNAL, January 19 page 239 in the reply to M D Alabama concerning a boy affected with a throat and mouth trouble the statement is made that the association with cows and goats or the use of milk butter or cheese from sources where foot and mouth disease is present might aid in the diagnosis. The fault of this statement lies in the fact that foot and mouth disease does not exist in the United States and it could not exist in Alabama or elsewhere in this country without bringing great headlines in the newspapers and an army of disease fighters to the scene without an hour's delay. Foot and mouth disease is one of those sweeping animal plagues that leave no doubt of their presence. Foot and mouth disease has broken out in the United States several times during the last fifty years but each time it was promptly stamped out. The vigil against it is constant. In view of the wide foreign circulation of THE JOURNAL, this remark by one so highly rated in the medical profession does an injustice to the veterinary service of the United States and can do incalculable harm to our struggling live stock industry. It implies that this grave plague exists among the domestic animals of the United States notwithstanding official declarations to the contrary.

L A MERILLAT D V M Chicago

PTOSIS OF EYELIDS

To the Editor—In Queries and Minor Notes in THE JOURNAL Dec 22 1934 the item entitled Ptoxis of Upper Eyelids interested me as from August to December 1928 I was a victim of ptoxis of the upper right eyelid. A complete examination by several specialists proved negative. Ten days after I discontinued cigaret smoking the ptoxis cleared up and I have never had any trouble since. Needless to say I have not smoked since. Please omit name and state. M D

Medical Examinations and Licensure

COMING EXAMINATIONS

ALASKA Juneau, March 5 Sec, Dr W W Council Juneau

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *W'ritten (Group B candidates)* The examination will be held in various cities throughout the country April 29 *Oral (Group A and Group B candidates)* New York, June 10 Sec Dr C. Guy Lane 416 Marlborough St Boston

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *W'ritten (Group B candidates)* The examination will be held in various cities of the United States and Canada March 23 *Final oral and clinical examination (Group A and Group B candidates)* Atlantic City N J June 10-11 Sec. Dr Paul Titus 1015 Highland Bldg Pittsburgh

AMERICAN BOARD OF OPHTHALMOLOGY Philadelphia June 8 and New York June 10 *Application must be filed at least sixty days prior to date of examination* Sec, Dr William H Wilder 122 S Michigan Blvd Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY New York June 8 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha

AMERICAN BOARD OF PEDIATRICS Atlantic City N J June 10 and St Louis Nov 19 Sec, Dr C A Aldrich 723 Elm St Winnetka Ill

ARIZONA *Basic Science* March 19 Sec Dr Robert L Nugent Science Hall University of Arizona Tucson *Medical* Phoenix April 23 Sec. Dr J H Patterson, 826 Security Bldg Phoenix

CALIFORNIA *Reciprocity* Los Angeles March 13 Sec Dr Charles B Pinkham 420 State Office Building Sacramento

COLORADO Denver April 3 Sec. Dr Wm Whitridge Williams 472 State Office Bldg Denver

CONNECTICUT *Regular* Hartford March 12 13 *Endorsement* Hartford, March 26 Sec. Dr Thomas P Murdock 147 W Main St, Menden *Homopathic* March 12 Sec, Dr J H Evans 1488 Chapel St New Haven

IDaho Boise April 2 Commissioner of Law Enforcement Hon Emmitt Pfost 203 State House Boise

ILLINOIS Chicago April 9 11 Superintendent of Registration Department of Registration and Education Mr Eugene R Schwartz Springfield.

MAINE Portland, March 12 13 Sec Board of Registration of Medicine Dr Adam P Leighton Jr 192 State St Portland

MASSACHUSETTS Boston March 12 14 Sec Board of Registration in Medicine, Dr Stephen Rushmore 144 State House Boston

MINNESOTA *Basic Science* Minneapolis April 23 Sec. Dr J Charnley McKinley 126 Millard Hall University of Minnesota Minneapolis

MONTANA Helena April 2 Sec Dr S A Cooney 7 W 6th Ave Helena

NATIONAL BOARD OF MEDICAL EXAMINERS The examination will be held in all centers where there are Class A medical schools and five or more candidates desiring to take the examination June 24-26 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia

NEW HAMPSHIRE Concord March 14-15 Sec Board of Registration in Medicine Dr Charles Duncan State House Concord

NEW MEXICO Santa Fe, April 8 9 Sec Dr P G Cornish Jr 221 W Central Ave Albuquerque.

OKLAHOMA Oklahoma City March 12 13 Sec Dr J M Byrum Mammoth Bldg., Shawnee

PUERTO RICO San Juan March 5 Act Sec Dr Ramón M Suarez Box 536, San Juan

RHODE ISLAND Providence, April 4 5 Dir Public Health Commission Dr Lester A Round 319 State Office Bldg Providence

WEST VIRGINIA Charleston March 18 State Health Commissioner Dr Arthur E McClue Charleston

WISCONSIN *Basic Science* Madison March 16 Sec Prof Robert N Bauer, 3414 W Wisconsin Ave Milwaukee

California July Examination at Los Angeles

Dr Charles B Pinkham, secretary, California State Board of Medical Examiners, reports the written examination held at Los Angeles, July 24-26, 1934 The examination covered 9 subjects and included 90 questions An average of 75 per cent was required to pass Ninety-four candidates were examined, 89 of whom passed and 5 failed The following schools were represented

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists	801 80.3 80.4 80.9 81.2 82.6 82.8 83 83.3 83.3 83.6 84 84 84 84.9 84.9 85.3 85.8 85.8 86.3 86.9 86.9 87.1 87.1 87.3 87.4 88.1 88.3 88.7 88.8 88.9 89.2 89.9 90.1 90.6 91.7	(1934)	80
Stanford University School of Medicine	86.4 88.6 88.9 89.7	(1934)	84.3
University of California Medical School	86.2 86.6 89.7	(1934)	81.9
University of Southern California School of Medicine	75.2 75.2 78.6 80.3 80.6 82.3 82.9 83.2 83.6 84 84 84.1 85.3 85.3 85.4 85.7 86.6 86.8 87.2 87.7 87.8	(1934)	75.1
George Washington University School of Medicine	(1933) 80.8	(1932)	86.9
Rush Medical College	(1934) 81.7, 85 90 92	(1928)	77.8
State University of Iowa College of Medicine	(1933)	(1933)	90.8
Johns Hopkins University School of Medicine	(1933)	(1933)	81.2
Harvard University Medical School	(1933)	(1933)	84
University of Michigan Medical School	(1933) 81.8	(1934)	86.1
St Louis University School of Medicine	(1933)	(1933)	93.8
Washington University School of Medicine	(1933) 80.6	(1934)	87.4
University of Nebraska College of Medicine	(1931)	(1931)	84.4
Cornell University Medical College	(1933)	(1933)	83

School	FAILED	Year Grad	Per Cent
University of Pennsylvania School of Medicine	(1933)	(1933)	83.3
Woman's Medical College of Pennsylvania	(1933)	(1933)	86.9
Medical College of Virginia	(1920)	(1920)	86
University of Toronto Faculty of Medicine	(1933)	(1933)	88.2
American Medical Missionary College Chicago	(1902)	(1902)	60.2
Bennett College of Eclectic Med and Surg., Chicago	(1915)	(1915)	68.7
Johann Wolfgang Goethe-Universität Medizinische Fakultät Frankfurt am Main Prussia Germany	(1926)*	(1926)*	61.9
Universität Leipzig Medizinische Fakultät Saxony Germany	(1908)*	(1908)*	62.8
Regio Università degli Studi di Modena Facoltà di Medicina e Chirurgia Italy	(1932)*	(1932)*	57.3
* Verification of graduation in process			

California July Examination at San Francisco

Dr Charles B Pinkham, secretary, California State Board of Medical Examiners, reports the written examination held at San Francisco, July 10-12, 1934 The examination covered 9 subjects and included 90 questions An average of 75 per cent was required to pass One hundred and twenty-three candidates were examined, 118 of whom passed and 5 failed The following schools were represented

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists	812 83.9 84.8 85 85.8 85.8 85.9 86.9 87, 87.1 89.7 90.4	(1934)	78.9
Stanford University School of Medicine	82.9 (1934) 76 77.8 78.4 79.9 81.4 82.4 82.4 82.7 82.7 82.8 83.1 83.4 83.9 84.6 85.1 85.2 85.2 85.6 85.8 86.3 86.3 87.1 87.2 88.1 88.4 90.1 90.3	(1933)	82.2
University of California Medical School	(1934) 78.2 79 79.4 79.8 80.1 80.2 80.8 81.7 81.8 82.2 82.6 82.8 82.9 83 83.1 83.7 83.7 84 84.6 84.8 84.9 85 85.1 85.1 85.6 85.6 85.7 85.8 85.9 86 86.2 87 87 87.1 87.4 88 88.1 89.6 90.3 90.9	(1933)	76.6
University of Southern California School of Medicine	(1934)	(1934)	82.3
Loyola University School of Medicine	(1934)	(1934)	84.9
Northwestern University Medical School	(1934)	(1934)	75.4
Rush Medical College	(1934)	(1934)	85.1
University of Illinois College of Medicine	(1934)	(1934)	77.8
Indiana University School of Medicine	(1932)	(1932)	79.1
Harvard University Medical School	(1932)	(1932)	83.6
University of Michigan Medical School	(1931) 75.4	(1932)	86.6
St Louis University School of Medicine	(1933)	(1933)	77.3
Creighton University School of Medicine	(1934)	(1934)	75.3
University of Nebraska College of Medicine	(1933)	(1933)	78.4
Cornell University Medical College	(1932)	(1932)	85.2
University of Rochester School of Medicine	(1933)	(1933)	78.8
University of Oklahoma School of Medicine	(1933)	(1933)	84.4
Jefferson Medical College of Philadelphia	(1933)	(1933)	83.4
University of Pennsylvania School of Medicine	(1933)	(1933)	83.4
McGill University Faculty of Medicine	(1933)	(1933)	85.7
Hamburgische Universität Medizinische Fakultät Hamburg Germany	(1922)*	(1922)*	87.8
* Verification of graduation in process			

West Virginia October Report

Dr Arthur E McClue state health commissioner, reports the oral, written and practical examination held in Martinsburg Oct 29-31, 1934 The examination covered 11 subjects and included 110 questions An average of 80 per cent was required to pass Six candidates were examined, all of whom passed Eleven physicians were licensed by reciprocity The following schools were represented

School	PASSED	Year Grad	Per Cent
Georgetown University School of Medicine	(1933)	(1933)	70.3
University of Oklahoma School of Medicine	(1933)	(1933)	68.7
Hahnemann Medical College and Hosp of Philadelphia	(1902)	(1902)	66
Universität Heidelberg Medizinische Fakultät Baden Germany	(1933)*	(1933)*	68.6
University of Moscow Faculty of Medicine	(1919)*	(1919)*	21.1
* Verification of graduation in process			

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Louisville School of Medicine	(1933)	(1933)	Kentucky
Johns Hopkins University School of Medicine	(1929)	(1929)	Maryland
University of Maryland School of Medicine	(1910)	(1910)	Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons	(1930)	(1930)	Maryland
University of Michigan Medical School	(1933)	(1933)	Michigan
Vanderbilt University School of Medicine	(1932)	(1932)	Tennessee
Medical College of Virginia	(1924) (1932)	(1933) 2	Virginia
University of Toronto Faculty of Medicine	(1926)	(1926)	Minnesota

Book Notices

Amebiasis and Amebic Dysentery By Charles F. Craig, M.D., M.A., F.A.C.P., Professor of Tropical Medicine and Head of the Department of Tropical Medicine, School of Medicine, Tulane University of Louisiana, New Orleans, La. Price \$5. Pp. 315 with 54 illustrations. Springfield, Ill. & Baltimore: Charles C. Thomas, 1934.

This timely monograph was written to help the physician in the diagnosis, prophylaxis and treatment of amebiasis, which, although not so understood by every one, includes amebic dysentery. The first chapters deal with the historical aspects of the disease and with its geographic distribution. The disease is world wide and, in the United States, its incidence is from 5 to 10 per cent. Included is a discussion of the organism *Endamoeba histolytica*, and Craig clearly points out the importance of the typical sluglike, directional movement of fresh trophozoites. Tables of surveys are listed to demonstrate certain epidemiologic aspects of amebiasis. However, since most surveys are of the sick, or at best of institutionalized subjects, there may be a reasonable doubt as to their application to the general population. Craig believes that the chief method of transmission is by food handlers, although he recognizes other methods as having been demonstrated. The pathology is treated in two chapters, and evidence is offered that carriers always have lesions due to cytotoxicity and necrosis of superficial epithelium, which is constantly taking place. He does not accept Koford's conclusions that joints are invaded in arthritis or lymph nodes in Hodgkin's disease. Symptomatology is thoroughly covered in relation to the healthy carrier, the carrier who is considered healthy but has very mild symptoms, and the patient who has recurrent attacks, and in relation also to acute and chronic amebiasis, with and without various complications and with and without sequelae. Methods of diagnosis receive adequate treatment in two chapters that deal with clinical examinations and laboratory methods, including smears, stains and cultures, and complement fixation tests, the last he recognizes as still experimental. Prognosis, prophylaxis and treatment are covered in the last chapters with the admonition that there is no single drug and no single method that can be effective in all cases. In general, he favors emetine for the acute condition, followed by chiniofon and for carriers chiniofon alone. The book is handsomely illustrated and the style is that of an experienced teacher, direct and forceful. Craig's position in this country in the field of amebiasis is unchallenged and this monograph is a worthy climax to his thirty years of experience in this work.

Radium and Cancer. A Monograph By H. S. Souttar, D.M., M.Ch., F.R.C.S., Surgeon, London Hospital. Cloth. Price 21/- Pp. 387 with illustrations. London: William Heinemann Ltd. 1934.

In his introduction the author points out the difficulties encountered in the radium treatment of cancer and adds that "the success obtained is due to the clinical instinct of the surgeon in each case, to his wide experience and the incommunicable way in which he applies that experience to the problem which each case presents." He could not have stated the problem more clearly and forcibly. Unfortunately, it is not yet recognized that the execution of a correct irradiation is not a simple technical procedure or a prescription to be filled by a technician under the general direction of a clinician not familiar with the principles of radiotherapy. Actually the problem is so complex that there is no field in medicine in which the clinical instinct and skill of the clinician are more important in the result than in the radiotherapy of cancer.

Recognizing the difficulties that beset the surgeon as regards the physics of radiation and the difficulties encountered by the physicist in comprehending the associated pathologic and clinical problems, the monograph is presented in an effort to unite the physical properties of radium with the clinical application of this agent to certain forms of cancer. The first nine chapters deal with the physics of radiation. These are followed by chapters on biologic effects, measurement of dose, and technique of radium application. The last eight chapters discuss the treatment of cancers of the skin, mouth, breast, esophagus, rectum, bladder, prostate and cervix. The physics of radiation is presented accurately, concisely and clearly. The selection of the material has been well made and this portion of the

monograph constitutes an excellent presentation of the subject for clinicians especially interested in the uses of radium. The chapters dealing with the construction of various types of radium applicators and radium beam therapy are of interest and practical value.

In discussing the general principles of radiotherapy the author believes that gamma rays of radium present a very definite advantage over x-rays since, owing to their shorter wavelength, they have proportionately greater penetration. It is easier to maintain a uniform field in deep seated lesions with radium than with x-rays, and although the use of greater distances with x-rays permits the delivery of a larger proportion of the energy in the depth, the use of such volumes presents important disadvantages. Thus there is general agreement that x-rays produce more constitutional disturbance than do gamma rays of equal adequacy, probably because of the more complete absorption which x-rays undergo in the tissues.

The latter part of the book, dealing concisely with the radium treatment of certain forms of cancer, contains much useful and practical clinical information. It is interesting to note that the author prefers the use of radon seeds to removable platinum needles in the treatment of carcinoma of the breast although he is impressed by the technique and results of Kevnes. It is difficult to visualize an accurate placement of 100 or 150 radon seeds throughout a breast. In this respect the author is not supported by the principles of filtration and uniformity of distribution or by the comparative results of the two methods in the hands of various workers. On account of the dangers involved and poor results obtained, the author's use of radon seeds in the treatment of carcinoma of the esophagus is generally not acceptable.

On the whole, the author is to be congratulated on his achievement of presenting in clear and concise form an interesting treatise on the physics of radium and its clinical application in the treatment of certain forms of cancer. The book can be recommended to all physicians who have a special interest in the radiotherapy and especially radium therapy of cancer.

Anaesthesia and Analgesia in Labour By Katharine G. Lloyd Williams, M.D., B.S., Honorary Anaesthetist to the Royal Free Hospital, including the Obstetrical and Gynaecological Unit. With a foreword by Dame Louise McIlroy, D.B.E., D.Sc., M.D., Professor of Obstetrics and Gynaecology, London (Royal Free Hospital) School of Medicine for Women. Fabrikoid. Price \$2. Pp. 96 with 12 illustrations. Baltimore: William Wood & Company, 1934.

This book describes the administration of drugs and anesthetics commonly used in England not only in hospitals by trained anesthetists but also in homes by general practitioners. The author emphasizes that thus far the ideal anesthetic has not been found. Most of the information given in the book is based on the extensive experience of the author. The material is divided into chapters describing the use of anesthetics and analgesic drugs in the first stage of normal labor, the second stage of normal labor, the third stage of labor and the resuscitation of the new-born, anesthesia for abnormal deliveries, and analgesics and anesthetics in complicated labors. Contrary to most American anesthetists and obstetricians the author considers chloroform to be a comparatively safe anesthetic in the second stage of labor. She does not believe that ether is as satisfactory as chloroform or nitrous oxide and oxygen. Ethylene has not been used much in England. The author believes that spinal anesthesia is excellent for cesarean sections, but it should be emphasized that pregnant women are far more susceptible to the dangers of spinal anesthesia than are nonpregnant individuals and the death rate is much higher among the former. The author singularly points out that spinal anesthesia should be used in cardiac cases but a bad heart in a pregnant woman is a double contraindication to the use of spinal anesthesia. Likewise the author recommends the use of morphine before administering a spinal anesthetic but since this and other alkaloids are respiratory depressants, they may lead to harm when a spinal anesthetic is used. Direct infiltration anesthesia is far simpler and safer than spinal anesthesia and should be used more frequently than it is at the present time. The book does not contain anything new but it is an excellent summary of the subject of analgesia and anesthesia in labor.

Psychotherapie. Ein Lehrbuch für Studierende und Ärzte. Von Privatdozent Dr. Heinrich Kogerer. Cloth. Price 10 marks. Pp 107. Vienna: Wilhelm Maudrich 1934.

The German language psychiatric literature seems recently to have changed. Until a few years ago German works on psychiatry were so detailed that their usefulness to the American practitioner was curtailed because of their ponderousness. Today, works such as Kogerer's impress one with their superficiality. Fully half of it treats of the symptoms of mental disorders rather than of their treatment. In this respect the book is inferior to the general run of American psychiatric textbooks intended for students. Organic psychoses for which there are now some treatments susceptible of being carried out by the general practitioner (for whom this book was intended) are hardly mentioned. The first half of the book contains a number of interesting comments, which are not particularly new but which are well expressed and might prove useful to a reader who has not gained his knowledge of psychotherapy through experience. In this part there is a chapter describing the attitude and make up of the psychotherapist which does not agree entirely with the experience of American practitioners. The chapter on psychotherapeutics in general attempts to cover the whole field in a relatively short space. No particular stress is laid on such new and useful techniques as those devised by Freud and Adler. While the use of these techniques is mentioned only casually, the author's interest in psychoanalysis is shown in a number of the case studies in which he mentions the use of analysis. These case studies are relatively short and there are about sixty-three of them. There are two pages devoted to social psychiatry at the end of the book. The knowledge to be derived from this book would seem to be useful to only those psychiatrists who are interested in keeping up with the literature on the subject. For practical purposes the information given is explained sufficiently well in American works to make the reading of this book unnecessary.

The Medicolegal Necropsy. A Symposium held at the Twelfth Annual Convention of the American Society of Clinical Pathologists at Milwaukee Wisconsin June 9 1933. Edited for the Society by Thomas B. Magath. Cloth. Price \$2.50. Pp 167 with 63 illustrations. Baltimore: Williams & Wilkins Company 1934.

The contents of the book are introduction, by Frederic E. Sondern, the medicolegal system of the United States, Oscar T. Schultz, the medicolegal necropsy, Charles Norris, performing the medicolegal necropsy, A. V. St. George, pathologic anatomy of death by drowning, Edward L. Miloslavich, toxicology in the medicolegal necropsy, Alexander O. Gettler, medical examiner's findings in deaths from shooting, stabbing, cutting, and asphyxia, Harrison S. Martland, report on necropsies by a joint committee representing the New York Academy of Medicine, the New York Pathological Society and the Metropolitan Funeral Directors' Association. These articles are reprinted from the January 1934 issue of the *American Journal of Clinical Pathology* except the article by the joint committee, which appeared in the *Archives of Pathology* 14: 701 (Nov.) 1932.

Die Irrtümer der Psychoanalyse. Eine Irrlehre mit einem genialen Kern. Von Dr. med. Henrik Egedal. Paper. Price 2.80 marks. Pp 86. Vienna & Leipzig: Wilhelm Braumüller, 1933.

This is one of those critical writings on psychoanalysis which cannot decide whether to appreciate or reject Freud's doctrine. The first chapter of the book consists of quotations of different authors' controversial opinions about psychoanalysis. After this the author has difficulty formulating his own opinion. Unlike many critics of psychoanalysis, the author, who obviously has been fascinated by this new field, shows a fair knowledge of psychoanalytic literature and quotes extensively from Freud's and also to some extent from Ferenczi's and Jones's writings. It is obvious that his knowledge of psychoanalysis is a theoretical book knowledge and is not based on clinical experience. Accordingly his criticisms are more of a deductive nature. What he can accept are mostly generalities, but he finds the more specific references to case histories or dream interpretations often fantastic and unacceptable. He gives great credit to Freud's general dynamic concept of neuroses but is skeptical regarding the correctness of detailed interpretations. He does not agree with the psychoanalyst's concept of the phenomenon of transference and is inclined to consider it as a deluded form of hypnotic sugges-

tion. The reader cannot help but feel that the author is in the process of his struggle with this new approach and that the book is the result of this struggle to digest and understand it. His undecided ("ambivalent") attitude is expressed in the subtitle of the book, "an erroneous doctrine with an ingenious nucleus" and he ends his writing with the following statements:

He [Freud] dared to introduce into the psychological and psychiatric sciences the finely shaded thinking of the Russian and French belles lettres of the second half of the nineteenth century with this method he broke through the solid barriers of the limited physicochemical way of thinking in these sciences.

Artists always anticipate sciences. Dostojewski, Ibsen and Maupassant ought to have waited many hundred years before they could express logically and inductively the psychological motivations of the heroes of their novels. Any one who like Freud had dared to make the courageous step of introducing into the psychological sciences ideas which can only be intuitively grasped but not proved was necessarily bound to go beyond the goal. It would be a misjudgment of the genius of the man if one only considered the defects of his accomplishments and not its merits.

The Anatomy of Surgical Approaches. By L. C. Kellogg, A.B. M.D. Professor of Anatomy, College of Medical Evangelists, Loma Linda and Los Angeles, California. Cloth. Price \$1.50. Pp 134 with 29 illustrations. Baltimore: William Wood & Company 1934.

This is a pocket size volume the chief purpose of which is to outline the specific methods of approaching the various structures within the body by means of external landmarks. Especial emphasis is placed on the extremities. No consideration is given to internal organs. The book is divided into four parts. The first deals with the upper extremity and considers the means of exposure of its arteries, nerves, bones, joints and tendons, as well as the spaces of the hand, palm and wrist. The second part considers the head and neck, giving special attention to isolation of the large vessels of the neck, the phrenic nerve and the technic of such procedures as incision of the maxillary nerve, exposure of the brachial plexus, and tracheotomy. The section devoted to the thorax and abdomen considers paracentesis, pericardium, ligation of the internal mammary and iliac arteries, and the muscle splitting incision of the abdominal wall. The fourth part, like the first, deals with the exposure of the vessels, nerves, bones and joints of the lower extremity. The work is written well, simply and concisely. The directions are clear and easily followed. The book should prove of value to the surgeon, to the general practitioner who is at times called on to do surgery, and to the medical student.

Traité élémentaire d'exploration clinique médicale [technique et séméiologie]. Publié sous la direction de Emile Sergent, professeur à la Faculté de médecine de Paris. Avec la collaboration de MM. Francis Bordet, Paul George, Hazard, d'Heuckeville, Camille Lian, René Mignot, Oury, Pierre Pruvost, Ribadeau Dumas et Emile Sergent. Cloth. Price 145 francs. Pp 1,170 with 420 illustrations. Paris: Masson & Cie 1934.

This is a complete and thorough book on medical technic. It is so complete that it is rather difficult to pick out any single phase of it for special comment. Almost all fields of diagnostic endeavor are covered and well covered. The section on x-rays contains some of the best printed roentgenograms we have ever seen. The rest of the illustrations are likewise excellent and to the point. The colored prints are as well done as one sees in special books devoted to the blood. The French seems easy to grasp. The book should be a standard reference book for clinical-technical procedures.

A Text Book of Medical Psychology. By Ernst Kretschmer, Dr. Med. Professor of Neurology and Psychiatry in the University of Marburg. Translated from the fourth German edition with an introduction by E. B. Strauss, M.A. D.M. M.R.C.P. Assistant Physician to the Cassel Hospital for Functional Nervous Disorders. Cloth. Price \$5. Pp 274, with 24 illustrations. New York & London: Oxford University Press 1934.

Here there is neither probing of metaphysical mysteries nor tracing of psychophysical intricacies. Any medical student or practitioner could read this book with profit, and every neuropsychiatrist should. "Typological psychology" is given simply a fair share of prominence. A scant dozen pages are devoted to the research most readily associated with the author's name, that on the psychosomatic and other types of habitus with their associated temperaments. The experimental work of Enke, Kroh, Klages and investigators along similar lines is mentioned with approval. Decision is reserved on the more speculative conclusions of the Jaensch school—as generally in America. Exceptions have been taken to Kretschmer's types as being too

inflexible or mutually exclusive. He seems to meet such objections satisfactorily (p 147) with his description of "diathetic" and "psyaesthetic" scales, and his disclaimer "essential factors should not be artificially separated out by means of too sharply limited concepts" The subject of intelligence is handled in the best modern manner, against a sociological background Consciousness and the degrees of the unconscious are discussed in terms of a less familiar concept, the 'sphaera.' Freud is given every credit for the epoch-making work of his school, the supreme importance of sexuality and of infantile traumas, however, is discounted. Jung fares best of the psychoanalysts Kretschmer's 'psychobiogram' has been criticized for its length and complexity It is an excellent example of Teutonic thoroughness In actual practice, not all the data would be obtainable in every case. The translation is thoroughly readable the bibliography is well selected, and the index helpful

Investigaciones sobre la enfermedad de Chagas I Sobre nódulos de histiocitosis en el hígado de perro inoculado con *S. cruzi* Chagas de origen humano Por los Doctores Salvador Mazza y M. E. Jörg II Otro caso de forma aguda de enfermedad de Chagas en el Norte Santa Feino Por los Doctores Salvador Mazza y Cecilio Romaña Publicación No. 15 Universidad de Buenos Aires Misión de estudios de patología regional Argentina Jujuy Paper Pp 54 with 48 illustrations Buenos Aires Imprenta de la Universidad 1934

Investigaciones sobre la enfermedad de Chagas I Primer caso agudo de la enfermedad de Chagas comprobado en la provincia de Santiago del Estero Por los Doctores Silvio Raimondi y Enrique J. Canal Feljó II Comprobación de formas agudas de la enfermedad de Chagas en Añatuya (Santiago del Estero) Por los Doctores Salvador Mazza y F. Z. Guerrini Publicación No. 16 Universidad de Buenos Aires Misión de estudios de patología regional Argentina Jujuy Paper Pp 20 with 8 illustrations Buenos Aires Imprenta de la Universidad 1934

Investigaciones sobre la enfermedad de Chagas I Casos agudos benignos de enfermedad de Chagas comprobados en la provincia de Jujuy Por el doctor Salvador Mazza II Hallazgo del gato como portador natural del *Schizotrypanum cruzi* en la provincia de Jujuy Por el doctor Salvador Mazza III Comprobación de otra forma aguda de la enfermedad de Chagas en la provincia de Jujuy Por los Doctores Salvador Mazza y Pablo Almaraz IV Difusión de la infección natural por *S. cruzi* en Perros de la provincia de Jujuy Por el doctor Salvador Mazza. Publicación No. 17 Universidad de Buenos Aires Misión de estudios de patología regional Argentina Jujuy Paper Pp 23 with illustrations. Buenos Aires Imprenta de la Universidad 1934

The eight papers in these publications appeared under the auspices of the University of Buenos Aires and form a valuable addition to the rapidly growing literature on Chagas disease, or American trypanosomiasis of man Five papers give interesting clinical reports of cases occurring in Argentina two deal with dogs and cats naturally infected with *Trypanosoma cruzi*, and one is a study of the histiocytic response in the liver of an experimentally infected dog

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Tumors of the Female Pelvic Organs By Joe Vincent Meigs A.B. M.D. F.A.C.S. Instructor in Surgery Harvard Medical School With a foreword by Robert B. Greenough M.D. President Elect of the American College of Surgeons 1933 1934 Cloth Price \$6 Pp 533 with 261 illustrations New York Macmillan Company 1934

In this book the author admirably describes the benign and malignant tumors affecting the pelvic organs and outlines the adequate treatment for each type. He has incorporated the most generally accepted views concerning these growths and has supported them by series of cases from the Massachusetts General Hospital The text is ably written and affords a complete picture of each group It is printed in large, clear type and on good paper The illustrations amply supplement the text, are well chosen and appear chiefly in halftones and black and white. The chapter on carcinoma of the cervix is especially well written, as is the last chapter, on metastases The author's discussion of total versus supravaginal hysterectomy for fibroids is rational and warrants the serious consideration of gynecologists and general surgeons alike. In estimating the significance of the retained cervical stump after supravaginal hysterectomy, Meigs found that in the Massachusetts General Hospital 'cancer of the cervical stump developed less frequently in patients who have had the top of the uterus removed than did cancer of the cervix in the group of women in the hospital as a whole. From this he deduces that total hysterectomy for fibroids as advocated by some physicians as a routine is not always warranted and that it would endanger the lives of some women who would probably never develop cancer. Periodic examination of the stump is advocated as even the unin-

jured cervix may develop cancer Not only the surgeon but the radiation therapist and pathologist as well will profit by a careful study of this splendid book. Numerous references accompany each chapter An adequate index is appended.

Técnicas de laboratorio Análisis de alimentos análisis clínicos Por Casaderante y Sanfella Paper Price 25 pesetas Pp 431 with 56 illustrations. Madrid Javier Morata 1933

The first part of this book deals with the chemistry of sugars, fats and condiments, only the more elementary facts are stated The second part is a laboratory manual, it gives many of the routine procedures for the more important laboratory examinations of urine, feces, blood, cerebrospinal fluid and sputum There are several omissions and errors for example, a statement to the effect that "*Amoeba coli*" is the specific agent in amebic dysentery The Wassermann test is given as the method of choice in the laboratory diagnosis of syphilis, but the precipitation reactions of Meinicke, Kahn and Sachs-Georgi are considered reliable The microscopic agglutination test for the typhoid bacillus, paratyphoid bacilli and *Brucella melitensis* is recognized as the most satisfactory The usual methods for the demonstration of tubercle bacilli in sputum are given. The only method for the detection of other pathogenic bacteria (pneumococci, streptococci and similar organisms) is the preparation of gram-stained smears

Mental Health Past, Present and Future By Arthur Hiler Buggles M.D. Superintendent of Butler Hospital Providence R. I. The Colver Lectures 1932 Published for Brown University Providence R. I. Cloth Price \$1.50 Pp 104 Baltimore Williams & Wilkins Company 1934

The Colver Lecture in Brown University for 1932 primarily is a brief historical review of the development of psychiatry and of the growth of facilities for the care of the insane. Under three divisions, mental health of the past, of the present and of the future beginning with the time of Hippocrates, the changing conceptions of mental ill health are traced to the present time and the author's conception of the future development of psychiatry is sketched. The growth of hospitals for the care of the insane is particularly stressed This brief work is exceptionally comprehensive in scope. In commenting on the multiplicity of factors that are pertinent to an understanding of conduct, the author has made it difficult for the layman to keep the thread of his discourse as it pertains to the problem of mental health He has attempted to outline the concept that man must be understood not as a series of organs or a collection of diseases but rather as a total human being with his physical and mental equipment intricately interrelated He has, however, not achieved an effective unity in presenting this theme. This is due to lack of selection and discrimination in emphasis Encephalography as a diagnostic method and the social and emotional factors in schizophrenia are discussed in one and the same paragraph This is too telescoped for the lay mind to deal with The book is provocative rather than informative, the historical material is authoritative and the most interesting section is that dealing with the activities of Dorothy Dix and the establishment of the Butler Hospital, of which the author is at present superintendent.

A Synopsis of Regional Anatomy By T. B. Johnston M.B. Ch.B. Professor of Anatomy University of London Guy's Hospital Medical School. Third edition Cloth Price, 12s 6d Pp 460 with 11 illustrations. London J. & A. Churchill, Ltd 1934

This book is intended to help students engaged in a review of gross anatomy Its arrangement is regional It attempts to indicate the anatomic facts in each region that are practically important in surgery or medicine or that might easily escape notice Students in our medical schools often state that they would like to know which facts in anatomy are of the most importance in actual clinical work They will find in this book a reliable indication It is not lengthy, the author has selected the points to which attention is given wisely and has stated them clearly It would find its greatest usefulness if read in connection with a review study of a dissected part or of a skeleton Study of dissections after their completion would be of more value to the students of anatomy than many of them realize and in such a study this book would be of great help It can be recommended to students reviewing gross anatomy in connection with the study of surgery

Medicolegal

Insurance, Life "Due Proof" of Total and Permanent Disability—The New York Life Insurance Company issued to the plaintiff an insurance policy providing for the payment of certain benefits on receipt of "due proof" that the insured has become wholly disabled by bodily injury or disease so that he is and will be presumably thereby permanently and continuously prevented from engaging in any occupation whatsoever for remuneration or profit. The plaintiff, 40 years old, became afflicted with phlebitis and a blood clot formed in the vein, in the thigh of his right leg. Contending that he was totally and permanently disabled, he applied for the benefits payable under the policy. The insurance company denied liability. In a suit to collect the benefits the trial court gave judgment for the plaintiff and the defendant appealed to the Supreme Court of Michigan.

The medical testimony, said the Supreme Court, established the fact that the plaintiff could not pursue any suggested vocation with a reasonable degree of regularity or length of time and without hazard of relapse. The physicians who attended the insured stated that he was not able to engage in any occupation for gain except under circumstances so favorable and fortuitous as to be without the range of probabilities. They testified that the insured's disability was probably permanent. The insurance company contended, however, that "due proof" of total disability had not been submitted to it, as required by the policy. Of course, said the Supreme Court, the policy cannot fairly be construed to constitute the defendant insurance company the sole judge of disability or to mean that the fact of permanent disability is foreclosed in favor of or against either party by the proof made to the company by the insured. Actionable disability ultimately, said the court, is a question of fact for trial. "Due proof" can mean no more than that reasonable evidence of disability within the terms of the policy shall be submitted to the company. Where such evidence is submitted in a good faith attempt to comply with the provisions of the policy, the company should point out particularly any defects therein if it intends to rely on them. The insured in this case submitted the reports of four attending physicians covering treatments from July 26, 1928, to June 1930, showing the character of his ailment and that he was totally disabled continuously during that time. The physicians who early treated him made a prognosis that his disability would extend into the future but did not then express an opinion that it would be permanent. However, they became progressively doubtful of his recovery as time passed and the condition did not yield to treatment. The physician who attended him in 1930 stated "It is my opinion that as much collateral circulation has been established in the Rt leg as is possible and that condition now is one of total and permanent disability as far as pursuing occupation is concerned." Having before it proof of the nature of the disease, concluded the Supreme Court of the results of treatment for two years, of the fact of past and present total disability, and medical opinion that it would be permanent, the defendant insurance company had such reasonable showing of total disability as constituted "due proof" and required it to pay the benefits or to be prepared to defend on the fact of disability. The judgment in favor of the insured was consequently affirmed.—*Forman v New York Life Ins Co (Mich)*, 255 N W 222.

Foods Liability for Death from Trichinosis—The plaintiff, as administrator of the estate of his deceased wife, brought this action against a retail dealer in meats and against the defendant packer claiming that his wife contracted trichinosis as a result of the ingestion of uncooked sausage prepared from raw pork containing trichinae, purchased from the retail dealer, who in turn obtained it from the packer. The retail dealer was relieved from liability by a directed verdict, and a verdict was rendered against the packer, from which an appeal was taken to the Supreme Court of Michigan.

The testimony showed said the Supreme Court that there is no known, practicable or feasible method of determining whether hogs are infected with trichinae. The bacteria can be detected only by microscopic inspection of the entire carcass of the animal although the organism is generally found in the

muscles. Until 1906 it was the practice of the government to make such examinations, but this practice was finally discontinued because it was found to be ineffective. The only known treatments generally effective in killing trichinae are (1) freezing for twenty days at a temperature not higher than 5 degrees Fahrenheit, (2) raising the temperature of the meat to 170 degrees momentarily, or (3) a prescribed curing process. All of these processes, although effective, remove from the meat in a degree the quality of freshness demanded by the public. None of these methods were used by the packer in the preparation of fresh pork but the evidence clearly showed, continued the court, that all the ordinary, usual and reasonable precautions taken by the meat packing industry were observed in the present case. There was no testimony revealing any negligence on the part of the packer. There was no breach of duty chargeable to it. The fresh pork was prepared by the methods adopted by other packers engaged in similar businesses. The methods of preparation and inspection measured up to the standard demanded by the federal government.

A Michigan statute forbids the sale of adulterated foods, including diseased or tainted meats. The plaintiff contended that a violation of this statute was negligence per se. To give the statute such force, said the court, would in effect impose on the packer the liability of an insurer, regardless of the unusual nature of the use to which the product is put. The legislature did not intend to impose on the producer the absolute civil responsibility of an insurer in cases in which every reasonable means designed to guarantee the safety of food for normal use has been employed. Likewise it would be manifestly unfair to impose the liability of an insurer on the meat packer through the implication of a warranty that pork is fit for human consumption in a raw state. This is especially true in view of the fact that the danger of infection can be reduced almost to the vanishing point by ordinary cooking methods. Fresh pork is not ordinarily intended to be eaten raw. The warranty should be applied only to food used in the usual rather than in the unusual and improper manner. The court was satisfied that the packer could not be held liable either for negligence or for breach of implied warranty and therefore reversed the verdict of the jury in favor of the plaintiff.—*Cheli v Cudahy Bros Co (Mich)*, 255 N W 414.

Corporate Practice of Optometry Illegal—Harris and others, the relators in the present case, presented to the secretary of state of Ohio articles of incorporation wherein they sought to incorporate the Columbus Optometric Company to engage "in the business of the practice of optometry." The secretary of state refused to accept the application on the ground that "the purpose clause of such articles of incorporation discloses that such corporation is attempted to be formed for the purpose of practicing a profession" in violation of section 8623.3, General Code of Ohio, which prohibits incorporation for profit for the purpose of carrying on the practice of any profession. The relators then sought a mandamus to compel the secretary of state to file the proffered articles of incorporation.

Whatever refinements of reasoning, said the Supreme Court of Ohio, may be brought to bear on the question of whether optometry is a business to be carried on or engaged in or a profession to be practiced, the legislature has definitely placed it in the category of professions. The Ohio law regulating optometry makes it unlawful for any person to practice optometry who is not more than 21 years of age and who has not met the requirements prescribed in the law. Evidence of preliminary education must be furnished and a two year course in optometry completed. The qualifications of the applicant are to be tested by an examination conducted by a board appointed as provided in the law. Not only is good moral character made one of the prerequisites to admission to the examination but the board is authorized to revoke a license for any of the causes enumerated, among which are gross immorality, grossly unprofessional or dishonest conduct. Throughout these statutory provisions the court said the legislature has recognized optometry as a profession. It thus appears, concluded the court, that the secretary of state has not refused to perform a duty enjoined on him by law for which mandamus would lie but that on the contrary, in his refusal to accept and file the proposed articles of incorporation

he has acted in obedience to the requirements of section 8623-3, General Code of Ohio. The petition for a writ of mandamus was therefore denied—*State ex rel Harris et al v Myers, Secretary of State (Ohio), 191 N E 99*

Workmen's Compensation Acts Rupture of Artery Attributed to Overexertion—The employee was engaged in pulling a heavily loaded truck, with the assistance of others, up an incline. As a result of the strain incident to the work, it was contended that an artery in his right leg was ruptured and that as a result of this rupture a thrombus developed which lodged in the lower right lung, causing death. The industrial commission awarded compensation to his widow. The circuit court confirmed that award and the plaintiff appealed to the Supreme Court of Wisconsin.

The employee was afflicted with arteriosclerosis in an advanced degree, which condition, said the Supreme Court of Wisconsin, rendered him liable to just such a result as did occur. To a man in his condition, the risk of serious illness or death was increased by unusual exertion. The evidence in the case, continued the court, left no doubt that the artery was extremely brittle and that the rupture was caused by less pressure or exertion than would have been required to cause it in a person of normal condition. This fact, however, did not prevent the rupture from being the result of the employee's work. While compensation, said the court, was not intended to take the place of life insurance, a showing of a fortuitous circumstance happening in the prosecution of one's work and having an open and direct relation to the industry causing injury brings the case within the workmen's compensation act of Wisconsin. The word "accident," as used in workmen's compensation cases, continued the court, includes ruptures resulting from lifting heavy objects. The very serious condition of the employee, warranting a belief that his death was likely to follow almost any exertion, makes this a doubtful case, said the court, but it cannot be said that there was no credible evidence to sustain the finding of the commission that the rupture was caused by the pulling of a heavily loaded truck up a short incline and that this exertion was the cause of the subsequent death. The judgment confirming the award was affirmed—*Malleable Iron Range Co V Industrial Commission (Wis), 255 N W 123*

Workmen's Compensation Acts Postponement of Herniotomy as Affecting Compensation—The employee May 15, 1924, sustained a double hernia in the course of his employment. A claim for compensation was filed with the department of labor and industries and the employee was notified that he would be required to undergo an operation and make report thereof to the department. In September, the operation not having been performed, the department, without notice to the employee, suspended the claim for compensation. Until March 1933, nothing further happened with respect to the matter. On March 2, 1933, approximately nine years after the accident, the employee was operated on for hernia, without the knowledge of, or any renewed authority from, the department, and a claim for the expenses incident to the operation was filed with the department. The claim was rejected on the ground that the statute of limitations had run against it, and that therefore it could not be reopened for further consideration. The superior court agreed with the finding of the department, and the employee appealed to the Supreme Court of Washington.

The workmen's compensation act of Washington provides that if an employee "shall refuse to submit to such medical or surgical treatment as is reasonably essential to his recovery, the commission may reduce or suspend the compensation of such workman." It will be observed, said the Supreme Court, that the right of the department to reduce or suspend compensation arises out of the refusal of the workman to submit to medical or surgical treatment. The penalty for such refusal is not the denial of the claim in toto, but simply its reduction or suspension. The term "suspend" read in connection with its context, contemplates a temporary withholding of payment pending a submission to treatment, and does not in the absence of a wilful refusal to comply with a proper order, contemplate an absolute denial of the claim in its entirety. In this case the employee was never notified that his claim had been suspended. From aught that appears in the record the employee

was conscientiously attempting to get along without an operation and without claiming the benefits to which he was, at the time of his injury, admittedly entitled. Having been specifically told by the department that when the operation was performed the claim would go forward for payment, the employee was led to believe, in the absence of a contrary notice, that when the operation became necessary he might then have it performed. The only question for decision here, said the Supreme Court, is whether the order of suspension, without notice to the employee, canceled and terminated all right of compensation. We are clearly of the opinion, concluded the court, that, under the facts in the case, it did not. The judgment of the superior court was therefore reversed with instructions to remand the case to the department with directions to award compensation.—*Urquhart v Department of Labor and Industries (Wash), 33 P (2d) 380*

Paint Poisoning, Death from Septicemia, and Workmen's Compensation—Lockhart, a shop foreman, painted vehicles with a "spray gun," as a part of his employment, when there were no painters available. While so painting April 17, 1932, he was taken sick and symptoms of paint poisoning developed. His body became covered with a rash, he developed an elevation of temperature, and suffered from nausea and cramps. Under medical treatment, he was recovering from the effects of the paint poisoning, when, about the middle of May, a localized infection developed in his ankle. Septicemia ensued and Lockhart died, June 20, 1932. The compensation commissioner declined to award compensation to the widow and she appealed to the Supreme Court of Appeals of West Virginia.

The evidence tended to show that death resulted directly from the infection originating in the ankle. Had death been due directly to the paint poisoning, said the Supreme Court of Appeals, there would be little question as to the right of the widow to compensation, for the evidence showed that Lockhart contracted the paint poisoning following the specific exposure while painting, April 17. Notwithstanding the fact that the paint poisoning was not the direct cause of death, continued the court, the uncontradicted evidence made out a prima facie case of compensability. From the evidence, it is clear that Lockhart would not have died, and indeed might not have suffered at all, from the infection that settled in his ankle had it not been for his weakened and debilitated condition directly traceable to the paint poisoning. The infection came before his complete recovery from the paint poisoning and its effects. There was, therefore, a clear preponderance of evidence establishing a direct causal connection between the paint poisoning and the death. The order of the compensation commissioner, refusing to award compensation, was therefore reversed and the case remanded for further consideration.—*Lockhart v State Compensation Commissioner (W Va), 174 S E 780*

Society Proceedings

COMING MEETINGS

- Alabama, Medical Association of the State of Mobile, April 16-18
Dr D L Cannon 519 Dexter Avenue Montgomery Secretary
American Association of Anatomists St. Louis April 18-20 Dr George W. Corner University of Rochester School of Medicine Rochester N Y Secretary
American Association of Pathologists and Bacteriologists, New York, April 18-19 Dr Howard T Karsner 2085 Adelbert Road Cleveland Secretary
American Physiological Society Detroit April 10-13 Dr Frank C. Mann Mayo Clinic, Rochester Minn Secretary
American Society for Experimental Pathology Detroit April 10-13 Dr Shields Warren 195 Pilgrim Road Boston Secretary
American Society for Pharmacology and Experimental Therapeutics, Detroit April 10-13 Dr E. M. K. Geiling 710 N Washington Street Baltimore, Secretary
American Society of Biological Chemistry Detroit April 10-13 Dr H A Mattill State University of Iowa Iowa City Secretary
Arkansas Medical Society, Fort Smith, April 15-17 Dr W R Brooksher 602 Garrison Avenue Fort Smith Secretary
Federation of American Societies for Experimental Biology, Detroit, April 10-13 Dr H A Mattill State University of Iowa Iowa City Secretary
Southeastern Surgical Congress Jacksonville Fla., March 11-13 Dr Benjamin T Beasley 478 Peachtree Street N E Atlanta Ca Secretary
Tennessee State Medical Association Nashville April 9-11 Dr H H Shoulders 706 Church Street Nashville Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to *THE JOURNAL* in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

10 143 286 (Dec.) 1934

- Selection of Cases of Thrombo-Angitis Obliterans and Other Circulatory Diseases of Extremities for Sympathetic Ganglionectomy. G E Brown, W M Craig and A W Adson. Rochester Minn.—p 143
- *Position of Heart Valves and Their Relation to Anterior Chest Wall in Living Subjects with Abnormal Hearts. M C Sosman and P H Wosika. Boston.—p 156
- Interpretation of Galvanometric Curves Obtained When One Electrode Is Distant from the Heart and the Other Near or in Contact with Ventricular Surface. Part I. Observations on the Cold Blooded Heart. F N Wilson, I G W Hill and F D Johnston. Ann Arbor, Mich.—p 163
- Id. Part II. Observations on the Mammalian Heart. F N Wilson, F D Johnston and I G W Hill. Ann Arbor, Mich.—p 176
- *Factors Concerned in Cardiac Hypertrophy. Study Made at Necropsy of Seventy Nine Cases of Rheumatic Heart Disease. F A Willius and H L Smith. Rochester Minn.—p 190
- Pulmonary and Pleural Complications of Aortic Aneurysm. C S Keefer and G K Mallory. Boston.—p 208
- *Total Thyroidectomy in Angina Pectoris. Experimental Study. P Shambaugh and E C Cutler. Boston.—p 221
- *Interlobar Effusions in Patients with Heart Disease. I D Stein and J B Schwedel. New York.—p 230
- Adhesive Mediastinopericarditis with Normal Cardiac Electrical Axis Rotation on Postural Change. J J Sampson and H Rosenblum. San Francisco.—p 240
- Transient Recurrent Complete Bundle-Branch Block. Report of Case. F A Willius and M J Anderson. Rochester Minn.—p 248

Position of Heart Valves and Relation to Chest Wall—Sosman and Wosika draw the following deductions with regard to the position of the aortic and mitral valves in patients with abnormal hearts. 1 Both valves are likely to be found on a line 45 degrees from the horizontal, starting at the auriculo-ventricular groove on the left border of the cardiac shadow, this line corresponding to the position of the auriculoventricular groove. 2 The mitral valve is likely to be more to the left of the midline than the aortic valve, and the latter may be exactly in the midline. 3 The aortic valve usually is more caudad than the mitral valve in relation to the wall of the chest, but it may be more cephalad in relation to the total bulk of the cardiac shadow. This is probably due to the predominance of the left ventricle in aortic disease and to the large dilated auricles in mitral disease. 4 In the right anterior oblique position the two valves may occupy the same position in relation to the cardiac outline. 5 The left anterior oblique view is the best for differentiating between aortic and mitral valve calcifications. Small areas of calcifications visible in the other oblique view may not be visible in this view. If large enough to be seen in the left anterior-oblique position, the mitral valve calcifications will be found to lie in the posterior third of the cardiac shadow, while the aortic valve calcifications are usually in the middle third. If the posterior cusp of the mitral valve is calcified, it may be within 1 cm from the posterior surface of the heart shadow. 6 In calcified annulus fibrosis cases the shadows are likely to be larger and denser and on the roentgenograms are more homogeneous in appearance than the irregularly mottled calcifications in the mitral leaflets. They occur frequently in patients without discoverable heart disease and are usually found in patients 60 years of age or older. 7 If both valves are calcified they may move independently, i.e. their dancing excursions with the beat of the heart are not synchronous but consecutive.

Factors Concerned in Cardiac Hypertrophy—Willius and Smith observed that the greatest average cardiac weight occurred in cases of aortic stenosis. In order of cardiac weight, other lesions occurred in the following sequence: aortic insufficiency, multiple valvular lesions, mitral stenosis and insufficiency, and pure mitral insufficiency. There was a marked correlation between the degree of the lesion and the average weight of the heart. There was a suggestive correlation, evidenced only in some groups, between the average weight of the heart and the interval elapsing from the initial attack of rheumatic fever to death. The condition of four children, who lived only for a short time following their first illness with rheumatic fever and chorea in one case, and three of whom had rather slight valvular defects, strongly suggests that myocardial injury by infection or its toxins in some instances permits the heart to respond by hypertrophy. Although increased cardiac work imposed by the valvular defect or defects appears to be the principal influence in the production of cardiac hypertrophy in rheumatic heart disease, other factors appear to exert a definite but less important influence. Among them is the length of time the heart is subjected to the lesion and actual myocardial injury in a certain group of cases.

Total Thyroidectomy in Angina Pectoris—Shambaugh and Cutler believe that the resulting lowered metabolism with slowing of the circulation and consequent lessening of the burden on the heart produced by total thyroidectomy in angina pectoris cannot be the entire explanation, in that a beneficial effect has been observed almost immediately after operation, whereas the basal metabolic rate does not begin to fall for over a week. Their experiments on dogs suggest that the early and dramatic change may be due to a change in reaction to epinephrine after operation. They studied the effect of thyroidectomy on the vasopressor action of epinephrine in dogs and found a definitely diminished response in two dogs when tested three and four weeks after thyroidectomy. Three other dogs tested one, two and six weeks after thyroidectomy failed to show this change. The individual variation in this regard may be due to the presence of varying amounts of accessory thyroid tissue. The beneficial effect of the removal of the thyroid in angina pectoris may be due, in part at least, to a diminished effectiveness of the physiologic output of epinephrine. This explanation would imply that the paroxysms of anginal pain in patients with coronary artery disease may be caused by an increase from time to time in the patient's output of epinephrine. Such a concept does not seem entirely unreasonable when it is known that the physical and emotional changes which precipitate attacks of angina are just those which have been shown experimentally to cause an outpouring of epinephrine into the blood stream. It has been demonstrated that injected epinephrine will generally initiate an attack in patients suffering from angina pectoris, so it is quite conceivable that a sudden increase in the secretory activity of the suprarenals might have a similar effect in these patients. Epinephrine, either secreted or injected might precipitate an attack of angina by causing a constriction of the coronary arteries which would directly produce the myocardial ischemia or by raising the blood pressure and heart rate, it may so increase the vascular demands of the myocardium that in the presence of a preexisting narrowing of the coronary artery or of a rigidity preventing a compensatory dilatation it causes a relative myocardial ischemia.

Interlobar Effusions in Heart Disease—Stein and Schwedel review the clinical course of eighteen cases presenting interlobar effusions and stress the comparative frequency with which the condition is encountered and its relationship to the general problem of myocardial insufficiency. In nearly all the cases studied the effusion was on the right side. Physical signs are comparatively few and the condition is usually an accidental observation in the teleroentgenogram. Verification by puncture is unsatisfactory. Their rapid disappearance with treatment is characteristic and refutes the common conception that diuretic measures are of no avail in the mobilization of chest fluid. This may be true of the ordinary type of hydrothorax, but it does not apply to interlobar fluid. The difference between the two probably lies in the fact that the total fluid area involved is much less, and that the two areas of lung tissue which bound the fissure form a more active resorption surface. The relationship of auricular fibrillation and diseases of the aortic valve to this condition has been stressed by Vessell and Austrian. The authors feel that these are coincidental and are merely expressions of long standing cardiac disease associated with decompensation. Differentially, lung abscesses, tumor nodules or

pulmonary infarcts may closely resemble interlobar effusions, and confusing shadows may be cast by the pectoralis and trapezius muscles, or by localized thickening of the pleura in the general pleural cavity. A density of this sort in a decompensated person, which seems to melt away with the return of compensation, should present no great diagnostic problem.

American Journal of Cancer, New York

22 765 1034 (Dec.) 1934

- *Carcinoid Tumors of Small Intestine Report of Three Cases with Metastases Eleanor M. Humphreys Chicago—p. 765
- Primary Apical Lung Carcinoma P. E. Steiner and B. F. Francis, Chicago—p. 776
- Malignant Neoplasms of Upper Respiratory Tract in the Young Report of Nine Cases M. Friedman and S. Rubinfeld New York—p. 786
- *Correlation Between Malignancy and Rate of Growth of Tar Warts in Mice. J. C. Mottram London England—p. 801
- *Why Cancer Is Not Recognized Early W. C. MacCarty Rochester Minn.—p. 831
- Mesenchymal Tumor in an Oyster (*Ostrea Virginica*) G. M. Smith New Haven Conn.—p. 838
- Comedo Carcinoma (or Comedo-Adenoma) of Female Breast J. C. Bloodgood Baltimore—p. 842
- Primary Carcinoma of the Lung C. F. Geschickter Baltimore and R. Demison Harrisburg Pa.—p. 854
- Survey of Cancer Cases in Hospitals of Bridgeport Conn. 1928-1932 Inclusive. W. F. Wild Bridgeport Conn.—p. 878

Carcinoid Tumors of the Small Intestine—In 3,200 necropsies, Humphreys found three examples of carcinoid tumors with metastases in regional lymph nodes. Two of these were multiple carcinoids, one with two the other with nine independent tumors. In two the lumen of the intestine was narrowed. In the same series there were five solitary carcinoid tumors without metastases, one in the jejunum, three in the ileum and one a carcinoid polyp of the rectum. Thus in this series of necropsies the incidence of all carcinoids was 0.25 per cent, for carcinoids of the small intestine 0.22 per cent, for multiple carcinoids, 0.06 per cent, and for metastasizing carcinoids, 0.09 per cent. It is evident that the carcinoid tumor of the small intestine is far from a harmless lesion.

Malignancy and Rate of Growth of Tar Warts—While studying individual warts following prolonged tarring of the skin of mice, Mottram observed a close correlation between malignancy and the high rate of growth. A few warts appear within 100 days after the beginning of tarring, the majority between 100 and 150 days and few after 300 days. The time of appearance of benign warts and of warts which disappear is not different, but malignant warts appear somewhat later. Fast growing warts do not appear earlier than slow growing, but later. Warts when first seen are for the most part sessile, a few are pedunculated. A small proportion of warts are ulcerated when first seen and begin as sores, many of these are then malignant. Many warts at first sessile later become pedunculated. Pedunculated warts are almost always benign, as are also horny warts, whereas warts that remain sessile are largely malignant. The lateral and deep extension of warts observed during life is not a completely reliable sign of a malignant manifestation since infective conditions lead to exactly similar signs on palpation. The length of life of warts that disappeared varied from four to 190 days. The height of warts was found to be variable. Sometimes a sudden increase in growth was observed and in all these cases the wart was then found to be malignant. The majority of benign warts have a low growth rate, while malignant warts have a high rate. There is a close association between ulceration and malignancy. Many warts are malignant only locally, since both epitheliomas and simple epithelial cysts resulted from the inoculation of different fragments of the same wart. Benign warts likewise vary from fragment to fragment. Autografts give rise to semi-malignant epithelial cysts and thus show that warts form a continuous series from malignant, through semimalignant, to benign. The whole wart should be divided in fragments and all the fragments inoculated in order to exclude malignant changes. The author reviews the problem of cancer.

Why Cancer Is Not Recognized Early—MacCarty selected at random 100 cancers of the stomach removed surgically. Throughout the 100 clinical histories one finds such terms or expressions as pain (dull or sharp sudden or burning), weakness, tired feeling, nausea, vomiting, flatulence, bloating, sour eructations, feeling of fullness, indigestion, stomach trouble

and periodicity of symptoms. Reports of the physical examination, contrary to the classic descriptions in textbooks, show absence of such features as emaciation, palpable tumor in the epigastrium, anasarca, accessory nodules, cachexia, pallor, edema of the legs, hematemesis, tarry stools and loss of weight greater than might be explained by a restricted diet. Strangely, also, gastric acidity was high rather than low, and the hemoglobin records were normal in the great majority of cases. None of these signs, symptoms or laboratory observations are pathognomonic of cancer. All may be found when no cancer is present as in simple gastric ulcer, duodenal ulcer and, frequently, in association with cholecystitis and even appendicitis. Such symptoms are common in any group of Americans, and certainly not all of these have cancer. It is fair to suspect, however, that some may have cancer, and this cannot be determined by signs and symptoms alone. As long as physicians continue to wait for the textbook picture of cancer they will continue to find a high proportion of hopeless cases. Cancer does occur as a small lesion. As such, its signs and symptoms are not those described for cancer in the textbooks of pathology and of the practice of medicine. Cancers are not recognized early and never will be until physicians learn that there are no characteristic signs and symptoms for early cancer and that the only means of telling whether the condition is gastric, duodenal, appendical or in the gallbladder is by the x-rays. It makes little difference for the present whether pathologists believe that cancer can be diagnosed from cells alone or not. The risk of cancer is still greater than the risk of removing a few benign ulcers, which may be cancer so far as signs, symptoms, roentgen data and gross appearance are concerned.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

32 717 854 (Dec.) 1934

- *Treatment of Cancer of Pharynx, Tonsil and Extrinsic Larynx by Divided Doses of External Radiation H. E. Martin New York and R. F. McNattin Wilmington Del.—p. 717
- *Radium Dosage and Technique in Carcinoma of the Breast G. W. Taylor Boston—p. 730
- Radium Dosage and Technique in Benign Lesions of Skin H. Morrow and L. R. Taussig San Francisco—p. 735
- Care and Treatment of Chronic Cancer Cases I. I. Kaplan New York—p. 740
- Significance of Abnormally Shaped Subarachnoid Cisterns as Seen in Encephalogram Correlation with Clinical Cases C. G. Dyke and L. M. Davidoff New York—p. 743
- Serial Bronchography in Early Diagnosis of Bronchial Carcinoma P. L. Fariñas Havana Cuba—p. 757
- Practical Observations on Use of Iodized Oil in Bronchography L. R. Sante St. Louis—p. 763
- Present Status of Diagnosis of Renal Tumors B. H. Nichols, Cleveland—p. 769
- *Calcification in Intestinal Tuberculosis C. H. Heacock Memphis Tenn.—p. 782
- Photographic Photometry of Roentgen Rays R. B. Wislacy Rochester N. Y.—p. 789
- Dangers of Roentgenoscopy and Methods of Protection Against Them II. Some Considerations of Size of Beam Used in Roentgenoscopic Examination E. I. L. Cilley E. T. Leddy and B. R. Kirklin Rochester Minn.—p. 805
- Comparison of Roentgen and Radium Spectrum from Standpoint of Practical Radiation Therapist R. R. Rathbone Washington D. C.—p. 808

Treatment of Cancer of Pharynx by External Irradiation—Martin and McNattin describe the treatment of 140 cases of cancer of the pharynx, tonsil and extrinsic larynx by divided doses of external radiation. The first requisite is the careful localization of the tumor by indirect mirror examination. For the examination of the posterior nasopharynx, the soft palate retractor is used. A biopsy is taken at the time of the first examination. With the aid of the palpating finger, the exact situation of the underlying tumor is marked on the skin of the neck by a dye. The relationship of any metastasis is then determined so that the skin portal will amply include both primary growth and metastasis. The size and shape of the skin portal, the direction of the beam and the daily dose are then decided on. At present, the period of treatment is about twenty days, it and the total dose being extended if the clinical course and local and general tolerance so indicate. With portals of from 7 to 10 cm. in diameter, treatment is begun with from 350 to 400 roentgens (measured in air) daily to alternate sides of the neck, so that at the end of twenty treatments the patient has received from 3,500 to 4,000 roentgens to each side. The patients are examined daily and any variations from the

technic originally decided on will depend on the clinical course. At the end of from fifteen to twenty days in some cases it will be found that less than the expected reaction has occurred in both normal and neoplastic tissues. In such cases the daily dose may be raised or the treatment continued beyond the period of twenty days. In cases in which the reaction is unusually early and marked, accompanied by rapid regression of the tumor, the daily dose may be lowered or treatment discontinued before the original plan is completed. In most cases it is best to err on the side of heavy treatment, since a marked reaction is usually followed by prompt healing and excellent regression of the tumor. The authors see no advantage in interrupting the treatment so as to give the patient a rest of several days before completing the original plan as is recommended in some cases by Coutard. When unusually severe reactions develop or in the case of a surgical complication such as tracheotomy, the daily sequence of treatments must be temporarily discontinued. If only one portal is used, the authors ordinarily give treatments on alternate days as a matter of convenience. Of 140 cases treated during 1931 and 1932 there remained forty-one free from disease in September 1933.

Radium Dosage in Carcinoma of Breast—Taylor used interstitial radium treatment in forty selected cases of inoperable carcinoma of the breast. Keynes platinum needles have been employed with doses ranging from 5,000 to 20,000 mg. hours. Roentgen treatment has been given in addition to radium in most cases. Regression of the local process was secured by treatment in almost all cases and seemed to be better than that which could be secured with roentgen treatment alone. Of the forty patients treated, nineteen are dead. Two of these had favorable regressions of the lesion and died of other causes five months and two years after radium treatment. One lesion proved on pathologic examination to be a gumma rather than carcinoma. Of the twenty remaining cases, eight were treated within six months and are too recent to permit judgment of the effect of treatment. One of the remaining twelve patients was subjected to radical operation six months after the radium treatment and now shows no evidence of disease one year after operation. The remaining eleven cases all present evidence of uncontrolled metastatic disease: nine in the axillary and supraclavicular areas and four in the skeletal system. As regards the immediate effect of the radium treatment, thirty-seven of the cases showed regression of the primary breast lesion, and this has been apparently a permanent arrest in twenty-four cases. Three patients showed no regression of the local process after radium treatment and died rather rapidly. Axillary metastases showed regression after radium treatment in fourteen cases. This was rarely so complete or so lasting as it was in the case of the primary breast lesions. In only five cases was regression observed in nodes in the supraclavicular region. No effect was observed on the propensity to develop remote metastases.

Calcification in Intestinal Tuberculosis—Heacock points out that calcification is the rule in old tuberculous foci, whereas in other types of infection it is the exception. The most common site for calcareous deposits in tuberculous foci is the lymph nodes, the lungs are second, and the third most common location is probably in the kidneys. Apparently, calcification also occurs in primary lesions of intestinal tuberculosis. The author examined five patients with scattered milary areas of calcification, apparently in the walls of the cecum. These five cases are reported. The mere presence of calcification in these cases was not interpreted as definite indication of healing or even of the presence of the disease itself. The routine examination of the gastro-intestinal tract was carried out with special regard to the accepted technic to discover intestinal tuberculosis. In all the cases the roentgen signs of the disease were present. The possibility that these shadows might be small flecks of ingested opaque material was eliminated by a second examination and the finding that the shadows were constant in size, contour and position. Calcified abdominal glands possess a different appearance. Although they may be mottled, lime salts occur in collections which outline the contour of the gland. Injections of bismuth and mercury compounds and salts of other metals into the buttocks will sometimes leave an opaque residue which is not absorbed. Shadows thus produced however are also in clusters and are not made up of multiple milary

shadows. The clinical history will prevent their being confused with those of tuberculosis. The author does not agree with Stumbach that the signs usually considered diagnostic of intestinal tuberculosis are highly unreliable in more than 52 per cent of cases. The demonstration of calcium, which is possible only by the use of the x-rays, will probably be of the highest value in an estimation of the extent of healing and of benefit of treatment.

Anatomical Record, Philadelphia

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- Rapid Method of Preparing Clean Bone Specimens from Fresh or Fixed Material. H. L. H. H. Green. Cambridge, England.—p. 1
Hair Cycles in Albino Rat. E. O. Butcher. Clinton, N. Y.—p. 5
Study of Certain Endocrine Effects on Mammary Glands of Female Rats. C. K. Weichert, R. W. Boyd and R. S. Cohen. Cincinnati.—p. 21
Special Secretory Cells in Transverse Ducts of Frog's Kidney. W. B. Steen. Chicago.—p. 45
Sympathetic Components of Genitofemoral and Obturator Nerves in Rhesus Monkey (Macaca Mulatta). S. Zuckerman and H. S. Burr. New Haven, Conn.—p. 53
Golgi Apparatus in Relation to Vacuolation in Basophils of Anterior Pituitary of Castrate and of Cancerous Rats. M. F. Guyer and Pearl E. Claus. Madison, Wis.—p. 57
Infra Red Photography in Anatomy. Some Experimental Observations. L. C. Massopust. Milwaukee.—p. 71
Proposed Classification for Types of Twins in Mammals. G. W. D. Hamlett and G. B. Wislocki. Boston.—p. 81
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Histogenesis of Muscular Tissue in Amphibia. I. Development of Striated Muscles from Mesenchyma in Urodeles. Z. S. Katznelson. Leningrad. U. S. S. R.—p. 109
Difference of Response of Pituitary Glands of Male and Female Albino Rats Treated with Growth Hormone. H. S. Rubinstein. Baltimore.—p. 131

Annals of Internal Medicine, Lancaster, Pa.

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- Arteriolar Infarction. J. C. Meakins. Montreal.—p. 661
Clinical Implications of Thyroid and Status Thyrocolymphaticus. A. G. Mitchell and Estelle W. Brown. Cincinnati.—p. 669
Clinical Manifestations of Amyloidosis. M. B. Rosenblatt. New York.—p. 678
*Nonpainful Features of Coronary Occlusion. S. M. White. Minneapolis.—p. 690
Personality Study in Practice of Internal Medicine. E. Weiss. Philadelphia.—p. 701
Use of Verodigen (Digitalis Glucoside) in Cardiovascular Disease. Its Biologic Assay and Pharmacologic Action. W. D. Stroud, A. E. Livingston, A. W. Bromer, J. B. Vander Veer and G. C. Griffith. Philadelphia.—p. 710
*Glycogen Formation in Diabetes. F. D. W. Lukens. Philadelphia.—p. 727
Electrophoresis Studies in Cases of Focal Infection. W. L. Wood, L. B. Jensen and W. E. Post. Chicago.—p. 734
Conservative Treatment in Occlusive Vascular Diseases of Extremities. Results in One Hundred Cases. S. Perlow. Chicago.—p. 741
Possible Relation of Blood Groups to Age and Longevity. Note. W. W. Graves. St. Louis.—p. 747
History of Invention and Development of Stomach and Duodenal Tubes. J. R. Paine. Minneapolis.—p. 752

Nonpainful Features of Coronary Occlusion—White points out that an appraisal of the nonpainful features is necessary if accurate diagnosis is to be made in coronary occlusion and if further steps are to be taken in determining during life whether actual necrosis of a considerable or important part of the wall of the heart has occurred. Fever and leukocytosis are signs of infarction whenever this process occurs in any considerable amount anywhere in the body. In coronary thrombosis, the blood pressure is nearly always lowered as compared to previous levels. The pericarditis that develops following coronary infarction is seldom accompanied by demonstrable effusion. Intracardiac thrombosis occurs when the infarction reaches the endocardium. The occurrence is signaled in life only by embolic phenomena. Changes seen in the electrocardiogram vary from striking to changes that are minor and indeterminate. Precordial pain alone is not adequate for the diagnosis of cardiac infarction. Given a patient seized with typical precordial pain if there is an area of infarction large enough to give fever, leukocytosis, pericarditis, intracardiac thrombosis or considerable changes in the ventricular complexes of the electrocardiogram a long period of rest is advisable to promote firm scarring of the area. A minimum of eight weeks is advised. If the signs of infarction are lacking, less drastic restrictions are in order and the diagnosis may be in question. Pain alone, regardless of how typical its character seems to be, is inadequate for an

accurate and final diagnosis. Rheumatic carditis, pulmonary embolism, disease of the gallbladder and other lesions of the upper portion of the abdomen, and rupture of the aorta with interstitial hematoma present particular difficulties in differentiation. Coronary occlusion may occur without pain and cause gross infarction. Study of the nonpainful features gives the only clues to the diagnosis. Two of the many changes in rate and rhythm, i. e., ventricular tachycardia and heart block, are of particular importance in prognosis and treatment.

Glycogen Formation in Diabetes—Lukens states that there exists in the diabetic organism a marked capacity to maintain the muscle glycogen at about the same level as is found in fasted normal animals. He has made a comparison of the time relationships of glycogen resynthesis after exercise in normal and in diabetic animals, from which he concludes that (1) in the earlier phases of muscle glycogen recovery the diabetic animal is similar to the normal and (2) in the later stages, presumably involving the conversion of dextrose to muscle glycogen, the normal animal shows a more rapid resynthesis, although over a recovery period of twenty-four hours the degree of glycogen reformation is the same. The probability that this phase of carbohydrate metabolism is independent of the action of insulin and of the oxidation of carbohydrate is discussed.

Archives of Dermatology and Syphilology, Chicago

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- Work of the Council on Pharmacy and Chemistry in Dermatology and Syphilology. H. N. Cole. Cleveland—p. 1
- Oral Administration of Potassium Bismuth Tartrate in Treatment of Syphilis. J. A. Kolmer. Philadelphia—p. 9
- *Excretion of Mercury After Oral Administration of Mercury with Chalk. Yellow Mercurous Iodide and Corrosive Mercuric Chloride. T. Sollmann, Nora E. Schreiber and H. N. Cole, with collaboration of H. DeWolf and J. V. Ambler. Cleveland—p. 15
- Sulphur Content of Hair and of Nails in Abnormal States. II. Nails. J. V. Klauder and H. Brown. Philadelphia—p. 26
- Changes in Skin in Chronic Encephalitis. H. Rattner. Chicago—p. 35
- *Pseudo-Ectothrix. Filamentous Change Noted on Hair Root in Certain Inflammations of the Scalp. F. C. Knowles, H. B. Decker, H. E. Radasch and E. F. Corson. Philadelphia—p. 38
- Calcifying Epithelioma. R. L. Sutton, in collaboration with R. L. Sutton Jr. Kansas City, Mo.—p. 48
- *Cutaneous Torulosis. L. J. Wile. Ann Arbor, Mich.—p. 58
- Is Spiegler Fendt Sarcoid a Clinical or Histologic Entity? G. M. Lewis. New York—p. 67
- Pityriasis Lichenoides et Varioliformis Acuta (Habermann). C. A. Greenhouse and L. C. Rubin. New York—p. 83

Excretion of Mercury After Oral Administration—

The excretion of mercury, and presumably its absorption and effective concentration in the blood and the tissues in the case of the oral administration of 0.2 Gm of mercury with chalk daily and of 0.016 Gm of yellow mercurous iodide four times per day, were found by Sollmann and his associates to be nearly the same in degree and in course as those obtained with treatment by injections, when 4 Gm of stronger mercurial ointment, containing 50 per cent of mercury, is used daily. These preparations may therefore be expected to give equivalent therapeutic effects. With the use of a dosage of 0.5 Gm of mercury of chalk daily, the excretion was twice as great as with the dosage of 0.2 Gm. On the basis of its content of mercury, the absorption of yellow mercurous iodide was about twice as great as that of mercury with chalk. The excretion of mercury with the use of 15 mg of corrosive mercuric chloride a day was between one-fourth and one-third that with the administration of 65 mg of yellow mercurous iodide daily; this difference corresponded closely to that in the content of mercury, but the excretion with this dosage of corrosive mercuric chloride was probably below the desirable therapeutic level. The amount of mercury excreted rose progressively with the continued administration of each of these preparations and declined rather slowly during the after-period, though more promptly than with the employment of injections. This cumulative effect is presumably due to the progressive coating with mercury of the intestinal mucosa, especially the surface of the villi which produces increasingly large depots for absorption.

Filamentous Change in Inflammations of the Scalp—Knowles and his co-workers state that certain hairs the roots of which exhibit threadlike wrappings can be found consistently in patients with neurodermatitis of the suboccipital region. In

glycerin preparations these filaments seem to follow the contour of the intercellular spaces of the cuticle or of the internal epithelial sheath. When treated with a solution of sodium hydroxide or potassium sulphide the swelling of the hair root tightens the filaments so that they may be mistaken for hyphae. The composition of the threadlike bands has not been determined. The authors believe that the filaments are in the nature of an intercellular exudate thrown out by the internal epithelial sheath as a result of the inflammatory process of the neurodermatitis. If the filaments are characteristic of neurodermatitis they constitute an aid in differential diagnosis.

Cutaneous Torulosis—Wile reports a case of fatal torulosis with cutaneous lesions differing somewhat from those described previously. Cutaneous manifestations of torulosis can occur as acneiform pustules, granuloma-like ulcers and deep-seated abscesses. To these must now be added subcutaneous and deep-seated nodules resembling ecchymoses varying in size from small plaques to those the size of a hand and having no tendency to ulceration. In histopathologic characteristics cutaneous torulosis conforms to that seen in other organs, modified only by the cutaneous structure. In general it may be described as a caseating, granulomatous process, characterized by enormous numbers of giant cells of the foreign body type, little inflammatory reaction and a peculiar form of caseation, which may lead to ulceration but did not in the present case. From blastomycosis the condition is easily differentiated pathologically by the absence of abscess formation and by the enormous numbers of organisms existing free and contained in giant cells throughout the section. From coccidioid granuloma it is differentiated not only by the same features that differentiate it from blastomycosis but also by the absence of endosporeulation. While few cases occur in the literature, it is suggested that cutaneous manifestations of *Torula* and indeed torulosis itself may not be so rare as the reported cases would seem to indicate.

Journal of Biological Chemistry, Baltimore

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- Fatty Acids of Phosphatides of Beef Suprarenals. W. C. Ault and J. B. Brown. Columbus, Ohio—p. 607
- Some Observations Concerning Chemistry of Arachidonic Acid and Its Quantitative Estimation. W. C. Ault and J. B. Brown. Columbus, Ohio—p. 615
- Proportionality Studies on Catalase. G. W. Marks. La Jolla, Calif.—p. 623
- Polysaccharide of Vitreous Humor. K. Meyer and J. W. Palmer. New York—p. 629
- Abdominal Fat of the Western Range Horse. H. A. Schuette, Thelma M. Garvin and E. J. Schwoegler. Madison, Wis.—p. 635
- Metabolism of L-Cystine and D-Cystine in Growing Dogs Maintained on Diets of Various Protein Contents. J. A. Stekol. New York—p. 641
- Effect of Fasting Refeeding and of Variations in Cystine Content of Diet on Composition of Tissue Proteins of White Rat. W. C. Lee and H. B. Lewis. Ann Arbor, Mich.—p. 649
- Quantitative Studies of Composition of Glomerular Urine. XII. Concentration of Chloride in Glomerular Urine of Frogs and Necturi. B. B. Westfall, T. Findley and A. N. Richards. Philadelphia—p. 661
- Electrolytes in Serum of the Rat. P. K. Smith and A. H. Smith. New Haven, Conn.—p. 673
- Inorganic Salts in Nutrition. V. Electrolyte Balance in Serum of Rats Receiving Diet Deficient in Inorganic Constituents. A. H. Smith and P. K. Smith. New Haven, Conn.—p. 681
- Id. XI. Changes in Composition of Whole Animal Induced by Diet Poor in Salts. A. E. Light, P. K. Smith, A. H. Smith and W. E. Anderson. New Haven, Conn.—p. 689
- Fat Soluble Vitamins. XI. Carotene and Vitamin A Content of Colostrum. J. Semb, C. A. Baumann and H. Steenbock. Madison, Wis.—p. 697
- Id. XII. Absorption and Storage of Vitamin A in the Rat. C. A. Baumann, Blanche M. Ruising and H. Steenbock. Madison, Wis.—p. 705
- New Procedure for Estimation of Bile Salts in Body Fluids Based on Bile Salt Hemolysis. S. S. Lichtman. New York—p. 717
- Liver Glycogen. Note on Blood Sugar Level. M. Caroline Hrubetz and L. B. Dotz. New York—p. 731
- Fate of Antirachitic Factor in the Chicken. III. Effective Levels and Distribution of Factor from Cod Liver Oil and from Irradiated Ergosterol in Certain Tissues of the Chicken. W. C. Russell, M. W. Taylor and D. E. Wilcox. New Brunswick, N. J.—p. 735
- Bence-Jones Protein in Serum. D. M. Kydd. New Haven, Conn.—p. 747
- Prosthetic Group of Limulus Hemocyanine. J. B. Conant, F. Derssch and W. E. Mydans. Cambridge, Mass.—p. 755
- Peroxidase. A. K. Balls and W. S. Hale. Washington, D. C.—p. 767
- Electrometric Titration of Lecithin and Cephalin. T. H. Jukes. Berkeley, Calif.—p. 783

Journal of Clinical Investigation, New York

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- Validity of Rapid Determinations of Osmotic Pressure of Protein Solutions H S Wells D G Miller Jr and B M Drake Nash
ville Tenn—p 1
- *Exchange of Lipids in Umbilical Circulation at Birth E M Boyd
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- Venous Pressure and Posture in Normal Young Women Josephine M
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- Surgical Treatment of Essential Hypertension I H Page and G J
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- Effect of Renal Denervation on Level of Arterial Blood Pressure and
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- Some Effects of Exercise on Urinary Sediment A M Roberts Los
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- Protein Content of Subcutaneous Edema Fluid in Heart Disease R G
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J Lerman and J H Means Boston—p 37
- Experimental Study of Clinical Vitamin B Deficiency Katharine
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- Histologic Study of Arterioles of Muscle and Skin from Arm and Leg
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- Id IX Relationship to Oxygen Saturation and Carbon Dioxide Con-
tent of Arterial Blood A Hurtado N L Kaltreider and W S
McCann Rochester, N Y—p 94
- *Concerning Naturally Occurring Porphyrins I Isolation of Copro-
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- *Id II Isolation of Hitherto Undescribed Porphyrin Occurring with
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Hemolytic Jaundice C J Watson Minneapolis—p 110
- *Id III Isolation of Coproporphyrin I from Feces of Untreated Cases
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- Resistance to Fibrinolytic Activity of Hemolytic Streptococcus with
Special Reference to Patients with Rheumatic Fever and Rheumatoid
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Jr Boston—p 119
- Antitryptic Activity of Synovial Fluid in Patients with Various Types
of Arthritis W F Holmes Jr C S Keefer and W K Myers
Boston—p 124
- Inhibition of Tryptic Digestion of Cartilage by Synovial Fluid from
Patients with Various Types of Arthritis C S Keefer W F
Holmes Jr and W K Myers Boston—p 131
- Ability of Nephritic Patients to Deaminate and Form Urea from
Ingested Glycine E Kirk New York—p 136

Exchange of Lipids in Umbilical Circulation—Boyd and Wilson present evidence indicating that certain lipids are added to umbilical blood by the placenta and removed or absorbed by the fetus. Whole blood from the umbilical artery at birth contained 22 per cent less phospholipids and 14 per cent less free cholesterol than whole blood from the umbilical vein. Ester cholesterol was also lower in arterial blood but only when venous blood contained more than 10 mg per hundred cubic centimeters of this lipid. Neutral fat was lower in about half the cases and higher in the other half. The results were considered to signify that phospholipid and free cholesterol are regularly absorbed by the human fetus from umbilical blood at birth, ester cholesterol providing that there is sufficient (more than 10 mg per hundred cubic centimeters) to be absorbed while neutral fat may be either absorbed or given up. It was estimated that more than 40 Gm, 75 per cent of which is phospholipids, of these substances are absorbed in twenty-four hours by an average large, well nourished human fetus at birth. Whole blood which lies in the placenta between the time that the cord is clamped and the time that the placenta separates from the uterine wall was found to acquire additional amounts of phospholipids in twelve of fourteen cases, free cholesterol in three fourths of the cases ester cholesterol in two thirds and neutral fat in half of the cases. It was concluded that the placenta adds all of these substances to umbilical blood and may remove some of them, especially neutral fat. Phospholipids free cholesterol and ester cholesterol therefore pass in general in one direction, namely from the placenta to the fetus, while neutral fat may pass in either direction. The composition of fatty acids in plasma from the umbilical vein were found similar, in respect to their iodine number to those of adult plasma except phospholipid fatty acids which are apparently more

saturated in the fetal circulation. It is probable that the fetus absorbs the more saturated phospholipid fatty acids and that it has an especial avidity for the cephalin fraction of the phospholipids. The white blood cells of fetal blood contain about half the lipid concentration of adult leukocytes, which is probably due to the greater proportion of lymphocytes in the blood of the fetus at birth. No evidence was obtained that they function in the transport of fat from the placenta to the fetus or vice versa.

Isolation of Coproporphyrin I from Urine in Cinchophen Cirrhosis—Watson isolated a porphyrin from the urine of a patient with cirrhosis of the liver, the latter probably caused by cinchophen. It has been identified by virtue of the ester melting point and spectroscopic character as coproporphyrin I. There was no suggestion in the behavior or appearance of the patient's erythrocytes, during life, of bone marrow irritation. There is little reason, therefore, to assume that this increase of coproporphyrin in the urine occurred because of increased formation in the marrow such as is the case in congenital porphyrinuria and pernicious anemia. Rather than derived from excessive formation in the marrow, it was believed that the porphyrin isolated was the normal coproporphyrin of the urine increased because of the damaged excretory power of the liver. Van den Bergh has recently discussed the retention of coproporphyrin in the blood serum in obstructive jaundice. He obtained experimental evidence to suggest that the coproporphyrin of the bile is formed in the liver. According to this, one would expect relatively large amounts of urinary coproporphyrin in simple obstructive jaundice, and smaller amounts or none in jaundice due to liver disease. This was apparently not true in the author's case, since there was advanced liver disease. The damage was fairly well limited to the periphery of the lobules and there was obviously a definite biliary obstruction. In three cases of common duct obstruction due to stone, the urine was found to contain definite but only moderate increases of coproporphyrin, much less in amount than in the case of cinchophen cirrhosis. Coproporphyrin or porphyrin was not isolated in the urine from a patient who later died of hepatic insufficiency due to advanced hepatic lobatum.

Porphyrin in Feces of Familial Hemolytic Jaundice—A heretofore undescribed porphyrin whose methyl ester melts at from 202 to 203 C, having some of the characteristics of a deuteroporphyrin but differing from the deuteroporphyrins spectroscopically, has been isolated by Watson from the feces in a typical case of familial hemolytic jaundice in which a "hemolytic crisis" was present at the time the feces were collected. This porphyrin occurred in association with a marked increase of coproporphyrin I. In four other cases of the same disease the excretion of coproporphyrin was moderately increased, and in two of these instances it was again isolated and shown to be coproporphyrin I. If this coproporphyrin is to be related to the protoporphyrin of the erythrocytes, as described by van den Bergh, the latter would have to correspond to etioporphyrin I. The possibility of independent formation in the marrow erythroblasts must also be considered.

Isolation of Coproporphyrin I from Feces in Untreated Cases of Pernicious Anemia—Watson has obtained coproporphyrin I also from the feces in two typical cases of pernicious anemia during relapse and has identified it by virtue of the ester melting point and absorption spectrum. In one of these, studied again after the liver had induced a remission the amount was obviously decreased and too small to isolate. In similar amounts of feces from two normal subjects and four having anemias of other types, the amounts were too small to permit of isolation.

Journal of Comparative Neurology, Philadelphia

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- Aberrant Pyramidal Fascicles in the Cat R L Swank Chicago—p 355
- Optic System of Teleost Holocentrus I Primary Optic Pathways and Corpus Geniculatum Complex R G Meader New Haven Conn—p 361
- Pattern of Cortical Injury in the Rat and Its Relation to Mass Action N R F Maier Ann Arbor Mich—p 409
- Relation Between Axone Diameter and Myelination Determined by Measurement of Myelinated Spinal Root Fibers D Duncan Galveston Texas—p 437
- Differentiation of Peripheral and Central Acoustic Apparatus in the Frog O Larsell Portland Ore—p 473

Journal of Thoracic Surgery, St. Louis

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- Malignant Disease of the Lung A. T. Edwards London England—p 107
- *Bronchogenic Carcinoma Classification in Relation to Treatment and Prognosis W. M. Tuttle Detroit and N. A. Womack, St. Louis—p 125
- *Topographic Classification of Primary Cancer of Lung Its Application to Operative Indication and Treatment C. B. Rabin and H. Neuhof New York—p 147
- *Bronchial Carcinoma Bronchoscopic Biopsy in a Series of Thirty Two Cases C. L. Jackson and F. W. Konzelmann Philadelphia—p 165
- Total Removal of Right Lung for Carcinoma Report of Successful Case R. H. Overholt Boston—p 196
- Lobectomy for Carcinoma of the Lung C. Eggers New York—p 211

Bronchogenic Carcinoma—Tuttle and Womack state that most, if not all, primary carcinomas of the lung are bronchogenic. At present a more detailed genetic classification is not justified. They tend to extend by the blood stream or by definite lymphatic pathways. The course of the disease as well as its symptomatology depends to a large extent on the portion of the bronchial tree in which the tumor arises. Tumors of the major bronchi give symptoms earlier, extend more slowly and are more amenable to surgical treatment. Tumors of the minor bronchi and the periphery of the lung cause fewer early symptoms and are more rapidly fatal. Histologic grading according to cellular differentiation, while it may offer some information, is subject to various interpretations and inaccuracies and must be used with great care.

Classification of Primary Cancer of Lung—Rabin and Neuhof analyzed 250 cases of primary cancer of the lung, in which 100 necropsies were done, with the object of classification for clinical purposes. Only the gross topographic features of cancer of the lung proved to be of aid in classification as to probable operability or probable nonoperability. The authors identify and describe two main groups, termed the circumscribed and the noncircumscribed types. The circumscribed type comprises a fourth of the cases. Cancers of the circumscribed type occupy the parenchymal and peripheral zones and are termed parenchymal and peripheral tumors. Regional lymph node involvement occurs later and is limited. The peripheral tumors grow from branch bronchi and may therefore be termed branch bronchus circumscribed tumors. The noncircumscribed type, to which three fourths of pulmonary cancers belong, comprises tumors growing from the main and the branch bronchi. These neoplasms are termed main bronchus and branch bronchus tumors. They present the usual invasive characteristics of cancer in the great majority of cases. Clinical, roentgenographic and bronchoscopic features serve to differentiate the circumscribed from the noncircumscribed types, on the basis of which the diagnosis as to type can be made accurately. Peripheral (branch bronchus localized type) and parenchymal tumors tend to fall into the class of operability. The great majority of main bronchus and branch bronchus tumors (with the exception of the peripheral type) do not fall into the operable class, in the sense of surgical eradication, at the time at which patients suffering from these lesions ordinarily come under observation. The indications for operation, based on the topographic classification, are outlined and five operative cases are described as illustrations of the selection of cases for operative treatment on the basis of topographic features.

Bronchial Carcinoma—During the last four and one-half years Jackson and Konzelmann have seen thirty-two cases of bronchopulmonary cancer in which bronchoscopic biopsy was confirmative. In all but three cases the endobronchial lesion was thought to be primary. The cardinal indication for diagnostic bronchoscopy is clinical or roentgenologic evidence of bronchial obstruction (a wheeze or an area of obstructive atelectasis or obstructive emphysema), and in no connection is it more valuable than in the early diagnosis of bronchial carcinoma. In addition to affording means of diagnosis, bronchoscopy will give the surgeon definite evidence regarding the level at which the lobe or lobes must be amputated to reach the upper limits of the tumor (Churchill). After roentgenographic localization of the lesion in both planes, the bronchoscope is passed down to the suspected area and the bronchial orifices are inspected. If fungating tissue is found in any of their removal of an ample amount is easy. If there is no definite involvement of the bronchial wall, but only a compression or bulge, biopsy should be postponed. It is necessary

to inspect the lesion carefully and to make certain to get tissue representative of the tumor itself and not just the peripheral "inflammatory zone." In many cases granulations are produced in the vicinity of the lesion and, of course, tissue removed from these will not show the growth. Bronchogenic tumors must be graded with caution. In the study of biopsy material from bronchogenic tumors, the fragment is by necessity small and often represents only a small part of the tumor. It has been the authors' experience that several specimens taken at various intervals have shown different degrees of malignancy as this is determined by cytologic structure. It has been their practice to correlate the information obtained by bronchoscopy, roentgenography and microscopic study of biopsy material. The sum of these three indicates the course to be pursued. Biopsy distinguishes inflammation and benign and malignant growths. Roentgenography and bronchoscopy guide the treatment.

Kentucky Medical Journal, Bowling Green

33: 1-50 (Jan.) 1935

- Angina Pectoris R. E. Smith, Henderson—p 11
- The Business Side of Medicine W. B. Atkinson Campbellsville—p 16
- Hernias of Urinary Bladder G. P. Grigsby Louisville—p 19
- Hay Fever Present Status of Methods Used in Treatment of Hay Fever A. E. Cohen Louisville—p 24
- Id. Vernal Conjunctivitis A. E. Leggett Louisville—p 26
- Discussion of Temple Treatment of Eclampsia O. Allen McHenry—p 30
- The Menace of the Human Defective J. S. Boggess Louisville—p 33
- Selection of Peptic Ulcers for Surgical Treatment F. W. Rankin Lexington—p 39
- Radical Operation for Carcinoma of Penis Report of Two Cases J. D. Hancock Louisville—p 44

Laryngoscope, St. Louis

44: 927-998 (Dec.) 1934

- Facial Nerves I. Prickle Cell Epitheliomas of Ear with Involvement of Facial Nerve in Tympanum W. C. Denison New York—p 927
- Id. II. Otitic Hydrocephalus Report of Case C. H. Smith New York—p 931
- *Id. III. Simple Surgical Method of Dealing with Salivary Calculi in Submaxillary Ducts A. L. Beck, New Rochelle N. Y.—p 935
- Present Status of Diathermy or Electrocoagulation in Treatment of Tonsil Disease E. R. Roberts Bridgeport Conn.—p 941
- Newer Clinical Approaches I. Nutritional Influences W. Weston Columbia S. C.—p 948
- Id. II. Autonomic Level F. Blackmar, Columbus Ga.—p 959
- Id. III. Newer Clinical Uses of Insulin S. M. Beale Jr. Sandwich Mass.—p 966
- Conservative Treatment of Chronic Suppurative Otitis Media Efficacy of Iodine Dusting Powder in Local Therapy O. R. Kline, Camden N. J.—p 976

Salivary Calculi—Beck states that the chief difficulties in the removal of a salivary calculus may be overcome if the parts can be immobilized at will while the work proceeds. This immobilization is accomplished by means of silk traction sutures temporarily placed for the duration of the operation. The tissue is grasped close to and beneath the papilla with small forceps, and one suture is placed on each side of the wall of the duct through its orifice and given to an assistant, who exerts countertraction, converting the small orifice into a fairly large slit. At the same time this traction brings about immobilization of that submaxillary gland duct and lifts the duct away from the floor of the mouth. The sutures may be held by an assistant or may be conveniently hooked round the teeth, at the point of emergence from the mouth. With the duct orifice thus held in position a Bowman lacrimal probe is passed for detection of the calculus, after which a Bowman canaliculus knife is inserted and the duct slit open far enough to expose the calculus. At a depth adjacent to the calculus it may be necessary to complete the slitting with scissors. When thus exposed removal of the stone is not difficult.

Missouri State Medical Assn Journal, St. Louis

32: 1-36 (Jan.) 1935

- Ocular Complications of Gonorrhea C. M. Swab Omaha—p 1
- Yeastlike Fungous Infection of Conjunctiva Report of Case A. A. Drake Rolla—p 6
- Diagnosis and Treatment of Perinephric Abscess J. R. McVay Kansas City—p 10
- Diagnosis of Childhood Type of Tuberculosis H. L. Mantz, Kansas City—p 13
- Treatment of Childhood Tuberculosis H. C. Berger Kansas City—p 20
- Chronic Prostatitis Its Benefits and Dangers in Prostatic Urogenic Obstruction D. B. Stutsman St. Louis—p 24
- Transurethral Prostatectomy Motion Picture Demonstration N. S. Moore St. Louis—p 25

Radiology, Syracuse, N Y

23: 651 780 (Dec.) 1934

- Anomalies of Colon Their Roentgen Diagnosis and Clinical Significance Résumé of Ten Years Study J L Kantor New York —p 651
- *Sources of Error in Oral Cholecystography with Suggested Methods of Correction W H Stewart and H E Illick New York —p 663
- Value of Encephalography as Diagnostic and Therapeutic Agent W D Abbott Des Moines, Iowa —p 672
- Renal Rickets Report of Case B H Nichols and E L Shuflett Cleveland —p 677
- International Recommendations for X-Ray and Radium Protection Revised by the International X-Ray and Radium Protection Commission at the Fourth International Congress of Radiology Zurich July 1934 —p 682
- A Roentgenologist's View of the Minimal Tuberculous Lesion C C Birkelo, Detroit —p 686
- *Encephalography in Alzheimer's Disease W C Menninger Topeka Kan —p 695
- Calcification of Abdominal Aorta M Feldman Baltimore —p 700
- Illustrative Case of Syringomyelia Treated with Roentgen Rays General Discussion of Effect of Radiation on This Disease H Fried New York —p 705
- Inhibition of Growth in Pollen and Mold Under X-Ray and Cathode Ray Exposure. C P Haskins and C N Moore Schenectady N Y —p 710
- Application of Kymoroentgenography to Diagnosis of Cardiac Disease Part II I S Hirsch New York —p 720
- Some Mathematical Aspects of Radiation Dosage. J G Hoffman and W C Reinhard Buffalo —p 738
- *Study of Back Scatter for Several Qualities of Roentgen Rays Edith H Quimby, C D Lucas A N Arneson and W S MacComb New York —p 743

Intensified Method of Oral Cholecystography—Stewart and Illick have devised the following technic for what they term the "intensified method of oral cholecystography" On the afternoon preceding the Graham test the patient is given two or three cups of weak tea with as much sugar as possible, accompanied by one sweet cake The dye (35 Gm) is given directly after the evening meal No breakfast is given the following morning Study of the gallbladder is undertaken sixteen hours after the administration of the dye, to estimate the mucosal function of concentration The twelve-hour examination is omitted Selected foods are then allowed that will not empty the gallbladder, extra sugar being one of the important items Additional dye is given in small doses during the afternoon and evening, along with more sugar An examination of the gallbladder for maximal concentration and intensity of the shadow is then made before breakfast the following morning, forty hours after the first dose of the dye Then a fatty meal is taken and an hour later a study is made of the function of contractability as the viscous empties Tumors and stones often come to light as the gallbladder empties Sometimes the patient has to be kept under observation for a number of hours as emptying progresses There is far more uniformity to the normal intense shadow obtained at the forty-hour observation, whereas many normal cases varied considerably in the shadow density at the sixteen-hour examination with the old technic The intensified method either does or does not give a shadow, and the faint shadow is more rare than with the former technic Fluoroscopy of the gallbladder is practical in any case in which a shadow of the gallbladder is obtained There are certain roentgen improvements which aid in obtaining these better roentgenograms A fast Bucky diaphragm is now used which permits exposures up to one twentieth of a second With such a fast technic, fuzziness of the shadow of the gallbladder due to motion is lessened The contrast obtainable is extreme and the visualization of small calculi is rendered more exact Compression is an advantage when the patient will permit it The authors employ a standard technic of 100 milliamperes and one-half second time, with less time in certain cases A fine focus tube may be used at this milliamperage The results obtained from a Graham test satisfactorily performed are as follows (1) The gallbladder is visualized, (2) the gallbladder is faintly visualized, (3) the gallbladder fails to empty properly, (4) there is no distinguishable shadow of the gallbladder and (5) gallstones are present With any of these observations, one may make certain mistakes of interpretation, the problems of which are discussed

Encephalography in Alzheimer's Disease—Menninger reports a case presenting the typical history, physical signs and mental picture of Alzheimer's disease, in which encephalography was used to exclude the remote possibilities of a brain tumor

and to support conclusively the diagnosis of Alzheimer's disease. Encephalography indicates the explanation of the symptoms and supports the repeatedly reported observations of the pathologic condition, namely, the marked brain atrophy, in this instance more pronounced on the one side than on the other

Study of Back Scatter for Roentgen Rays—Quimby and her associates point out that the amount of scatter depends on the quality of the radiation, the nature of the material on which it impinges, the volume of the material and the area of the beam The relative amount of scattered radiation is different in different directions, being greatest in the forward and least in the backward direction The portion scattered backward is of particular interest, because of its contribution to the dose delivered at the surface of the body This dose consists in part of radiation from the primary beam and in part of that scattered back by the underlying tissues Since all depth doses are determined in relation to the surface dose, it is necessary to know this accurately Moreover it is not possible to determine the erythema dose in terms of physical units (roentgens) until the intensity of a beam as measured in air can be related to that on the surface of the body Most of the disagreements in measuring back scatter may be explained by variations in the experimental conditions This is particularly true in the case of physical measurements in which instance the nature and material of the ionization chamber are extremely important When approximately the same experimental conditions are used, there is fair agreement in the results obtained. The method of choice so far has been the use of the small ionization chamber of organic materials, the assumption being that its walls have no effect on the results Some of these chambers, when calibrated against a standard open air chamber, agree with it over a wide range of quality of radiation However, the scattered radiation contains components of very long wavelength, which may be more or less completely absorbed in the walls of the chamber At the same time, the secondary radiation from these walls and from the inner electrode may introduce a disturbing factor The authors studied the problems of back scatter in radiation by measuring it with a new type of ionization chamber They found that values of percentage scatter obtained in this way are considerably higher than those obtained with so-called air wall ionization chambers The scatter increases with the irradiated area and with the effective wavelength of the radiation, the two effects being independent of each other Tables are given for the total radiation, including back scatter for a range of fields and qualities, for the variation in total radiation with field for any quality, and for the variation with quality for any field

Southwestern Medicine, Phoenix, Ariz

18: 391-434 (Dec.) 1934

- Special Phases of Medical Economics. H Taylor, Fort Worth Texas. —p 391
- Appendicitis C W Mayo Rochester Minn —p 397
- Industrial Accident Neuroses Suggestions for Appraisal and Treatment L C Marsh, Tucson Ariz —p 403
- Tuberculosis as Seen in Postmortem Examinations of Children W W Waite El Paso Texas —p 408
- Transurethral Prostatic Resection H Wear, Denver —p 411
- Significance of Blood Picture in Acute Surgical Infections A E. Winsett Amarillo Texas —p 415

Tennessee State Medical Assn. Journal, Nashville

27 471 518 (Dec.) 1934

- The Newer Concepts of Cardiovascular Syphilis F A Willis Rochester Minn —p 494

Wisconsin Medical Journal, Madison

34 176 (Jan.) 1935

- Open Reduction Treatment of Fractures. J A Jackson Madison —p 11
- Scarlet Fever M J Fox Milwaukee —p 19
- Diagnostic and Therapeutic Considerations in Management of Acute Intestinal Obstruction O H Wangersteen Minneapolis —p 24
- Torsion of Spermatheca Cord C R Marquardt Milwaukee —p 33
- Safety Spectacles for the Color Blind V A Chapman Milwaukee —p 35
- Cataract Extractions Report of One Hundred and Eight Intracapsular and Forty Seven Extracapsular E E Carl, Milwaukee —p 37
- Toxic Pruritus Secondary to Chronic Nephritis M J Reuter Milwaukee —p 38

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

48 515 564 (Dec.) 1934

Eczema as Clinical Entity and Its Fundamental or Essential Lesion
H G Adamson—p 515

*Self Healing Primary Squamous Carcinoma of Skin J S Dunn and J F Smith—p 519

Diagnosis and Treatment of Scleroderma and Acrosclerosis and Some of Their Kindred Diseases J Sells—p 523

Self-Healing Primary Squamous Carcinoma of Skin—

Dunn and Smith recently described a case of multiple primary skin cancer in a young man, with spontaneous healing of many of the lesions, and no sign of metastasis in a period of seven and a half years. In sections in the early stages, a highly malignant-looking condition was observed and, as the lesion grew older, differentiation of the cells became greater, the epithelial pearls became more completely cornified, and ultimately healing took place, with replacement of the corium by scar tissue, in which here and there degenerate remnants of epithelial pearls might be detected. The normal pattern of the corium was lost and the elastic tissue largely destroyed. In a similar case the authors cannot say what the course would have been had the lesion not been excised, but in from three to five weeks it had reached a size which squamous epithelioma usually takes as many months to attain. Rapidity of growth is usually associated with early involvement of the regional glands, but this was not so in this case. The authors think that they may be dealing with something which is not quite cancer in the ordinarily accepted sense but which cannot in its early stages be differentiated from cancer, either histologically or clinically. It is not impossible that some of the cases of primary epithelioma that are diagnosed clinically, excised, proved histologically and cured permanently are examples of the condition which they describe, and that, if they had been left to develop naturally, they would have gone through the series of changes ending in spontaneous cure. Against this view is the fact that the lesions in their two cases reached a considerable size, and experience teaches that epitheliomas that have been allowed to reach a diameter of 3 cm do badly, even with extensive surgical procedures.

British Journal of Experimental Pathology, London

15 321-400 (Dec.) 1934

Studies on B Virus. III. Experimental Disease in Macacus Rhesus Monkeys A B Sabin—p 321

*Observations Concerning Mechanism of Parathyroid Hormone Action J B Collip L I Pugsley H Selye and D L Thomson—p 335

Immunization of Animals with Formalized Tissue Cultures of Rickettsia from European and Mediterranean Typhus. I J Kligler and M Aschner—p 337

*Observations on Properties of the Vi Antigen of Bacillus Typhosus A Felix S S Bhatnagar and R Margaret Pitt—p 346

Antigenic Differences Between Related Bacterial Strains. Criticism of Mosaic Hypothesis F M Burnet—p 354

New Agent for Stimulating Metabolism. Dinitro-Ortho-Cyclopentyl phenol (Preparation 2769/1) and Its Action on Basal Metabolic Rate F E C. Devegney—p 360

Action of Human Blood on Meningococcus N Silverthorne and D T Fraser—p 362

Production of Tumors in Fowl with Colloidal Solution of 1, 2, 5, 6-Dibenzanthracene. I Berenblum and L P Kendal—p 366

Immunologic Relationships of Pseudorabies (Infectious Bulbar Paralysis (Mad Itch) A B Sabin—p 372

Flocculable Substance of Vaccinia. Effect on Its Antigenic Properties of Adsorption on Colloidal Particles M H Salaman—p 381

Agglutinogens of Strain of Vaccinia Elementary Bodies J Craigie and F O Wishart—p 390

Mechanism of Parathyroid Hormone Action—Collip

and his associates carried out complete removal of the kidneys in eight male albino rats. The animals were injected with 40 units of parathyroid hormone twice daily for two days and killed forty-eight hours after the operation. The lower ends of the femurs were decalcified with nitric acid, stained with hematoxylin and eosin and examined histologically. All showed marked signs of osteoclastic bone resorption. From this the authors conclude that the action of the parathyroid hormone on the bones is independent of any direct influence it may have on the renal threshold for phosphates. Since the histologic

changes in the bones in hypervitaminosis D are entirely different from those observed in experimental hyperparathyroidism, it is difficult to believe that viosterol acts merely by stimulating production of the parathyroid hormone.

Properties of Vi Antigen of Bacillus Typhosus—Felix and his associates present observations on some of the properties of the Vi antigen (an antigen of special virulence in strains of Bacillus typhosus). The Vi antigen of Bacillus typhosus can be demonstrated by the inagglutinability of the living organisms by pure O serum or by agglutination with pure Vi serum. The two methods give equally reliable results. The development of Vi antigen is suppressed by growing virulent strains of Bacillus typhosus at temperatures between 20 and 25 C and also between 40 and 44.5 C. The application of this technic to similar studies in other bacterial species is suggested. The heat resistance of the Vi antigen is described as it is reflected by agglutination and absorption tests and by antibody formation in the rabbit. Sodium chloride extracts of cultures of virulent strains of Bacillus typhosus contain Vi antigen precipitable by pure Vi antiserum. The use of formalized extracts is suggested for the preparation of relatively potent Vi antiserum.

British Journal of Ophthalmology, London

18 673 720 (Dec.) 1934

Critical Values for Light Minimum and for Amount and Rapidity of Dark Adaptation C E Ferree G Rand and M R Stoll—p 673

*Primary Glaucoma. Respective Values of Different Forms of Treatment of This Disease G H Burnham—p 687

Foreign Bodies In and About the Eyeball. Three Unusual Cases F T Tooke—p 695

Phenomenal Visual Acuties of European Chimney Swallow S Holth.—p 703

Primary Glaucoma.—Burnham divides primary glaucoma into two kinds: the form associated with noncupping of the optic disk and that which has cupping of the optic disk. He believes that the noncupping variety of glaucoma is due to a certain type of cyclitis without the exudation of ordinary cyclitis but with the property of causing plus tension, and that the variety of glaucoma associated with cupping of the optic disk is not due to a cyclitis, to begin with, but rather owes its origin to an inflammation of the optic disk and of the nerve immediately behind it. His conclusions are that in the beginning nearly all cases of the noncupping and cupping varieties of glaucoma can, with few exceptions, be cured by the use of scopolamine, mercury and iodide and bromide of sodium. If, however, the improvement is not satisfactory, the combined treatment may be used, that is, operation combined with the foregoing treatment. The author relies more on the medicinal treatment than the treatment by operation. In the cupping variety, he believes that in the beginning the medicinal treatment or the combined treatment is superior to the operative. In the noncupping variety, if only one eye is diseased and the other apparently not, the treatment will prevent the onset of glaucoma in the good eye. He states that his results show how wide and beneficial is the action of the nonoperative system, as advocated by him. His feeling is that the operative treatment is just about useless, being used as a last and the only resort with little belief in its ability to influence the disease.

British Journal of Radiology, London

7: 641 704 (Nov.) 1934

Treatment of Syringomyelia by X Rays E M Haworth—p 643

Electric Characteristics of Constant High Voltage Generators for X Ray Work. Part I. Theory of Half Wave Generators G E Bell—p 654

*X Ray Treatment of Some Uncommon Tumors R F Phillips—p 670

X Ray Output of Constant Potential High Voltage Apparatus J E Roberts—p 685

Roentgen Treatment of Tumors—Phillips presents twenty unselected cases of bone sarcoma showing the immediate results of modern high voltage roentgen therapy. Improvement in the general condition of the patient, together with reduction in size of the tumor and relief of local symptoms, occurred in eight cases. Biopsy of the sarcoma to establish its pathologic nature is essential, either before the commencement of roentgen therapy or within the first few days of such treatment. Roentgen therapy of operable osteogenic

sarcoma is not yet justified but may improve the surgical results when applied after operation to the stump and to the thorax. For certain round cell sarcomas, especially the rare plasmocytoma, roentgen therapy is probably the treatment of choice, while temporary alleviation is not infrequently obtained in inoperable sarcomas of all types.

British Medical Journal, London

2: 977 1026 (Dec. 1) 1934

- International Action to Control the Spread of Infectious Diseases G S Buchanan—p 977
Treatment of Adolescent Aphosis J Calvé—p 983
Allergy Metabolism and the Autonomic Nervous System C P Lapage—p 985
Diverticulitis with Unusual Complications Report of Two Cases H Foxell—p 988
Aural Vertigo W S T Neville—p 989
Tonsillectomy with Local Anesthesia Review Based on Five Hundred Cases G Morey—p 990

2 1027 1086 (Dec. 8) 1934

- *Operative Treatment of Facial Palsy A B Duell—p 1027
Stomach and Duodenum After Operation S C Shanks—p 1012
Relative Advantages of British and Foreign Health Resorts E P Poulton—p 1037
Mediastinal and Apical Empyema S J Hartfall and L N Pyrah—p 1039
*Uveoparotid Tuberculosis Report of Three Cases S E Tanner and A L McCurry—p 1041
Clinical Diagnosis of Whooping Cough Without the Whoop P R Evans—p 1043

2 1087 1136 (Dec. 15) 1934

- Pain and Mechanism of Its Production D Waterston—p 1087
Arterial Embolectomy G Jefferon—p 1090
Ruptured Spleen After Trifling Mishaps Record of Two Cases H Dodd—p 1094
Congenital Heart Block Case J Lewis—p 1096
Subleukemic Lymphadenosis in Child G S Smith—p 1097
Practical Note on Suicide F Dillon—p 1098

Operative Treatment of Facial Palsy—Duell urges immediate investigation of the site of accidental injury in cases of facial palsy. In many instances the removal of a spicule of bone the lifting of a fractured plate of bone the decompression and cleansing of 10 mm or more of nerve with a slitting of the sheath to relieve inflammatory pressure, will ensure an almost perfect recovery, when neglect would be followed by only partial recovery with grotesque disfiguration for life. When such an investigation reveals the fact that there is an actual section of the nerve or extensive damage, a preliminary incision of the femoral cutaneous nerve may be done immediately and, two or three weeks later, a graft may be transplanted from this to replace the gap. In such a case for from forty-eight to seventy-two hours after the initial injury, one will have the advantage of being able to pick up the distal segment and verify it by faradic stimulation and will know something of the problem to be faced in making the transplant later on. No matter what the length of graft necessary in such cases, recovery is assured if the graft is transplanted successfully. Operation in cases of long standing is indicated whenever there is galvanic response in the muscles sufficient to show that the muscles have not undergone too much fibrous atrophy. The nerve can always be repaired. If there is sufficient muscle fiber left the case will be greatly improved. The quality of the result will always depend on the condition of the muscle the time element enters largely into this. The author has incised the sheath of the nerves of several cases of Bell's palsy in which the recovery was incomplete and had remained unchanged for many years. In every instance despite this long period of inactivity, the relief of the pressure by incising the sheath of the nerve has resulted in a marked improvement. He presents four recent cases.

Uveoparotid Tuberculosis—Tanner and McCurry present three cases of uveoparotid tuberculosis. In the first uveitis and unilateral parotitis were accompanied by facial paresis optic neuritis, dysphagia and palatal paresis. Mediastinal adenitis probably tuberculous in nature, was demonstrated. In the second case uveitis and bilateral parotitis and left sided facial paresis occurred. A biopsy of the parotid gland gave definite evidence of tuberculosis and there was also evidence of the same infection in the lungs. The third case showed extensive uveitis in both eyes leading to blindness in one,

unilateral parotitis and facial paresis there was a family history of tuberculosis and roentgen evidence of chronic pleurisy. The authors state that when death occurs it is due to miliary tuberculosis. This statement is based on the only three necropsies reported. An interesting feature of two of these, Souter's and Garland and Thomson's, was the presence of tuberculosis of the cardiac musculature. The authors were unable to demonstrate by clinical or electrocardiographic investigation any such involvement in their cases.

Glasgow Medical Journal

4: 225 284 (Dec.) 1934

- Rabelais Physician and Humanist E H L Oliphant—p 225
Review of Burn Cases Treated in the Glasgow Royal Infirmary During Past Hundred Years (1833 1933) with Some Observations on Present Day Treatment J Dunbar—p 239

Journal Obst & Gynaec of Brit. Empire, Manchester

41 853 1064 (Dec.) 1934

- Treatment of Genital Prolapse W F Shaw—p 853
Postnatal Development of Genital Organs in the Albino Rat Discussion of New Theory of Sexual Differentiation B P Wiesner—p 867
*Breech Method of Dealing with Aftercoming Head J W Burns—p 923
*Technic for Delivery of Breech with Extended Legs in Primiparas C M Marshall—p 930
Surgical Anatomy of Presacral Nerve A A Davis—p 942
Basis and Significance of Antispasmodic Control of Labor J Kreis—p 955
Spontaneous Intrapartum Rupture of Uterus in Case of Placenta Praevia H D De Sa—p 963
Our Efforts to Improve Obstetric Results C Burger—p 968
Eclampsia (1933) Case H Paramore—p 978
*Changes in Ovaries of Pregnant Women and Female Rabbits as Result of Autoreaction of Zondek Aschheim J Rosenblatt and F Nathan—p 983

Method of Dealing with Aftercoming Head—Burns deprecates any assistance being given to the descent of the presenting part by abdominal or fundal pressure in the treatment of the normal breech. Such interference may encourage early separation of the placenta. In the fully flexed breech the arms and shoulders soon follow the birth of the umbilicus, and it is at this stage that the head is entering the pelvis. The child's body is allowed to hang from the vulva. This brings about flexion of the head and brings the nape of the neck well into the subpubic angle. The suboccipital area of the child's skull is in contact with either (1) the back of the symphysis pubis or (2) the ischiopubic ramus. The child's body weight forces the head to rotate on its horizontal axis. This method of producing flexion acts whether the head is just above the brim or whether it has already entered the pelvic cavity. When the head is already in the pelvic cavity, flexion is still necessary in order that the shortest diameters of the head will stretch the perineum and distend the vulva. In this way lacerations may be avoided and the head does not suffer undue stress. In the delivery of the head the operator should stand sideways to the buttocks of the patient and use that hand which is farther away from the mother. Only one hand should be used in lifting the child up over the mother's abdomen. The ankles must be seized when in their most dependent position, and tension applied to the legs by traction. This tension must be sufficient to keep the neck taut and should be maintained throughout the lifting. The fetal head is forced to rotate about the point of contact between the suboccipital area and the ischiopubic ramus. The perineum and vulva are distended in turn by the suboccipitomentomeal and the suboccipitofrontal diameters and finally by the suboccipitobregmatic circumference. If the weight of the child's body is not sufficient to bring the head into the pelvis, suprapubic pressure may be applied. This must be performed by the operator himself. The infant's feet are seized and tension is applied by the right hand, while with the left hand, placed directly above the pubes, pressure is applied in the axis of the brim so as to force the head through the inlet and to pass the hollow of the sacrum. This combined method of applying tension to the legs and suprapubic pressure to the head will successfully deliver the infant in almost all cases. In cases of breech delivery, separation of the placenta is not wholly a third stage phenomenon as it is in cases in which the head is delivered first. At the time when the head is

entering or has entered the pelvic cavity, so much contraction and retraction of the empty upper segments are possible that the placenta, if not actually separated from the uterine wall and retained only by the membranes, has at least ceased to function physiologically

Delivery of Breech with Extended Legs—Marshall submits a technic for breech delivery with extended legs which considers the left sacro-anterior position. The delivery is begun when the anterior buttock is visible through the vulva and the posterior buttock is impinging on the perineum. The buttocks of the mother are brought to the end of the table and the legs are placed in the lithotomy position. The bladder is emptied by catheter. With the finest hypodermic needle the region of the posterior edge of the vulva is infiltrated intradermally and subcutaneously with a few cubic centimeters of a 0.5 per cent solution of procaine hydrochloride. A 3-inch needle is inserted through this area and a fanlike superficial and deep infiltration of the whole perineum and lower part of the posterior vaginal wall is carried out. Care should be taken to ensure that the skin in the area of the proposed episiotomy is rendered completely anesthetic. Gentle ironing of the pelvic floor is proceeded with. The index finger of the right hand is now passed up behind the symphysis into the anterior groin. Steady groin traction is then made throughout the whole duration of the succeeding pains. From five to ten pains, reinforced by the groin traction, are required to bring the anterior buttock completely beneath the pubes and the posterior one firmly against the bulging perineum. At this moment a medio-lateral episiotomy is made on the same side as that on which the sacrum is descending. The traction is continued and usually with the next pain the buttocks are born. Chloroform is administered immediately on an open mask. With continued traction, or the momentum gathered with the last pain, birth as far as the umbilicus or the popliteal spaces takes place. Pressure in the popliteal spaces, directed away from the midline, flexes the legs on the thighs and detaches the feet from the vulva. A loop of cord is drawn down. The buttocks are grasped with the thumbs over the sacrum, and gentle tension is maintained. No set rule is followed with regard to the moment when the arms should be brought down. If the scapulae or the axillae readily appear at the vulva, the arms are probably flexed and thus delivery is accomplished with ease. The posterior arm is sought as soon as a definite resistance to further traction is experienced. The ankles are grasped with the left hand, the trunk is raised so that the infant's abdomen approaches the mother's right groin, while the right hand is passed up over the right shoulder and the bend of the elbow reached with the tips of the fingers. The arm is flexed and brought down over the chest and through the vulva. A little further traction, at the same time depressing the body, will frequently bring the anterior scapula into view, and the bend of the arm can usually be reached with two fingers. The elbow is flexed and the arm swept out. As soon as the arms are delivered, the body is released gently and allowed to hang from the vulva. In about half of the cases the amount of visible neck will lengthen and in a few cases the trunk may be seen to undergo a short sharp drop, the head having entered the pelvic cavity. The ankles are grasped again in a towel and the delivery of the head effected by adopting the stance and the leg traction method described by Burns.

Changes in Ovaries Resulting from Autoreaction of Zondek-Aschheim—From their clinical observations, as well as from experiments, Rosenblatt and Nathan state that in ovaries of women and rabbits during pregnancy the same changes appear that may be found in immature mice or rabbits after the injection of urine of pregnant women. These changes are less marked than after numerous injections of hormones of the anterior pituitary body, because during pregnancy the action of the hormone is not so intense. The occurrence of the Zondek-Aschheim reaction in ovaries of pregnant rabbits does not agree with Zondek's statement that an overproduction of hormones of the anterior pituitary body is to be noticed only in primates during pregnancy. To discover whether the changes that they observed in the ovaries are of a temporary character the authors isolated the rabbits after delivery

and from four to eight weeks later they took out the second ovary. The changes were no longer visible. The ovary was small, there were no hemorrhagic spots, the surface of the ovary was smooth without any corpora lutea atretica and there were numerous normal graafian follicles, proving to them that the changes were the result only of pregnancy.

Lancet, London

2 1263 1322 (Dec. 8) 1934

- The Hippocratic Ideal J. A. Ryle—p. 1263
Some Aids to Tidy Operating W. H. Ogilvie—p. 1268
Etiology and Mortality Rate of Hematemesis F. F. Hellier—p. 1271
Symptomatology of Insulin Hypoglycemia A. M. Cooke—p. 1274
Point of Entry in Tuberculous Infection C. Cameron—p. 1275
*Histidine Treatment of Peptic Ulcer Note on Fifty Two Cases E. Bulmer—p. 1276

Histidine Treatment of Peptic Ulcer—Bulmer treated fifty-two unselected cases of peptic ulcer with histidine. So far as possible histidine has been the sole treatment and, except in three cases, the treatment has been ambulatory. Treatment consisted of the daily intramuscular injection for three weeks of 5 cc. of a 4 per cent solution of histidine. Local and general reactions were not encountered and in two cases 20 cc. was given daily for three weeks without demonstrable ill effects. The immediate results of histidine treatment, if expressed in percentages, are (1) 58 per cent of symptomatic cures with disappearance of the abnormal roentgen observations, (2) 19 per cent of symptomatic cures with persistence of some roentgen abnormality and (3) 23 per cent of failures. In a follow up, three patients relapsed and one of the apparent failures improved—the cases of gastric ulceration seemed more amenable than those of duodenal ulcer, and those with a shorter history tended to react more favorably than those with a longer history. The results with histidine seem to be better than those of the more orthodox methods and quicker of achievement, while treatment on ambulatory lines has much to commend it.

Medical Journal of Australia, Sydney

2 665 706 (Nov. 24) 1934

- The Sir Richard Stawell Oration C. B. Blackburn—p. 665
Chronic Intestinal Toxemia in Children F. N. Le Messurier—p. 672
Fracture of Shaft of Femur J. C. Storey—p. 675
Fractures of Shaft of Femur L. G. Teece—p. 679
Juvenile Rheumatism L. Hughes—p. 682

2 707 736 (Dec. 1) 1934

- Treatment of Surgical Injuries Following Childbirth H. H. Schlunk—p. 707

South African Medical Journal, Cape Town

8 821 860 (Nov. 24) 1934

- The Practice of Eugenics P. W. Laidler—p. 823
Bacillary Dysentery in Salisbury Southern Rhodesia W. D. Alves—p. 835
Reminiscences of an Old Fossil H. Cagier—p. 837
Psychotic Epidemic Encephalitis Case D. A. van Binnendyk—p. 839
Bovine Tuberculosis in Relation to Man B. F. Sampson—p. 842

Journal of Oriental Medicine, South Manchuria

21: 67 94 (Nov.) 1934

- Leprosy Among Natives of Manchuria K. Y. Yu—p. 67
Gross Method of Staining for Frozen and Paraffin Sections H. S. D. Garven—p. 72
Subtotal Division of Sensory Root of the Fifth Nerve for Treatment of Trigeminal Neuralgia Report of Two Cases C. Chang—p. 74
Accelerating Action of Bile in Creating Erythrocytes S. Oyama and S. Yamaguchi—p. 77
Chemical Components of Urine of Smokers and Nonsmokers C. Tsuru M. Sugiura M. Fukushima and T. Hirota—p. 78
Pathologic and Histologic Study of Nerve Center System in Morphineism Part IV Experiments on Guinea Pigs A. Hayashi—p. 79
Id. Part V Experiments on White Rats A. Hayashi—p. 81
Id. Part VI Experiments on Mice A. Hayashi—p. 83
Id. Part VII Experiments on Domestic Fowls and Frogs and General Conclusion A. Hayashi—p. 85
Trichina Found in Dogs in South Manchuria T. Yagawa—p. 88
Investigations in Amebic Dysentery V. Cultivation of Endamoeba Histolytica Y. Yamamoto—p. 89
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Comparative Study of Mental and Thermal Sweating on Human Axilla K. Ogata—p. 92
Influence of Repeated Applications of a Hot Air Bath on Activity of Sweat Glands S. Ito and J. Adachi—p. 93

Paris Medical

2 457 468 (Dec 8) 1934

*Action of Concentrated Splenic Extract in Certain Dermatoses and in Asthma Pasteur Vallery Radot and P. Blumoutier—p 457
Contribution to Study of Blood Sedimentation Methods of Blood Sedimentation A. I. Raponsky—p 461

Action of Splenic Extract in Dermatoses and Asthma
—Pasteur Vallery-Radot and Blumoutier discuss splenotherapy in certain disorders. The splenic extracts which they used at first were painful because of insufficient removal of albumins. The aqueous extracts later employed were practically painless and as a rule produced no generalized reactions. The principal indication for splenic therapy is oozing eczema in the acute state. The effect of the extract is often rapid and may be lasting and final. The pruritus accompanying the eczema may decrease markedly even though the eczema is not definitely modified. The authors have, however, never seen appreciable improvement in the chronic dry eczemas. The results in urticaria are less satisfactory and apparently it is only the urticarias of digestive origin that may be modified by this treatment. In Quincke's edema, splenic extract has no action. Frequently the extract exerts a favorable action on the general condition, such as increased weight and improved appetite. In forty nine cases of eczema treated by them, twenty-one cures were obtained. In twelve others, marked improvement also occurred. Of thirty-five cases of urticaria there were eight cures and seven notably improved. In three cases of Quincke's edema, complete failure occurred. Seventeen cases of various types of asthma were treated, but only four were materially modified. The authors thus believe that in cases of selected type the results may be favorable.

Presse Medicale, Paris

42 2053 2076 (Dec 22) 1934

*Scapulohumeral Algebras and Their Treatment by Physical Agents G. Chaumet—p 2053

Arterial Topography of Lung Lopo de Carvalho and J. Rocheta—p 2057

*Pigmentary and Osseous Larval Form of Neurofibromatosis H. Grenet R. Ducroquet P. Isaac Georges and M. Macé—p 2060

Clinical and Therapeutic Aspects of Pulmonary Tuberculosis Among Malaria Patients E. Benhamou and R. Abecassis—p 2063

Investigations on Myopathies. D. Paulian—p 2067

Total Ectopia of Stomach in Right Hemithorax with Colic Hernia A. Cain and J. Olivier—p 2071

Role of Nutrient Arteries of Long Bones in Callus Formation and Calcification of Medullary Cavity K. Houang—p 2074

Axillary Depilation in Course of Hepatic Cirrhosis A. Jacob—p 2076

Scapulohumeral Algebras and Their Treatment
—Chaumet observed forty cases of persistent shoulder pain with certain limitations of movement. Ordinary periartthritis accounts for some. It is characterized by spontaneous pains in the shoulder more or less active at rest, acute suffering on some motions of the arm and two zones of tenderness to pressure: one externally under the point of the acromion, the other anterior to the head of the humerus and descending along the tendon of the biceps. Finally atrophy of the deltoid accompanies periartthritis when it has been of long duration. In the presence of this clinical picture, roentgenoscopy is necessary. This may be entirely negative, may show a normal shoulder but a lesion or anomaly of the cervical column or may show some particular pathologic change of the shoulder itself. The author lists five conditions of the shoulder that may be found: (1) diffuse decalcification of the articular segments or the humerus alone, (2) direct evidence of an old traumatism, as, for example, fracture of the large tuberosity with or without decalcification, (3) presence of osteophytes, (4) rugosities of the periosteum extending along a face of the surgical neck of the femur and (5) calcification of the subacromial bursa. The best treatment, he believes, is by roentgen therapy. Infra-red radiation and diathermy are also of benefit in some instances.

Pigmentary and Osseous Form of Neurofibromatosis
—Grenet and his co workers describe several cases of skin pigmentation often associated with various types of bony disorders which are closely allied to Recklinghausen's disease. They were able to collect fifteen cases in about a year. This form or its skeletal changes, is relatively frequent. A pure osseous form probably exists but is much more difficult to identify. They have almost come to the conclusion that in the majority of the cases the pigmentary and osseous complex is

more a stage of evolution of neurofibromatosis than a definite larval form. The practical conclusion is that Recklinghausen's disease, especially such larval forms, must be recalled as a common factor in osseous disorders. When suggestive bony abnormalities exist, one must search carefully for Recklinghausen's disease in the family tree.

Polichnico, Rome

42 89 128 (Jan 21) 1935 Practical Section

*Congo Red Test in Different Forms of Hepatic Diseases R. del Zoppo—p 89

Clinical Roentgenologic Contribution to Study of Congenital Osseous and Articular Syphilis G. Liuzzo—p 95

Contribution to Technic of Blood Transfusion New Apparatus P. Bossi—p 99

Congo Red Test in Hepatic Diseases—Del Zoppo used the following technic in testing twenty-eight patients presenting various diseases of the liver. Five cubic centimeters of the patient's blood is taken from one arm and is placed in a tube containing 1 cc. of a 5 per cent solution of sodium citrate. This is followed by immediate injection in the arm of 1 per cent congo red in physiologic solution of sodium chloride. After four and sixty minutes respectively from the time of injection, 5 cc. of blood is removed from the other arm and each specimen is placed in a separate tube containing 1 cc. of the same solution of sodium citrate. The tubes are placed on ice for several hours and afterward are centrifuged. The normal plasma is decanted with a standard 1:10,000 solution of congo red (1 cc. of normal plasma plus 1 cc. of congo red solution plus 9 cc. of distilled water). The decanted plasma is compared with the remaining two diluted plasmas (1 cc. of plasma and 10 cc. of distilled water) by means of the colorimetric method and artificial light. The amount of color retained in the plasma is next determined. The hepatic function of all patients was studied by means of the glycemic and the amino acid curves. The author found the test an important aid to the study of hepatic function. It is applicable to diseases of the kidney presenting reticulohistocytic lesions. Congo red in general ranks equally with other chromodiagnostic tests in the study of the reticulo-endothelial system. In hepatic diseases with acute and chronic intense biliary stasis, the amount of color in the plasma was high. The color rate was average in diseases with mixed lesions, such as various forms of cirrhosis, hepatic syphilis, neoplasms and abscesses of the liver all having combined parenchymal and reticulo-endothelial lesions. In diseases with a parenchymal disturbance and a retention of the biliary pigment in the blood, the rate of color was markedly high. This must be attributed to a saturation of the reticulo-endothelial elements on the part of the biliary pigment.

Rivista d'Ostetricia e Ginecologia Pratica, Milan

16: 467 510 (Nov.) 1934 Partial Index

Clinical Considerations on Treatment of Syphilis During Pregnancy R. Sassi—p 470

*New Sign Indicating Expulsion of Fetus After Intra Uterine Death Causes of Determination of Labor by the Fortieth Week P. Talamo—p 483

Expulsion of Fetus After Intra-Uterine Death—Talamo states that the appearance of painful intense turgor of the breast associated with profuse milk secretion during the last half of pregnancy is an unmistakable sign indicating imminent expulsion of the fetus after intra-uterine death. The author discusses the mechanism of production of the sign in its relation to that of the production of uterine contractions by which the onset of labor is determined. According to the hypothesis of the author there is during pregnancy an equilibrium between estrogenic substance and the antithetical hormones (lutem and luteinizing factor of anterior pituitary-like principle during the first half of pregnancy and other undetermined hormones during the last half). The rupture of this equilibrium, either normal or pathologic, results in the production of the uterine contractions which determine the onset of labor. Normally the hormonal equilibrium is disturbed by the fortieth week because of the accumulation of estrogenic substance in the blood. When the fetus dies in the uterus before term, the quantity of estrogenic substance is not enough to disturb the hormonal equilibrium, which later breaks down by the decrease of the antithetical hormones in the blood, since their production stops as soon as the fetus dies. The hormone unbalance is reached

during the time elapsed between the death and the expulsion of the fetus. When for some unknown reason, probably related to the death of the fetus, the hypophysis develops a hyperactive function during this period, a large quantity of hypophyseal hormones is thrown into the blood and their action prevails over that of estrogenic substance. In these cases the sign described by the author appears. The intense lacteal and mammary symptoms, caused by the action of the prehypophyseal hormones, are the first to appear and their appearance indicates a more or less immediate expulsion of the fetus by the oxytocic action of the posthypophyseal hormones. In the author's two cases a dead fetus was expelled within twenty-four hours of the appearance of the sign.

Prensa Medica Argentina, Buenos Aires

21 2345 2390 (Dec 12) 1934

- Surgical (Extrapharyngeal) Scarlet Fever R Cibils Aguirre and F N Cosentino—p 2345
Mechanism of Mercurial Diuresis J J Beretervide and C Rechinewski—p 2362
*Reactivation of Latent Malaria by Calcium Chloride Injections C A Videla—p 2378
Surgical and Climatic Therapy of Coalgia O A Marottoli—p 2380

Reactivation of Malaria by Calcium Chloride—Videla attempted to produce the reactivation of latent malaria by the administration of either berberine sulphate, by the oral or intramuscular routes, or epinephrine chloride, by the intramuscular route, and obtained 100 per cent negative results in eighteen cases. Daily intravenous injections of 10 cc. of a 10 per cent solution of calcium chloride gave 66.5 per cent positive results in six cases. The reactivation of latent malaria by calcium chloride is produced as early as the first, second or third injection and coincides with a positive Henry ferroflocculation test (+ or ++), and with the existence of splenomegaly of the first or second degree. Monteleone, who originated the method of administration of calcium chloride injections used by the author, explained the action of calcium chloride as caused by a vasomotor reaction by which the malarial parasites appear in the blood.

Semana Medica, Buenos Aires

41: 1661 1732 (Nov 29) 1934 Partial Index

- *Restitution of Endocrine Functions by Uterine and Ovarian Grafts After Gynecologic Surgery C R Cirio and E G Murray—p 1661
Hyperplasia of Joints in Congenital Syphilis J B Galand—p 1704
Coma Syncope and Collapse Diagnosis and Treatment D Boccia—p 1707
Needle and Technic for Injections in Epidural and Peridural Spaces E S Sammartino—p 1720

Restitution of Endocrine Functions After Gynecologic Surgery—Cirio and Murray say that either ovarian or endometrial grafts, implanted after hysterectomy and ovariectomy, undergo a rapid process of degeneration with early reabsorption of the graft. Ovarian and endometrial grafts, simultaneously implanted immediately after hysterectomy and ovariectomy in distant structures (the omentum and a superficial vein in the forearm, respectively, in the experiments of the authors), "take" and show life and normal histologic characteristics six months after their implantation. Ovarian and endometrial grafts, simultaneously implanted immediately after hysterectomy and ovariectomy in the same structure and in contact with each other, undergo manifest lytic changes. The results of these experiments verify the previously reported concept of the existence of a synergic activity between the ovary and the uterus. The authors found that the great omentum is the seat of selection for the implantation of ovarian grafts, which show life and normal functions one year after their implantation. The endothelial surface of the internal vena saphena is the seat of selection for the implantation of the graft when, because of its aseptic conditions if ovarian or its nature if endometrial, it cannot be left in the great omentum. Ovarian and endometrial autografts and homografts, implanted immediately after oophorectomy and hysterectomy, respectively, give satisfactory results in preventing the symptoms of endocrine insufficiency, which regularly follow those operations. The symptoms of endocrine insufficiency do not appear or, if they do, they are greatly attenuated by timely grafting, both when menstruation continues regularly and when it does not. As a rule, grafts performed late after mutilating operations do not give satisfactory results. The graft took and gave satisfactory results in only one patient out

of five in whom ovarian homografts were implanted eighteen days after oophorectomy. Menstruation in the patient was regular after grafting and she had an increased basal metabolism (44.3 per cent). The authors state that one should resort to ovarian and endometrial autografts and homografts immediately after mutilating operations of the reproductive organs in women in order to reestablish the endocrine functions.

Archiv für Gynakologie, Berlin

158: 505 764 (Dec. 19) 1934 Partial Index

- *Intermediate Metabolism During Pregnancy Fat Content of Food and of Blood O Bokelmann and A Bock—p 505
*Adrenaltropic Substance of Anterior Lobe of Hypophysis K J Anselmino L Herold and F Hoffmann—p 531
Mode of Infection and Primary Complex in Tuberculosis of Female Genitalia H Kienlin—p 550
*Histology of Anterior Lobe of Hypophysis in Castration Obesity K W Schultze—p 555
Regulation of Hypophysis by Ovary C Clauberg and W Brenpohl—p 567
Theca Interna Wedge Preparing the Way for Follicle E Strassmann—p 628
Development of Human Vagina from Formation of Distal Portion of Müller's Vagina to Beginning Replacement of Müller's Epithelium by Sinus Epithelium R Meyer—p 639

Intermediate Metabolism During Pregnancy—Bokelmann and Bock point out that in former studies on fat metabolism they observed that pregnant women respond to a fat tolerance test with a considerable increase in the acetone bodies of the blood and that the elimination of the total acetone, but particularly of the beta-oxibutyric acid, is considerably increased in the urine, while in nonpregnant women, although the elimination of acetone is increased, the beta-oxibutyric acid remains unchanged. The studies reported here were begun on the basis of the observation that the fats form acetone bodies, which, in case of abstention from carbohydrates or under the influence of oral fat tolerance tests, are eliminated in the urine in considerable quantities, especially in pregnant women. They conclude that the blood and the urine of pregnant women contain a larger amount of acetone bodies than the blood and the urine of nonpregnant women. The blood of pregnant women contains also much larger amounts of fatty acids than does that of nonpregnant women. Following the oral administration of large quantities of fat, while at the same time the diet contains relatively large amounts of carbohydrates, the blood contains more fatty acids and more acetone bodies and the urine likewise has more acetone bodies. These reactions are much greater in pregnant than in nonpregnant women.

Adrenaltropic Substance of Hypophysis—Anselmino and his associates show that the anterior lobe of the hypophysis contains a substance that produces in rats and mice histologic changes in the adrenal medulla. These changes are characterized by reduction of the chromaffin substance, formation of vacuoles in the marrow cells and hyperemia of the blood spaces. They are noticeable two hours after a single injection of the active substance, and they reach their maximum from six to twelve hours after the injection; however, they are demonstrable also in the prolonged experiment. Control tests prove that the changes of the marrow cells are specific for the extract of the anterior lobe of the hypophysis. The physical characteristics of the hypophyseal substance that acts on the adrenal medulla are essentially the same as those of the other extracts of the anterior lobe of the hypophysis. In attempts to separate the adrenaltropic substance from the other hormones of the anterior lobe of the hypophysis it was found that it is not identical with the thyrotropic, the pancretotropic and the corticotropic substance, the hormones of the fat and of the carbohydrate metabolism, and the gonadotropic hormone. Its differentiation from the corticotropic hormone permits the separate modification of the adrenal cortex and medulla. The authors discuss whether the changes in the adrenal medulla were the manifestations of a stimulation of the medulla and answer this question in the affirmative. Finally they consider the blood sugar action of the substance and discuss the possible identity of the adrenaltropic substance with the blood sugar increasing substance of the anterior lobe of the hypophysis (the contra-insular hormone of Lucke and the diabetogenic substance of Houssay).

Anterior Lobe of Hypophysis in Castration Obesity—Schultze determined the histologic behavior of the anterior

lobe of the hypophysis in castrated female rats. He observed a difference in the number of basophilic cells in animals with and without castration obesity. Animals that gained a considerable amount of weight following castration had more basophilic cells than those that did not. The authors call attention to similarities with Cushing's pituitary basophilism and with the constitutional obesity of Kraus.

Beitrage zur Klinik der Tuberkulose, Berlin

85 543 700 (Dec. 18) 1934 Partial Index

- Experiences with Paraffin Filling in Caverns of Upper Lobes. A Neddermeyer —p. 543
Roentgen Diagnosis of Tuberculosis of Larynx. H. Adler —p. 556
*Pathogenesis and Clinical Significance of Palpable Metastases of Lymph Nodes in Pulmonary Tumors. M. Takino —p. 561
*Prevention of Postoperative Wound Complications in Thoracocautery According to Jacobaeus. A. Sattler —p. 606
Biologic Properties and Pathogenic Action of So-Called Non Acid Fast Tubercle Bacilli. H. Mollgaard —p. 616
Value of Supravital Staining of Leukocytes Particularly for Examination of Blood Picture in Tuberculosis. H. Nolte —p. 664
*New Method of Culturing Tubercle Bacilli from Punctates. J. Sargo —p. 675

Palpable Metastases of Lymph Nodes in Pulmonary Tumors.—In a patient who had a tumor in the left pulmonary hilus Takino observed that the first metastasis was not in the left supraclavicular lymph nodes but in those of the right side. He points out that in case of abdominal tumors particularly cancer of the stomach, the left supraclavicular gland (so called Virchow gland) is most carefully examined for metastases. Later he observed three cases of pulmonary neoplasm in which the tumor was in the left upper lobe, in the left hilus, and the metastasis was only in the right supraclavicular lymph nodes. This indicates that in case of pulmonary and mediastinal tumors not only the left but also the right supraclavicular lymph nodes should be examined. The author watched the mode of metastatization in fifteen other patients, most of whom had pulmonary tumors and a few of whom had mediastinal tumors. He found that, if the tumor is located in the upper lobe and spreads toward the surface and the apex of the lung the first metastases develop in the homolateral supraclavicular lymph nodes. If the tumor is near the hilus, the metastasis is at first on the contralateral side. If the tumor is in the pleura, metastatization takes place in the homolateral axillary lymph nodes. In case of metastasis in the homolateral supraclavicular lymph nodes the tumor must be in the upper lobe somewhat removed from the mediastinum and not near the main lymph vessels. In case of metastatization in the supraclavicular lymph nodes of the opposite side, the growing tumor exerts pressure on the chief lymph channels and the cancer cells are carried through anastomoses to the opposite side. Not all metastases can be explained on the basis of the anatomic conditions of the system of lymph vessels, for the retrograde transport or the "paradoxical lymph stream" may play a part. If the cancer cells are carried to the homolateral supraclavicular lymph nodes even if pressure was exerted in the beginning on the main lymphatic channels, it must be assumed that either not all channels were compressed or new lymph channels had been formed. In most cases metastatization takes place early, within two months after the appearance of the first symptoms. They help to localize the tumor.

Prevention of Postoperative Wound Complications in Thoracocautery.—Sattler discusses two typical complications of endothoracic pleuroscopy and pleurolysis, namely, postoperative emphysema and suppuration of the thorax wound. Both complications are hardly ever of vital significance, but they annoy the patient, impair the immediate result of the intervention and eventually may impair the final results. To prevent emphysema, careful management of the operative wound is important. If a large instrument has been used, it is not sufficient merely to close the cutaneous wound, for a comparatively large muscular wound would remain and nothing would prevent the air from entering the tissues. It is necessary to close the wound in layers. He further shows how postoperative suppurations may be caused by tissue injuries that are caused by prolonged duration of the operation, by bruising and drying of the wound. If this is the case, the wound should be freshened by excision before the suture is made, for thus healing by primary intention may be obtained. To prevent specific infection of the

wound the intervention should be omitted in case of extensive, caseous tuberculosis of the pleura.

Method of Culturing Tubercle Bacilli from Punctates.—Sargo places a small quantity of the punctate to be examined in test tubes that contain culture medium. According to the width of the test tube the amount is 0.5 or 1.5 cc., the object being to introduce such a quantity that about three fourths of the surface of the culture medium remains free. After the test tube has been closed it is inclined several times so that the punctate runs over the surface of the culture medium. In the incubator the tubes are left in the vertical position, but the process of moving the tubes is repeated from time to time (about four times each week) during the entire period of incubation that is for at least two months. However the moving should be done with great care, to give the organisms the opportunity to adhere to the surface without being flooded off again. The author employed stained egg culture mediums a red and green one for each punctate. He employed this method for the examination of various exudates and punctates from serofibrinous pleurisy, pneumothorax, tuberculous empyema, tuberculous peritonitis, tuberculous pericarditis, tuberculous meningitis, tuberculous articular exudate and the pus of tuberculous glands. Of 123 cases, 103 gave positive results. The method was proved particularly valuable in the spinal punctates from patients with tuberculous meningitis, of eighteen cases, seventeen gave positive results. The method is simple and reliable and it can be used for all clinical and diagnostic purposes.

Klinische Wochenschrift, Berlin

13 1809 1848 (Dec. 22) 1934 Partial Index

- Relation of Heavy to Light Water in Organism. F. Breusch and E. Hofer —p. 1815
Cervitamic Acid and Blood Catalase Determination of Deficit of Vitamin C. G. Torok and L. Neufeld —p. 1816
*Pregnancy and Physical Exertion. C. Schroeder and W. Franz —p. 1818
Phytopharmacologic Experiments According to D. J. Macht. G. King isopp —p. 1820
Syphilis of Stomach in Boy with Congenital Syphilis. H. Kalk —p. 1823
*Experiences in Treatment of Nontuberculous Pleural Empyema by Means of Combined Irrigation and Iodized Oil Treatment. R. Boller and K. Makrycostas —p. 1825
Functional Test of Cardiopulmonary System. E. Simonson —p. 1831

Pregnancy and Physical Exertion.—Schroeder and Franz determined the working capacity of women during pregnancy and compared it with the working capacity four months after delivery. The period of recovery, that is, the time the circulation and metabolism require to return to normal after an exertion was found to be longer during pregnancy than in the absence of pregnancy. The authors think that this indicates a certain instability of circulation and metabolism in pregnant women but that this instability is not observed during the exertion. They conclude that work requiring light and medium exertion may be done up to the end of pregnancy without detrimental effects on the pregnant organism. They consider it false humanitarianism to forbid a pregnant woman to work, and they maintain that work is the best preparation for the delivery and prevents worrying and anxiety.

Irrigation and Iodized Oil Treatment of Empyema.—Boller and Makrycostas review the treatment of empyema by means of irrigation and injection of iodized oil which was described by Boller in the *Wiener Archiv für innere Medizin* (23 37 [Oct. 1] 1932, abstr. THE JOURNAL, Dec. 24, 1932, p. 2229), and they describe eight more cases in which they employed this combination of irrigation and iodized oil injections. Whereas in the first report only cases that were treated with irrigation and iodized oil were described, this report includes three cases in which the irrigation and iodized oil treatments had to be followed by Bülow's drainage. The latter was well tolerated and with the aid of regular fillings with iodized oil the treatment could be successfully concluded in a comparatively short time. The authors recommend that first in every case of pleural empyema the treatment with irrigation and iodized oil be given several times, for in the majority of cases this therapeutic method will succeed. In empyema of severe septic character, however, it is not sufficient. Here, it should be followed by Bülow's drainage, which in turn should be aided by filling with iodized oil.

13 1849 1864 (Dec. 29) 1934 Partial Index

- Continuous Registration of Composition of Alveolar Air by Means of Gas Exchange Recorder T. Benzinger and F. Brauch—p. 1852
- *Action of Growth Hormone of Hypophysis on Hereditary Dwarfism in Mice T. Kemp—p. 1854
- *Delivery as Work Process C. Schroeder and W. Franz—p. 1855
- Disappearance and Reappearance of Bile Acids in Bile in Temporary Closure of Choledochus F. Breusch and C. G. Johnston—p. 1856
- Direct Demonstration of Lead by Means of Diphenylthiocarbosone M. Kasahara and T. Kasahara—p. 1857
- *Influence of Amyl Nitrite on Cerebrospinal Fluid Pressure in Normal and Pathologic Brains H. Stefan—p. 1858

Action of Growth Hormone on Dwarfism in Mice—Kemp treated dwarfed mice, in which the inhibition of growth was caused by a hereditary defect of the anterior lobe of the hypophysis, with the isolated growth hormone of the anterior hypophysis. He found that this treatment induced a well proportioned growth in the various organs, including the long tubular bones, which increased considerably in length. The thymus, however, with a luxuriant growth of the parenchyma, grew much more than the other organs.

Delivery as Work Process—To determine the amount of work the organism performs during the process of delivery, Schroeder and Franz obtained specimens of respiratory air from parturient women at fifteen or thirty minute intervals. They determined the oxygen consumption of seventeen women from the onset of the labor pains until five hours after delivery. They show a curve they obtained in a healthy primipara. The peaks indicate the increased oxygen consumption during a uterine contraction and the depressions represent the consumption during the pain-free interval. During the period of dilatation the curve rises gradually, but during the rupture of the bag of waters and the subsequent pain-free interval it decreases again. The curve reaches the highest peaks during the period of expulsion, for now the work of the uterine muscle is complemented by the pressure of the abdominal muscles. After the birth of the child, the oxygen consumption decreases considerably but it does not reach the preparient level until four hours later. The oxygen consumption that is normal for the nonpregnant organism is not attained until about eight days after delivery. In comparing the work performance of the delivery of old and young primiparas, the authors were able to corroborate the results obtained by Frey with the hysterotonograph, that the old primipara has to meet the same physiologic requirements in the course of the delivery as does the young primipara. The old primipara consumes during delivery no more oxygen than does the young primipara. The authors studied the effects of various analgesics on the work process of birth and found that the oxygen consumption per unit of time was not reduced under the influence of the analgesics.

Influence of Amyl Nitrite on Cerebrospinal Fluid Pressure—Tests on normal persons convinced Stefan that the cerebrospinal fluid pressure is much lower when the person is lying down than when he is sitting up and for this reason he advises that the pressure be tested only while the person is lying down. The inhalation of a few drops of amyl nitrite leads to a florid reddishness and a feeling of heat in the face as well as to a cerebral hyperemia. These manifestations are the result of an increased inflow of blood, which is caused by a paralysis of the vasomotor centers with consequent dilatation of the vessels. Its inhalation during lumbar puncture is accompanied by a dilatation of the intracranial vessels and by an increased production and a greater pressure of the cerebrospinal fluid. He studied the pressure changes in 151 persons, of whom sixty-two were normal, twenty-two had space limiting processes, thirty-two had cerebral arteriosclerosis and thirty-five had postencephalitic parkinsonism and other chronic inflammatory cerebral disturbances. He found that the normal persons and those with space-limiting cerebral processes reacted with an enormous increase in the cerebrospinal fluid pressure to the inhalation of amyl nitrite, while patients with cerebral arteriosclerosis or with chronic inflammatory disturbances of the brain showed almost the opposite reaction. He thinks that these tremendous differences in the action of the amyl nitrite are due to the fact that its effect is limited in vascular and in chronic inflammatory disturbances of the brain in that the extent of the vascular dilatation is lesser, that the number of vessels which become dilated is smaller, or that both factors are involved. In a number of patients in whom the diagnosis had not been decided

as yet, it was possible to determine it by means of the amyl nitrite action. The subsequent necropsies corroborated the diagnostic value of the method. These observations indicate that the amyl nitrite test is helpful in the differentiation between the space-limiting processes and the chronic inflammatory or vascular disorders of the brain. However, it is not suited for the differentiation between diseased and normal brains.

Wiener klinische Wochenschrift, Vienna

47: 1569 1600 (Dec. 28) 1934 Partial Index

- *Tubercle Bacillema in Course of Acute Polyarthrits C. Reitter and E. Lowenstein—p. 1569
- Method of Determination of Creatinine in Urine and Blood H. Iieb and M. K. Zacherl—p. 1572
- Diagnosis of Brucella Abortus E. Lauda—p. 1578
- Action Mechanism of Diiodotyrosine M. Wachstein—p. 1579
- *Aid for Palpation of Poorly Palpable Arterial Pulse J. Wilder—p. 1583
- *Studies on Reticulocytes in Pulmonary Tuberculosis M. Szour and C. Bergenbaum—p. 1583

Tubercle Bacillema in Course of Acute Polyarthrits—Reitter and Lowenstein review their former studies on tubercle bacillema in polyarthrits, pointing out that in 1928 Reitter first advanced the theory that tuberculosis plays a part in acute polyarthrits. During 1930 and 1931 they examined cases of acute polyarthrits for tubercle bacillema and concluded that acute polyarthrits is an exudative-inflammatory phase in the course of a tuberculous reinfection. At that time they stressed that tubercle bacillema alone is not sufficient to produce the symptomatology of acute polyarthrits but that the tubercle bacilli must enter a connective tissue that is highly susceptible to tuberculosis, an allergic or hyperergic tissue. Reitter emphasized in 1928 that in rare instances tubercle bacilli are found in the articular fluid and that at certain times patients with polyarthrits are highly susceptible to tuberculin. The authors deplore that, although they always stressed the clinical manifestations and showed that tubercle bacillema may be present at the same time, many clinicians, pathologic anatomists and bacteriologists gave their attention only to the bacillema and took an attitude as if the foundations of the pathologic anatomy of tuberculosis had been attacked. With this attitude many began the search for tubercle bacilli and were gratified when they obtained negative results, in many cases examining only one specimen of blood from each patient. Nevertheless, a few investigators corroborated the authors' observations.

Aid in Palpation of Arterial Pulse—Wilder calls attention to the fact that it is difficult to detect by palpation the pulse of the dorsalis pedis artery, for even experienced examiners are sometimes unable to agree on their observations. He thinks that this difficulty may be remedied by an old but almost forgotten method, namely, by applying oil to the skin. By putting oil on the dorsum of the foot, the palpation of the pulse becomes much easier. Pulsations that were hardly palpable before become much clearer, and those ordinarily not perceptible now become palpable. In palpating muscles in order to determine areas of hardness, nodules and other pathologic conditions, the application of oil is likewise helpful for it is much easier to palpate the details in the underlying tissue if the finger glides over a smooth surface. Moreover, oil palpation is helpful also in palpating the liver and other abdominal organs.

Studies on Reticulocytes in Pulmonary Tuberculosis—Szour and Bergenbaum studied the behavior of the reticulocytes in 200 cases of pulmonary tuberculosis. They employed the vital staining of the blood drop according to the method of Levaditi-Ehrlich. After preliminary studies on the reticulocytes of normal persons which disclosed that in adults the number of reticulocytes varies between one and five per thousand of the erythrocytes, the authors studied the number and then the behavior of the reticulocytes in patients with pulmonary tuberculosis. They found that these studies are valuable in the diagnosis, the prognosis and the evaluation of therapeutic methods. In summarizing their observations they state that the curve of the reticulocytes in the course of pulmonary tuberculosis reflects the combat between the organism and the tuberculous infection in the region of the erythroblastic system of the bone marrow. The quantitative and qualitative changes in the reticulocytes that enter the periphery are exact indicators of the relationship between the intensity of the tuberculous infection and the defense powers of the organism.

Zeitschrift für Kinderheilkunde, Berlin

58 609 701 (Dec. 5) 1934 Partial Index

- Action of Colon and of Paracolon Culture Filtrates on Surviving Intestine of Rabbit K. Hassmann and Irmgard Scharfetter —p. 609
House Epidemic of Disturbances of Typhoid Type Caused by Bacterium Typhi Mlurium H. David and D. Halberstam —p. 620
*Significance of Tryptophan Retention for Diagnosis of Tuberculous Meningitis H. M. Schumacher —p. 626
Clinical Significance of Various Categories of Tuberculin Allergy During Childhood F. von Groer and A. von Chwalibogowski —p. 631
Attempt to Determine Actual Allergic Condition as Well as Allergic Channel by Determination of Reaction Capacity and Sensitivity in Tuberculin Allergic Organism of Children F. von Groer, A. von Chwalibogowski and H. Steinhaus —p. 669

Tryptophan Reaction in Tuberculous Meningitis — Schumacher gives a description of the technique of the tryptophan reaction in tuberculous meningitis. To from 2 to 3 cc of cerebrospinal fluid is added 15 cc. of a concentrated hydrochloric acid solution and 2 drops of a 2 per cent solution of formaldehyde (prepared fresh each time from the usual 40 per cent solution by preparing a dilution of 1:20), and this mixture is shaken. Then it is allowed to stand for four or five minutes and after that is layered with 2 cc of a 0.06 per cent solution of sodium nitrite. If the reaction is positive, there appears in the course of two or three minutes, at the site where the two fluids meet, a delicate violet ring. If there is no change of color or if a brownish shade appears, the reaction is negative. The author reports his experiences in 114 cases. In thirty-two cases of tuberculous meningitis the reaction was always positive. In none of the cases of tuberculous meningitis was a negative reaction found. The cerebrospinal fluid of eighty-two patients with nontuberculous disorders of the brain or of the meninges served as a control. Of these, eight gave a positive tryptophan reaction. Seven of the latter were false positive reactions that developed in purulent, hemorrhagic or xanthochromic cerebrospinal fluids. In one instance the tryptophan reaction was a complete failure. However, the differential diagnosis was not in doubt in this case for the presence of a cerebral tumor had been recognized. The author concludes that the tryptophan reaction permits a quick and definite differentiation of tuberculous meningitis from disorders with a similar symptomatology.

Zentralblatt für Gynäkologie, Leipzig

58: 2945-3008 (Dec. 15) 1934

- Term of Ovulation and Conception on Basis of Four Hundred and Sixteen Cases with Exactly Known Single Cohabitation and Subsequent Pregnancy F. Weinstock —p. 2947
Hormone Disturbances as Cause of Menstrual Disorders Role of Pancreas B. Liegner —p. 2952
Surgical Treatment of Uterine Hemorrhages Vilma Schrattenbach —p. 2958
Pregnancy in Multipara Without Subjective Manifestations H. Schulz —p. 2961
Juvenile Hemorrhage Resulting from Chronic Suppurating Tonsillitis A. Kuncz —p. 2964
Clinical Aspects and Therapy of Suppurated Peritoneal Pregnancy That Was Brought to Term M. Bordjuschki —p. 2965

Ovulation and Conception —To test the Knaus-Ogino-Smulder theory of the period of physiologic sterility, Weinstock selected 416 women in whom pregnancy had taken place after a single coitus, the exact date of which was known as well as the dates of at least the last three menstruations and the length of the menstrual cycle. The women were healthy. He shows the length of the menstrual cycles and that there are comparatively few women in whom the menstrual cycle is always of the same length. Another table showing the day of the single fertilizing coitus within the menstrual cycle indicates that conception is possible on every day of the cycle but that there are fluctuations in the fertility and that conception is most likely between the fifth and tenth day of the cycle. The author concludes that practical experience indicates that there is no sterile period within the menstrual cycle.

Hormone Disturbances as Cause of Menstrual Disorders —The observation that pregnancy is rare in diabetic women induced Liegner to investigate whether less pronounced pancreatic disturbances influence fertility. In former investigations he had observed in guinea-pigs that the resection of the pancreas was followed by severe disturbances in the gonads and that fertility was greatly reduced. He now reports that he observed women with a deficient function of the insular

apparatus in many of whom menstruation was abnormal. He attempts to explain these menstrual disturbances on the basis of changes in the ovaries of animals the insular function of which had been interfered with. These changes indicate that menstruation may be retarded and reduced in intensity, or, the failure of the formation of a corpus luteum (the absence of the inhibitory factor) may result in atypical, acyclical and prolonged hemorrhages. The author states that he employed insulin in a number of women with menstrual disturbances, in whom various treatments, including the administration of estrus-inducing hormones had failed. In many instances the results were favorable in that the menstruation became regulated within a comparatively short time. However, precaution is necessary because in the beginning some of these patients do not tolerate insulin well. Moreover, it is generally necessary to repeat the insulin treatment after a certain interval. The first series of insulin injections is usually continued for four weeks.

58 3009 3072 (Dec. 22) 1934

- *Late Sequels of Eclampsia and Its Preliminary Stages with Especial Consideration of Renal Changes T. Heynemann —p. 3010
Gynecologic Urologic Significance of Retrograde Ureteropyelography According to Chevassu G. von Kulitzky —p. 3021
Demonstration of Prostate Bladder in Roentgenogram E. Philipp and H. Kratz —p. 3025
Plastic Production of Totally Destroyed Urethra A. Mandelstamm —p. 3040
*Surgical Treatment of Urinary Incontinence W. Mestitz —p. 3046

Late Sequels of Eclampsia Particularly Renal Changes —Heynemann asserts that there is no definite proof that pregnancy nephrosis or eclampsia ever causes chronic glomerular nephritis. If they ever do so, he thinks that it is an extremely rare occurrence. He maintains that the damages caused by eclampsia or pregnancy nephrosis on the renal parenchyma, or the tubules as well as the glomerules, heal as a rule, at any rate they do not produce severe changes. However, eclampsia and pregnancy nephrosis do have a damaging influence on the vascular system, which becomes manifest in headaches, vertigo, increased blood pressure, changes in the vessels of the fundus oculi, cardiac changes, nephrosclerosis and apoplexy. The changes in the cerebral and renal arteries are the most important ones, but eclampsia and its preliminary stages are not the only cause of these changes, for age and hereditary predisposition likewise play a part. However, in approximately 5 to 6 per cent of the cases of eclampsia and pregnancy nephrosis severe vascular changes occur. As a rule there develops nephrosclerosis, but the more severe manifestations generally do not become evident until after the fortieth year of life. In the pathogenesis of malignant sclerosis and its transitional cases, eclampsia and its preliminary stages play a rather important part. In from 1 to 15 per cent of these disorders, the development of a malignant sclerosis or of one of its preliminary forms must be expected. If this is the case, an unfavorable outcome may be expected at an earlier age. If hypertension and albuminuria develop in women who have passed through an eclampsia or its preliminary stages, the existence of a nephrosclerosis and not of a chronic nephritis should be considered first, and, if signs of renal insufficiency appear in women under 40 years of age, malignant sclerosis or one of its preliminary stages should be thought of. The treatment should aim at counteracting the hypertension and the arteriosclerosis. The after examinations never revealed hepatic changes. The author concludes that a former eclampsia or a pregnancy nephrosis do not contraindicate a new pregnancy. A nephrosclerosis, however, particularly its malignant form, may become exacerbated by a new pregnancy.

Surgical Treatment of Urinary Incontinence —Mestitz points out that the method to counteract the urinary incontinence resulting from a damage of the vesical sphincter must try to imitate the physiologic mechanism. An effort must be made to lift and bend the urethra, particularly its posterior wall, toward the symphysis. This aim is accomplished best by means of the artificial formation of a sphincter from the vesicovaginal fascia. The method can be used in virgins and in multiparas. In most cases urinary incontinence is accompanied by sinking or prolapse of the anterior vaginal wall, and this makes the procedure even more simple. Moreover, the method can be employed in the absence of the uterus as well as in women during the reproductive age. He limits the intervention to the

suture of the connective tissue fascia and dispenses with the exposure of the vesical musculature. In this respect his procedure differs from that of several other surgeons. However, he considers it important that the transverse sutures be made in such a manner that the fascia is grasped far outward in the region of the levator muscle. If this is done, the function of the fascial clasp is effectively supported by the action of the puborectal muscle. In cases of especially severe incontinence or in case of relapse following his fascial suture, the author employs the method of Goebell-Frangenheim-Stoeckel. Goebell formed a substitute for the urethral sphincter from the pyramidal muscles or from a strip of the rectus muscle, while Frangenheim suggested the use of flaps of the anterior rectus sheath. Stoeckel introduced this method into gynecologic surgery. The formation of the sphincter from the vesicovaginal fascia or the Goebell-Frangenheim-Stoeckel method was employed by the author in eleven cases, and the results were favorable in eight. In addition to these two methods, he tried the formation of the urethral sphincter from the bulbocavernosus muscle. This method was successful in six out of eleven cases. He concludes that in uncomplicated, mild or medium severe cases the sphincter formation from the vesicovaginal fascia is the best method and that in more severe cases or in relapses the method of Goebell-Frangenheim-Stoeckel is the most satisfactory.

Novyy Khirurgicheskiy Arkhiv, Dnepropetrovsk

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- Symptoms and Therapy of Anaerobic Infection D. A. Arapov —p. 3
Question of Perforative Peritonitis in Typhoid P. S. Manukyan —p. 12
Symptomatology of Exophthalmic Goiter V. M. Kogan Vasnyy —p. 24
Operations on Thyroid in Exophthalmic Goiter M. V. Shevandin —p. 37

*Relationship Between Clinical Picture and Histologic Structure of Thyroid in Exophthalmic Goiter M. P. Veber and E. K. Elenevskaya —p. 41

*Experimental Conservation of Blood Yu. M. Irger, P. E. Ginzburg, Z. S. Sosonkin, A. S. Mazzeleva, P. Yu. Dobruskina and S. N. Verzhynskaya —p. 53

Histologic Structure of Thyroid in Exophthalmic Goiter—According to Veber and Elenevskaya, the thyroids of patients who have exophthalmic goiter and who have been subjected to the preoperative treatment of compound solution of iodine exhibit as a rule the histologic picture of a colloid goiter with pronounced proliferation of the epithelial layer. The authors have not encountered any so-called primary forms of hyperthyroidism in their material. They found the method of Mallory and of Kraus for staining the colloid a valuable histologic procedure in evaluating the severity of the disease. They failed to establish a definite relationship between the histologic picture and the severity of the disease in the cases of exophthalmic goiter treated preoperatively with compound solution of iodine. Preoperative administration of compound solution of iodine brings about an improvement in the clinical picture and a histologic alteration in the direction of diminution of the polymorphism of the follicles and the epithelium. The authors conclude that the essence of the morbid process is to be sought in its hormone activity rather than in the histologic picture of the gland.

Experimental Conservation of Blood—Irger and his associates drew blood from the femoral artery of a dog and collected it into a vessel containing 50 Gm. of sodium citrate, 7 Gm. of sodium chlorate, 0.04 Gm. of magnesium sulphate and 0.2 Gm. of potassium chlorate in 1,000 cc. of distilled water. The blood was added to this fluid in an equal amount. The authors found that the erythrocytes remained unchanged for about fifteen days after which period they diminished in number by 12.9 per cent, by 39.6 per cent on the thirty-fifth day and by 76 per cent on the forty-fifth day. Microscopic study showed that the erythrocytes maintained their form until the twentieth day, after which they displayed a gradual shrinkage resembling erythrocyte shadows on the thirty-eighth day. The diminution in the leukocyte count took place much earlier. On the fifth day it was diminished by 7.4 per cent, on the fifteenth day by 27.2, on the thirty-fifth day by 66.6, and on the forty-fifth day by 84.2. The leukocytic formula changes in the direction of diminution of neutrophils and a relative

increase in lymphocytes. The number of reticulocytes diminished gradually, there being none present after the forty-fifth day. The lowering of the respiratory function of the erythrocytes (determined after the method of Barcroft) took place slowly and the hemoglobin changed little. The authors have noted a gradual diminution of the glycogen content of the blood. The inorganic blood phosphorus increased up to 10 on the fifth day, 20.5 on the eighteenth and 29.3 on the forty-third day. There was noted a gradual lowering of the osmotic tension of the erythrocytes, and this corresponded to the increase in the inorganic phosphorus. Parallel with the fall in sugar content there was an increase in lactic acid. The authors insist that the strictest asepsis must be maintained in the conservation of blood, such as wearing of a mask and of gloves. Blood may be kept sterile for forty-five days at room temperature. Hemolysis was absent in conserved human blood for twenty-one days and in dog's blood for forty-five. Because of the morphologic and biologic alterations noted, the value of conserved blood for purposes of transfusion is much less than that of the fresh blood.

Vrachebnoe Delo, Kharkov

17: 545-624 (No 9) 1934 Partial Index

- *Focus of Infection in Pathogenesis of True Rheumatism A. M. Koritskiy —p. 545
Roentgenologic Signs of Gastritis N. M. Berzhinskaya and Ya. J. Levin —p. 549
Double Invasion—Opisthorchis Felineus and Lambliia Intestinalis A. Ya. Althauzen, O. A. Rozenfeld and P. V. Perchik —p. 555
Symptoms of Radiculitis with Trophic Disturbances L. B. Litvak and V. V. Chernikov —p. 559
Injection Therapy of Varicose Veins S. G. Bukin —p. 563
Psychotherapy in Ear Diseases A. A. Skript —p. 567
Diagnosis of Acute Leukemia with Tonsil Lesion N. B. Strier —p. 569
Effect of Antipinephrine on Cholesterol Metabolism L. M. Golber —p. 571

Focus of Infection in Pathogenesis of True Rheumatism—According to Koritskiy, clinical observations and anatomic and experimental studies indicate the existence in genuine cases of rheumatism of a sepsis with a hyperergic reaction. The author observed that rheumatic patients are chronic carriers of a focal infection located in the pharyngeal region. They are best demonstrated by rotating the tonsil. The peculiarity of such a focus is its painless chronic course characterized by suppuration in the various areas of the pharyngeal region with a selective localization in the supratonsillar, pretonsillar and retrotonsillar sinuses rather than in the tonsils themselves. The infectious process here runs a chronic latent course, with occasional acute exacerbations in the form of acute tonsillitis. Inspection of the tonsils and the adjacent sinuses reveals, as a rule, erosions, ulcerations, indurations, hypertrophy or scar formation. One may observe here all stages of an inflammatory process, from hyperemia and infiltration to breaking down of tissue and suppuration with consequent scar contraction. The process is a tissue reaction to a polymorphous bacterial flora, particularly of the streptococcus group, to bacterial toxins and to the products of the broken down albumins. The author regards such a focal infection not only as a port of entry of infection but also as a lesion capable of influencing the organism as a whole so as to alter its reactivity. The organism reacts to repeated exacerbations in a manner different from its original reaction. There may develop an unusual, abnormal, allergic reaction laying the foundation for rheumatic disease.

Hospitalstidende, Copenhagen

77 1433 1444 (Dec 18) 1934

Changes in Blood in Intoxication Due to Cellulose Lacquer J. Jakobsen —p. 1433

*Does Wassermann Reaction Occasionally Occur in Febrile Pulmonary Disturbances? H. Boas and I. C. Neergaard —p. 1439

Wassermann Reaction in Febrile Pulmonary Disturbances—Boas and Neergaard state that with the technic employed at the state serum institute a positive Wassermann reaction in febrile pulmonary disorders seems to be rare (less than 0.33 1/3 per cent), yet in view of the results of other investigations they advise a certain degree of caution in judging the serologic test in the presence of an acute highly febrile lung disorder.

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THE DIFFERENTIAL DIAGNOSIS OF THE LEUKEMIC STATES

WITH PARTICULAR REFERENCE TO THE IMMATURE
CELL TYPES

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A thorough knowledge of hematopoiesis is essential for a careful differentiation of the various types of leukemia. No longer are these dyscrasias considered "diseases of the blood" but rather dysfunctions of hematopoietic tissues.¹ Until the second decade of the twentieth century with the work of Reschad and Schilling-Torgau² and others, there were recognized only two types of leukemia: myeloid, arising in the bone marrow, and lymphatic, having its origin in the lymphoid tissue. The recognition of a third type of leukemia involving the monocytic series of cells has engendered new ideas concerning the origin and classification of blood cells.³ As a result of this stimulus, many conflicting theories have arisen.

PRESENT CONCEPTION OF HEMATOPOIESIS

Investigators are in accord only in a single concept—that all blood cells have their origin from the mesenchymal cell of the mesodermal layer in the embryo.⁴ From this point, opinions diverge in many directions.

Pappenheim⁵ and later Maximow⁶ are considered the founders of the monophyletic theory. According to this view, in adult life all types of blood cells have a common origin from a single primitive stem cell with azurophilic, basophilic cytoplasm, which is called "lymphocyte" by some investigators and "hemocytoblast" (Feratta⁷) by others.

According to the polyphyletic or dualist theory, advanced by Ehrlich,⁸ this common ancestral cell is not present after birth but there are two precursors in post-natal life: the myeloblast giving rise to granulocytes, erythrocytes and monocytes and the lymphoblast, from

which mature lymphocytes develop. Naegeli,⁷ although not in complete accord in minor details, is considered a strict dualist, believing that granulocytes, red cells, platelets and monocytes arise from the myeloblast. Piney¹ has adopted a modified polyphyletic point of view. He believes in the existence of three postnatal stem cells: (1) an erythroblast, which has a unique maturation cycle and produces mature red blood cells, (2) a myeloblast, which is the precursor of both myeloid and monocytic leukocytes, and (3) a lymphoblast, which gives rise to lymphoid cells.

Further divergence is found in the triphyletic concept, championed by Schilling⁸ and sponsored by many of the more recent contributors, including Aschoff and Kiyono,⁹ Cunningham,¹⁰ Dameshek,¹¹ Sabin¹² and Merklen and Wolf.¹³ This school places the monocytic series of cells in a separate cycle of maturation, tracing its origin from a postnatal stem cell, the monoblast, which in turn arises from a primitive stem cell of the reticulo-endothelium. This primitive stem cell is found in all blood-forming tissues. In the bone marrow it gives rise to myeloblasts and megaloblasts, in lymph tissue to lymphoblasts, in outside reticulo-endothelium to monoblasts and to macrophages or fixed tissue cells. From this point of view there are three sites of hematopoiesis: the bone marrow, the lymphoid tissues and the so-called reticular-endothelial system, and as a result three respective types of leukemia.

Leukemia is defined by Musser and Wintrobe¹⁴ as "a morbid condition characterized by widespread hyperplasia of the leukopoietic tissues." Piney¹ does not consider simple hyperplasia to be sufficient description of the existing pathologic condition. He believes that in almost every case of myeloid leukemia there is a tendency toward "Lenaz's monophasic anaplasia" in which there are great aggregates or foci of cells of a single immature type, at which point maturation has stopped, generally at the leukoblast stage. Surrounding these foci there is a simple hyperplasia.

At this point a question arises: In the leukemic states, does hyperplasia occur in the normal sites of origin of these various cells or is there in addition a reversion to embryonic conditions in which extramedullary hematopoiesis occurs? It seems certain that the

From the Department of Pathology and Bacteriology, Emory University School of Medicine.

Read before the Section on Radiology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

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13. Merklen, P. and Wolf, M. The Monocyte: Cytology and Histology of the Granular Mononuclears of Tissues and Blood. *Ann. d'anat. path.* 4: 621 (June) 1927.

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latter condition does exist in myeloid leukemia, where, according to Naegeli,⁷ not only can an active hyperplasia develop normally in the bone marrow, but there is extensive extramedullary myelopoiesis in the connective tissues of the body. He believes that these secondary foci in the spleen are responsible for its increased size as well as an accumulation of cells gathered from the blood stream.

There is further evidence to favor the view that in leukoses variation in the origin of leukocytes is the rule rather than the exception. In lymphatic leukemia, autopsy generally shows a terminal lymphoid proliferation in the bone marrow. There is some evidence that in monocytic leukemia the monocyte, regardless of where it arises under normal conditions, has its origin chiefly in the bone marrow. A number of the reported cases have terminated as typical myeloblastic leukemias. The formation of secondary foci has been considered as a metastasis starting from the bone marrow, lymph tissue or monocytic centers.¹⁵ Others do not consider this extramedullary hyperplasia a metastatic condition but rather "the activity of the reticulo-endothelium widely scattered throughout the body." Under the proper stimulus this undifferentiated mesenchymal tissue becomes active, causing a reversion to embryonic blood formation.¹⁶

Since anemia and hemorrhagic tendencies are almost invariably sequelae of the leukemic states, some discussion of erythropoiesis and thrombopoiesis should be given. In addition, some explanation should be made to emphasize the unfortunate relationship of the leukemic process to erythrocytogenesis.

According to Doan's¹⁷ studies, red cells begin their maturation in gelatinous bone marrow and have their immediate origin from the inside lining of the closed vascular sinusoids. A sluggish blood flow, low oxygen tension, and collapsed sinusoids favor erythrocytogenesis.¹⁸ The endothelial lining of these blood vessels swells and gives rise to megaloblasts, which in turn eventually form mature erythrocytes. These corpuscles are forced into the blood stream as the blood passes from the vascular bed of the marrow to the peripheral circulation. White cells are formed extravascularly and pass into the blood vessels by their own motility. Granulopoiesis is said to begin when the collapsed sinusoids dilate and is more active in areas richly supplied with blood.^{17b} Doan^{17b} and Sabin¹⁸ state that this difference in time and location for erythropoiesis and granulopoiesis necessitates a functional division of the two processes. For this reason, an excessive stimulation of myeloid tissue such as in myelosis, resulting in a flushed vascular bed, may produce an unfavorable environment for normal red cell formation. This condition plus an actual mechanical obliteration of erythropoietic tissue by excessive myeloid hyperplasia may be a predisposing factor for the inevitable anemia accompanying a majority of the leukemias.

LEUKOBLASTS

A differentiation of the three types of leukoblasts on morphologic criteria offers a difficult cytologic prob-

lem. The myeloblast, lymphoblast and monoblast present many similarities. There is little difference in size and morphology at first glance. All have a round, red purple nucleus with a clear, deeply staining nongranular blue cytoplasm. Naegeli⁷ believes that the myeloblast may be distinguished from the lymphoblast chiefly on fine nuclear criteria. According to his concept, the nuclear chromatin is finer and more homogeneous than in the lymphoblast, the chromatin of which has a coarse arrangement and appears dense at the edges of the nucleus, giving evidence of a definite nuclear membrane. Another point of distinction is the number of nucleoli; myeloblasts contain from three to five pale nucleoli, while lymphoblasts show a smaller number, generally from one to three. The presence of a definite perinuclear zone is characteristic of the lymphoblast and is rarely, if ever, found in typical myeloblasts. Obviously, these aids to distinction are inadequate and final differentiation depends more on association of the indefinite cell types with the more easily recognized cells, which belong to the same series.

With regard to the monoblast, there are differences of opinion as to whether it can be definitely distinguished from the other two leukoblasts. It is agreed that it cannot be distinguished by ordinary staining methods. Naegeli⁷ makes no effort to isolate this cell type. He offers evidence that monoblasts and monocytes are myeloid in nature by the similarity of nuclear structure, the characteristic maturation of the nucleus in its basioxychromatin structure, the segmentation of the monocytic nuclei occurring with age, and the positive oxidase, peroxidase dopa reactions and positive lipid granule stains.

Other investigators¹⁹ definitely classify monocytes into a separate group of leukocytes. Their conclusions have resulted from supravitral staining technic and their distinction between the three leukoblasts rests on the size, position and structure of mitochondria and neutral red vacuoles. Naegeli⁷ states that these supravitral changes have not been substantiated by other investigators (Hall, Newer, Maximow, Bloom).

The oxidase reaction in the three primary leukoblasts is negative, since none contain granules. This test, devised by Graham²⁰ and Goodpasture,²¹ and later modified by Sato and Yoshimatsu,²² is, however, of great diagnostic value in a differential diagnosis of acute lymphatic and myeloid leukemias. When this test is positive, a diagnosis of myeloid leukemia can be made with fair certainty. A negative test, however, does not rule out the possibility of a predominance of myeloblasts. In this instance other diagnostic aids must be employed, i. e. histologic changes and the indophenol blue synthesis²³ test, which is positive in myeloid leukemia and negative in lymphatic

15 Isaacs Raphael. Present Status of the Study and Treatment of Leukemia, *J Lab & Clin Med* 17: 1006 (July) 1932.

16 Ordway Thomas and Gorham L. W. The Diagnosis and Treatment of Diseases of the Blood. Oxford Monographs vol. 9, edited by H. A. Christian. New York, Oxford University Press 1930 (supplement to 1931).

17 (a) Doan. (b) The Circulation of the Bone Marrow. Carnegie Institution of Washington. Contributions to Embryology 14: 27 1922 (cited by Sabin).¹⁸ Capillaries of the Bone Marrow. *Bull Johns Hopkins Hosp* 33: 222 (June) 1922.

18 Sabin Florence R. Bone Marrow. *Physiol Rev* 8: 191 (April) 1928.

19 Doan. Sabin.¹⁵ Schilling. Dameshek.²¹ Cunningham and Tompkins.¹⁹ Sydenstricker. V. P. and Phinzy. T. B. Acute Monocytic Leukemia. *Am J M Sc* 184: 770 (Dec.) 1932.

20 Graham G. S. Benzidine as a Peroxidase Reagent for Blood Smears and Tissues. *J M Research* 39: 15 (Sept.) 1918.

21 Goodpasture E. W. Peroxidase Reaction with Sodium Nitroprusside and Benzidine in Blood Smears and Tissues. *J Lab & Clin Med* 4: 442 (April) 1919.

22 Sato, Akira and Yoshimatsu S. Peroxidase Reaction in Epidemic Encephalitis. New Diagnostic and Prognostic Method. *Am J Dis Child* 20: 301 (March) 1925.

23 Indophenol blue synthesis (W. H. Schultz's modification) for blood films. 1. Fixation in 40 per cent solution of formaldehyde plus absolute alcohol (equal parts). 2. Stain for three minutes in a mixture of solution A and B (one part of A plus four parts of B). 3. Counter stain for three minutes with Giemsa's stain (Grubler) and examine the preparation while immersed in water. Myeloid granules and myeloblasts stain blue. Lymphocytes do not stain. Monocytic granules stain blue. Solution A. One hundred cc. of 1 per cent alpha naphthol in physiological solution of sodium chloride to which is added 1 cc. of tenth normal sodium hydroxide. Solution B. A 1 per cent solution of paradimethylparaphenylenediamine base (Merck) in physiological solution of sodium chloride.

There is a wide difference of opinion concerning the oxidase reaction in monocytic leukemia. Until the disease has been studied more fully and proved a separate entity, this test is of little diagnostic aid. Naegeli⁷ states that mature monocytes are peroxidase positive and does not recognize a monocytic type of leukemia. His description of the condition is a "monocytoid phase of myeloid leukemia."

We have studied carefully the cases of monocytic leukemia in the Hematological Registry, which is, no doubt the largest collection existing, and have noted the large percentage of well studied cases that eventually terminate as definite myeloid leukemia. This would indicate, at least, that under leukemic conditions the monocytic cell is identical with the myeloblast.

THE CHRONIC LEUKEMIAS

Chronic myelosis and lymphadenosis are diseases of middle and old age and are rare in young people. The onset of chronic leukemia is insidious and the duration variable, the usual course being from two to five years. A physician seldom sees chronic leukemia in its incipient stages, the disease is usually well established before the patient seeks medical aid.

In chronic myelosis the usual complaints are a feeling of fullness and pressure in the epigastrium (due to the splenic tumor), disturbances of digestion, pain in the left side of the abdomen, fatigue and pallor. The splenic tumor may fill half the abdomen. Other clinical manifestations are disturbances in sight and hearing, pains in the gums, diarrhea, dyspnea and palpitation of the heart. The bones are often sensitive to pressure. The blood picture is characterized by high leukocyte counts, usually from 100,000 to 400,000, counts as high as 1,000,000 have been found. The criterion of a leukemia, however, is not the number of white cells but the type of white cell present. In myelogenous leukemia the cells of myeloid origin usually constitute about 95 to 99 per cent of the cells, with the neutrophilic myelocyte as the predominating abnormal cell type. Myeloblasts may be present in from 1 to 3 per cent in the early stages, usually increasing later or in a transition to an acute form. Naegeli⁷ states "The most important feature of a leukemia is not the high leukocyte count but the fact that the blood shows all cells of myeloid tissue so that really only quantitative differences exist between leukemic blood and normal bone marrow." The blood is viscous, possesses oxidase and peptic ferments and gives a typical positive indophenol blue reaction. There is moderate to severe anemia, and the platelets are usually increased in number.

In chronic lymphatic leukemia the patient usually visits the physician because of a painless but progressive swelling of the lymphatic glands, especially the cervical, axillary and inguinal glands. The spleen is usually enlarged. There are infiltrations and hemorrhages in the retina, and sometimes infiltrations into the skin.

The hematologic picture shows a leukocyte count, usually of several hundred thousand, with small lymphocytes predominating, even 99 per cent. Smudge forms are constant. The platelets are almost always decreased. The red cell count and hemoglobin are not decreased in the first stages, but, as the disease progresses, moderate or severe anemias occur. The blood shows no oxidase or peptic ferments and a negative indophenol blue synthesis.

THE ACUTE LEUKEMIAS

Since Virchow first described leukemia there has been a constant evolution of ideas concerning its histologic and hematologic manifestations. It is one of the oldest of known blood diseases, yet knowledge of its etiology has advanced little since Ehrlich's time. A long list of imposing names is linked with the subject of leukemia. Sherrer,⁸ soon after its discovery, believed the spleen to be a genetic factor in one type of leukemia and therefore proposed two kinds of leukemia: splenic and lymphatic. Newman⁹ found bone marrow changes in the splenic type and thus established myelogenous leukemia. Ehrlich⁶ gave a classification and propounded the dualist theory for the origin of leukocytes. Naegeli⁷ was the first to recognize and describe myeloblastic leukemia. Before this time these cells were thought to be lymphocytes. Furthermore, he exploded the theory of a transition from myeloid to lymphatic leukemia. He states that "all acute myeloid leukemias arise as myeloblastic, and the chronic form, in exacerbation and before death, eventuates into secondary myeloblastic leukemia." Kundrat⁵ was one of the first to recognize that leukemia affected not only a single organ but the entire body. Meyer and Heineke⁵ (1907), Naegeli and Fabian⁵ (1907) and Schridde⁵ (1908) proved that extramedullary metaplasia of myeloid tissue occurs in both physiologic and pathologic conditions.

The acute form of leukemia is a disease of the young, occurring most frequently in individuals under 25 years of age. For many years acute leukemias were considered lymphatic in nature. It is now generally recognized that acute leukoses in adults are myeloid in type. Naegeli⁷ emphasizes this point: "I doubt whether a certain peracute lymphatic leukemia exists in an adult." Certainly no convincing cases have been reported within the last ten years. This condition in children, however, is almost invariably lymphatic in origin.

Clinically, there is a sudden onset and a rapidly fatal course. When a patient presents the clinical and hematologic picture of an acute leukemia and lives longer than six months, the condition is probably an acute exacerbation of a chronic process that has existed for a long period of time with no noticeable symptoms. Into this class fall many of the reported cases of acute leukemia. Too much stress should not be made, however, on the duration of illness as a distinction between the chronic and acute forms.

Acute myeloblastic and lymphatic leukemias are identical clinically and symptomatically. The patient generally becomes ill with dramatic suddenness and exhibits all or a few of the following conditions: headache, extreme prostration, pain in the joints, a necrotic gangrenous gingivitis, bone pains, retinal changes, vomiting, diarrhea, hemorrhages, and severe and progressive anemia. Generalized glandular enlargement and increase in size of spleen and liver are variable physical manifestations, whereas cervical adenopathy is of more frequent occurrence. In some instances these characteristic changes are absent and the disease may appear diagnostically obscure, simulating sepsis or any variety of acute conditions.

Acute myeloblastic leukemia usually presents the following blood picture: 1. A subleukemic leukocyte count, if taken during the early stages of the disease, which ranges from a few thousand to 30,000 or 40,000 per cubic millimeter. The count may rise rapidly to

100,000 or slightly higher, but rarely to the figures found in untreated chronic forms. 2 A marked anemia, which in the later stages presents a microscopic picture of pernicious anemia with hyperchromic cells, polychromatophilia, normoblasts, megaloblasts and marked variation in size and shape. 3 A marked reduction in the number of platelets, which explains the frequency of the hemorrhagic diathesis accompanying acute leukemias. 4 A preponderance of myeloblasts, which on superficial examination appear to belong to the lymphocytic series. Close examination will finally reveal, however, the intermediate faintly granulated promyelocyte, the presence of which in sufficient numbers makes the diagnosis a certainty. In some cases neutrophilic myelocytes are present in large numbers. In addition to these predominant cell types there are found frequently a few mature neutrophils.

In some instances the microscopic picture may consist entirely of myeloblasts, micromyeloblasts and mature segmented neutrophils without any of the other intermediate forms found in the normal maturation cycle. Naegeli⁷ calls this phenomenon "hiatus leucæmicus" and considers it an infallible sign of an acute phase. Warren,²⁴ in 1929 in a review of the literature and a report of twenty-eight of his own cases, found only eighty-five from 500 cases in the literature that could be classified without criticism as true examples of acute myeloblastic leukemia. Ordway and Gorham¹⁶ give the following postulates for substantiating the diagnosis of this condition:

- 1 An aleukemic or subleukemic stage
- 2 An acute downward course with death usually ensuing within from one to four months
- 3 The characteristic blood picture of myeloblasts, myelocytes and the transition forms between the two
- 4 The typical gross and histologic changes in the liver, spleen, bone marrow and lymph glands
- 5 The specific proof of myeloid elements by enzyme reactions

The clinical changes and blood picture of acute lymphatic leukemia are identical with myeloblastic leukemia with the exception of the predominant cell type involved. The large lymphocyte and lymphoblast predominate. The azure granulation characteristic of normal lymphocytes is absent, according to Naegeli's⁷ observations, thus fortunately preventing confusion with granulated promyelocytes of the myeloid series. As a rule, the differential diagnosis between these two types of leukemia presents difficult problems. The diagnosis is easy if in myelosis the characteristic promyelocytes and myelocytes are present in sufficient numbers to give a peroxidase positive reaction. Otherwise differentiation rests on the obscure morphologic differences between myeloblasts and lymphoblasts or the more exact indophenol blue synthesis. Occasionally myelocytes, sometimes as high as 10 per cent, appear in lymphadenosis to confuse the diagnostician further. These are called "irritation myelocytes" by Pappenheim and appear only in the early stages of the disease.¹⁶ These myelocytes are typically mature with no accompanying promyelocytes, as seen in myeloblastic leukemia.

It is difficult to separate the acute leukoses on a clinical basis. An extensive glandular enlargement, however, favors the diagnosis of lymphadenosis, but its absence does not exclude myelosis.

One of the diagnostic difficulties relative to acute lymphatic leukemia is its confusion with acute benign lymphadenosis or infectious mononucleosis. Their similarity in the early stages is a diagnostic pitfall for both experienced clinicians and veteran hematologists. Both are diseases of childhood or young adults. Both are characterized clinically by an acute onset, high fever, generalized adenopathy and sore throat of the ulcerative type, and hematologically by a relative and absolute lymphocytosis. It is generally agreed that the predominating lymphoblast appearing in both conditions cannot be distinguished morphologically with certainty, although Downey and McKinlay²⁵ published in 1923 a report of nine cases in which they gave a criterion for separating these cell types.

There are, however, some striking differences in the two conditions. Infectious mononucleosis is milder in its clinical manifestations, running a benign and harmless course. Red cell and platelet changes are never sequelae of this disease. As a general rule, the leukocyte count is lower than in acute lymphatic leukemia.

It is safer to be cautious and follow the rule that a diagnosis of acute lymphatic leukemia is dangerous on morphologic grounds alone and in the absence of red cell and platelet reductions.

A discussion of the acute leukemias would not be complete without introducing the subject of a new type of leukemia, reported first by Reschad and Schilling-Torgau² in 1913. They discovered what they consider a leukemia of the monocytic series of leukocytes in which the predominant cell type is a typical "transitional" cell or monocyte. Other authors²⁶ separate the development of the monocyte from the other leukocytes. It is interesting to note what the leaders of the monophyletic and dualistic schools reported on examination of a smear sent to them from this case. Pappenheim, the leader of the monophyletic theory for the origin of leukocytes, reported "a selective, highly pronounced monocytosis characterized by the presence of genuine transitional forms of the lymphatic type." In contrast to this view, Naegeli, a strict dualist, in a recent correspondence, classified this type of leukemia as a "monocytic leukocytosis" or as an atypical type of myeloid leukemia. Fleischmann²⁷ in 1915 reported the second case of monocytic leukemia. He is in agreement with Naegeli, since he believes that his case changed to a myeloblastic leukemia in the terminal stages. This view is likewise upheld by Ewald, Frehse and Hennig,²⁸ Alder²⁹ and others. On the other hand, Dameshek,¹¹ Merklen and Wolf,¹³ Sydenstricker and Phinney,¹⁹ Clough,³⁰ Lawrence, Josey and Young³¹ and a majority of the American authors are inclined to support the conception that this third type of leukemia exists and that the monocyte has an independent and separate cycle of maturation.

25 Downey Hal and McKinlay C. A. Acute Lymphadenosis Compared with Acute Lymphatic Leukemia. Arch. Int. Med. 32: 82 (July) 1923.

26 Cunningham R. S., Sabin Florence R. and Doan C. A. The Development of the Leukocytes, Lymphocytes and Monocytes from a Specific Stem Cell in Adult Tissues. Carnegie Institution of Washington. Pub. 316. Contributions to Embryology 16: 227, 1925 (cited by Sabin²⁴).

27 Fleischmann P. The Second Case of Monocytic Leukemia. Folia haemat. 20: 17 (Oct.) 1915.

28 Ewald, Frehse and Hennig. Acute Monocytic and Myeloblastic Leukemia. Deutsches Arch. f. klin. Med. 138: 353 (Feb.) 1922. Ewald O. Leukemic Reticulo-Endotheliosis. ibid. 142: 222 (April) 1923.

29 Alder A. Abnormal Cell Forms and Their Frequency in Acute Myelosis. Folia haemat. 29: 105 (June) 1923.

30 Clough P. Monocytic Leukemia. Bull. Johns Hopkins Hosp. 51: 148 (Sept.) 1932.

31 Lawrence J. S., Josey I. A. and Young M. W. Monocytic Leukemia. Report of Three Cases. Folia haemat. 44: 332 (June) 1931.

24 Warren S. L. Acute Leukemia. A Review of the Literature and of Twenty Eight New Cases. Am. J. M. Sc. 178: 490 (Oct.) 1929.

From a review of thirty-two published cases in England and America and sixteen unpublished cases on file in the Hematological Registry, it may be said that, in general, monocytic leukemia differs little clinically from the other acute leukemias other than in age limits, which range from 1 to 78 years and average around 40 years. It occurs in males about twice as frequently as in females. The onset is generally insidious, with fever, malaise and marked pallor. Gingivitis of the ulcerative type is found in about half of the cases. Bleeding and petechial hemorrhages are prominent in the histories. Enlargement of lymph glands is a variable physical finding. The duration of the disease varies from ten weeks to two years. The course is progressively downward, with sequelae of marked anemia, bleeding and petechiae. The leukocytes range from 600 to 320,000 per cubic millimeter. Red cells and platelets are markedly decreased in the last stages of the disease.

The diagnosis of this type of leukemia rests entirely on the morphologic examination of the stained blood cells. The cell type is the fully developed, mature monocyte and in some cases the histiocyte. Many authors believe that this cell cannot be identified with certainty without a confirmation with supravital stains. As yet no agreement exists as to whether monocytic leukemia is a disease entity. Until the points at issue in regard to the origin of the monocytes are settled, an attempt to classify this condition as chronic or acute would be difficult.

THE ALEUKEMIC STATE

In all types of leukemia, especially the acute forms, the process may undergo at one time or another an aleukemic phase in which the leukocytes drop below the normal level. This phase cannot be distinguished clinically, organically or histologically from the more typical leukemic conditions. The term "aleukemia" is misleading. The condition probably should be considered a leukopenic phase of the existing leukemic process. The reason for the disappearance of the leukocytes in the peripheral blood is shrouded in mystery. This phase may occur at any stage of the disease or the patient may be seen by the physician for the first time with a marked leukopenia, a severe anemia of the hyperchromic megaloblastic type, and a decided decrease in platelets with the resulting hemorrhagic diathesis. In this case the condition becomes of special importance diagnostically.

If the condition is myeloid in nature, a correct diagnosis is more easily made. According to Pinkerton,³² a comparative study of five cases of aleukemic myeloid leukemia shows a "diversity of clinical symptoms" but a marked anatomic and postmortem similarity. As a rule, patients suffering from this condition show an enlarged spleen, a myeloid hyperplasia of lymph nodes and other organs and a hyperplastic bone marrow in addition to leukopenia, progressive anemia and thrombopenia. The predominant cell type is the myeloblast when this phase occurs in acute myelosis and the myelocyte when the patient is suffering from the chronic form. Thus, in this instance the differential count with its high percentage of immature cells, the severe primary anemia blood picture, hemorrhagic tendencies, and an enlarged spleen make one suspicious of leukemia despite the low leukocyte count. It is true that in many instances there is no splenic or glandular enlargement.

At any rate, a diagnosis cannot be made with assurance until the leukocytes rise to leukemic levels or the biopsy and autopsy finding of myelosis clears up uncertainty.

In aleukemic lymphadenosis, which is said to be more prevalent than the myeloid type, the diagnosis is even more difficult. The signs and symptoms are those of acute leukemia. Gross hematologic changes are identical with those of aleukemic myelosis: leukopenia, anemia, thrombopenia. The differential count alone differs. In the microscopic picture the lymphoblast and mature lymphocyte predominate, depending on the acuteness or chronicity of the underlying pathologic changes. In the latter, it is generally impossible to distinguish the condition from a typical aplastic anemia, in which again there are marked thrombopenia, neutropenia and erythropenia. There are only a few fine points of distinction. In aplastic anemia the physical changes are entirely negative, the anemia is a normocytic, normochromic type with no normoblastic regenerative changes, and the bone marrow is typically aplastic. In aleukemic lymphadenosis there is in some cases a lymphoid enlargement and hyperplasia, and the anemia is more often of the hyperchromic, normoblastic and megaloblastic type. There is frequently a marked variation in size and shape of the red corpuscles and, as a rule, the platelets do not reach the low levels found in aplastic anemia. As in the myeloid type, diagnosis may depend entirely on biopsy and autopsy observations unless the patient survives this depression phase and eventuates into a typical leukemic state.

Not only is it difficult to distinguish the various types of aleukemia from one another and from aplastic anemia, but they are easily confused with certain stages of granulopenia, Vincent's oral sepsis, the hemorrhagic states, and pernicious anemia.

Typical acute cases of granulopenia are not hard to differentiate, since the neutropenia is more marked and progressive in this condition and the red cells and platelets are only slightly affected. In those cases of granulopenia, however, which show the erythropenic-thrombopenic syndrome, one encounters the same diagnostic difficulties as in separating the aleukemic states from the aplastic anemias. Only one point of difference exists: the anemia associated with granulopenia is generally of secondary type until the terminal stages, when it becomes inseparable from aplastic anemia.

Vincent's oral sepsis is confused with aleukemic states only temporarily and clinically. Oral sepsis and Vincent's ulcerative lesions may be the first clinical symptoms to bring a leukemic patient to the physician's attention. A blood examination quickly reveals the more serious nature of the condition.

On the other hand, profuse bleeding or petechial hemorrhages may be the first outstanding manifestation of aleukemic leukemia leading the physician to suspect a simple purpuric condition. Careful hematologic and physical examinations will soon reveal the error in diagnosis, since the purpuric states show a normal leukocyte count and secondary anemia only when hemorrhages have become of such severity as to lead to definite loss of blood volume. Platelet counts, time of bleeding and coagulation will serve to aid in the differential diagnosis.

Aleukemic leukemia and pernicious anemia are similar only in the type and degree of anemia, since both show a hyperchromic erythrocyte picture. Except in the terminal stages of pernicious anemia, the leukocyte count is normal or only slightly depressed, the differ-

32 Pinkerton, Henry. Aleukemic Leukemia and Typical Leukemoid Conditions. Arch. Path. 7: 567 (April) 1929.

ential count is essentially normal and the platelets are little affected. The color of the skin and sclera, gastric changes and response to liver therapy will soon rule out or confirm the diagnosis of pernicious anemia.

CONCLUSIONS

1 There still remains no unanimity of opinion relative to the origin of white blood cells, but it seems probable that under normal conditions myeloid cells arise mainly from the bone marrow and lymphoid cells from the lymphoid glandular system, including the spleen.

2 It is virtually impossible to distinguish between the various types of leukoblasts with ordinary staining methods, or even with vital staining.

3 Cases of chronic leukemias can be diagnosed easily as well as acute forms provided the total white cell count is definitely increased with a preponderance of blast cells.

4 The leukemic states in which the total number of white cells is normal, or below normal, offer considerable difficulty in diagnosis both clinically and hematologically and are apt to be confused with various leukopenic diseases.

5 The most reliable criterion for the diagnosis of any leukemia is a preponderance of immature cells regardless of the total number. Studies on a large number of cases of monocytic leukemia that are filed in the Hematological Registry indicate that the chief cell type has its origin in the bone marrow and adds further evidence that monocytic leukemia is but an atypical phase of myelogenous leukemia.

LEUKEMIA

ITS DIAGNOSIS AND TREATMENT

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Of the serious disorders of the hematopoietic system, leukemia is most frequently encountered. Although usually associated with splenomegaly or lymphadenopathy, by the presence of which it is readily differentiated, leukemia may be confounded with other conditions characterized by anemia, infection, purpura or lymphadenopathy. The difficulty in diagnosis is due to the many variations that may occur both in the clinical picture and in the laboratory observations.

Leukemia has heretofore been regarded as a disorder characterized by a persistent increase in the number of white blood cells. According to the present conception of the disease, however, an increase in the number of white cells is not an essential diagnostic factor.

The present study comprises observations on 455 patients in Mount Sinai Hospital and in private practice during the past fifteen years, as classified in the accompanying table.

CLASSIFICATION OF MATERIAL

The cases observed were divided into two groups, namely, acute or chronic. Patients who lived three

months or less were regarded as suffering from acute leukemia (38 per cent of our material), those who survived longer than three months were included in the chronic group (62 per cent). The cases were further classified according to the predominance of certain cells, as (1) myeloid leukemias (66.7 per cent), (2) lymphatic leukemias (27.6 per cent), and (3) monocytic leukemias (1.9 per cent). It is interesting to note that these percentages are identical with the percentage of the neutrophils, lymphocytes and monocytes present in normal blood.

For practical purposes, cases in which there were 15,000 leukocytes or less were considered leukopenic, those with a larger number of leukocytes were classified as leukocythemic. The number of leukocytes in our series varied from 400 to more than 1,000,000. The classification, therefore, utilized in this paper, i. e., leukopenic leukemia of an acute or chronic variety, is an arbitrary one and is not based on actual differences in the fundamental nature of the disease.

BLOOD PICTURE

The diagnosis of leukemia can usually be made from the blood count and an examination of the blood smear.

The presence of a persistent relative or absolute increase in the number of mature or premature white blood cells constitutes the important characteristic alteration in leukemia. The premature cells are the myelocytes and their nongranular precursors or myeloblasts, the premature lymphocytes or lymphoblasts and precursors of the monocytes or monoblasts. Mitotic myeloblasts and amitotic myeloblasts and lymphoblasts may occasionally be present.

The type of premature cell usually varies with the duration of the disease. Cases of acute leukemia are characterized by the presence of the more premature types of cells, particularly the myeloblasts, lymphoblasts and monoblasts, while chronic varieties have a tendency to display more mature types, such as polymorphonuclear neutrophils and myelocytes in the myeloid leukemias, and lymphocytes in the lymphoid leukemias.

The hemoglobin and the number of red blood cells are usually reduced in acute leukemias. In chronic types, anemia may be absent or only moderate at the onset. The anemia is hypochromatic, with a color index that varies from 0.5 to unity. Nucleated red cells are usually present.

The blood platelets present marked variations in leukemia. In the early stages of chronic leukemia they are normal, but they are usually profoundly reduced in acute varieties or in acute exacerbations of the chronic forms. In some of our cases of "polynuclear-celled leukemia" that followed polycythemia, a thrombocythemia, or persistent increase of the blood platelets from 500,000 to 2,000,000 per cubic millimeter occurred.

Occasionally, a typical leukemic blood picture was accidentally found in cases that were entirely asymptomatic and later showed symptoms of the disease.

SYMPTOMATIC VARIATIONS

Weakness and fatigue are common and persistent symptoms in leukemia. Abdominal distress, caused by enlarged viscera or lymph nodes, is a usual complaint. Frequently pain and ulceration in the upper part of the respiratory tract may be observed at the onset of the disease. Purpuric manifestations or uncontrollable bleeding, such as epistaxis, bleeding gums or persistent hemorrhages following a surgical procedure, may be the

first evidence of the leukemic state. Gastro-intestinal hemorrhage is less frequent. Pallor, cough, arthralgia, myalgia and loss of weight may occur during the course of the disease.

Enlargement of the spleen is usually observed in myeloid leukemia, enlargement of the lymph nodes particularly in the cervical region, in lymphatic leukemia. However, both the spleen and the lymph nodes may be involved in either type of leukemia. In one case of lymphatic leukemia there was an enlargement of the spleen without peripheral adenopathy. In acute leukemia, however, the splenomegaly and lymphadenopathy are less marked.

DIFFERENTIAL DIAGNOSIS

A typical case of leukemia, either acute or chronic, is usually differentiated by the presence of an increased number of white blood cells as well as mature or pre-mature leukocytes. However, difficulty in diagnosis

Classification and Frequency of Various Types of Leukemias

	Percentage of All Cases	No. of Cases		Total No. of Cases
		Males	Females	
Myeloid Leukemia				
1. Acute myeloid leukemia	29.4			
(a) leukocythemic		67	30	97
(b) leukopenic		10	22	32
2. Chronic myeloid leukemia	34.1			
(a) leukocythemic		60	56	116
(b) leukopenic		26	15	41
3. Eosinophilic leukemia	0.6	1	2	3
4. Associated with polycythemia	2.2			
(a) myeloid leukemia		4	2	6
(b) polynuclear cell leukemia		4	0	4
Lymphoid Leukemia				
5. Acute lymphatic leukemia	7.0			
(a) leukocythemic		9	7	16
(b) leukopenic		10	0	10
6. Chronic lymphatic leukemia	20.6			
(a) leukocythemic		68	28	96
(b) leukopenic		4	4	8
Monocytic Leukemia				
7. Acute monocytic leukemia	1.5			
(a) leukocythemic		4	2	6
(b) leukopenic		0	1	1
8. Chronic monocytic leukemia	0.4			
(a) leukocythemic		0	0	0
(b) leukopenic		2	0	2
9. Aleukemic leukemia	1.3	3	3	6
Total		217	176	420

may be encountered in cases of leukopenic leukemia in which the number of leukocytes is normal or profoundly reduced. Such cases, when admitted to the hospital, are sometimes diagnosed as pernicious anemia, purpura haemorrhagica, agranulocytosis, subacute endocarditis, splenic anemia or other disorders.

Anemia—After the anemia has developed, it becomes progressive and responds only temporarily to the usual therapy for secondary anemia. If the color index is relatively high and nucleated red cells are present the leukemia may simulate pernicious anemia. The characteristic macrocytosis of pernicious anemia is not observed, but the presence of myelocytes or myeloblasts is indicative of a leukemic condition.

All cases of chronic, progressive anemia with splenomegaly require continued and careful study of the blood. Leukopenic leukemia may simulate splenic anemia, hemolytic icterus, subacute endocarditis, Gaucher's disease and thrombosis of the splenic vein. Here again the presence of myelocytes or myeloblasts with a leukopenia or even with a normal number of leukocytes should provoke the suspicion of leukemia.

In rare instances the blood pictures of aplastic anemia and of leukopenic lymphatic leukemia may be identical with respect to the profound anemia, thrombocytopenia, leukopenia and relative lymphocytosis. In such cases the presence of splenomegaly or lymphadenopathy may indicate leukemia. In some cases the correct diagnosis can be made only by means of a biopsy on the bone marrow, which may reveal the lymphoid metaplasia of the rare medullary lymphatic leukemia or the hypoplasia of aplastic anemia.

Purpura—Bleeding from the gums or nose or into the skin as in purpura haemorrhagica, may occur at the onset in practically all forms of leukemia, as a matter of fact, this may be the only symptom for a long time. Severe anemia, due to considerable loss of blood may supervene as the disease progresses. This bleeding tendency in leukemia is due to an associated deficiency of blood platelets, as in primary thrombocytopenic purpura haemorrhagica. It differs from the latter however, in its differential blood count, which is typical of leukemia.

A striking example of this type of case was observed in our series. The patient was treated for epistaxis, bleeding from the gums, purpura and a progressive anemia. The leukocytic count was normal, but the abnormal cells in the spread had been overlooked. On the basis of the good results obtained from splenectomy in cases of purpura haemorrhagica, the patient was admitted to the hospital for splenectomy. Careful examination of the blood revealed that, in addition to a marked diminution in the number of blood platelets and a severe anemia, a characteristic increase had occurred in the number of myelocytes and myeloblasts. A diagnosis of myelogenous leukemia was made and splenectomy was not performed.

In two similar cases of our series, splenectomy produced no increase in the blood platelets. The purpura persisted and a leukocythemic type of leukemia developed.

In the acute type of all the leukemias, and in the late stages of the chronic forms, the number of blood platelets is reduced, but the hemorrhagic tendency does not correspond with the diminution of the platelets. Patients who have the same marked numerical diminution in blood platelets may react differently. In some there may be no signs of bleeding throughout the course of the disease, others may have hemorrhages of varying severity into organs such as the eyes, brain and middle ear, or from the mucous membranes. In one instance a puncture of the ear was followed by bleeding for twenty-four hours, which was controlled by a blood transfusion. In some cases the epistaxis and gingival bleeding may lead to exsanguination.

Infection—Secondary infection is not unusual in leukemia. It may obscure the underlying condition, so that it resembles grip, subacute bacterial endocarditis, or agranulocytosis. Among the severe complications, pleurisy, pneumonia and alveolar abscess may be mentioned. Bacteremia, early or late in the course of the disease, was observed in about 2 per cent of our cases.

Fever may be present in chronic as well as in acute cases, but it is not necessarily the result of frank supuration. It may disappear with the improvement in the general condition, following blood transfusions or radiotherapy.

Ulcerations of the mucous membranes are very frequent in acute leukemias. The gums may be involved, producing a considerable amount of pain and swelling,

particularly in the lower jaw. At times extraction of teeth may be followed by a marked exacerbation of the entire process—a circumstance that often leads to the differentiation of the leukemic condition. In cases of leukemia with profound diminution of the number of leukocytes below 2,000 per cubic millimeter, necrotizing pharyngitis may simulate agranulocytosis. However, the presence of anemia, a hemorrhagic diathesis, and myeloblasts in the blood smears indicate the presence of leukemia rather than of agranulocytosis.

Lymphadenopathy—Leukemia should be differentiated from the various conditions associated with localized or generalized lymphadenopathy. As a rule, the blood picture is sufficient to differentiate leukemia from Hodgkin's disease or lymphosarcoma. Occasionally a nonspecific lymphadenosis may persist for many months before a true leukemic blood picture is evident.

Infectious mononucleosis (lymphocytosis or monocytosis) may be mistaken for leukemia. The clinical course in this disease, however, is usually typical of a benign condition—fever, sore throat, absence of anemia (either clinical or hematologic), and transient lymphocytosis or monocytosis. The positive heterophile antibody reaction is often helpful in excluding leukemia.¹

ATYPICAL LEUKEMIAS

Atypical leukemias are regarded as varieties of the well known forms or as rare cases. Chloroma, or chloroleukosarcoma, is one of the most interesting of these types. Essentially this is a myeloblastic leukemia with subperiosteal infiltrations that involve the orbit and cause exophthalmos. In the gross, the deposits have a typical green coloration.

In a small percentage of myeloid leukemias—usually of the chronic variety, although rarely of the acute—a generalized osteosclerosis of the bone marrow was observed. In some of our cases this was verified during life by means of a biopsy on the sternal bone marrow. Although no special blood changes characterize this particular form, most of our cases were leukopenic and myeloid. Cases of this type may occasionally be of long duration, eighteen years in one of our series.

Certain unusual variations of lymphoid leukemias may be mentioned, such as the splenic, medullary and plasma cell types. In the splenic variety the principal finding is a splenomegaly without a peripheral lymphadenopathy, it may resemble myeloid leukemia. In the medullary form the spleen and lymph nodes are not palpable. Sternal biopsy may be necessary to establish the underlying lymphoid metaplasia. Plasma cell leukemia is very rare,² only one case having been observed in our series.

There is also an extremely rare form of aleukemic leukemia in which the blood picture is nonleukemic but the lymph nodes (on biopsy) present the typical changes observed in chronic lymphatic leukemia.

Cases of splenomegaly have likewise been described in which the chief changes are marked leukocytosis with predominance of mature eosinophils³ or of polymorphonuclear neutrophils.⁴ While such cases are not

usually classified among leukemias, their course and symptoms are somewhat parallel. A similar eosinophilia may be present in Hodgkin's disease.⁵ The polynuclear cell leukemias, on the other hand, bear a close relationship to polycythemia. It is not unusual to find marked polynucleosis in the early or late stages of polycythemia. Subsidence of the polycythemia is not infrequently associated with the development of severe anemia, accompanied by either marked polynucleosis or myeloid leukemia (so-called erythroleukemia of Di Guglielmo⁶).

INCIDENCE

Age—Leukemia may occur, with varying frequency, at any time during life. In acute myeloid leukemia the largest percentage occurred between the ages of 20 and 29, in the chronic variety the disease was encountered most frequently between the ages of 30 and 39. These observations agree with those of Minot, Buckman and Isaacs.⁷ Chronic lymphoid leukemia was observed most frequently between the ages of 50 and 69.

Sex—Our series revealed a predominance of the disease in males, 277 cases occurring in males and 178 cases in females, as shown in the table. In the two sexes the course of the disease was identical.

TREATMENT

Because of the limitation of knowledge concerning the etiology of leukemia, no specific remedy is known, the treatment therefore is essentially symptomatic. The ends to be accomplished are (1) improvement of the general condition and affording comfort by rest, diet and sedatives, and (2) increase of strength and efficiency by blood transfusions and roentgenotherapy.

The literature is replete with suggestions regarding effective medicinal measures. Among the many therapeutic substances that have been advocated are lead, sulphur, malarial inoculations, embryonic extracts and arsphenamine. Some of these measures (neoarsphenamine, malaria, fetal liver extract and raw fetal liver) have been employed in our series without satisfactory results.

Blood transfusions may be employed to combat the anemia and to deter the leukemic process. In some instances the anemia and hemorrhagic diathesis are improved after the first or second blood transfusion, subsequent transfusions may not be efficacious.

Transfusions frequently prolong the patient's life and may even induce a remission. This was strikingly demonstrated in the case of a child, aged 5 years, who, when first seen, had a severe anemia, with marked leukopenia with numerous myeloblasts. While under observation the patient became extremely pale and stuporous, a blood transfusion was given at that time, which resulted in so marked an improvement in the clinical condition that the child survived about one year after the onset of the disease.

Splenectomy in leukemia should be discouraged. As a rule the operation is fatal, although the patient may live about three months—rarely longer. In the quiescent stage of chronic myelogenous leukemia⁸ the opera-

1 Paul J. R. and Bunnell W. W. The Presence of Heterophile Antibodies in Infectious Mononucleosis. *Am J M Sc* 183:90 (Jan.) 1932. Rosenthal Nathan and Wenkebach G. Die Bedeutung der heterophilen Antikörperreaktion für die Diagnose der infektiösen Mononukleose. *Klin. Wchnschr* 12:499 (April 1) 1933.

2 Ghon A. and Roman B. Ueber pseudoleukämische und leukaemische Plasmazellen Hyperplasie. *Folia haemat. (Archiv)* 15:72 1913.

3 Stillman R. G. A Case of Myeloid Leukemia with Predominance of Eosinophilic Cells. *M Rec* 81:594 1912.

4 Touthy E. A Case of Splenomegaly with Polymorphonuclear Neutrophil Hyperleukocytosis. *Am J M Sc* 160:18 (July) 1920.

5 Stewart S. G. Eosinophilic Hyperleukocytosis in Hodgkin's Disease with Familial Eosinophilic Diathesis. *Arch. Int. Med.* 44:772 (Nov.) 1929.

6 Di Guglielmo G. Un caso di eritroleucemia. *Folia med.* 3:319 1917.

7 Minot G. R. Buckman T. E. and Isaacs Raphael. Chronic Myelogenous Leukemia. Age Incidence Duration and Benefit Derived from Irradiation. *J. A. M. A.* 82:1489 (May 10) 1924.

8 Giffin H. Z. Splenectomy Following Radium Treatment for Myelocytic Leukemia. *M Rec* 94:1020 (Dec 14) 1918.

tion may be tolerated better. In two cases of leukopenic myeloid leukemia in our series, splenectomy was followed by a leukocytic myeloid leukemia. Since leukemia is a disease of the entire hematopoietic system, it is unreasonable to expect any constant alteration in the general condition by removal of only one of the affected organs. In one case of choking of the splenic artery,⁹ surgical procedure induced no improvement.

Conservatism should be the keynote of treatment of leukopenia. Iron and arsenic and liver extract are well tolerated and apparently have some immediate beneficial effect in maintaining the hemoglobin at a constant level. The anemia, however, tends to be progressive and transfusions are then necessary to increase the hemoglobin and to improve the general condition. In these cases radiotherapy is of no value in reducing the size of the spleen. Furthermore, it is definitely contraindicated in marked leukopenia and in such cases may even be followed by untoward effects such as secondary infection, necroses and hemorrhage.

The cases in which treatment is most availing are the chronic myelogenous and lymphatic leukemias of the leukocytic variety. In these the aim should be to reduce the number of white blood cells and to increase the hemoglobin and red blood count. Although this may not necessarily prolong life, it will usually increase efficiency and well being.

Reduction in the number of white blood cells or leukocytolysis, as suggested by Aubertin,¹⁰ may be accomplished by several methods, namely, (1) chemical, (2) biologic or (3) physical.

1 *Chemical Method*—(a) Arsenic. Prior to the extensive employment of roentgenotherapy, arsenic was frequently utilized in the treatment of leukemia. Its use was popularized by Branwell,¹¹ who reported the first apparent remission in leukemia. Subsequently the enthusiasm for arsenic waned but recently it has been advocated in larger doses by Forkner.¹² The best results with this drug are obtained in a few selected cases of chronic myelogenous leukemia. It has practically no influence in chronic lymphatic leukemia. To be effective, solution of potassium arsenite should be given in large quantities. The initial dosage of five drops three times a day should be gradually increased to ten drops three times a day. It may not produce improvement in symptoms. Occasionally it causes anorexia and loss in weight. It may be employed advantageously between courses of roentgen treatment.

(b) Benzene. Benzene, introduced by von Koranyi,¹³ in the treatment of this condition, is poorly tolerated and rarely effective. Repeated use of this drug in some of our cases was followed by no response.

2 *Biologic Method*—Leukocytolytic substances have been demonstrated in leukemia by Capps and Smith.¹⁴ Lindström¹⁵ was able to produce an antileukocytic

serum from leukemic white blood cells. These investigators used such serum in cases of leukemia and obtained only transitory beneficial response.

3 *Physical Method*—Radiotherapy. This is the most satisfactory form of treatment. There is no doubt that roentgenotherapy is of the greatest therapeutic value in chronic myeloid and chronic lymphoid leukemia. Since the first case was so treated by Senn¹⁶ in 1903 it has been used with increasing and justifiable popularity. Radium, in the form of surface application or packs, is used only in the event that roentgenotherapy is not available, or in patients who cannot be moved from their homes.

When radiation therapy is to be employed, no definite plan of treatment can be outlined in advance. The marked radiosensitivity of leukemic tissue and the lability of the blood count necessitate extreme caution. In general marked reactions should be avoided, and rapid regressions of leukemic deposits should not be sought. In our series of cases, fractional treatments of roentgenotherapy have been employed, i. e. high voltage therapy (from 180 to 200 kilovolts, 4 milliamperes 0.5 mm of copper plus 1 mm of aluminum filter and the application of from 150 to 250 roentgens at each sitting). Under these conditions radiation is tolerated better and fewer toxic reactions occur. This conforms with recent observations by McAlpin, Golden and Edsall.¹⁷

In our series the areas treated were the spleen in the myeloid cases and palpable lymph nodes and spleen in the lymphoid cases. Occasionally the long bones or the flat bones were irradiated but the response appeared to be somewhat slower. Duke¹⁸ recommends treatment directed to the chest, and Dale¹⁹ advises treatment of the entire body. Recently Craver and MacComb²⁰ published their results with total radiation over a protracted period (from ten days to two weeks) with apparently good effects. This plan is apparently useful in certain refractory cases of chronic lymphatic leukemia.

The effect of roentgen treatment is measured by the degree of symptomatic improvement. In favorable cases there is a rise in the hemoglobin and an increase in the red blood cells, a response that occurs more rapidly in myeloid cases. In lymphoid leukemias the improvement is not so marked. After the first series of roentgen treatments the blood picture may return to normal, particularly in chronic forms, and it may remain so for a variable period—from a few weeks to nine months. The symptomatic improvement, however, may be of longer duration. Additional treatment in our cases has proved less successful. In time patients become more resistant to the treatment and as the disease progresses do not tolerate it well. Toxic symptoms are not infrequent and may occur regardless of the area irradiated or of the amount of treatment. In cases of this type some improvement may be obtained by intravenous infusions of dextrose and saline solution or by blood transfusions.

In our experience radiation therapy is justifiable and useful for acute leukemia. It was employed in twenty

16 Senn, Nicholas. Case of Splenomedullary Leukemia Successfully Treated by the Use of the Roentgen Ray. *M. Rec.* 64:281, 1903.

17 McAlpin, K. R., Golden, R. and Edsall, K. S. Roentgen Treatment of Chronic Leukemia. *Am. J. Roentgenol.* 26:47 (July) 1931.

18 Duke, W. W. The Treatment of Leukemia by Irradiation of the Chest. *Radiology* 1:298 (Oct.) 1923.

19 Dale, T. Eine neue Methode der Roentgenbehandlung von Leukemia. *Acta radiol.* 12:263, 1931.

20 Craver, L. F. and MacComb, W. S. Irradiation of the Entire Body. *New York State J. Med.* 34:249 (March 15) 1934.

9 Payr, E. Ueber die Drosselung der Milzarterie mit Fascie bei uebergrossen oder nicht exterpierbaren Metzgeschwuelsten. *Arch. f. Klin. Chir.* 167:512, 1931.

10 Aubertin, C. La medication leucolytique. *Paris med.* 1:553 (June 25) 1932.

11 Branwell, B. Anemia and Some of the Diseases of the Blood Forming Organs and Ductless Glands. Philadelphia: P. Blakiston's Son & Co. 1899.

12 Forkner, C. E. and Scott, T. F. M. Arsenic as Therapeutic Agent in Chronic Myelogenous Leukemia. Preliminary Report. *J. A. M. A.* 97:3 (July) 1931.

13 von Koranyi, Alexander. Der Beeinflussung der Leukaemie durch Benzol. *Berlin klin. Wochenschr.* 49:1357, 1912.

14 Capps, J. A. and Smith, J. F. Experiments on the Leukolytic Action of the Blood Serum of Cases of Leukemia Treated with X-Ray and the Injection of Human Leukolytic Serum in a Case of Leukemia. *J. Exper. Med.* 9:51, 1907.

15 Lindstrom, G. A. An Experimental Study of Myelotoxic Serums. Therapeutic Attempts in Myeloid Leukemia. *Acta med. Scandinav.* suppl. 22, 1932.

cases of our series. The spleen, spine and ribs were irradiated at intervals of three or four days with from 150 to 200 roentgens²¹. Some of these patients were given one or two blood transfusions to improve the anemia, prior to the roentgen treatment. In most of these no harm was done, but no improvement resulted. However, remissions were observed in three cases of acute leukemia. In two, remissions occurred, which lasted from four to nine months, the third was admitted to the hospital in a moribund state and was given solution of potassium arsenite, roentgenotherapy and a blood transfusion. This was followed by a remission. A relapse set in three months later. The treatment was repeated and again there was a remarkable improvement. Up to the time of writing (eleven months) the patient has apparently been in good health and has a normal blood picture. In our opinion, irradiation is useful in both acute and chronic cases.

Repeated blood counts should be done during a course of radiotherapy. During the administration of the first series, the fall of the white blood cells to 30,000 should serve as an indication for diminishing their quantity and frequency. In subsequent series, changes in the hemoglobin and in the number of red blood cells should be carefully noted. The presence of anemia is the signal to hospitalize and transfuse the patient before treatment is resumed. Knott and Watt²² believe that the phagocytic power of the white blood cells is also an important criterion in connection with roentgen therapy. The loss of phagocytic power should serve as an indication for suspension of treatment, it should, however, be resumed on the return of normal phagocytic activity. It is therefore essential that leukemic cases be kept under the control not only of the radiologist but of the clinician and hematologist as well. This will prevent accidents that are associated with overdosage of radiation.

DURATION OF LIFE

In our series the duration of life in chronic leukemias was apparently somewhat modified by the inclusion of certain cases formerly regarded as acute. This may be attributed to the more extensive use of blood transfusions in treatment. In cases of chronic myeloid leukemia, 35 per cent of the patients apparently succumb in from four to twelve months, 45 per cent live from two to four years, and a few survive from five to eleven years. In the chronic lymphoid leukemias the duration of life is essentially the same. Most of the patients live from one to four years, a few live from five to fourteen years. In the chronic myeloid leukemias of the leukopenic type, most of the patients live for about one year, a few live longer, and one patient survived sixteen years. Although roentgen treatment does not prolong life, the patient's condition may be improved. It is apparent from our study that there is some justification in the belief that life in some of the acute forms of the disease may be prolonged perhaps to one year by blood transfusions.

SUMMARY

1 The relative occurrence of the three principal groups of leukemia apparently corresponds with the relative percentage of the various types of leukocytes in the circulating blood, namely, granulocytes, lymphocytes and monocytes.

2 The underlying systemic disorders present in all cases is essentially the same. An arbitrary division may be made according to the duration of the disease, acute or chronic, and also according to the number of white blood cells, into leukopenic and leukocytic forms.

3 Symptomatology, although of great value in differentiating the disease, is unreliable for purposes of diagnosis. This should be based on the characteristic blood changes, which do not depend so much on the number of white blood cells as on the presence and persistence of specific types of cells, such as myelocytes, myeloblasts and relative and absolute lymphocytosis.

4 Confirmatory diagnosis of the more obscure varieties may be made by biopsy on the sternal bone marrow or on a lymph node.

5 The treatment of leukemia is largely symptomatic. Arsenic, transfusions and particularly roentgen irradiations are the chief means of inducing symptomatic improvement, remission or possibly prolongation of life.

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CLASSIFICATION AND DIFFERENTIAL DIAGNOSIS OF THE ANEMIAS

RUSSELL L. HADEN, M.D.

CLEVELAND

An anemia is a decrease in the hemoglobin of the blood below the limit of normal. Since hemoglobin is contained only in the red blood cell, an anemia must result from quantitative or qualitative changes in the erythrocytes. The erythrocyte count may be low or the amount of hemoglobin per cell may be decreased. Red blood cells are always being formed and destroyed rapidly, so that the entire mass of cells is replaced every two to six weeks. An anemia results from a disturbance in the normal balance between destruction and regeneration of erythrocytes and hemoglobin. The red blood cells are formed primarily from the endothelial cells lining the capillary spaces in the bone marrow, especially of the flat bones. Successive stages in the growth of an erythrocyte from the endothelial cell include the megaloblast, erythroblast, normoblast, reticulocyte and mature erythrocyte. Red blood cells in the circulation do not all go through such developmental phases, since multiplication may take place at any immature level, although this is limited largely to the megaloblast and normoblast stages, points designated as critical in erythrocyte development by Sabin¹.

The normal growth of red blood cells requires the elements such as protein, carbohydrate, mineral salts and vitamins, which are necessary for all cell growth. In addition to these nonspecific building stones, certain specific principles must be supplied. Two specific substances are known to be essential for normal erythrocyte development. These are (1) the specific antianemic principle of liver in the absence of which maturation from the megaloblastic stage is abnormal, and (2) iron, which is necessary for normal multiplication at the normoblastic stage and the normal filling of red cells with hemoglobin. Further study may reveal other factors essential to erythrocyte development, but so far

From the Cleveland Clinic.

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¹ Sabin, F. The Bone Marrow. *Physiol. Rev.* 8: 191-244 (April) 1928.

²¹ Roentgen units measured with back scattering.

²² Knott, F. A. and Watt, W. L. Irradiation and Leukemias. Index to More Successful Treatment. *Brit. M. J.* 2: 991 (Dec. 13) 1931.

these two are the only ones that have been proved. A deficiency in these specific elements leads at first to a qualitative defect and in time to a quantitative defect in blood formation with a resulting anemia. The growth of erythrocytes may be depressed apart from a lack of cell building material or a deficiency in specific elements by such general factors as lowered metabolism, malnutrition, exhaustion, toxemia, infection, malignancy and poisons or mechanical measures that inhibit normal cell growth in the marrow, such as infiltration of marrow by tumor or leukemia. The defect in blood formation when the function of the marrow is depressed is quantitative, although it is possible that there may be a qualitative factor also, since a poison, such as lead, may interfere with the utilization of one or both of the specific principles necessary for blood formation.

On the other hand, blood is constantly being destroyed at a rapid rate. The red cells fragment as they grow old, are picked up by the reticulo-endothelial cells, especially in the spleen, and are dissolved, the hemoglobin is set free, iron is split off and bile pigment is formed. Iron so released is utilized again and again. The life history of the red blood cell is illustrated diagrammatically in table 1.

The amount of bile pigment formed is the best measure of the rapidity and of the amount of erythrocyte destruction, since this is the normal end product of hemoglobin metabolism. Cells may also be lost mechanically by hemorrhage. A mechanical loss should be evident from the history or examination of the patient, or by tests for occult blood in the feces or stomach contents. With excessive hemolysis, clinical jaundice usually develops because bile pigments are being formed more rapidly than the liver can excrete them. In determining excessive loss of blood, the icterus index of

globin. There are other ways, however, to detect a qualitative change in the marrow, and especially to obtain evidence of a deficiency in the specific substances necessary for normal erythrocyte growth. These tests will be discussed later.

TABLE 2—Phase of Erythrocyte Metabolism

I Increased Blood Loss
(a) Mechanical loss from acute hemorrhage as in
1 Trauma
2 Peptic ulcer
3 Uterine bleeding
4 Disturbance in blood coagulation
(b) Accelerated destruction as in
1 Chronic hemolytic icterus
2 Hemolytic anemia due to infections and poisons
II Decreased Blood Formation
(a) Depression of marrow function in
1 Idiopathic aplastic anemia
2 Cachexia, chronic intoxication, metabolic disturbances, poisons, radioactive substances, malignancy or infiltration of marrow by tumor or leukemia
(b) Deficiency in specific substances necessary for normal red cell formation as
1 Deficiency in specific antianemic factor of liver leading to pernicious and other macrocytic anemias
2 Deficiency in iron and perhaps other unknown substances necessary for hemoglobin formation—chronic hemorrhage, dietary deficiency of iron and disturbance in utilization (idiopathic hypochromic and microcytic anemia)

An etiologic classification of the anemias from a clinical point of view may be made, as in table 2, depending on the phase of erythrocyte metabolism that is involved.

Laboratory aid is necessary, however, even for a clinical classification, and at the same time it provides data for hematologic classification of the anemia. The following laboratory information is required. The technic of the determinations may be found elsewhere.²

- 1 The red cell count
- 2 Hematocrit reading
- 3 Hemoglobin content
- 4 The volume index (relative mean volume of the red cell)
- 5 The color index (relative mean hemoglobin content of the red cell)
- 6 The bile content of the blood plasma (icterus index)
- 7 The reticulocyte count.
- 8 The diameter of the red cells, qualitative changes in the stained cells, the number and type of leukocytes, the platelet count, and the coagulation and bleeding time, which may be of help in some cases.

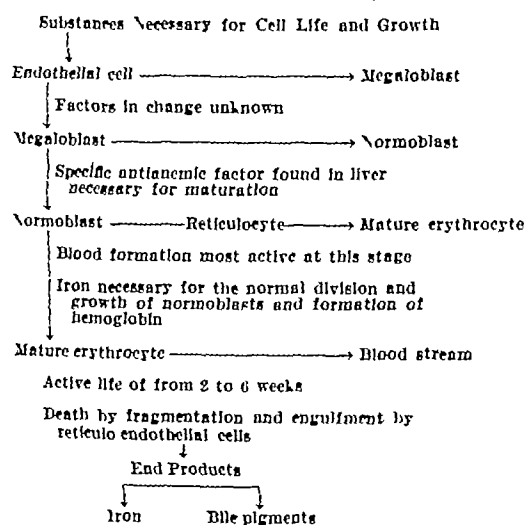
On the basis of the size and hemoglobin content of the red cell as determined in such an examination, the anemias are classified from a hematologic standpoint as follows:

- 1 Normocytic and normochromic volume index normal, color index normal
- 2 Normocytic and hypochromic volume index normal, color index low
- 3 Macrocytic and hyperchromic volume index increased, color index increased
- 4 Macrocytic and normochromic volume index increased, color index normal
- 5 Macrocytic and hypochromic volume index increased, color index low
- 6 Microcytic and hypochromic volume index low, color index low

I have illustrated in figure 1 the mean size of the erythrocyte and its mean hemoglobin content in the six different types of anemia.

² Haden R. L. The Technic of a Blood Examination. J Lab & Clin Med. 17: 843-859 (June) 1932.

TABLE 1—Life History of the Erythrocyte



the blood plasma is measured and thorough search for evidence of hemorrhage is made by means of the history and laboratory tests.

The most accurate indicator of the activity of erythrocyte regeneration in the marrow is the level of reticulocytes in the circulating blood, since these are young cells. The number of reticulocytes is the only measure of a quantitative increase in marrow activity other than the routine estimations of red cells and hemo-

The blood changes and the clinical classification may be correlated. In the anemias caused by acute hemorrhage the number of cells and the quantity of hemoglobin are equally reduced which indicates a reduction in the number of cells with those remaining normal in size and hemoglobin content. The anemia is normocytic and normochromic. In chronic hemorrhage or if the acute hemorrhage is sufficient to produce an iron deficiency, the picture is that of an iron deficiency anemia with a low volume index and color index. The icterus index is normal or reduced and the reticulocyte count is increased with normal marrow response.

In the presence of accelerated destruction of erythrocytes, the most characteristic clinical feature is the increased icterus index. If the process is chronic, the marrow is normally overactive, so there is often a great increase in reticulocytes with red marrow in the long bones. Since reticulocytes tend to be slightly larger than normal mature red cells, some increase in the size (volume index) and color may be found, although this is variable.

In all types of anemia resulting from decreased formation of erythrocytes the reticulocyte count is low. In true idiopathic aplastic anemia and simple depression of marrow activity the effect on the bone marrow is usually purely quantitative so fewer cells are produced by the marrow but those that are formed are normal. The color, volume and icterus indexes are within normal limits. Often the effect of lowered metabolism, malignancy, poisons and toxemias is to interfere with the formation, absorption or utilization of one or more of the specific principles necessary for normal blood

formation. In such cases the blood takes on the characteristics of a specific deficiency anemia although the actual cause is malignancy or some other abnormality.

In the specific deficiency anemias the changes in the blood are characteristic. If the anemia is due to a deficiency in the specific antianemic factor of liver the bone marrow is crowded with large cells which are unable to mature and these die in situ in excessive numbers. The icterus index is high for this reason. The reticulocyte count is low

conditions is thus a macrocytic and hyperchromic anemia with high icterus index and low reticulocyte count.

With an iron deficiency there is first a decrease in hemoglobin, each cell carries less hemoglobin, so the color index is low since the total count normally remains high. Less hemoglobin is destroyed, so the icterus

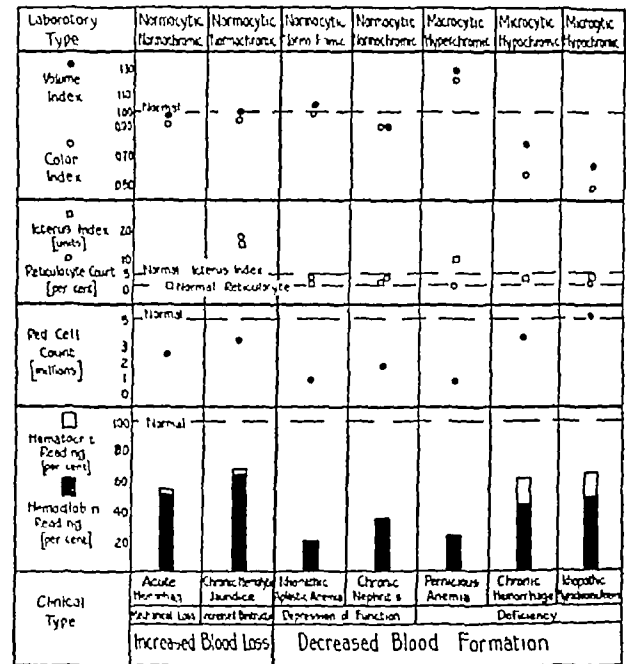


Fig. 2—Typical laboratory observations in the various clinical groups of anemia.

index is lower than normal. Often the plasma is very clear. Almost the sole function of the red cell is to transport oxygen. With a prolonged iron deficiency and a great decrease in hemoglobin there is no need for cells of normal size, as the number may not change greatly. In such a deficiency, in time the mean size of the cell becomes smaller, although the hematocrit reading seldom becomes less than two thirds of normal. The characteristic anemia of an early or mild iron deficiency is a normocytic and hypochromic anemia with the icterus index 1 or less, and with little change in the reticulocytes, in a severe or chronic iron deficiency the characteristic anemia is microcytic and hypochromic, with a marked decrease in the icterus index.

The characteristic blood changes in the different clinical groups of anemia are shown in figure 2.

Not infrequently more than one factor is operative in the causation of an anemia, so the blood changes represent a summation of these characteristics for the different types of anemia. If there is a deficiency in both iron and the antianemic factor of liver, the microcytosis and the hypochromia characteristic of the iron deficiency may be neutralized by the macrocytosis and hyperchromia brought about by the deficiency in the antianemic factor of liver. The cell size and hemoglobin content may then be within normal limits. Malignant disease may depress the marrow, interfere with the utilization of a specific factor, and also cause hemorrhage. In such an instance there are three factors in the causation of the anemia. A careful study usually reveals all the factors.

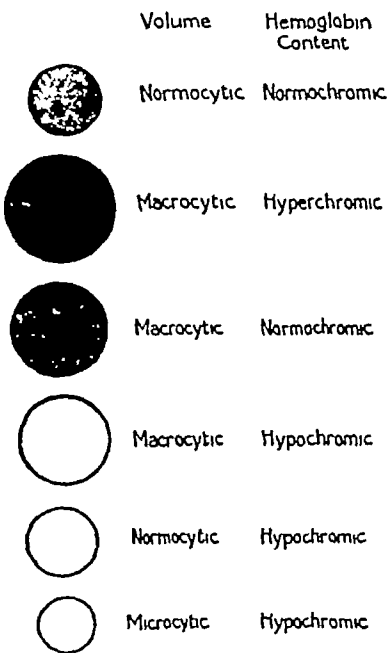


Fig. 1—Diagram to illustrate the six groups of anemia on the basis of volume and hemoglobin content of the red cell.

because few cells get into the blood stream. Such cells as do get out are large and contain more hemoglobin than normally. Hence the volume and color indexes are high, as well as the icterus index while the reticulocyte count is low. The disturbance in the marrow is at the megaloblast stage of red cell development. The characteristic anemia in pernicious anemia or related

COMMENT

If the blood is studied correctly and adequately, if a careful history is obtained and if the patient is examined completely, a case of anemia can almost always be correctly classified, both clinically and hematologically.

It is apparent that a correct diagnosis is of necessity prerequisite to the proper and adequate treatment of any patient with anemia. The factors in the production of anemia are relatively few, but frequently more than one factor may be operative. Thus with adequate specific treatment of pernicious anemia or iron deficiency not infrequently develops if the response to therapy is rapid. Likewise there may be a quantitative depression of bone marrow activity and also a qualitative deficiency caused by interference with the absorption or utilization of the specific principles necessary for the normal development of the erythrocyte. Infection is often a factor in the specific deficiency anemias. Thus, if an infection develops in a patient under treatment for pernicious anemia the dose of the antianemic factor of liver must be increased, showing that the infection interferes with the absorption or utilization of the specific principle.

In every case an abstract laboratory diagnosis from a hematologic standpoint must be made as well as a

anemias or in the macrocytic anemias when the color index is much lower than the volume index (low saturation index). Liver is an excellent food to supply nonspecific factors and hence may be tried in every type of anemia, although it probably has a specific effect only in macrocytic anemia.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DR KRACKE AND HORTENSE GRAVER, DRS ROSENTHAL AND HARRIS AND DR HADEN

DR CHARLES A DOAN, Columbus, Ohio. In the Research Service at Ohio State University, seventy-five cases of leukemia have been studied during the last four years. Using the supravital criteria in addition to the usual methods for morphologic identification we have made differential diagnostic studies of the types of cells involved in each case. The relative incidence of monocytic leukemia, in our series about 15 per cent, is surprising in view of the relative infrequency with which this type of leukemic dyscrasia has been reported in the past, 45 per cent were lymphatic and 40 per cent myeloid leukemia. Four post-mortem studies in the group of eleven cases diagnosed as monocytic leukemia confirmed beyond question the underlying pathologic reticulum cell hyperplasia characteristic of this type. Some light has been thrown on the question of 'mixed leukemia' in this study. In our experience to date, a 'mixed leukemia' has been always a monocytic leukemia. The problem of aleukemic leukemia is being confused with agranulocytic angina. More than 80 per cent of the patients referred to us with a low white count—presumably specific granulopenic states—have not conformed to the Schultz syndrome and many have shown the blood picture and pathologic changes of acute leukemia. We have found prognosis based on either physical or laboratory examination to be extremely hazardous in leukemic patients. A patient with less than 1500 total white count and the majority of the cells myeloblasts lived for eight months without symptoms other than some weakness and an occasional lingual ulceration. Another patient was sent home with 400,000 total white count, 90 per cent of the cells being myeloblasts, and with a beginning gangrene of the face, and returned five months later in remission with 11,000 white cells but with the same qualitative differential. The making of a diagnosis of leukemia especially in elderly individuals with an elevation of the white count, the lymphocytes predominating, is not always easy. Therapy must be individualized. In the acute cases with "blast" cells predominating, x-rays and radium are usually contraindicated. In the more chronic cases of all three types of leukemia small graduated doses of x-rays (starting with 100 roentgens) may be advantageously alternated with solution of potassium arsenite in successive courses of treatment. The development of a refractory tolerance may thus be overcome. We have been able to maintain both chronic and subacute manifestations of the disease in control for periods as long as from four to five years, and the patients in fairly good health, on such a regimen. The treatment available at the present time is, of course, only palliative and only temporarily if at all effective.

DR VICTOR LEVINE, Chicago. Dr Kracke has come to the conclusion that monocytic leukemia is a phase of myelogenous leukemia. This is in accordance with the view of Naegeli. Downey, however, has divided monocytic leukemia into two types: the Schilling type and the Naegeli type. By the Schilling type he means the true monocytic leukemia, with a preponderance of monocytic cells in the bone marrow and blood stream. By the Naegeli type is meant the monocytic phase of a myelogenous leukemia, a condition which I have observed at the Cook County Hospital and in which the myeloid cells predominate in the bone marrow despite the fact that the peripheral blood shows a majority of monocytic cells. To the types of acute leukemia mentioned there might be added two other types, megakaryocyte leukemia (which is quite rare) and stem cell leukemia. Many hematologists will not speak of a stem cell leukemia but there are a certain number of acute leukemias in which the predominant cell is so immature that it is impossible

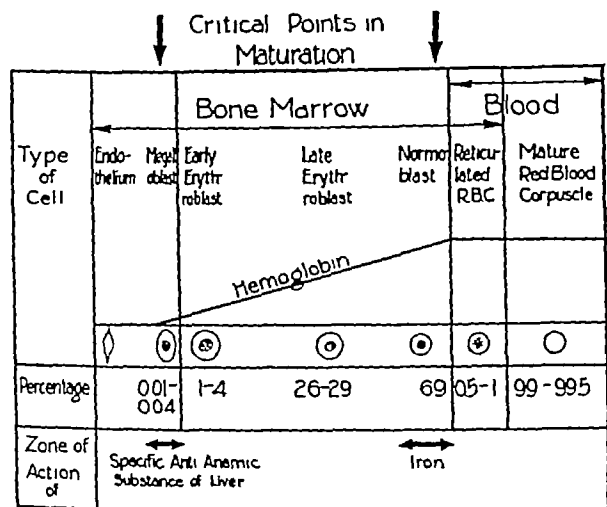


FIG. 3—Embryologic cycle of the red cell of man (after Sabin) and the point of action of the specific principles necessary for normal red cell formation.

clinical classification based on the method of production of the anemia. All possible factors must be evaluated in planning treatment. To accomplish this the life history of the red cell must be kept adequately in mind, and the results of a complete blood examination must be known. The results of treatment are also determined by a careful blood study. In pernicious anemia the macrocytosis of the erythrocytes disappears with complete treatment, in an iron deficiency anemia, if enough iron is given, the cells become larger and are filled with hemoglobin. I have illustrated in figure 3 the close relation of treatment to the embryologic cycle. Each of the two specific methods of treatment of anemia (iron and liver and liver substitutes) bears a definite relation to a stage in the life history of the red cell. Thus the antianemic principle of liver acts at the megaloblast stage, while iron acts at the normoblast stage. Liver substitutes help only the macrocytic anemias, while iron is indicated only in the hypochromic

to classify it as a myeloblast, monoblast or lymphoblast and it is accordingly called a stem cell. Rather than try to describe this type of cell, I will refer to an article by Dr. Forkner in the January 1934 issue of the *Archives of Internal Medicine*. He has one plate of excellent colored illustrations on which are the cells of a case diagnosed acute lymphatic leukemia. Forkner calls these white cells lymphocytes, but from their appearance they are certainly stem cells.

DR. W. EDWARD CHAMBERLAIN, Philadelphia. The radiologist must make a thorough study of his own cases of leukemia, in addition to studying the literature and attending such symposiums as this. In studying his own cases, I would urge him to make a practice of drawing up charts of blood counts based on absolute numbers of various cell types instead of percentage figures. For example, let us suppose that on a certain date the total white blood count is 100,000 and that 3 per cent of the cells are lymphocytes. Let us further suppose that ten days later the total white blood count is 30,000 and the lymphocyte count is 10 per cent. Actually the lymphocyte differential has increased from 3 per cent to 10 per cent, when expressed in percentages, while the absolute number of lymphocytes has remained exactly the same, namely, 3,000 cells. One should be primarily interested in the increase or decrease in total, and in the absolute numbers of various cell types. Charts or tables based on percentages do not give the lucid picture that can be obtained from charts or tables based on the absolute numbers of cell types.

DR. GEORGE J. KASTLIN, Pittsburgh. Within the last three months I have had under observation three cases of aleukemic leukemia of different types. One was a case that was first interpreted as an aplastic anemia, which continued for nine months. Approximately twenty-eight or thirty transfusions were given by one of my colleagues. This was a case that could not be definitely classified clinically as leukemia but at autopsy was definitely of an aleukemic type. The second case was also one in which confusion arose in diagnosis between aplastic anemia and leukemia. There was profuse hemorrhage from the nose and mouth, with a low platelet count but with no distortion in the bleeding or coagulation time. Although there were no abnormal lymphocytes in the blood stream, it appeared clinically as an aleukemic leukemia and was proved so at autopsy. The question came up whether roentgen treatment could be administered in the doses that are advocated by some in granulocytopenia or in other leukemias. The third type was a conventional type of leukemia with low white count but with a typical myelogenous blood picture. I present these three types, seeking information with regard to the possibility of roentgen therapy in addition to transfusion, the use of arsenic and supportive measures in general.

DR. NATHAN ROSENTHAL, New York. Dr. Doan's studies of living cells are important. Observations of the activity of cells after roentgen treatment may prove to be an important guide for continuation of roentgen treatment. Dr. Kastlin's cases of marked leukopenia with definite leukemic changes at the postmortem are interesting. In such cases the biopsy on the sternal bone marrow during life is an important aid in diagnosis. Roentgen treatment is contraindicated in such leukopenic states. It is not followed by good results and may lead to production of a greater leukemia and secondary septic complications.

Laboratory Doodads—In the Epidemion, there are a considerable number of case histories, quite as thoroughly recorded, from day to day, as many of our modern ones, upon which diagnostic judgment can be based. In many instances, the observations of Hippocrates are so precise that we can often supply, from modern knowledge the exact type of infection—not infrequently the micro-organism that must have been responsible for the individual conditions. In regard to many nonsurgical conditions Hippocrates did quite as well, we surmise as will be possible for the modern general practitioner or "family medical adviser" who is so dear to the hearts of many of our reactionary contemporaries, and who, by a turn to medical muzzle loading is to emancipate our profession from all the newfangled laboratory doodads—Zinsser, Hans Rats, Lice and History. Boston, Little, Brown & Co., 1935.

THE GASTRO-INTESTINAL MANIFESTATIONS OF UROLOGIC DISEASE

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The gastro-enterologist is frequently confronted with symptoms, referable to the abdomen, that cannot be explained on the basis of pathologic changes in the gastro-intestinal tract. In a number of cases, exhaustive study and resultant symptomatic management failed to relieve the symptoms. We therefore sought a possible explanation in the urinary tract, in spite of the fact that the urinary symptoms were either lacking or entirely in the background.

Metabolic disturbances associated with the nephritides frequently give rise to symptoms that are purely gastro-intestinal, but these are associated with corresponding blood changes with absorption of the toxic products. This group of cases is not considered in this presentation because the cases are so obviously renal in origin.

With these facts in mind we began to search for a possible explanation of this curious relationship. Reviewing the neurologic aspect, we note the interrelation of the nerve supply of the upper urinary tract, and the organs of digestion. Smith¹ has carefully shown this connection. He maintains that since both are supplied by the vagus and sympathetic nerves, any disturbance of the kidney may be reflected through the gastro-intestinal tract. The connecting link is through the celiac ganglion. Therefore it is reasonable to suppose that impulses originating abnormally in the urinary tract may produce gastro-intestinal symptoms without pathologic changes.

Numerous authors have also emphasized the close anatomic approximation of the kidneys with other abdominal viscera. This is especially true of the right kidney in relation to the gallbladder, duodenum, pancreas and ascending colon. However, in this group of cases the kidneys play the predominant role.

There are no pathognomonic signs or symptoms that would lead to a more accurate diagnosis. This is more a matter of exclusion, the possibility of such an interrelationship being kept in mind.

Frequently a careful history will reveal a urinary disturbance, particularly in women. They complain, in addition to their other symptoms, of a frequency and desire for urination, and a feeling of incompletely emptying the bladder. There may also be an urge which must be satisfied within a relatively short time. Difficulty in starting the stream is not uncommon. Smarting or burning may be present. In the male, similar but more pronounced urologic changes may cause the distress. From the gastro-intestinal standpoint the symptoms frequently simulate gallbladder disease, occasionally ulcer—especially duodenal—and many are treated for so-called colitis for a period of years, and in some, even operative intervention has been resorted to, with the extirpation of organs that show little or no change, with a persistence of complaints after surgery.

Read before the Section on Gastro-Enterology and Proctology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

¹ Smith, E. C. Canad. M. A. J. 28: 281-283 (March) 1933.

We wish to emphasize a rather large group of cases, particularly in women, that has often escaped the attention of the internist in which definite pathologic changes have been found in the urethra. Until of late, very little reference has been given in the literature to this group. In spite of these reports, the mention of urethral pathologic changes in females, particularly strictures, elicits a feeling that this condition is a rare one. This, however, is not true, for if the urethra would be examined by gynecologists and general practitioners as a routine during pelvic examinations, this entity would be found rather frequently.

Urologically, the changes are those of a definite stricture, usually in the anterior third of the urethra. Here one finds a definite narrowing and catheterization is done with difficulty if at all. Passage of a bougie reveals a definite "hang." The back pressure in these bladders results in the cystoscopic changes closely resembling those seen in prostatic hypertrophy—the degree depending on the duration of the stricture and the severity of the obstruction. Also, in the female, contractures may occur at the bladder neck, as well as diffuse polypoid formation.

We especially disregard at this time that group of cases known as ureteral strictures, recognizing that they may be a factor, but the increasing evidence points to the fact that they are not so common as previously mentioned by Hunner. That they occur there is no doubt, but are they as common as so often diagnosed?

In this connection we are reporting a group of thirty cases. For the sake of brevity we will review a few outstanding clinical pictures to emphasize this phase. In the cases herein cited the usual work up was given of a complete history and physical examination, complete blood count and differential, urine, stool, Wassermann and Kahn tests, basal metabolic rate, complete blood chemistry when indicated, and complete gastro-intestinal roentgen examination with or without a cholecystogram. In some cases a barium sulphate enema was given. Deviations from normal of these laboratory data will be cited if they have any significance, and, when omitted, it is assumed that they are within the limits of normal.

REPORT OF CASES

CASE 1—Miss E. S. consulted us, March 1, 1928, for pain in the upper part of the abdomen. During the last twelve years she had had attacks of diffuse abdominal pain, coming on in the nature of attacks. Pain was rather severe and frequently radiated to the back on the right side. Attacks usually lasted from twenty-four to forty-eight hours and were accompanied by a temperature of 102 F. There had been no nausea or vomiting. A great deal of belching occurred, however. Six months before she had an attack of pain, accompanied by jaundice, which lasted ten days. She had previously been told that she had blood and pus in the urine. Cystoscopy was done at that time and a kidney infection was diagnosed. She was seen subsequently by another urologist, who confirmed this opinion, and during the last two years an appendectomy and cholecystectomy had been performed, following the latter operation there was slight improvement and then again a return of the symptoms. Analysis of the urine was negative on several examinations. Under suitable management no improvement was noted, urologic examination was done, and at this time a marked fibrous stricture in the last two thirds of the urethra was noted. A clear urine and normal bladder tolerance was observed. There were numerous areas of trabeculization over the wall of the bladder. On the floor of the bladder, and chiefly in the region of the right ureteral orifice, there was a marked bullous edema. The right ureteral orifice was embedded in this edema. The left orifice was essentially normal. Both ureters were catheterized unobstructed and a clear urine was

obtained from each side. A renal function indigocarmine test revealed a return in three minutes on the right and three and one-half minutes on the left side, in good concentration. She did not report again for another year and a half, at which time a recheck of the lower part of the urinary tract was done with similar observations. Subsequent dilations of the urethral stricture in this particular patient relieved her symptoms, and she has been well since.

CASE 2—Mrs. E. J. S., aged 47, who consulted us, Aug. 2, 1927, gave a history of cholecystectomy and appendectomy nine months before. However, there was still a persistence of belching and a bitter taste in the mouth. Symptoms were only slightly and temporarily relieved by the operative intervention, and although she had been fairly comfortable for six months there was a definite return of her symptoms. A complete examination at this time revealed no pathologic changes to explain the recurrence of symptoms, and in this particular case there was no nocturia and frequency of urination. However, during the course of observation of a few months, a frequency did develop, and cystoscopic examination at that time revealed a firm fibrous stricture, 2.5 cm. from the outlet, with marked trabeculization of the bladder. Both ureteral orifices were normal, and there was moderate trigonal cystitis. Subsequent dilation of the urethra in this particular case completely relieved the gastro-intestinal symptoms, and the patient has been free from symptoms for the last five years.

Most internists are acquainted with the symptoms of nephroptosis and their attending phenomena. However, there is a certain group of cases in which the gastro-intestinal symptoms play the predominant rôle. In this connection we are reporting the following case.

CASE 3—Mrs. R. F., aged 27, who consulted us, Aug. 29, 1923, complained of pain in the right side, nausea, lumbar pain, headache, loss of weight, and a tendency to perspire easily. For the past five years she had had pain in the right side which was more or less constant. Appendectomy four years previously for this complaint failed to relieve her symptoms. The pain radiated up into the back and to the scapula. She felt nauseated when the pain was at its height, it never was referred to the pubic region and she never required opiates for relief. There had been some fulness and distention after meals. Noteworthy physical changes were a systolic murmur at the base of the heart, with a blood pressure of 142 systolic and 90 diastolic. There was some tenderness over the gallbladder region, and a mobile right kidney was observed. Subsequent gastro-intestinal roentgenograms revealed a prepyloric spasm on the lesser curvature side of the stomach which was distinctly tender. Otherwise the gastro-intestinal examination was negative. She was treated for a period of three years off and on, on gastro-intestinal management, with improvement and relapses. In 1926, with the return of symptoms, a cholecystogram was made, and what was thought at that time to be a pathologic gallbladder was observed. On suitable management there was a return of her previous phenomena and at this time it was thought wise to investigate the urinary tract. April 17, 1928, Dr. Kretschmer reported the following: Cystoscopic examination was negative, except for a freely movable right kidney, and a pyelogram showed the right kidney pelvis in normal position, with the patient lying flat on the table, and a prolapse of the pelvis down to the crest of the ilium when the patient stood up. The kidney could easily be displaced so that the pelvis was seen over the spine. After much discussion, and with some reluctance on the part of the urologist, it was finally decided to do a right nephropexy. This was subsequently done, and for the last six years the patient has been completely relieved of all of her symptoms and has had no recurrence of the gastro-intestinal manifestations.

Following this line of thought as to displacement, it is interesting to report the following case, illustrating pressure phenomena.

CASE 4—Miss S. G., aged 43, who consulted us, Feb. 7, 1928, complained of pressure in the epigastrium and substernum. For the past three or four years the patient had had recurrent

pains in the epigastric and substernal regions, coming on during the day or night, never awakening her, and lasting for an hour or so. There was no particular relation to meals and no nausea, vomiting or jaundice. There was, however, excessive belching and passage of gas. Physical examination revealed frozen, irregular pupils, a definite systolic murmur in the aortic region, and a blood pressure of 168 systolic and 114 diastolic. There was definite fulness in the epigastrium, and there was a dull area displacing the normal stomach tympany. Examination of the rectum and vagina did not show any pelvic tumor mass. Repeated examinations of the urine showed no noteworthy changes, and the same was true of examination of the stool. The stomach acids were ten free and twenty total on the Ewald meal. The motor meal showed no evidence of retention. The Wassermann reaction and a previous spinal fluid examination were negative. The renal functional test gave a return of 35 per cent the first hour and 40 per cent at the end of the second hour. The blood sugar was 90 mg and nonprotein nitrogen was 31 mg. Fluoroscopic examination of the chest and abdomen revealed no noteworthy changes of the chest, however, the cardiac end and the greater curvature side of the stomach were displaced to the right half of the abdomen. The duodenal bulb, when brought into view, was normal. Beneath the left side of the diaphragm there was a region similar in density to that seen on the right, occupied by the liver. Plates confirmed the fluoroscopic observation showing a displaced stomach to the right and a depressed transverse colon into the pelvis. Cystoscopic examination revealed no noteworthy bladder changes. Indigocarmine injected intravenously appeared on the right side in two and one-half minutes in good concentration and on the left side in four minutes in fair concentration, and one-half minute later in excellent concentration. The left pyelogram showed a nephroptosis of the third degree. There was a slight degree of hydronephrosis. There was a tortuosity of the ureter, due to ptosis of the left kidney. There was no evidence of ureteral stricture and the pelvis and calices were practically normal. It was thought that the ptosis of this kidney was due to extrarenal pressure. Subsequent laparotomy by Dr. H. M. Richter revealed a large solitary cyst of the upper pole of the left kidney. This was subsequently resected and the kidney left in situ. Following the removal of this cyst, the patient's gastro-intestinal symptoms completely subsided.

CASE 5—Miss M. S., aged 29, who consulted us July 15, 1926, complained of distress after eating and vomiting. She had had an appendectomy sixteen years before. For the last five years she had had attacks of indigestion. These would come approximately every month and last for about two weeks, they were particularly distressing after the patient ate fat and greasy foods. Physical examination other than tenderness over the gallbladder and epigastric regions, was essentially negative. Gastro-intestinal and gallbladder examinations revealed what appeared to be a pathologic gallbladder with stones. She was advised to have a cholecystectomy, and a single stone was found in the gallbladder. Following this a thyrotoxicosis developed and a subtotal thyroidectomy was done, and following the thyroidectomy the patient was fairly comfortable.

There was again a return of the previous gastro-intestinal manifestations, however with some urinary distress. Vaginal examination revealed several large fibroids of the uterus. A cystoscopic examination revealed, particularly on the left side, an invaginated area of the bladder wall. This was about 5 cm in diameter. There was distinct hyperemia of this area. The trigon and ureteral orifices were normal. Cystograms showed a deformity of the left lateral wall of the bladder conforming to the cystoscopic picture. Following the removal of the fibroid uterus, the patient's urinary symptoms entirely disappeared, and she has been free from gastro-intestinal manifestations for the last two years.

Still more interesting are patients in whom one should readily suspect urologic manifestations that are entirely overshadowed by gastro-intestinal phenomena. In the male urologic disease is frequent, and yet it is easily overlooked as the causative factor for the basis

of the symptoms. This will be exemplified by the following cases.

CASE 6—F. B., a man, aged 41, who consulted us, Nov. 13, 1931, complained of distention of the abdomen, belching and nervousness. For the last several years the patient had experienced a feeling of distention, especially across the upper part of the abdomen, coming on every day, usually noticed in the morning and late in the evening, and even while he was asleep. However, there was no relation to food taking. About a year before he had had a very severe pain under the right costal margin, which lasted for three or four weeks, not enough to incapacitate him and not associated with any vomiting or jaundice. There had been no loss of weight, and his past history was essentially negative. Physical examination revealed a markedly accentuated aortic tone, a blood pressure of 160 systolic and 116 diastolic, with definite tenderness over the gallbladder and sigmoid regions. The urine and stool examinations were essentially negative. Roentgenograms revealed numerous apical diseased teeth. The basal metabolic rate was 0 per cent, the blood sugar 88 mg, nonprotein nitrogen 23 mg, and a renal functional test 40 per cent at the end of the first hour and 30 per cent at the end of the second hour. Roentgen examination of the gastro-intestinal tract revealed no noteworthy changes of the stomach or duodenum. A cholecystogram revealed a gallbladder within the limits of normal. Because of the hypertension it was thought that conservative gastro-intestinal management would be the procedure of choice. On what was presumed to be adequate gastro-intestinal therapy, however, his symptoms did not markedly decrease. A diurnal and nocturnal frequency then developed, associated with some slight difficulty on starting the stream. Rectal examination revealed a small, firm, irregular and nontender prostate. Both seminal vesicles were slightly enlarged. Prostatovesicular smear revealed from 20 to 30 pus cells per high power field. When an attempt was made to sound the urethra, a definite firm, linear stricture was encountered in the membranous portion of the urethra. Dilatation of this stricture with adequate prostatic massage completely relieved the gastro-intestinal manifestations and the patient has been comfortable since.

CASE 7—C. A. E., a man, aged 41, consulted us, Feb. 28, 1927, for vague abdominal symptoms, associated with loss of weight, with no genito-urinary history. It was thought that he had a low grade disease of the gallbladder, and under subsequent management he seemed somewhat improved. However, some three or four years later pain developed in the left side, with a return of the abdominal manifestations, and he also noticed a frequency of urination. Because we felt that there might be a urologic condition in the background, this investigation was done instead of a gastro-intestinal examination. The external genitalia were essentially normal. Rectal examination revealed a smooth, nontender, bilaterally enlarged prostate. Cystoscopic examination revealed on the left lateral wall, just above the left ureteral orifice, an opening of a large diverticulum. This was about 1 cm in diameter. Scattered throughout the bladder were numerous coarse trabeculae. The interureteral ridge was markedly hypertrophied. Examination of the bladder neck showed a definite hypertrophied median lobe. The lateral lobes did not show any marked changes. A subsequent intravenous pyelogram demonstrated that the left ureter took a tortuous course above the bladder and was pushed to the midline by the diverticulum. There was no evidence of hydronephrosis, and the removal of this diverticulum and a prostatic resection of the median lobe were advised. The urologist in his home town, however, felt that the diverticulum was all that should be removed and there was some slight improvement following this operation. With the return of symptoms the urologist was convinced that a resection of the prostate was indicated. After this was performed, the symptoms entirely disappeared and the patient has been free from gastro-intestinal manifestations.

CASE 8—S. L., a man, aged 47, who consulted us, Aug. 19, 1929, complained of abdominal distress, belching and distention. For the past two or more years the patient had had regular recurrent periods of abdominal distress, coming on about an hour after meals, especially after fried and greasy foods, associated with fullness and distention, and excessive belching. The

past history, other than a herniotomy fourteen years before and an appendectomy eleven years before, was essentially negative. Physical examination revealed no noteworthy manifestations. Examination of the urine and stool was negative. There were no noteworthy changes in the gastric content. Roentgen examination of the gastro-intestinal tract revealed a normal stomach and duodenum. A cholecystogram showed what appeared to be a pathologic gallbladder. Subsequent gastro-intestinal management made only little improvement in the patient. During the course of this observation symptoms of frequent and nocturnal distress developed and cystoscopic examination was thought advisable. At this time it revealed a residual bladder urine of 3 ounces (90 cc.) and normal bladder tolerance. A slight, coarse trabeculization on the posterior wall of the bladder, normal ureteral orifices, and a depressed trigon with median lobe enlargement which was definitely elevated and hypertrophied, with the lateral lobes within the limits of normal, were found. Following an adequate median lobe transurethral resection, the gastro-intestinal manifestations completely disappeared.

CASE 9—S. L., a man, aged 24, complained of abdominal distress coming on some two hours after eating. This was associated with frequent nausea and vomiting. Gastro-intestinal examination was essentially negative. He was treated with ulcer management, with no improvement of symptoms. He had one severe attack of epigastric distress resembling that seen in a penetrating duodenal ulcer and when seen by his internist surgical intervention was suggested for a penetrating and probably perforated duodenal ulcer. However after the clinical picture was reviewed with the urologic manifestations it was deemed advisable to investigate the urinary tract with the result that a definitely enlarged and tender left seminal vesicle was found which on massage showed a large number of pus cells. After massage of the seminal vesicle there was an immediate abatement of the gastro-intestinal symptoms. During the last four years, while under observation there has been a recurrence of the gastro-intestinal symptoms which have not mended under medical management and it is exceedingly noteworthy to find that with a repetition of urologic therapy there has been a complete remission of the symptoms.

COMMENT

It is evident from these various cases that urologic disease can and does cause gastro-intestinal symptoms. But how frequently is this etiologic factor overlooked? The more recent addition of intravenous pyelography to the armamentarium of diagnostic procedures has shed even greater light on this interesting phase of disease. We recognize the fact that intravenous pyelography has some shortcomings, but this should not detract from its helpfulness in leading to more accurate diagnoses in certain groups of cases.

The cooperation of the urologist with the internist has brought about a clearer understanding of many obscure pictures that heretofore have not been recognized, and, what is more important, that have been treated for many years symptomatically with no relief. Multiple operations are resorted to, and no improvement in the original picture is brought about. These patients are frequently mislabeled—treated as “neuro,” or hypochondriacs—and are classified frequently in that all inclusive diagnosis “colitis,” and yet are no better after the best of talent has had an opportunity to prove its skill.

CONCLUSIONS

With these facts in mind we feel justified in drawing the following conclusions:

- 1 The interrelationship of the nerve paths of the urinary and gastro-intestinal tract may explain this curious relationship of symptoms.
- 2 Women with urethral pathologic changes frequently show gastro-intestinal manifestations.

3 Pressure phenomena and displacement play a role in a certain group of cases.

4 Pathologic changes in the lower part of the urinary tract in the male may cause symptoms, particularly in middle aged men.

5 Finally, we do not offer this evidence as a panacea for all obscure gastro-intestinal complaints. However, we do feel that it is justifiable for the gastro-enterologist to become urologically minded enough to explain at times these many obscure clinical pictures. More hearty cooperation between the internist and the urologist should produce a more accurate diagnosis in a certain percentage of cases that do not react to recognized medical care.

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ABSTRACT OF DISCUSSION

DR HARLOW BROOKS, New York. In my service are many patients who enter the hospital through the gastro-intestinal outpatient department, complaining of nausea and vomiting. These cases may include pretty nearly everything from hysteria to pregnancy. In a considerable number of cases we found that this was the result of urologic conditions and yet they were thrown on the internist and gastro-enterologist for diagnosis. In the first place there is traumatism of the kidney. Nausea and vomiting are the most outstanding signs of renal disease. Pyelitis causes nausea and vomiting with great frequency, and so do stones, renal abscess, the large solitary nephritic abscess or, still more frequently, the small cortical abscesses, which are so difficult of diagnosis even in the hands of the expert urologist. Tumors of the colon and stomach are mistaken frequently for tumors of the urinary tract, and vice versa. One should never forget the close anatomic relationship between the colon, the gallbladder and the stomach in their proximity to the kidney or even to the urinary tract lower down. It is easy to assume when one finds a case of apparent tumor of the stomach with the characteristic signs and symptoms of carcinoma that the stomach is the primary focus, but sometimes an inquisitive finger forced into the anus will show that the growth really originated in the prostate. Prostatic carcinoma frequently metastasizes early in the region of the colon or the stomach. Of course, that makes a great deal of difference if one has in mind a subtotal gastrectomy. Gallbladder disease is so frequently mistaken for urinary disturbances that I hardly need to mention that we have found in the past month in the hospital several cases sent in as gallbladder disease but really due to septic nephritis. Renal tumor, pyelitis, cortical abscesses, solitary abscess, cysts of the kidney, quiet stone, proctitis, hemorrhoids and rectal disturbances of almost all sorts may simulate one another closely. Stricture, abscess and ulcerations of the sigmoid and rectum in particular are often secondary to prostatic disorder. So far as their symptomatic picture is concerned prostatic abscess, carcinoma of the prostate and pelvic abscess are quite frequently associated and stricture of the rectum may be due to widespread pelvic abscess possibly originating from an inflamed prostate. Three cases have recently entered the hospital under the diagnosis of typhoid. One who recalls the occasional difficulty of diagnosing this infection in the early stages will not be surprised to find that those three cases were instances of prostatic abscess. Then there is the frequent story of chronic appendicitis mistaken for an incarcerated stone in the ureter. I want to point out that the gastro-enterologist must be an internist with a particular equipment and skill and, as part of the internist's training, he must not forget that he must know a good deal of urology.

DR CHARLES M. McKENNA, Chicago. Many patients have been sent out of the doctor's office after a complete work up on gastro-intestinal disease as neurotic when in reality they were suffering from a pathologic condition of the urogenital tract. When one takes into consideration that the solar, aortic, renal hypogastric, ovarian, prostatic and vaginal plexuses innervate both the gastro-intestinal tract and the urogenital tract it becomes evident that any lesions of the urogenital tract

may produce symptoms in the gastro-intestinal tract I would like to point out some conditions that I have observed in the Research Hospital in Chicago. Seminal vesicle disease will illustrate my point. Patients suffering with seminal vesicle disease may exhibit referred pain at McBurney's point. Excretion urography has been a great aid to the internist. Internists are now using more skiodan in eliciting gastro-intestinal disease than ever before.

DR JULIUS FRIEDENWALD, Baltimore. Aside from renal disease, I have been especially interested in two urologic conditions giving rise to gastro-intestinal symptoms. The first is the presence of stone in the pelvis of the kidney, which may produce symptoms resembling duodenal ulcer or cholelithiasis, giving rise to pain several hours after meals, with signs of hyperacidity or reflex, and colicky pain in the upper part of the abdomen. The true condition may remain obscure unless a thorough investigation is made. The second is that associated with prostatic obstruction in which the digestion becomes markedly impaired and nausea, vomiting, eructations, abdominal pain, distention and emaciation become so prominent that the presence of carcinoma of the stomach may be suspected. In a number of instances of this type in which the patient had been previously under treatment for a considerable length of time for a supposed gastric cancer, the examination pointed directly to toxemia due to a prostatic hypertrophy. It is therefore of importance to bear in mind that, in individuals past middle life in whom gastro-intestinal symptoms are prominent, the prostate should always be examined.

DR. LEON BLOCH, Chicago. The occurrence of gastro-intestinal symptoms as the chief manifestations of urologic diseases up to recently has been stressed very little. This statement excludes of course conditions of severe colic with reflex nausea and vomiting and the patients in whom the symptoms are toxic manifestations of acute seminal vesiculitis or prostatitis. The symptoms group themselves under four types, gastroduodenal, cholecystic, colitic and appendiceal. The following is an example of the gastroduodenal type. Z. L. complained of regularly recurring distress after meals. A duodenal defect was found on fluoroscopy. He improved very little on medical treatment. Subsequently a urethral discharge appeared, which was treated for six months without avail. At this time a roentgenogram revealed a renal calculus. All the symptoms disappeared after removal of the stone. Recently a young doctor with a similar gastric history, a duodenal defect and a negative urinalysis and who did not respond to medical treatment of ulcer, was found by intravenous pyelography to have distorted calices. He was entirely relieved of all his symptoms after the removal of a chronic hydronephrotic kidney. An example of the appendiceal type is a patient who was scheduled for an appendectomy. A rectal examination on the night preceding the date set for operation revealed a large distended seminal vesicle containing considerable amounts of pus. Massage cured the appendicitis. A patient treated for colitis for six months was found to have tuberculous seminal vesiculitis and tuberculosis of the left kidney, and later tuberculosis of an ankle. The diagnosis was made originally by finding tubercle bacilli in a specimen of urine passed in the office and later in urine obtained by renal catheterization. In those patients in whom the pain of renal colic is limited to the right hypochondriac and lumbar regions, biliary colic can be easily suspected. The shadow of the calculus may be found within the shadow of the gallbladder. Repeating the examination with the patient in an oblique position will reveal the presence of the calculus in the kidney. I believe, as the authors have shown, that the common innervation of the upper gastro-intestinal tract, the kidney and the upper part of the ureter through the celiac plexus by way of the preganglionic fibers from the lower dorsal spine and of the colon and rectum and the lower urinary tract through the sacral plexus will explain the causation of similar symptoms in both groups of cases.

DR. ANTON W. OELGOETZ, Columbus, Ohio. Four years ago I developed an infection which subsequently proved to be duplicated kidneys on the left side, with infection of one. Both kidneys on the left were removed. About a year later I developed a dull, boring, constant pain over McBurney's point. After a thorough search I was advised to have the appendix removed. As time went on I noticed the urinary stream

gradually becoming smaller. Finally some one passed a catheter and found a stricture of the urethra. It was evidently just a mucous affair, which acted more as a valve because the catheter passed through very easily. My symptoms abated immediately. Since then about every three or four months I have had a return of my trouble. We get out the wax catheters, pass a number 18 just once, and that cures my appendicitis.

DR. SIDNEY A. PORTIS, Chicago. Many clinical conditions have been omitted in the presentation of this subject. These omissions will be found in the complete publication of this paper. We particularly left out acute manifestations associated with fever, feeling that they did not belong to those chronic disorders for which gastro-enterologists are consulted and the clinical picture of which is so evident that the diagnosis should not be confusing. However, I am happy that Dr. McKenna reemphasized seminal vesicular disease with gastro-intestinal manifestations and reported improvement after adequate therapy. We have seen several of these cases and their clinical summary will be found in the paper. I am happy that Dr. Friedenwald emphasized the important symptom complex of hypertrophied prostate, particularly the fact that he feels that gastro-intestinal examinations are not complete without a rectal examination of the prostate and its surrounding tissues. I feel that the most important phase of this contribution is the emphasis on the frequency of urethral strictures in the female. This manifestation, so frequently overlooked and yet so easily found, should make one urologically minded. I am sure that many gastro-enterologists, as well as we have overlooked this condition in the past, and that they would be amazed at the marked improvement in the gastro-intestinal symptoms of these patients following the simple dilation of a strictured urethra.

TWO CARDIAC COMPRESSION TRIADS

CLAUDE S. BECK, MD

CLEVELAND

Lesions of the pericardium are generally difficult problems in diagnosis. Auenbrugger, Corvisart and Laënnec early recognized these difficulties. Osler not infrequently lamented his failure to recognize a lesion of the pericardium and it would seem that these problems in diagnosis still exist. The chief reason for failure in the diagnosis of pericardial lesions is the fact that the physiologic concept of acute and chronic compression of the heart has not found the place in applied medicine that it deserves. Clinically, almost all of the intrapericardial lesions express themselves, if they express themselves at all, by producing either acute or chronic compression of the heart. Some lesions of the pericardium are entirely silent; they produce no clinical signs whatever and clinical recognition of these silent lesions is not to be expected.¹ However, the important group of lesions—important because treatment is effective—produces either acute or chronic compression of the heart. In this respect the intrapericardial lesion producing compression of the heart is exactly similar to the intracranial lesion producing either acute or chronic pressure on the brain. The intrapericardial lesion, like the intracranial lesion, produces clear and distinctive earmarks for recognition. In the case of the heart the earmarks for both acute

¹ From the Department of Surgery of the Western Reserve University School of Medicine and the Lakeside Hospital.

In this group of silent lesions are the cases of adhesions between the normal parietal pericardium and the heart. Intrapericardial adhesions per se, do not disturb the circulation. The circulation is disturbed if the parietal pericardium is thickened by the formation of scar tissue but the presence or absence of adhesions in this condition is entirely incidental. The thickened parietal pericardium produces chronic compression of the heart. Extrapericardial adhesions per se do not disturb the circulation and these also are silent lesions. However, extrapericardial and intrapericardial adhesions combined are not silent. In this condition the work load of the heart is increased and hypertrophy takes place.

and chronic compression can be reduced to three essential components. These two triads for cardiac compression are presented because I believe they not only will be useful in diagnosis but also will focus attention on the mechanical and surgical aspects of these lesions, placing the treatment on a more rational basis.

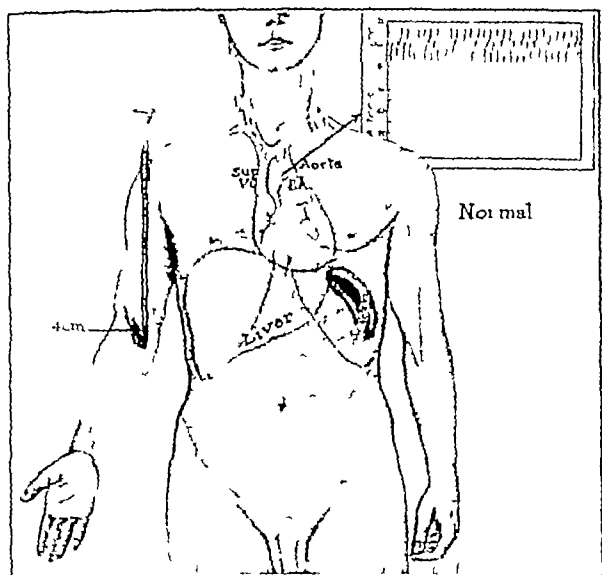


Fig 1—Cardiac compression triads. For comparison normal (fig 1), acute (fig 2) and chronic (fig 3). The acute compression is produced by fluid in the pericardial cavity. Note collapse of venous gateway and distention of veins outside the pericardium. The ventricles are shrunken and the heart per se is smaller than normal. The parietal pericardium has not had time to dilate nor has there been sufficient time for the liver to enlarge and for ascites to form. In the illustration for chronic compression of the heart the compression is produced by scar tissue. The heart is a small shrunken organ in contradistinction to cardiac dilatation. The veins dilate in response to the high venous pressure. The liver and spleen enlarge and ascites develops.

ACUTE CARDIAC COMPRESSION TRIAD

The acute cardiac compression triad (fig 1) consists of (1) a falling arterial pressure, (2) a rising venous pressure and (3) a small quiet heart. All other clinical manifestations of acute compression are secondary to this triad. The great venous gateway to the heart (the intrapericardial segments of the venae cavae and the right auricle) is partially or completely collapsed. The ventricles are also smaller than normal. The heart, being partially collapsed, is able to make only a feeble excursion and there is no visible or palpable precordial pulsation. This restricted pulsation of the heart can be seen by fluoroscopic examination, but the condition of the patient is usually so critical that this examination cannot be carried out. If the compression is due to intrapericardial hemorrhage and develops acutely (within several hours), as little as 200 cc of blood may be fatal. This collection of blood will produce a slight increase in the size of the cardiopericardial silhouette, but in acute compression the increase in size is frequently not demonstrable. There are no murmurs. The cardiac sounds are distant and muffled. A compression force of about 16 cm of water acutely applied to the heart is fatal. The venous pressure rises in a manner parallel to the rise in the intrapericardial pressure. The tension in the venous system is an exact measurement of the abnormal tension exerted on the heart. In this respect the venous system may be considered as a physiologic tambour that can record compression forces exerted on the great venous gateway of the heart. As the amount of blood enter-

ing the heart is reduced because of the compression of the heart and the venous gateway, the amount of blood expelled by the heart is reduced by an equal amount. The failure of the arterial circulation produces anxiety, restlessness, pallor, cold moist skin, a weak or imperceptible pulse and finally unconsciousness. These are secondary manifestations to failure of the arterial circulation. The differentiation between acute cardiac compression and acute cardiac dilatation need not be discussed.

The most common cause of acute cardiac compression is intrapericardial hemorrhage. The most common causes of intrapericardial hemorrhage are penetrating wounds of the heart, rupture of a myocardial infarct, rupture of a cardiac contusion, rupture of the auricle, rupture of a coronary or aortic aneurysm and rupture of the base of a sclerotic aorta. Hemorrhage occurs also from neoplasms growing within the pericardium. It develops in scurvy, in tuberculosis of the pericardium and in purpura. Dr Robert Dinsmore observed the development of the acute compression syndrome from mediastinal hemorrhage following the removal of a substernal goiter. Acute compression develops also when fluid other than blood forms rapidly in the pericardial cavity. The fluid may be sterile or infected. Acute cardiac compression may be produced also by gas pressure. The gas may arise from the lung (pressure pneumothorax, valvular pneumothorax) from the outside air or from a gas producing infection.

CHRONIC CARDIAC COMPRESSION TRIAD

The chronic cardiac compression triad (fig 1) consists of (1) a high venous pressure, (2) ascites and (3) a small quiet heart. All other clinical manifestations of chronic compression are secondary to this

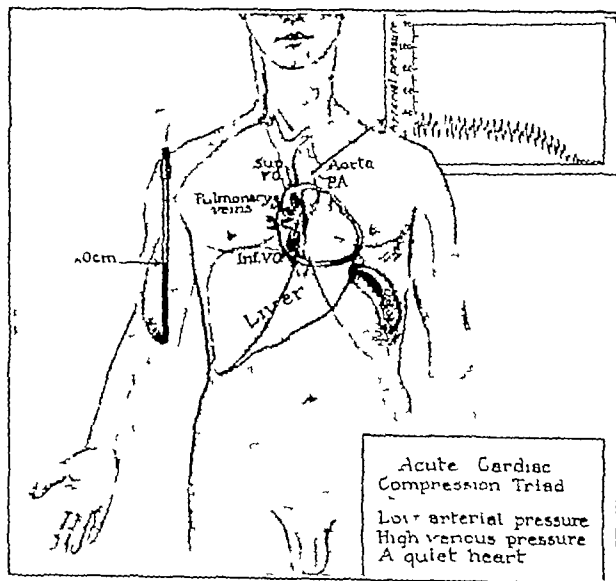


Fig 2—Acute cardiac compression triad

triad. A much greater pressure on the heart and also on the great venous gateway to the heart can be tolerated if it develops slowly than if it develops rapidly. The intrapericardial pressure may rise to 38 cm of water. Accordingly, the venous pressure rises an equal amount. The walls of the veins stretch in response to this pressure and the veins stand out like goose quills. Likewise the liver and spleen enlarge in response

to the high venous pressure. These organs sometimes become covered by a layer of fibrin and fibrous tissue. This icy coating is not produced by infection, as was formerly believed. Venous stasis without infection can produce it. The ascites may be marked and may be the most conspicuous feature of chronic cardiac compression. The heart is quiet, showing little if any precordial activity. The reduction in diastolic-systolic excursion of the heart is best demonstrated by fluoroscopic examination. There are no murmurs. The sounds are distant and faint. The heart itself is smaller than normal, but one must not confuse the cardiac silhouette with the cardiopericardial silhouette. If the heart is compressed by fluid over a long period of time the pericardium stretches and the cardiopericardial silhouette is enormously enlarged but the heart per se is small and shrunken. A compressed heart cannot hypertrophy nor can it dilate.

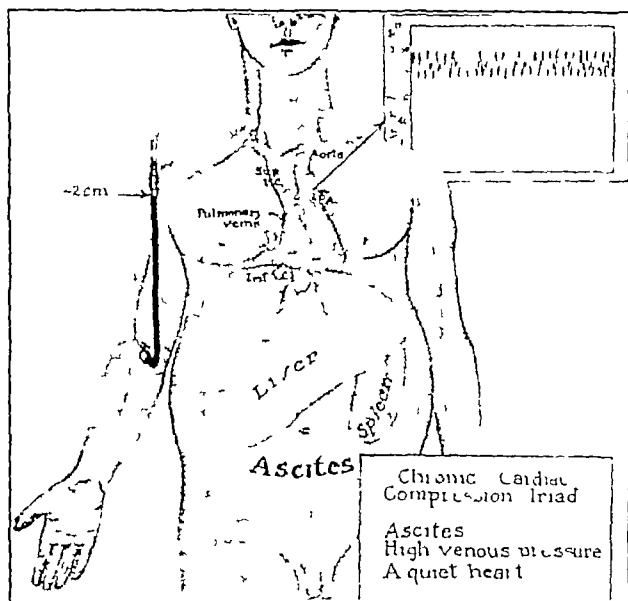


Fig. 3—Chronic cardiac compression triad

The various lesions producing chronic cardiac compression have been presented in a previous publication.

TREATMENT

Cardiac compression should be regarded as diametrically opposite to cardiac dilatation. Not only are the triads of acute and chronic compression useful in diagnosis but, emphasizing as they do the mechanical aspects of two large groups of disorders, they should be useful in determining the nature of the treatment that should be given. The treatment of such mechanical disturbances obviously is surgical. Many of these compression syndromes, like those produced by stab wounds of the heart, tumors, scar, effusion, abscess or generalized pericardial infection, are recognized as surgical lesions. The question arises as to whether or not some of the lesions in the nonsurgical group can be placed in the surgical group. Perhaps some of the cases of spontaneous rupture of ventricles and auricles could be saved by operation. In a study of cardiac contusions, Dr. Ernest Bright and I² found that 20

per cent of those that went on to rupture seemed to be amenable to surgical repair, whereas operation was not carried out in a single case. The time is probably close at hand when the patient with a myocardial infarct or a myocardial contusion will be closely observed for the development of cardiac rupture, just as a patient with typhoid is watched for perforation of the bowel. Should rupture occur, the attempt to suture the bleeding point would be carried out immediately. Perhaps the time is not far distant when a prophylactic operation will be carried out for the purpose of strengthening the ventricle or the auricle so that the strain of intracardiac pressure can be tolerated. This could be done by placing a graft of pericardium over the weakened area in the heart. Undoubtedly the cases of acute and chronic compression of the heart offer opportunities for surgical intervention, and diagnosis is imperative. When the diagnosis is in doubt, exploratory pericardiotomy should be regarded as a justifiable procedure.

IS NEPHRECTOMY ALWAYS INDICATED FOLLOWING A DIAGNOSIS OF UNILATERAL RENAL TUBERCULOSIS?

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The possibility that renal tuberculosis, once it has reached the point at which diagnosis is beyond question, ever heals has received considerable discussion during the last fifteen years. In 1920 Chute¹ reviewed three cases that occurred in his practice; he considered that there were indications in occasional cases that tuberculous processes of the kidney healed. He pointed out how such a belief is necessary if one is to accept the hypothesis of the hematogenous route of the infection. He says:

I believe we must assume that tubercle bacilli are brought in approximately equal numbers to both kidneys, that small cortical tuberculous infections are common and that far from going on to complete destruction of every kidney that is infected they are probably promptly stamped out in the greater majority of instances. The generous blood supply of the kidney allows it to overcome perhaps the greater number of infections while yet they are incipient.

After most careful experimental study, Lieberthal and von Huth² confirmed this observation and in the summary of their work state:

The kidney has a peculiar immunity to hematogenous infection with tubercle bacilli because of its copious blood supply and the comparatively large caliber of its blood vessels. Tubercle bacilli which are circulating in the blood tend to pass through the circulation of the kidney to lodge in other organs. Infection of the kidney occurs only if local disturbances in the circulation or the presence of the tubercle bacilli in large masses which cause embolism (suspended in fat droplets, adherent to debris or agglutinated masses of bacilli) allow the organism to lodge in the renal tissue.

2 Beck, C. S. and Cushing, E. H. Circulatory Stasis of Intra-pericardial Origin. The Clinical and Surgical Aspects of the Pick Syndrome. J. A. M. A. 102: 1543-1548 (May 12) 1934.
3 Bright, E. F. and Beck, C. S. Penetrating Wounds of the Heart. A Clinical and Experimental Study. Am. Heart J. to be published.

Read before the Section on Urology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.
1 Chute, A. L. Some Hypotheses Regarding Renal Tuberculosis. J. Urol. 5: 431-438 (May) 1921.
2 Lieberthal, Frederick and von Huth, Theodore. Tuberculous Bacilluria and Excretion Tuberculosis. Experimental Study. Surg. Gynec. & Obst. 55: 440-448 (Oct.) 1932.

If such emboli do become lodged, the work of Medlar³ would indicate that even then healing may occur if the original infection is not too extensive, a finding that has abundant clinical and experimental proof in a study by Harris⁴ of forty-three adults and sixty-seven children having tuberculous lesions outside the urinary tract. In 37 per cent of the adults and in 13.8 per cent of the children a tuberculous bacilluria occurred, and yet in the majority of cases there were no urinary symptoms. Harris was interested to see whether he could demonstrate that any of the unexpected incidences of symptomless tuberculous bacilluria were of the secretory type. He collected urine daily for ten days from three patients who were free of symptoms referable to the urinary tract but who had tuberculosis elsewhere. He wrote:

Each of these daily specimens produced tuberculosis when inoculated into guinea-pigs. In other words tubercle bacilli were present in the urine every day though the patients were free from symptoms. Were their presence due to excretion from the blood stream by the kidney an equally constant tuberculous septicaemia must have been present. A tuberculous septicaemia so constant and severe could hardly exist without the occurrence of miliary tuberculosis. None of the patients had at that time nor have they at the present any evidence of miliary tuberculosis. Blood cultures taken during the periods when urine was collected were free of tubercle bacilli. It seems certain, therefore, that the tubercle bacilli came from foci of renal tuberculosis.

In the majority of his cases, as stated urinary symptoms were not present. The frequency with which urinary tuberculosis occurs without symptoms is not generally appreciated. In reviewing 345 cases in which stained smears of urine contained acid-fast bacilli at the Mayo Clinic, one of us (Bumpus) working with Thompson⁵ found that twenty-eight patients (8 per cent) had no complaint referable to the urinary tract, from twenty-three of these patients tuberculous kidneys were removed. The other five also had renal tuberculosis but operation was thought inadvisable.

Bugbee,⁶ in reporting similar cases, has observed that "they lead one to believe that tuberculosis of the kidney probably exists much more frequently than is generally conceded, that a correct diagnosis of this type of case is often overlooked and that such a low grade tuberculous renal infection is self limiting in some cases."

Since a goodly proportion of Harris's patients without symptoms, but with bacilli of tuberculosis in the urine, ultimately became free of the organisms, as indicated both by examination of the stained smears and by the results of inoculation of guinea-pigs, it is not strange that in his conclusions he stated that "the initial renal lesions frequently heal, less frequently they steadily progress to complete destruction of the kidney and death of the patient."

In such symptomless cases, once the diagnosis of renal tuberculosis is made, the question arises as to the justification of nephrectomy. Henline⁷ answers this by stating which tubercle bacilli have been repeatedly recovered. "We believe that the removal of a kidney from

without other clinical evidence is an error of judgment," and he goes on to say that "until further convincing proof to the contrary is forthcoming we feel that some types of tuberculosis of the kidney will heal under certain circumstances." Braasch⁸ in a recent article observes that "the possibility of spontaneous recovery from renal tuberculosis must be recognized," while Thomas and Kinsella⁹ conclude an article on the subject by stating, "We cannot understand why tubercle bacilli behave differently in the kidney than in other tissue in that a renal lesion is not supposed to heal."

With such an apparent unity of belief relative to the possibility of renal tuberculosis becoming arrested, the question naturally presents itself: When is nephrectomy indicated? Certainly the keynote of whatever form of treatment is adopted must place emphasis on the fact that there should be no hurry about operative removal of a tuberculous kidney. It is never an emergency procedure, and there can be no excuse for neglecting the most painstaking examination to be certain that the remaining kidney is not involved. For if one accepts the hypothesis that renal tuberculosis in its pre-clinical stage is frequently bilateral, then the earlier one is able to discover its presence in one kidney the more chance there will be for it to be present in the opposite kidney, although undiagnosed. Certainly to perform a nephrectomy on a kidney from which the only evidence of tuberculous infection is the presence of organisms with possibly a few red blood cells and an occasional leukocyte and a few months later have the disease appear in the remaining kidney is as Henline has stated, poor judgment. It would certainly seem probable, with the increase in accuracy of diagnosis and the frequent discovery of the disease in symptomless cases, that this unfortunate outcome should be assiduously avoided.

If one could follow all the patients with renal tuberculosis for a certain length of time and particularly those in whom a proper hygienic regimen could be established, the incidence of healed lesions in the kidneys would probably be somewhat astonishing. We believe that the process of prolonged watchful waiting should however be insisted on in behalf of those patients in the adolescent period, as it has been agreed that younger patients are more prone to bilateral involvement than those of more advanced age and that nephrectomy should be performed only when definite cavitation exists. We believe that the coexistence of genital and renal tuberculosis gives preference to the former when operative procedure is indicated.

We have found that the result of the renal functional test is a most excellent guide in determining the time for operation. If this remains normal, or nearly so the disease has probably not advanced to any great degree, but a marked decrease in the amount of dye excretion, which can be demonstrated by the intravenous urogram as well as by the color dyes, would appear to show the necessity of surgical intervention.

There is little danger of the infection of one kidney by the other except through a deposit of the tubercle bacilli into the blood stream. Lymphatic connection between the two is not constant, and since the lymphatics of the kidney are practically all of the efferent type, such a contingency may usually be dismissed.

³ Medlar E M The Pathogenesis of Renal Tuberculosis *Am J Surg* 7: 605-606 (Nov.) 1929

⁴ Harris R I Tuberculous Bacilluria Its Incidence and Significance Amongst Patients Suffering from Surgical Tuberculosis *Brit J Surg* 16: 464-484 (Jan.) 1929

⁵ Bumpus H C Jr and Thompson G J Renal Tuberculosis Changing Conceptions in the Decade 1920-1930 *Am J Surg* 9: 545-551 (Sept.) 1930

⁶ Bugbee H G Two Cases Representing Unusual Types of Renal Tuberculosis *Tr Am A Genito-Urinary Surg* 17 95-106 1924

⁷ Henline R B Renal Tuberculosis *Surg Gynec & Obst* 57 231-241 (Aug.) 1933

⁸ Braasch W F and de la Pena Alfonso Renal Tuberculosis *Pennsylvania M J* 34 769 (Aug.) 1931

⁹ Thomas G J and Kinsella T J Renal Tuberculosis Preliminary Report of a Clinical Research Problem *J Urol* 17 390-405 (April) 1927

The clinical experience of finding in the majority of cases far advanced renal tuberculosis in the removed kidney, while the disease is absent in the remaining kidney, would indicate that not until late in the disease does the infection again become bilateral.

If there is vesical irritation or other evidence of beginning tuberculous cystitis, the question of the advisability of nephrectomy no longer exists. It is mandatory and it seems almost superfluous to add that, in cases in which the disease has advanced sufficiently to show unmistakable roentgenographic changes in the pyelogram, no question of the desirability of nephrectomy can be entertained.

The case, however, that gives questionable roentgenographic evidence of the disease and in which the tuberculous infection has caused so little damage as to produce but a few pus cells in the urine together with the organisms seems to us to deserve sanatorium care and observation rather than immediate nephrectomy.

This advice was given to such a patient when first seen by one of us (Bumpus) at the Mayo Clinic.

CASE 1—A man, aged 26, seen in October 1926, had been married six weeks before, shortly after which he noted an enlargement of the left testicle followed in a week or two by a smaller swelling of the right. At first the enlargements were associated with considerable pain, but during the next three weeks this had subsided, although the swellings had increased. His general examination was negative except for an acute vesiculitis, prostatitis and bilateral epididymitis. The left epididymis, being fluctuant, was operated on and drained.

He was seen next two months later when a cystoscopic examination showed normal renal function from both kidneys, as determined by a phenolsulphonphthalein test. The urine from the right kidney was normal, while that from the left showed an occasional pus cell. A diagnosis of bilateral tuberculous epididymitis and prostatitis was made and guinea-pigs were inoculated with urine from both kidneys. The test with the urine from the right kidney was negative and the one with the urine from the left was a failure. The patient was placed on heliotherapy with marked improvement. Jan 16, 1927, after a month's interval, cystoscopy was again done and this time the stained specimen of urine from the left kidney showed acid-fast organisms to be present. The right kidney urine was normal. The patient being dissatisfied with his progress, and at his urgent solicitation a bilateral epididymectomy was done February 18, and the diagnosis of tuberculous epididymitis was confirmed. There was no involvement of either testicle.

He was seen again in May 1927, and stated that a sinus had persisted on the left side following epididymectomy and that recently one had developed on the right side. Cystoscopic examination showed the renal function to be unchanged. The urine from the right kidney was normal, that from the left had an occasional pus cell. Two guinea-pigs were inoculated with urine from each kidney, those inoculated with urine from the left were failures, one of those inoculated with urine from the right kidney gave positive results and the other negative. A left pyelogram made at this time suggested evidence of cortical necrosis of the middle calix.

In July, approximately a month later, cystoscopic examination was repeated and a right pyelogram was made because of the finding of a positive reaction at the previous examination. The pyelogram, although blurred, seemed normal. Pigs were again inoculated with urine from each kidney, those inoculated with urine from the right kidney gave negative results and both pigs inoculated with urine from the left kidney gave positive results. Seven weeks later two more pigs were inoculated with urine from the left side, the test in one pig was a failure and in the other gave positive results.

The patient was not seen again for three years, during which time he spent a considerable period in Arizona under

heliotherapy. When examined in July 1930, six pus cells to the field were found in the urine from the left kidney and stained smears showed acid-fast organisms, guinea-pigs inoculated with the urine were positive. A pyelogram of the left kidney showed the calices normal with the exception of one of the minor upper calices, which appeared to be missing. The pelvis was normal and there was no dilatation of the ureter.

The pyelogram on the right side was negative, the urine was normal, and the two guinea-pigs inoculated with urine from this side gave negative results. The bladder urine contained tubercle bacilli.

His next examination was made nearly four years later Jan 15, 1934. He had no urinary complaints and his general examination was negative, although a roentgenogram of the chest showed a healed lesion in the left apex. The one taken at his first visit was negative. The bladder urine contained only an occasional pus cell and was negative for tubercle bacilli. The bladder was entirely normal on cystoscopic examination. The urine from the right kidney contained an occasional pus cell and that from the left three in the high power field. Cultures of both proved sterile and stains were negative. Guinea-pigs inoculated with urine from the left kidney on January 22 were examined on February 26 and both gave positive reactions for tuberculosis, those inoculated with urine from the right kidney gave negative reactions.

The left pyelogram showed a normal pelvis but still some apparent abbreviation of the upper minor calix.

The action of three patients observed by one of us (Woodruff) is interesting.

CASE 2—A woman, aged 32, complained on admission of severe hematuria of three weeks' duration. The appearance of the blood was sudden, and the amount has been about the same since the beginning. There were no premonitory symptoms and no particular frequency except since the appearance of the hematuria. Cystoscopic examination revealed blood coming from the left ureteral orifice. A very decided stricture was found in the left ureter about 5 cm beyond its orifice that resisted catheterization. With the aid of the terminal eye catheter, a successful ureteropyelogram was accomplished. The latter revealed no particular alteration in the pelvic outline except a slight fuzziness in the superior calix. Following the pyelogram the hematuria immediately ceased, and the subsequent cystoscopy showed an equal and normal function from each kidney. The tubercle bacillus was demonstrated in the bladder urine. The history of this patient repeated itself yearly over a period of nearly five years. After each cystoscopy and pyelogram the hematuria would immediately cease and not appear again until the lapse of from six to eight months. In the meantime, the stricture of the ureter had been successfully dilated and at each cystoscopy the renal functional test appeared normal, the pyelogram showing the same fuzzy appearance in the upper portion of the superior calix. The tubercle bacillus was demonstrated in the urine from the left kidney at each examination. After four and three-fourth years of this type of observation, the patient appeared with a hematuria after a lapse of six months. The pyelogram still showed no difference in appearance from the one taken at the beginning, but the functional test was now grade 1 instead of grade 4, as formerly. The patient also stated that she has lost some weight. Nephrectomy was advised at this time but was refused. Four months later the patient returned, but without hematuria, and consented to an operation because she felt herself that she was going downhill. Removal of the kidney revealed a typical tuberculous infection in its upper pole. There were, however, no abscess cavities of any demonstrable size. The patient is alive and apparently well at this time, which is six years after the operation.

CASE 3—A man, aged 34, presented a most desperate tuberculous condition. Examination revealed evident tuberculosis of the left epididymis, the right epididymis and testicle and a frank cavernous pyonephrosis of the right kidney. There are many tubercular organisms in the urine, these organisms coming mostly from the right kidney. There are a few organisms demonstrated in the urine from the left kidney. The

right kidney was evidently practically destroyed by caseo-cavernous infiltration of its substance. This patient urged that heroic measures be taken in an endeavor to effect a cure, and, rather against the author's will, a right nephrectomy, a right epididymo orchidectomy, and a left epididymectomy were performed. The patient was sent to the Loomis Sanitarium for treatment. After a stormy year there he purchased a house in Liberty and has lived there ever since. He has made several visits for observation during the past ten years, and in the last six of these no tubercle bacilli have been found in the urine.

CASE 4—A woman a nurse on whom bilateral renal tuberculosis had been clearly diagnosed, was given sanatorium treatment for one year, when it was found necessary to remove one kidney because of its evident destruction. Subsequently she was given sanatorium and rest treatment for a period of two years. At the end of that time no tubercle bacilli could be demonstrated in the urine. Four years after this she was found to have tuberculosis of the lumbar spine and an operation was performed a bone from her shin being transplanted to the diseased portion. This was followed by recovery and at this time, which is ten years after the nephrectomy, she is apparently well, and there are no tubercle bacilli in the urine.

Droegemueller¹⁰ has reported his observations on a tuberculous kidney in which the disease was so early that its only clinical manifestation was the appearance of tuberculosis in guinea-pigs after inoculation with urine from the kidney. He discovered practically no evidence of healing in the pelvic mucosa, while in the parenchymatous portion of the kidney signs that he interpreted as reparative processes were frequent. In conclusion he states

In considering healing of renal tuberculosis a distinction should be made between lesions involving the pelvis or in communication with the pelvis and circumscribed parenchymal lesions not in communication with the pelvis. Circumscribed tuberculous parenchymal lesions not involving the pelvis may heal at times. It is questionable whether true healing ever occurs in lesions that involve the pelvis.

In contrast to Droegemueller's case, case 1 at no time showed any evidence of pelvic or ureteral involvement. Advice against nephrectomy until evidence of a more extensive lesion in the kidney became manifest seemed justified. Had the ureter or pelvis given evidence of involvement by inflammatory dilatation a nephrectomy would have been urged. From a clinical standpoint, the disease seems arrested, only time of course can prove it permanently healed. In similar cases the keeping of the patient under observation rather than urging immediate nephrectomy would seem indicated, for every physician has observed how the clinical manifestation of diseases are undoubtedly changing. Glandular tuberculosis, common in our youth, is rarely seen today. The resistance of renal tissue to the tuberculosis bacilli may be undergoing a change, certainly its reaction in various parts of this continent appears different. For in the Northwest one sees many cases of calcification in the involved areas, not alone in the late cases but occasionally so early as to make the differential diagnosis from calculus difficult. Yet, in the Eastern clinics, calcified tuberculous kidneys are rarely seen, while in the Southern sections of the country the incidence of the disease appears so slow that at the last meeting of the Pan-American Medical Association held in Dallas the Southern urologists present all attested their surprise at the amount of interest manifested in the North about a pathologic process which they encountered so seldom.

SUMMARY

We believe there is sufficient laboratory evidence that tuberculous infection of the kidney actually heals. We believe there is great clinical evidence of this. Neither of these facts, however, prohibits reinfection.

We believe in adequate hygienic treatment of renal tuberculosis in its early stage, preferably in a sanatorium.

We believe that nephrectomy should be performed only when evidence of extension of the disease exists, when caseo-cavernous conditions can be demonstrated, or when the renal functional test has become markedly diminished.

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ABSTRACT OF DISCUSSION

DR R. M. LeCOMTE, Washington D. C. A clear distinction should be made between healing in renal tuberculosis and cure of the disease in the entire organ. Some evidence of healing may be found in practically every tuberculous kidney, but the occurrence of a complete cure may well be questioned. Renal tuberculosis pathologically, may mean anything from a minute solitary tubercle to an extensive process that has destroyed the whole parenchyma of the organ. In its surgical form it consists of an ulcerating or caseating lesion, characterized clinically by the presence of grouped pus and clumped bacilli in the urine and by evidence of destruction of the parenchyma, shown either by diminished function or by characteristic pyelographic changes in the suspected kidney. Unfortunately, not all the stages of this pathologic process are distinguishable clinically and there are certain errors necessarily associated with the manipulations required to make a bacteriologic diagnosis of the disease. These are soiling of the ureteral catheter specimens by the bladder contents, either by material carried up on the catheter or from an unsuspected vesico-ureteral reflux or by tuberculosis of the lower segment of a ureter the kidney of which is quite normal. Each of these possible errors makes it more likely that diagnosis of tuberculosis will be made in a normal kidney than that it will be missed in a diseased one. To establish a cure in a surgical form, it would be necessary to show that the previously diseased kidney was capable of secreting a urine free from pus and bacilli and was negative both on roentgen study and on urography. I do not consider the pathologic studies of Dr. Medlar absolutely conclusive, because they were done on kidneys of people who died of pulmonary tuberculosis and the lesions studied differ materially from those encountered in the living operable subject. None of the clinical references describe in sufficient detail a case that would answer the criteria of cure just noted, and all the apparent cures might easily be explained on the basis of more or less prolonged remissions or possible technical errors in the diagnosis. As Dr. Thomas's work has been reported, it can be subjected to criticism, for no matter how skilful and careful a cystoscopist may be, he is in constant danger of having the ureteral catheter soiled in one way or another. There is considerable question in my mind as to whether Dr. Bumpus's patient might not have been benefited more by a left nephrectomy in 1927 than by the years of general treatment that he received, and whether he might not be benefited by it now or eventually come to it. I believe that Dr. Woodruff cured his three cases by removing a unilateral tuberculous kidney, although the clinical examination gave rather confusing data as to the freedom from infection of the remaining kidney in the second and third cases. I rather deplore the tendency to get away from surgery in the early unilateral cases, because it is in them that the best results are obtained.

DR J. C. PENNINGTON, Nashville, Tenn. I have been urologist to the Davidson County Tuberculosis Hospital for eight years. It has a capacity of 300 beds and is always full. The interns have many times demonstrated tubercle bacilli in the urine of patients free from urinary symptoms. We have had only one case in the eight years which required surgery for tuberculosis of any part of the genito-urinary tract. This patient was a man who had tuberculosis of each epididymis.

¹⁰ Droegemueller E. H. Renal Tuberculosis. A Detailed Study Made Early in the Disease, S. Clin. North America 13: 1007-1016 (Aug.) 1933.

and each seminal vesicle. It has been remarkable how few tuberculous lesions of the genito-urinary tract were found in cases of pulmonary tuberculosis. Whether or not the finding of bacilli in symptomless cases means that there is active tuberculosis in the urinary tract, I am unable to say. It has been our policy to leave such cases alone and let them continue with their treatment of pulmonary tuberculosis.

DR. HUGH H. YOUNG, Baltimore. This is a subject of such great importance that we should consider it thoroughly before giving forth to the medical world that the Section on Urology even considers the advisability of not carrying out nephrectomy in the presence of an early tuberculous lesion on one side. The diagnosis is difficult. Tubercle bacilli are not always to be found in the urine nor do guinea-pigs always die from urine injections from a definite renal tuberculosis. I remember the case of a young man in whom tubercle bacilli were found elsewhere in the urine from the right kidney. When seen by me and my associates two months later the urine was absolutely negative. Numerous studies and animal inoculations showed no tubercle bacilli and ureteral catheterization was also negative. Inoculated guinea-pigs were killed from two to three months later and were negative. About six months later the patient came down with a right epididymitis, the right seminal vesicle was involved, and the diagnosis of tuberculosis was positive. I carried out right epididymectomy, vasectomy and seminal vesiculectomy but as the prostate seemed not to be involved and the right epididymis and vesicle appeared normal, I did not remove them. Seven years later the patient returned with cloudy urine and tubercle bacilli were obtained from the right kidney. Nephrectomy and partial ureterectomy were performed. For five years thereafter the patient was apparently well. The urine was normal. In February 1926 (twelve years after the first partial seminal tract operation) the patient returned with tuberculosis of the right epididymis. It was not possible to recognize tuberculosis of the prostate or remaining vesicle. He lived in Colorado and insisted on taking heliotherapy. Five years later he died of pulmonary tuberculosis complicated by pneumonia, eighteen years after the initial lesion in the kidney had been discovered. This case demonstrates conclusively that it is often difficult to find tubercle bacilli in an early renal lesion. (After eight years the tuberculous area in the kidney removed by me was still small.) This case also shows the importance of removing both vesicles both vasa deferentia and epididymides and also the lateral lobes of the prostate when the radical operation is carried out. The serious error was in failing to recognize the very early tuberculosis in the right kidney. Now intravenous and retrograde pyelography would have prevented such a mistake. The case is an argument against the nonoperative treatment of even slight renal tuberculosis. After a careful recent study of all our cases of tuberculosis of the genito-urinary tract I am absolutely convinced not only that early nephrectomy and partial ureterectomy are desirable but that wherever tuberculosis has involved an epididymis there is practically absolute certainty that the vasa, vesicles and prostate are also involved and that an early bilateral radical operation on the seminal tract is indicated as soon as the patient has recovered from the nephrectomy.

DR. H. C. BLUMPS, JR., Pasadena, Calif. Dr. Woodruff and I wished to emphasize the point that with the diagnosis of renal tuberculosis being made increasingly early one must be absolutely certain that only one kidney is infected. I have seen many nephrectomies performed when the microscopic study of the urine from the remaining kidney was negative only to have the guinea-pig reported positive a few weeks later. Such patients develop or had one better say continue with the infection in the only remaining kidney. That is why we asserted that nephrectomy for tuberculosis is never an emergency procedure. Dr. LeComte referred to the case I reported. A nephrectomy was done last week. The patient's urine was free from pus, he had no roentgenographic evidence of tuberculosis and was free from symptoms, and only the guinea-pigs were positive. After eight years the kidney showed as in Dr. Young's case, a very limited single lesion a few millimeters in diameter, a finding that further emphasizes I believe that nephrectomy for tuberculosis can safely await the most exacting examination. It is never an emergency procedure.

QUARTZ LIGHT THERAPY IN UROGENITAL TUBERCULOSIS

STANLEY L. WANG, MD

NEW YORK

Quartz light therapy has been included in the treatment of urogenital tuberculosis for the past eight years. It is not used alone but is a part of the general plan of treatment. The general plan is to remove the active lesions by surgery, so far as this may be done advantageously, and then to follow the surgery by a long course of after care. The after care, as is also the treatment of inoperable patients, is based on the traditional method of treating tuberculosis, namely, rest, fresh air and proper diet. To these are added other measures and procedures that have been found useful and that seem indicated in the various kinds of patients. Among the useful measures is quartz light therapy.

The air cooled mercury vapor quartz lamps of both the older and the newer types have been employed for the local irradiation of sinuses and for general irradiations over the regions of the kidneys and bladder. Formerly water cooled mercury vapor quartz lamps

TABLE 1—Irradiation of Wounds and Sinuses

	Number of Patients	Number of Months Treated with Quartz Lamps Before Healing	Average Months
Post-nephrectomy	41	2 4 2 1 10 1 4 7 0 6 4 1 1 4 0 6 2 3 2 6 7 7 18 4 1 12 7 2 1 3 4 0 1 1/2 5 8 2 8	40
Post-epididymectomy	18	8 4 1 2 2 1 3 1 7 5 2 1 1 2 8 14 2 1/2 3	37
Inoperable epididymal	0	2 4 18 2 2 8 0 18 4	71
Post-orchideotomy	1	1	
Inoperable testicle	1	2	
Post-inguinal adenectomy	2	9 1	
Post-seminal vesiculectomy	1	12	
Total	73		

were used to some extent for local treatment. More recently about a year and a half ago irradiation of the interior of the bladder of patients suffering from bladder tuberculosis was begun with a lamp that is somewhat of a variant from the usual mercury vapor quartz lamp.

The air cooled lamps have been very useful in the treatment of wounds and sinuses. Sinuses following the surgery of urogenital tuberculosis are of considerable importance for they occur in a more or less certain percentage of patients. The sinuses usually ensue within a few weeks after the operative treatment, when as a result of abscess formation the incision line breaks open partially or completely. When the entire incision or a large part is involved, a deep wound is formed, which discharges pus profusely. The postoperative recovery is delayed and there is a long period of inconvenience as the result of the frequent dressing of the wound. Previous to the advent of quartz light therapy postoperative sinuses particularly following nephrectomy for tuberculosis had a long standing reputation for persistence, and there were numerous reports that drainage often continued for three years and occasionally longer. Besides the patients with sinuses following surgery there were other patients with sinuses

From the Department of Urology (James Buchanan Brady Foundation) New York Hospital.
Read before the Section on Urology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

from tuberculosis of the epididymides or testicles who were deemed inoperable or who refused operation

Table 1 gives the healing of the wounds and sinuses in postoperative and inoperable cases. The local treatment was irradiation with the air cooled mercury vapor quartz lamps and in a few instances it was alternated with heliotherapy. The treatments were given twice each week beginning with a one minute exposure at a distance of 20 inches from the wound. The time was gradually increased to seven minutes and the distance then slowly shortened to 15 inches. With the older lamps the treatments were begun at three minutes at a distance of 20 inches and gradually changed to ten minutes exposure at 8 inches. After these settings had been reached the treatments were continued until the wounds healed, with occasional variation according to the skin reactions. The progress seemed most satisfactory when there was no other treatment of the wound than cleansing the edges with dilute alcohol and applying the dry gauze dressings. There seemed to be slowness in the healing when there had been a long interval between the development of the sinus and the institution of the treatment, also when the patients did not come for treatment regularly. One in the series had nephrectomy at another hospital four years previously. The postoperative sinus that had persisted during the four years healed after a long course of the irradiations. Two others had retro-ureteral reflux of urine from the bladder into the postnephrectomy sinuses, but it seemed to cause no delay in the healing. In three, small sinuses developed in the post-nephrectomy scars several months after the first sinus healed, these soon closed however. In the cases of tuberculosis of the epididymides that were treated surgically, healing occurred on the average in about half the time (37 months) necessary for healing of the

in all inoperable and postoperative cases presenting tuberculosis of those organs. Cases of epididymal or testicular tuberculosis are treated in a like manner. The treatments are begun gradually and the lamps are brought closer, depending on the skin reactions. Short exposures of seven or eight minutes at from 12 to 15 inches have worked out well. The heat of the lamps seems to have a good influence. In table 2 are the results of treatment of 156 cases, which included this method of quartz light therapy.

TABLE 2—Results of Treatment that Included Quartz Light Therapy

	Apparently Cured	Im proved	Unim proved	Died	Total
Postnephrectomy	10	39	15	5	75
Inoperable renal		23	8	3	39
Postepididymectomy	14	0	1	1	21
Postseminal vesiculectomy		1	1	1	3
Postorchidectomy	1				1
Postinguinal adenectomy	2				2
Posturethrotomy			2		2
Inoperable epididymitis	10		2		12
Inoperable orchitis	1				1
Totals	44	73	29	10	156

There is no way of appraising the value of the procedure. It is further made difficult by the fact that it is only one measure in a general regimen of care. The patients as a general rule, however, insist that it is of benefit. No harmful effects were noted, even though in some instances the irradiations were continued for as long as three or four years. The impression has been gained that this part of the regimen is worth while.

Irradiation of the interior of the bladder of patients with bladder tuberculosis has been carried on for more than a year and a half. It was begun soon after Caulk

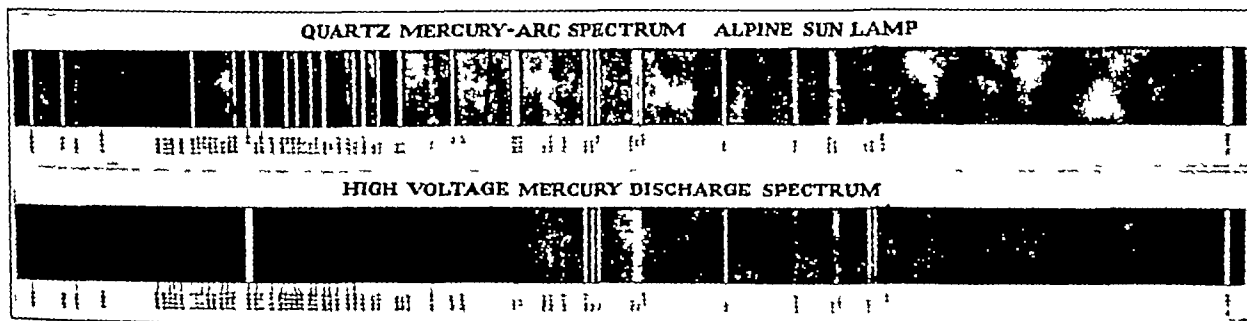


Fig 1—Comparison of the two spectrums above quartz mercury arc spectrum Alpine Sun Lamp below high voltage mercury discharge spectrum

group in which operation was refused or which were deemed inoperable (71 months).

There were, in addition to the patients in table 1, one with a postnephrectomy sinus who discontinued treatment after a few months with her wound still draining. Five with postepididymectomy sinuses stopped their treatment after five, four, seventeen, twenty-four and twelve months. Two with postseminal vesiculectomy sinuses were unhealed after twelve and fourteen months. Two with renal tuberculosis had urethral sinuses following urethrotomy for stricture which were still draining after thirty and four months.

On the whole the results seem to indicate that the quartz lamps are of value in the treatment of wounds and sinuses in this class of case.

Irradiations with air cooled lamps over the regions of the kidneys and bladder are given twice each week

and Everhardt¹ reported the treatment of a case of bladder tuberculosis by intrabladder irradiation with a special quartz lamp arranged so as also to introduce air. The lamp I have used differs mechanically and in its emission from the air cooled mercury vapor quartz lamps. Mechanically it is of the high voltage discharge mercury vapor type and operates at a temperature sufficiently low that the heat of the electrode is barely felt on the skin or mucosa. The difference in the emission of the rays is clearly shown by the comparison of the two spectrums. The rays from the high voltage discharge mercury vapor lamp varies from the other in that they are more of a monochromatic nature since about 90 per cent are concentrated in the wavelength at 2537 angstrom units.

¹ Caulk J R and Everhardt F H. Direct Internal Irradiation of Ultrasound to the Bladder. Arch Phys Therap 13 325 327 (June) 1932

The intrabladder applicator is of fused quartz built according to the design by Dr. Oswald S. Lowsley and myself. It is about the same shape as a Brown-Buerger cystoscope and approximately 24 French in diameter. There is an extra tube built into the fused quartz with an opening near the tip of the applicator and with an extension at the other end for the attachment of a rubber tube. The extra tube is for the purpose of catheterizing the bladder and after it is

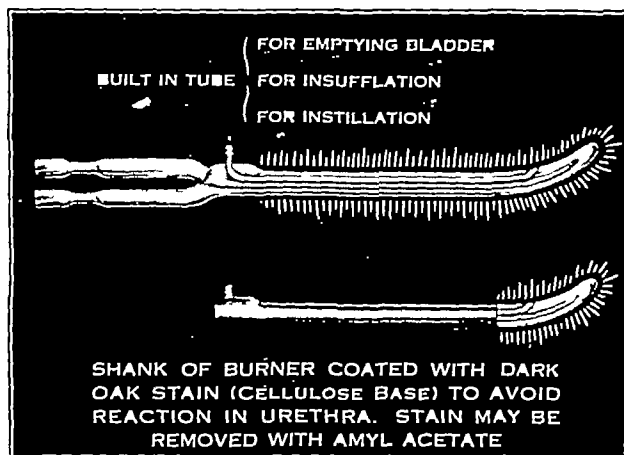


Fig. 2—Appearance of applicator

emptied of urine air is insufflated with a syringe to distend the bladder slightly before irradiation. Following the treatment an instillation can be made through the tube if desired. The applicator with the exception of the part at the distal end, which protrudes into the bladder, is painted with a dark oak stain made with a cellulose base to screen the rays from the urethra. When urethral irradiation is desired, the stain is easily removed with amyl acetate and can be reapplied when needed.

The device has been found to be practical for irradiating the interior of the bladder. The applicator passes easily through the urethra into the bladder with little discomfort to the patient. The bladder is emptied of urine, slightly distended with air and irradiated, and the air is permitted to escape from the bladder at one operation and in a very short time.

TABLE 3—Results of Intrabladder Irradiations

	Improvement			Unimproved
	Marked	Moderate	Slight	
Postnephrectomy	2	2	6	4
Inoperable renal			1	
Total number of patients treated	15			

The intrabladder irradiations were given once each week. The time varied from five to twenty seconds, depending on the local reaction. Longer time and more frequent treatments seemed to be unsatisfactory. A small amount of liquid petrolatum, which permits the passage of the rays, was used on the tip of the applicator for lubrication. Although no mishap has yet occurred, it was thought best to insufflate only a little air, and an opportunity was given for it to pass out through the extra tube in the applicator after the treatment. The instrument was sterilized in the formaldehyde cabinet and when several patients were treated it was sterilized between applications by immersion of

the applicator in 1:1,000 mercuric oxycyanide solution for ten minutes.

Fifteen patients were treated as shown in table 3. The results were encouraging. This group presented a somewhat severe test, as all the patients had old bladder lesions that had not responded to other measures. Several had badly crippled bladder function due to extensive disease of the cystic wall, which had diminished the capacity and rendered the organ sensitive to small quantities of urine. The improvement, when it occurred, was evidenced by a lessening of the sensitivity and a decrease in the urinary frequency. Usually the intensity of the local symptoms was increased for from twelve to twenty-four hours following the treatment. One patient with a rather large ulcer showed a marked decrease in the size of the ulcer as seen through the cystoscope, and the urine became free from acid fast bacilli. Another became free from the bacilli, and the condition of the bladder interior seemed improved. One who was apparently much better also had a lessening of the number of bacilli in the urine. There was no improvement in symptoms or in the appearance of the bladder in four cases.

The treatments were tolerated remarkably well. No harmful effects were seen. While not all were benefited there was a sufficient number to warrant the belief that intrabladder therapy of this kind has a place as an adjunct or supplemental measure in the treatment of bladder tuberculosis. Perhaps patients with earlier and more favorable lesions would have improved results.

126 East Sixty-First Street

TUBERCULOSIS OF THE GENITAL TRACT

HUGH H. YOUNG, MD

BALTIMORE

The subject of tuberculosis of the seminal tract has for years been highly controversial. Some of the questions at issue have been: Which is the primary seat, the epididymis or the seminal vesicles? Does the pathologic process within the scrotum start in the globus major or the globus minor? Does it reach there through the blood stream, by the lymphatics or down the vas deferens? Has heliotherapy or hygiene any value? Is castration preferable to epididymectomy? Should operation be attempted if the bladder, kidneys or lungs are involved? Seminal vesiculectomy has hardly been mentioned.

In the literature one will find a great array of papers in which leading surgeons and urologists have expounded views at variance on the subject of genital tuberculosis. In my early days on the surgical staff of the Johns Hopkins Hospital, castration was the rule in genital tuberculosis. Later we employed the Bardenheuer operation of epididymectomy.

A little later von Bünner recommended that after isolation of the epididymis, in order to remove as much as possible of the tuberculous vas it should be forcibly divided by violent traction, which often brought considerable lengths of involved vas deferens from back of the bladder through the inguinal canal, but subperitoneal infection and miliary tuberculosis occasionally resulted. I then modified the procedure by dividing

From the James Buchanan Brady Urological Institute, Johns Hopkins Hospital.
Read before the Section on Urology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

the vas deferens below the external ring and then, by means of a clamp in the inguinal canal, brought it out through the skin of the groin, opposite the upper end of the inguinal canal, where free drainage could be obtained and the seminal vesicles be treated by intravasal injections.

In 1900, being convinced that seminal vesiculectomy was desirable in certain cases, I presented an extra-peritoneal, retrovesical suprapubic method of removing the seminal vesicles and epididymides. Although this technic was not difficult, the results were not good, because the drainage of the deep wound was unsatisfactory. Postoperative miliar tuberculous occurred. As the years went by I was impressed more and more with the fatalities that occurred with considerable frequency in cases of genital tuberculosis which had been treated only by epididymectomy or castration.

Having attacked the seminal vesicles in conjunction with the operation of perineal prostatectomy, I again resorted to seminal vesiculectomy through the perineum

in cases of tuberculosis.¹ Using a long prostatic tractor, which could be introduced through the urethra I had little difficulty in removing the seminal vesicles and involved portions of the lateral lobes of the prostate through the perineum, without opening the urinary tract and then at the same sitting, in removing the one or both epididymides and the entire vas deferens through an incision in the groin. This operation is sufficiently depicted in the accompanying illustrations.

After employing this technic for nine years I collected

the retroperitoneal lymphatics, and that from the same source the bronchial glands and the lung itself sometimes were invaded. These statistics showed conclusively that Kocher's assertion was true that an operation on genital tuberculosis is indicated, even though the lungs are involved, that the more the external focus of disease can be removed, the better

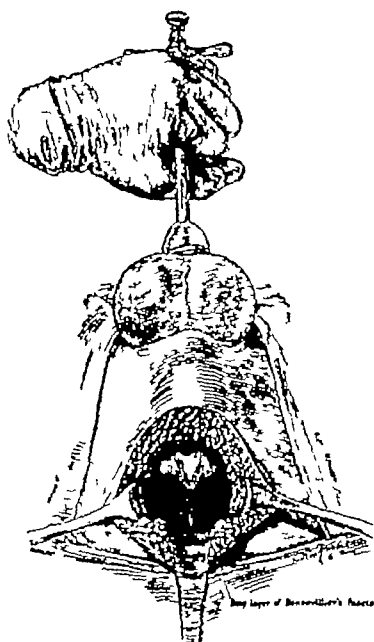


Fig 1—The posterior layer of Denonvilliers' fascia has been pushed backward with the rectum, exposing the anterior layer of Denonvilliers' fascia covering prostate and seminal vesicles. Y shaped incision through capsule is shown.

all cases of tuberculosis of the genito-urinary tract in which operation had been done in the general surgical wards and in the urologic department.² These studies proved to be of great interest. In the first place, it was shown quite conclusively that tuberculosis of the epididymis began more commonly in the globus minor than in the globus major, that it reached the epididymis probably through the lymphatics perhaps also by way of the vas deferens, but not often through the blood stream, that the testicle was rarely involved until late, and that castration was seldom necessary. This study showed also that in the majority of cases the seminal vesicles were involved or were surely the primary focus from which the tuberculosis spread to the epididymis in most instances, that from the seminal vesicles the kidney was not infrequently involved by

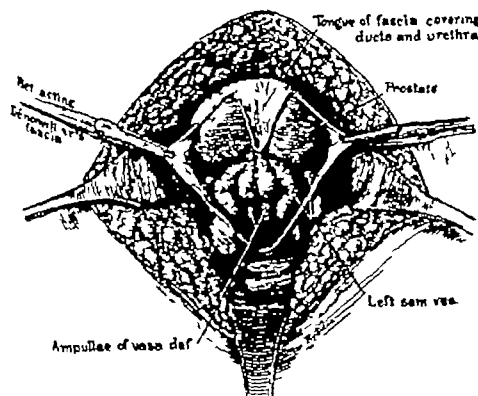


Fig 2—Denonvilliers' fascia dissected up from the lateral lobes of the prostate and seminal vesicles.

chance there is for the arrest of the pulmonary involvement.

In the same paper I presented a complete report of fifteen cases in which my radical operation for tuberculosis of the seminal tract had been carried out. Among these, lung tuberculosis was present or suspected before operation in seven cases, and renal tuberculosis before operation in five, the operative mortality was 0. There was one death from lung tuberculosis

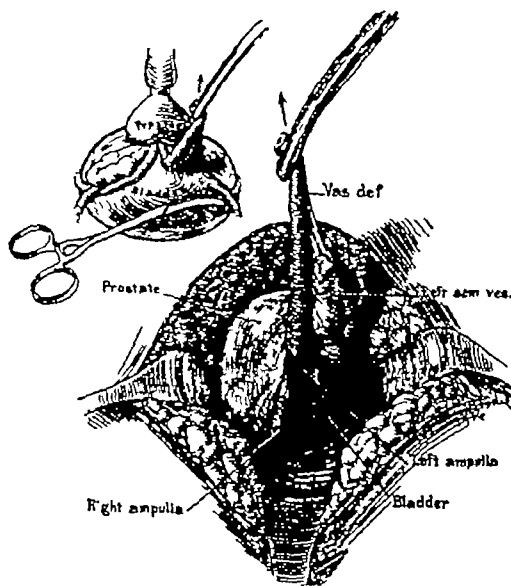


Fig 3—The left seminal vesicle has been freed after its pedicle has been clamped, ligated and divided. The vas divided high up is clamped and drawn downward. The right vesicle is freed and drawn down in the same way.

twelve months after operation, and one patient had not been heard from. An excellent result was obtained in thirteen cases.

This report showed very conclusively that the radical operation for tuberculosis of the seminal tract, combined (if necessary) with epididymectomy, with castration and sometimes with nephrectomy, which had been carried out in three cases, showed very much

¹ Young H. H. Surg. Gynec. & Obst. 28: 608-615 (June) 1918.
² Young H. H. The Radical Cure of Tuberculosis of the Seminal Tract. Arch. Surg. 4: 334-419 (March) 1922.

better results than had been obtained by the partial operations of epididymectomy and castration

Very conclusive proof of the inadequacy of epididymectomy is shown in a later study of cases³ of unilateral tuberculosis of the epididymis, without involvement of the kidneys, ureters or bladder, and is as follows

Resume of 38 cases of unilateral epididymectomy without urinary involvement Dead, 11 cases 29 per cent. Of those alive, 5 have been followed less than 1 year Well on last report, five years or more 6 cases, four years, 2 cases, three years, 1 case, two years, 2 cases one year, 2 cases, less than one year, 3 cases, total 16 or 42 per cent Well over one year, 13, or 38 per cent Improved 5, or 13 per cent Not improved 6, or 16 per cent Of the 16 cases classed as well, all but 5 required other operations after the primary epididy-

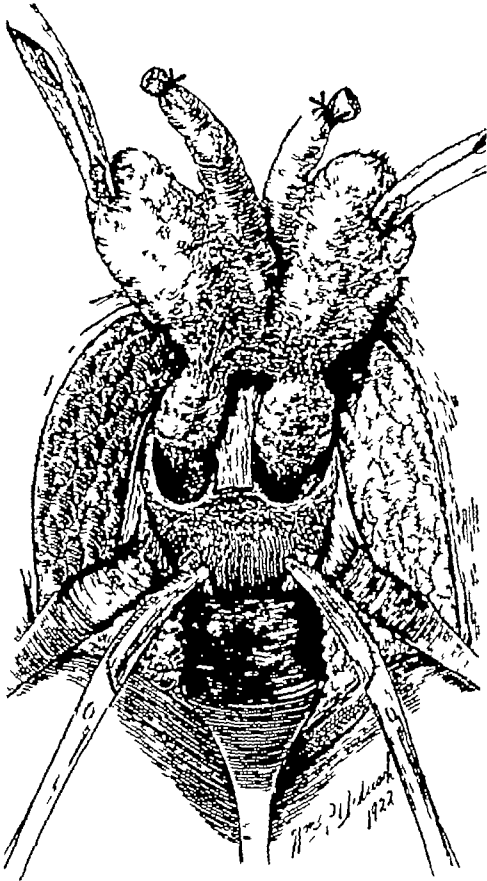


Fig 4—The seminal vesicles ampullae and lateral lobes of the prostate have been freed from the bladder and urethra which remain intact The vasa deferentia are still held by clamps

mectomy viz nephrectomy 4 epididymectomy on other side 7, radical operation seminal tract, 1 In 15 (40 per cent) we know that the opposite epididymis became involved subsequently

I have intentionally included the two previous sets of statistics to show how my early confidence in the radical treatment of genital tuberculosis has been confirmed by subsequent studies of cases With the passage of time, and with successful results in cases far advanced or complicated with tuberculosis of the lungs or kidneys, or both I have made bold to extend the operation even to cases in which the prognosis was manifestly poor, with the hope that at least local relief and prolongation of life could be obtained There are a number of such cases in the fifty I am now present-

ing Among these tuberculosis of the lungs was definitely diagnosed by x-rays in twenty-seven cases, twelve as active and fifteen as inactive Unilateral tuberculosis of the kidney was present in fourteen cases and bilateral involvement in one Tuberculosis of the bones and joints was present in four Epididymal involvement was present, unilateral in fourteen and bilateral in thirty-one cases There were five cases in which there was no involvement of the epididymides The prostate and vesicles were involved in all

Before the radical operation was carried out, the following operations had been done epididymectomy, unilateral in five and bilateral in one, drainage of the epididymis, five, castration, eleven, nephrectomy fourteen There were other cases in which vesical tuberculosis was present and in some cases perivascular sinuses and fistulas or infections, which rendered the operation more difficult and hazardous

The results obtained in these fifty cases are shown in the following summaries There were four deaths in the hospital In one of these there was a retro-vesical abscess before operation and the patient died from tuberculous peritonitis In the other three cases death resulted from complications of the lungs previously present There were no operative deaths

Dr Lloyd G Lewis has made a very careful analytic study of these cases based on questionnaires, and has also personally examined a good many of the patients He has been able to follow forty-one cases in which the radical operation has been performed The results are as follows Seven patients are living and well more than ten years after operation, and one patient died after seventeen years of pulmonary tuberculosis which was present before operation There are seven patients who were operated on from five to eight years ago Three of these are known to be free from tuberculosis, and four have been cured of genital involvement but still suffer from pulmonary lesions Three patients died nine, eight and six years, respectively, after operation, two of pulmonary tuberculosis (which was present before operation) and one of diabetes Nine patients have died of tuberculosis within two years after leaving the hospital lungs, three, kidneys, one, meninges, one, mihray, three, undetermined, one These patients had pulmonary tuberculosis as shown by roentgen examination before the radical operation was performed Sixteen patients are living from one to seventeen years after operation Of these, eight are free from tuberculosis and eight have signs of tuberculosis elsewhere vesical tuberculosis, two, renal (bilateral), two, colon one, lungs, two, bones and joints one All these complications were present on admission

In determining the value of the radical operation in these cases, which have been tabulated and analyzed one must consider the conditions present on admission As stated, tuberculosis of the lungs (active or arrested) was shown by the x-rays to be present in 50 per cent of the cases, unilateral involvement of the kidneys in fourteen cases and bilateral in one and tuberculosis of the bones and joints in four cases It is therefore evident that many patients included in this series were poor operative risks The fact, however, that twenty-seven of the forty-one patients are living and that sixteen of them are shown to be entirely free from tuberculosis and the others with only preexistent involvement in other organs, proves conclusively the value of the radical removal of the entire seminal tract involvement

As an example of the possibilities of the operation, three cases are herewith cited in brief

N D, aged 29, admitted Oct 7, 1916, had had the right kidney and epididymis removed for tuberculosis seven years before. Examination showed involvement of the remaining epididymis, prostate and vesicles, but these were completely removed by the radical operation. Examination now (fourteen years later) shows him to be free from tuberculosis and well.

A O, aged 26, admitted Jan 26, 1924, had had a nephrectomy for tuberculosis performed five years before. Examination showed tuberculosis of the seminal vesicles, prostate, epididymides and bladder. Complete radical operation was carried out and the patient now reports (seven years later) that he is well.

A B, aged 43, admitted June 3, 1925, had had the left kidney removed three years previously on account of tuberculosis. Examination showed involvement of both epididymides, vasa and vesicles. Complete radical operation was carried out. Six years after operation the patient was free from tuberculosis but had diabetes and died of carbuncle.

In closing I can, with every assurance of accuracy, state that at the Brady Urological Institute the addition of seminal vesiculectomy to epididymectomy in cases of genital tuberculosis has given far better results than were ever obtained by simple epididymectomy, and that the radical operation in itself is accompanied by a minimum of danger, the fatalities having in all instances been of patients with severe complications.

CONCLUSIONS

A series of statistics have been presented which are in complete agreement as to the following facts concerning genital tuberculosis:

The disease arises more commonly in the prostate and vesicles than in the epididymis.

Genital tuberculosis is ultimately accompanied by tuberculosis of the lungs or kidneys in a large percentage of cases.

If the seminal vesicles are involved, adequate drainage is not furnished by the ejaculatory ducts, and from

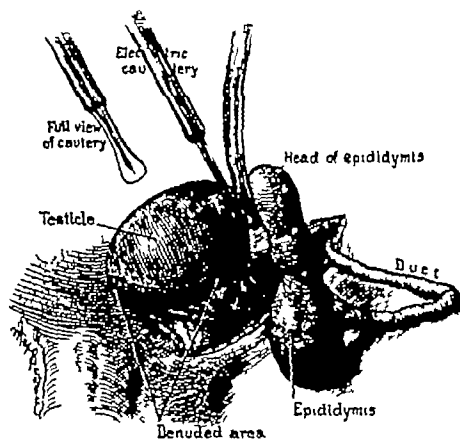


Fig 5—The tuberculous epididymis is being cut off from the testicle by the cautery after which the testicle is returned to the scrotum.

this region the disease progresses downward to the epididymis or upward to the kidneys or lungs.

The presence of renal tuberculosis, which has occurred in about 30 per cent of the cases, is no bar to carrying out the radical operation, in addition to nephrectomy, and curative results may thus be obtained.

The presence of old or recent tuberculosis of the lungs is often no contraindication to the radical operation, in fact, it is one's duty to assist, if possible, in the arrest of pulmonary tuberculosis by removing the external foci of tuberculosis.

If the disease is apparently localized within the scrotum, most careful examinations should be made to rule out involvement of the vesicles and prostate before relying entirely on epididymectomy, which generally will not arrest tuberculosis of the vesicles.

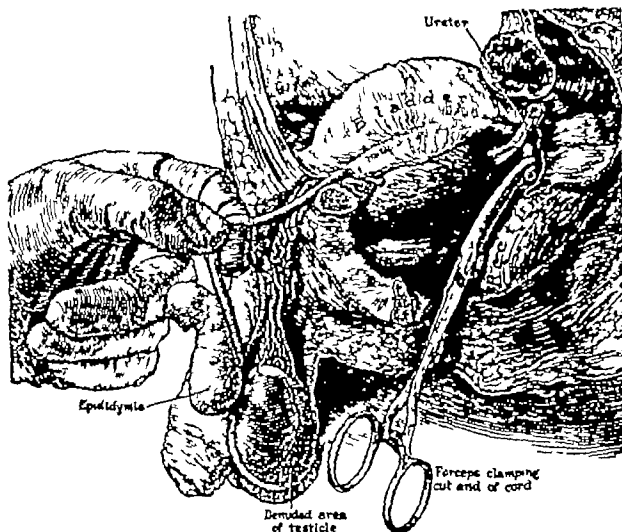


Fig 6—Method of traction (alternating between operator in groin and assistant pulling on clamp in perineal wound on vas) by which vas is freed and then drawn out through inguinal canal.

The radical removal of the seminal tract, both epididymides, vasa, vesicles and lateral lobes of the prostate is the operation of choice in the treatment of genital tuberculosis.

ABSTRACT OF DISCUSSION

DR W F BRAASCH, Rochester, Minn. All are aware that in Dr Young's hands the operation that he so well described is unquestionably a procedure that is worthy of serious consideration. However, that the average urologic or general surgeon can do as well is decidedly open to question. This is evidenced by the fact that although not many such operations have been performed, I have observed three patients operated on elsewhere who came because of a permanent urethrorectal fistula. Furthermore, one must hesitate to advise an operation that even in the most skilful hands has an immediate and late mortality as high as is shown by Dr Young's figures. In the first place one must decide whether so radical an operation for pangential tuberculosis is necessary. It is well known that in cases of renal tuberculosis evidence of some form of genital tuberculosis is present in the great majority of cases. Among some 1,200 patients operated on for renal tuberculosis at the Mayo Clinic, evidence of involvement of the genitalia was discovered on clinical examination in approximately 80 per cent. Most urologists have found surgical treatment advisable only in the epididymis or testicle. Why should the tuberculous epididymis or testicle be operated on? Largely because of the common tendency to suppuration and formation of abscess. In contrast suppuration of the prostate or the seminal vesicles is rarely observed. The late mortality following nephrectomy for renal tuberculosis in patients with evident involvement of the prostate and seminal vesicles is no higher than among those without such an involvement. This is shown by the fact that among the female patients operated on for renal tuberculosis, most of whom have no evidence of involvement of the genitalia, the late mortality was little if any less than in the males. What would be the best procedure in the presence of tuberculosis involving all of the genitalia? Tuberculosis of the epididymis is arrested by heliotherapy in many cases, as has been shown by a number of observers. The great difficulty, however, in advising patients to use heliotherapy is the difficulty of securing adequate radiation. Furthermore, extension of the disease in the epididymis with involvement of the testicle is

sometimes observed in spite of ideal irradiation I have observed that the tuberculous epididymis is best removed surgically before suppuration takes place and that heliotherapy should be employed as an adjunct. In this way suppuration and involvement of the testicle can be obviated. Reexamination of patients in whom tuberculosis of the prostate and seminal vesicles was found five or ten years afterward shows that nature has taken care of these tissues. On rectal examination but little evidence of the previous infection is usually made out. In some, cicatricial areas may be felt, in others, the prostate and vesicles seem to have atrophied. In only an occasional case is there any evidence of an active tuberculous process. The burden of proof still rests with Dr Young in showing that the late mortality following complete removal of the genitalia is any better than when left alone.

DR C J McDEVITT Cincinnati: Early diagnosis and radical removal of genital tuberculosis offers the greatest hope of cure. With active pulmonary tuberculosis complicating the picture, however, one is justified in withholding surgical therapy a reasonable length of time in the hope of first arresting the pulmonary lesion.

THE INCIDENCE OF RENAL TUBERCULOSIS

IN FIVE HUNDRED AUTOPSIES FOR PULMONARY AND EXTRAPULMONARY TUBERCULOSIS

MONROE E GREENBERGER M D

LEONARD PAUL WERSHUB M D

NEW YORK

AND

OSCAR AUERBACH M D

STATEN ISLAND N Y

After a careful survey of the literature it is amazing to learn of the various opinions and theories concerning renal tuberculosis. It comprises 30 per cent of all surgical lesions of the kidney, being more than twice as common as renal tumors. The disease usually afflicts persons in the prime of life and, if not successfully treated, may lead to extensive involvement of the genito-urinary system.

Despite advances made in the recognition and treatment of renal tuberculosis, the disease is often overlooked. In a service confined to a large institution caring for tuberculosis in its various forms, one becomes "tuberculosis conscious" and ever on the alert for manifestations of this disease in the genito-urinary system. But in private practice and in a general hospital where tuberculosis is infrequently encountered involvement of the genito-urinary tract is often overlooked. This is especially true in early renal tuberculosis, in which symptomatology is markedly deficient and routine physical examination fails to reveal evidence of extrarenal tuberculosis.

We believe that neglect in recognizing tuberculosis in other parts of the body often leads to a failure in the recognition of early kidney involvement. To make a diagnosis of renal tuberculosis after extensive caseation and excavation has occurred is no difficult task. The recognition of early preclinical renal tuberculosis requires the greatest care, and until some reliable method is developed every effort must be made to correlate all clinical, roentgenologic and pathologic data. For this reason we submit the present compilation of statistics.

From the Departments of Urology and Pathology, Sea View Hospital, City of New York Department of Hospitals.
Read before the Section on Urology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

SOURCE OF MATERIAL

The material that forms the basis of this report was gathered from Sea View Hospital, a 1,750 bed institution. This is a municipal tuberculosis hospital situated on Staten Island in New York harbor. The report



Fig 1—Kidney that was of normal size (the illustration is about seven tenths the size of the original). Capsule stripped easily leaving a smooth surface studded with a number of varying sized yellowish white areas extending into the kidney substance. Similar areas are present on cut surface both in the medulla and in the cortex. The pelvis, calices and ureter are normal.

covers the period from June 1932 to April 1934. The data were obtained from routine postmortem examinations correlated with the clinical observations obtained by the careful analysis of the history of each case.



Fig 2—The surface of both kidneys shows irregularly distributed numerous small yellowish white areas which on section seem to extend into the kidney substance. Both ureters are dilated but at the ureteral pelvic junction of the left kidney there is a sharp double kink which effectively obstructs the lumen. The upper left calix is so enlarged that it reaches into the cortex.

Of the 500 cases in which necropsy was performed, 252 showed evidence of tuberculous infection as shown in the accompanying table. Miliary tubercles were found in 228, or 45.6 per cent. By this we mean small tubercles that can be recognized grossly (figs 1, 2 and 3). They are gray or yellow, are single or conglomerate.

erate, and often lie in rows and follow the medullary rays into pyramids. Microscopic examination of these sections revealed that they vary from necrotic areas to fibrotic tubercles. These necrotic areas showed a number of polymorphonuclear leukocytes and acid-fast bacilli when stained with Ziehl-Neelsen's stain. Hyperemia was present in the remaining portion of the kidney but was more pronounced in the tissue adjacent to the tubercle.

In this group the disease was found to be bilateral in 187 cases, or 82 per cent, and unilateral in forty-one cases, or 18 per cent. The youngest patient of this group was 9 months old and the oldest 74 years. The average age was 36. There were 157 males, seventy-one females, 154 of the white, seventy-two Negroes and two of the yellow race in this group. Only 25 per cent had urinary symptoms. The most common complaint was nocturia and frequency.

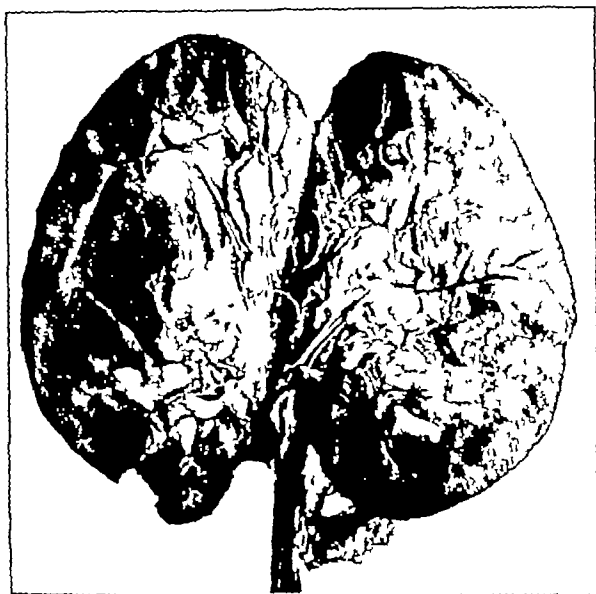


Fig 3—This kidney was slightly larger than normal. The capsule stripped with ease, leaving a smooth surface on which there are a number of small yellowish white areas extending into the cortex. The calices and ureter show no evidence grossly of pathologic change.

Of the 500 cases in which necropsy was done, organ tuberculosis was found in only twenty-four cases, or 4.8 per cent. By organ tuberculosis we mean a destruction of the kidney substance. In the early cases there was often an area of caseation in the cortex of the upper pole (figs 4, 5 and 6). This area of caseation extended through the medulla to the calyx adjoining it. When the area of caseation liquefies, a cavity results. In a fully developed "organ tuberculosis" there is extensive destruction of the kidney parenchyma (figs 7, 8, 9 and 10).

In this group the disease was found to be bilateral in thirteen cases, or 54 per cent, and unilateral in eleven cases, or 46 per cent. The youngest of the group was 23 and the oldest 59 years of age. The average age was 39. There were twenty men, four women, twenty-one of the white race and three of the Negro race in this group. Sixty per cent of the cases in this group presented some evidence of urinary disturbances surprisingly mild as compared to the pathologic changes found at the postmortem table.

In sixteen cases the tuberculosis was extrapulmonary and the renal involvement bilateral. In all but one it

was of the miliary type. The youngest of this group was 1½ years and the oldest 56 years of age. The average age was 22. There were nine males, seven females, five of the white, ten of the Negro, and one



Fig 4—Bilateral pyelogram revealing tuberculosis of the upper pole of the left kidney.

of the yellow race in this group. The outstanding cause of death was tuberculous meningitis, ten, tuberculous peritonitis, four, generalized miliary tuberculosis, two



Fig 5—Same case as in figure 4. Kidney injected with sodium iodide after removal. Lesion in the upper pole of the kidney.

COMMENT

Certain allowances should be made for differences of opinion regarding histologic interpretations. Young adults in whom gross examination revealed scar forma-

tion microscopically showed circumscribed areas of fibrous tissue. The kidney showed no evidence of arteriosclerosis. Such a lesion could be classified only as healed tuberculosis by inference.

In the terminal stage of pulmonary tuberculosis, hematogenous dissemination of tubercle bacilli is a

surprisingly lacking, as shown in our series. This has been confirmed by other observers and is explained by the absence of tuberculous involvement of the ureter and bladder.

The observations of other investigators are of interest, for they report that more than 30 per cent of the victims of genito-urinary tuberculosis succumb to miliary tuberculosis and tuberculous meningitis. Such a preponderance of tuberculous meningitis as the cause of death was not encountered in our cases.

It is our belief that careful postmortem examination will often reveal a high incidence of bilateral miliary renal tuberculosis. This must not be interpreted as meaning that clinically bilateral miliary renal tuberculosis is common but rather that this occurred as a terminal manifestation of the disease a few weeks prior to death.

Mention has repeatedly been made of the greater preponderance of tuberculosis among the Negro race as compared to the white race. In our series, 69 per cent of the cases presenting renal tuberculosis were of the white race. This percentage corresponds to the proportion of white inmates at Sea View Hospital and must not be taken as an index of the virulence of the disease in the white race. An average census taken during the period of this study from June 1932 to April 1934 shows between 1,750 and 1,800 beds occupied. During this period there were admitted 3,224 white patients, as compared with 807 Negro and twenty-seven yellow patients.

SUMMARY

- 1. An attempt has been made to correlate the incidence of renal tuberculosis in 500 cases of pulmonary and extrapulmonary tuberculosis.
- 2. Statistics reveal the high incidence of bilateral renal tuberculosis.
- 3. The nondestructive, closed or miliary lesion is common.

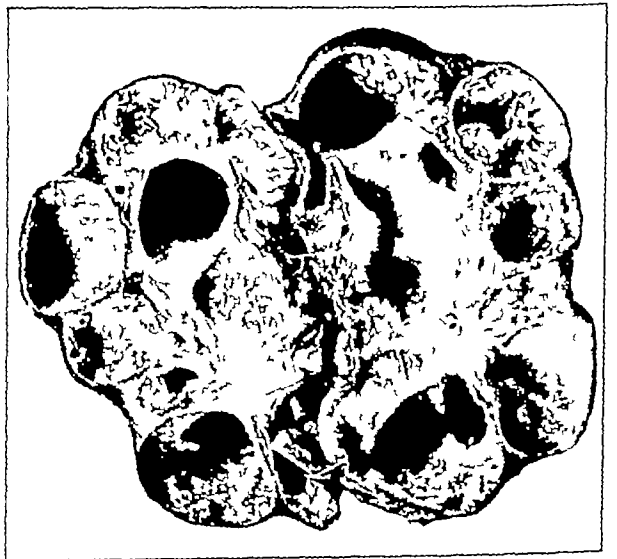


Fig. 7.—Kidney that was slightly larger than normal. Tuberculous excavation with almost entire kidney involved.

frequent occurrence and macroscopic and microscopic tubercles can be found in the liver, spleen and kidneys. These areas of tubercle formation found at the necropsy table are not to be regarded as evidence of previously existing clinical tuberculosis but as a phase of the terminal stage of the disease.

It is probable that this explains the unusually high percentage of miliary tuberculosis found in our series.

Number of Cases (252, or 50.4 per cent) Presenting Renal Pathologic Changes

	Male	Female	White	Negro	Yellow	Miliary Tubercles		Organ	
						Bilateral	Unilateral	Bilateral	Unilateral
Chronic pulmonary tuberculosis	454	168	68	170	65	172	41	12	11
Extrapulmonary tuberculosis	16	9	7	6	10	15	0	1	0
Total	500	177	75	176	75	283	41	94	11
	252		252			45.6%		4.8%	

Clinically this type of renal infection is of little significance. It rarely is accompanied by urinary symptoms, has no radiographic signs of alteration in the renal architecture, and is demonstrable only at postmortem examination. This type is commonly referred to as the nondestructive, closed lesion.

Organ tuberculosis is the pathologic condition most frequently encountered by the clinician and urologist. It is the type of lesion that shows definite pyelographic changes and is clinically recognizable. Despite marked renal involvement, symptoms in this group are often

- 4. The destructive, open, organ or chronic surgical tuberculosis of the kidney is notably deficient in symptoms despite the advanced renal involvement.
 - 5. Pulmonary tuberculosis appeared as the primary focus of infection.
- 40 East Sixty-First Street.

ABSTRACT OF DISCUSSION

DR. ROY B HENLINE, New York This study shows additional evidence of the frequency of kidney infections secondary to tuberculosis elsewhere in the body. Probably most other renal infections reach the kidney similarly by way of the blood stream and form small infected areas, which follow the medul-



Fig 8—Hypertrophied kidney. Extensive excavation of upper and lower calices. Multiple areas of caseation with central excavation.

lary rays into the pyramids. This may therefore be a basis for more clearly understanding the earlier phases of all kidney infections and permit more intelligent treatment. The miliary tubercles found in 45 per cent of these 500 necropsies are probably the pathologic entities that have given rise to the term 'preclinical' or silent stage of tuberculosis. This stage of renal tuberculosis is never recognized clinically. However, the same phase of a pyogenic infection so-called pyelitis is commonly seen in children who manifest normal urine, fever and prostration for from twenty-four to forty-eight hours followed by a shower of pus and bacteria in their urine as the infection gains an exit into the kidney pelvis. Further evidence that small tubercles in the renal cortex may heal corresponds to the recent generally accepted views. These healed lesions are rarely seen except at autopsy, and conclusive proof that they are tuberculous in origin is lacking. Bilateral renal tuberculosis was present in almost 80 per cent of the 252 cases in which tuberculous infection of the kidneys was found. This percentage of bilateral involvement is much larger than one finds clinically and thus many of these infections must have occurred shortly before death. Less than 5 per cent showed gross renal destruction and less than half of these were unilateral. Of ninety-seven cases of nephrectomy for tuberculosis in my services in New York City, less than 5 per cent showed any gross evidence of bilateral involvement as determined by the renal function test infected urine or pyelogram. Since we are concerned with the problem of treating tuberculous kidneys, one must believe that bilateral clinical renal tuberculosis is rare. The symptoms of renal tuberculosis in no way correspond to the kidney damage. Many grossly destroyed kidneys manifest very few urinary symptoms, while a very small lesion may give rise to severe bladder and general symptoms. This obviously depends on the lesions in the bladder. It is my opinion that some types of renal tuberculosis will heal spontaneously that tuberculous bacilluria without renal disease does not exist that a tuberculous kidney should be removed when pyelographic evidence shows the occurrence of destruction and when the function is diminished that bilateral renal tuberculosis occurs more often than was formerly believed and that in some patients

in whom bilateral renal tuberculosis has been diagnosed removal of the destroyed kidney offers the greatest hope of benefit to the patient.

DR. THOMAS D MOORE, Memphis Tenn. The frequent terminal involvement of the kidneys with miliary tubercles in patients dying of general or pulmonary tuberculosis is of more academic interest to the urologist than of practical importance. Renal tuberculosis of the type referred to by the authors as 'organ tuberculosis' is of paramount importance and occurred in about 5 per cent of their cases. This complication is evidently commonly overlooked or neglected in institutions caring for tuberculous patients. In a 300 bed sanatorium near Memphis a member of the staff stated that they were interested chiefly in the chest, that genito-urinary symptoms and pyuria were seldom investigated urologically and that patients with urinary involvement seldom did well. In a study of the records in six sanatoriums for the tuberculous Young noted evidences of the disease in the urinary tract in seventeen cases. Cystoscopy and ureteral catheterization had been employed in only three. It was noted that when the genital or urinary tracts became involved the outlook was unfavorable and that most of these patients died. Institutions with a record of a high percentage of cures of pulmonary tuberculosis may show in marked contrast, a 100 per cent mortality record in cases with renal disease. On the other hand it is not uncommon to observe the rapid improvement in the condition of a patient with pulmonary tuberculosis after the removal of a tuberculous kidney. The nephrectomy enables his defenses to become concentrated on the pulmonary process with beneficial effect. This is especially true if the operation has been performed under paravertebral nerve block or spinal anesthesia thus avoiding the insult to the lungs of a general anesthetic. Those specializing in tuberculosis should be impressed with the absolute need of alertness in recognizing involvement of the genital and urinary tracts. It



Fig 9—Moderate enlargement of kidney. Multiple renal calculi. Multiple areas of excavation with productive tissue reaction at periphery.

behooves urologists to bring to their attention that radical surgical measures adopted early will combat in an effective way the bad results so common at present.

DR. WILLIAM ROSENBERG, Cleveland. Many of the changes in renal tuberculosis may be explained on the basis of bacterial allergy. Certain lesions of the kidney are probably dependent on the degree of sensitization of the cells and the size of the

shocking dose of the tubercle bacilli or their toxins. The greater the dose for a given sensitivity, the more extensive the exudative phenomena that result.

DR. FREDERICK LIEDERTHAL, Chicago. In all cases of tuberculous renal bacilluria, the kidneys should be examined very carefully. It is amazing how many pathologists expert in their field, will merely open the pelvis and split open the ureter without looking at the renal papillae. If one will take scissors, however, and split open every calyx to its very termination and examine every renal papilla carefully, one will be sure to find a tuberculous lesion on a renal papilla in every case in which tubercle bacilli have been demonstrated in the ureteral catheter specimen of urine. If this procedure should be followed in every doubtful case, fewer reports would be found in the literature of a so-called tuberculous renal bacilluria without a tuberculous renal lesion. On the finding of such a minute specific renal lesion rests the disproof of the existence of a tuberculous nephritis in each given case.

DR. MONROE E. GREFFENBERGER, New York. At Seaview Hospital we are in a sort of urologists' utopia, because of the cooperation that exists between our department and the attending medical staff. The medical director Dr. George G. Ornstein is surgically minded and is in complete accord with the

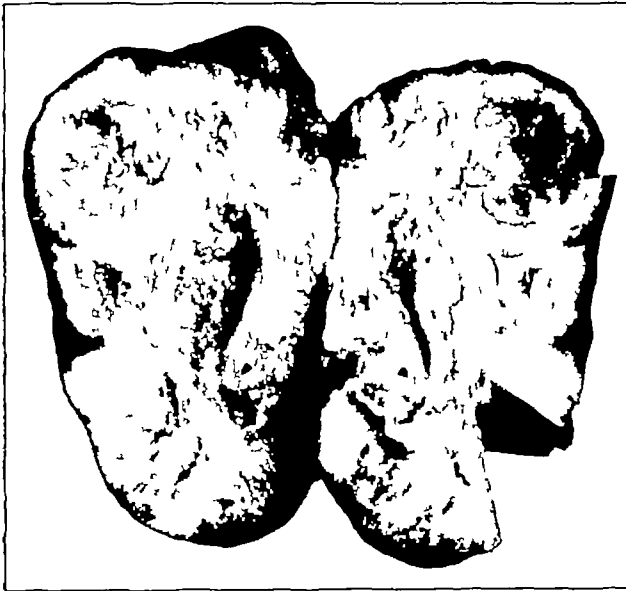


Fig. 10—Kidney that was smaller than normal. Extensive productive changes predominating. Tuberculous abscesses surrounded by thick fibrous tissue.

urologists' point of view in the treatment of renal tuberculosis. In the majority of sanatoriums throughout the country, as Dr. Moore pointed out, it is most difficult to obtain permission to operate or even to work up a case. The report that we presented covered only our autopsy studies. We have been fortunate in operating in a number of cases and obtaining results corresponding to those reported by others throughout the country. The patients live longer and in greater comfort than they would if treated only medically.

Probably Once in Fifty-Seven Million Confinements—

As plural births go, twins are fairly common about one in 87 confinements giving rise to twins. But the scarcity of plural births goes up very fast with the number born at one confinement. It has in fact been pointed out by W. W. Greulich of the University of Colorado that the scarcity increases approximately like the powers of 87, while one confinement in 87 brings twins into the world triplet births would be expected about once in 7,569 confinements, this number being the square of 87, and quadruplets once in 658,503 births this being the cube of 87. If this law continued for higher orders of plural births we should expect quintuplets once in 57 million confinements.—*Statist. Bull. Metropolitan Life Insurance Company* July 1934.

THE EFFECT OF ATHEROSCLEROTIC PLAQUES

ON THE DIAMETER OF THE LUMEN OF
CORONARY ARTERIES

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EUGENE BIRCHWOOD, M.D.

AND

H. GIDEON WELLS, M.D.

CHICAGO

It is a common observation that postmortem examination may reveal extensive atherosclerotic changes in the coronary arteries of the hearts of persons who have shown no marked evidence of myocardial damage during life. This raises the question whether thick atherosclerotic plaques which seem nearly to occlude the coronary arteries when these are seen in the collapsed state at the postmortem examination, really diminish to an equal degree the lumen of the artery when it is distended with blood under the usual intravascular pressure. The classic observation of Thoma¹ convinced him that atherosclerotic plaques in the aorta really did not protrude into the lumen but merely filled in bulgings resulting from weakness of the media. He made paraffin casts of the aorta at blood pressure and reported that the plaques which bulge into the lumen after death are really ironed out during life when the aorta is filled under the usual tension of the blood pressure. He therefore considered arteriosclerotic plaques as patches which fill in the depressions resulting from focal weakening of the wall. Attempts have been made to repeat this work particularly by Ophüls² in 1906 and Klotz³ in 1910 who obtained negative or unsatisfactory results and could not confirm Thoma's observations on the aorta.

Thoma's conception of the development of arteriosclerosis with primary medial changes and secondary atheroma formation is supported by some investigators notably Beitzke,⁴ and it has often been pointed out that in the coronary arteries the media is usually found to be thinner under sclerotic plaques than elsewhere, although it has not been determined whether the plaque formation is primary or secondary to the medial condition. Many students of atherosclerosis consider the intimal changes as primary (Duguid,⁵ Klotz⁶ and Ophüls⁷), but the exact nature of the process has not yet been determined. Regardless of the primary or secondary nature of the plaques they seem to narrow the lumen of the dead arteries, but whether they do so in living hearts has not been determined. A great volume of work has been published on coronary arteriosclerosis and we do not wish to add needless or purposeless material but as we have not found a comparative study of the caliber of the vessels at blood pressure and in the collapsed postmortem state we venture this brief report.

From the Department of Pathology, University of Chicago and the Otho S. A. Sprague Memorial Institute.

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In order to determine the configuration of the lumen of the coronary arteries under living conditions, they were examined roentgenologically when distended with an injection mass of a suspension of barium sulphate tragacanth and water. Fresh hearts of persons old enough to exhibit coronary atherosclerosis of varying degrees were washed in physiologic solution of sodium chloride and the coronary arteries perfused with the radiopaque solution. The coronaries were then filled with the opaque suspension and thus held at mean aortic pressure while stereoroentgenograms were taken in the roentgenologic laboratory of the University of Chicago Clinics under the direction of Dr Paul C Hodges. The pressure was then released and the heart

the roentgenogram shows well filled vessels with smooth contours and only minor points of narrowing, while the arteries themselves when sectioned show what seem to be very obvious points of narrowing at the sites of plaque formation. These differences are listed in the table and are particularly evident in hearts 1, 2, 4, 5, 6 and 9. (Note the parallel columns of figures for cross section and X-ray narrowing and vessel caliber.) The number of points of apparent narrowing seen on cross section are numerous despite the fact that the roentgenograms of the same arteries when acted on by the normal expansive force of the blood pressure show them to have had a practically uniform lumen without noticeable constriction. The

Observations in Nine Cases

Heart No Age Sex Hospital	Cause of Death	Injection Pressure mm Hg	Right Coronary						Left Coronary					
			Contour		Points of Narrowing		Caliber mm		Contour		Points of Narrowing		Caliber mm	
			Relaxed (Gross)	Distended (X Ray)	Gross	X Ray	Gross	X Ray	Gross	X Ray	Gross	X Ray	Gross	X Ray
1 62 ♂ Oak Forest	Cardiac dilatation	90	Irregular with many plaques	Good round con- tour no narrowing	5	0	1.8 1.0 3.0 0.5 0.7	4.0 4.0 4.0 2.0 2.0	Irregular many plaques	Relative smooth large lumen	4	0	1.0 1.0 1.1 0.8	3.0 2.0 1.5 1.3
2 67 ♂ Oak Forest	Myocardial degeneration	90	Vessels occluded						Very irregular with narrowing	Smooth contour good sized lumen	4	2 slight	2.0 1.0 1.1 0.9	2.0 2.0 4.0 2.5
3 25 ♀ Billings	Chloroma	80	Smooth	Smooth	0	0			Narrowing due to plaques	Smooth through- out	2	0	1.0 0.5	2.5 2.0
4 42 ♀ Billings	Carcinoma of breast	90	Plaques and nar- rowing proximally	Smooth and rounded	4	0	1.2 1.3 1.2 1.6	4.0 3.5 3.0 4.0	Plaques and narrowing proximally	Smooth rounded contour	6	2 slight	2.0 1.0 2.5 2.0 3.0 0.2	3.0 2.5 3.0 3.5 2.0 3.0
5 44 ♂ Oak Forest	Heart block	95	Irregular narrowing in all branches	Quite smooth with rounded contour	5	3 slight	1.5 2.0 1.0 0.2 1.0	4.0 4.0 3.0 1.0 3.0	Marked narrowing with apparent occlusion	Poorly injected with ragged contour	2	0?	1.5 0.2	2.5 3.0
6 42 ♂ Oak Forest	Pneumonia	90	Many plaques with marked narrowing	Caliber good contour ragged	8 marked	Several slight	1.0 1.0 0.7	2.0 1.5 1.5	Many points of narrowing	Caliber of good size but ragged	5	2 slight	1.5 1.5 1.0 1.0 0.5	4.0 3.0 2.5 3.0 2.5
7 64 ♀ Billings	Carcinoma of sigmoid	90	Consider- able narrowing throughout	Good caliber with slight narrowing	2 marked	2 slight	1.0 1.0	3.0 2.5	Consider- able narrowing through- out	Good rounded caliber slight narrowing	4	2 slight	1.5 1.5 1.0 0.9	3.1 2.9 3.0 2.0
8 66 ♂ Oak Forest	Malignancy	95	Scattered plaques and points of narrowing	Kinked but good caliber	2	0	1.1 0.9	4.0 4.0	Scattered plaques and points of narrowing	Good rounded contour slightly irregular	2	0	1.1 1.0	3.5 3.0
9 23 ♂ Oak Forest	Chronic rheu- matic pericarditis	90	Vessel occluded	No filling	Occluded	No filling			A few points of narrowing	Good rounded contour throughout	2	0	1.0 0.2	3.8 2.1

fixed in solution of formaldehyde. After a small series of these hearts had been collected and such plates prepared, the coronary arteries were examined by the usual necropsy methods and rather striking differences were found between the apparent effect of atherosclerosis as seen in the collapsed artery and the real condition of the lumen. The coronaries were sectioned coronally at intervals of from 2 to 3 mm and the lumen was measured directly with a millimeter rule. The roentgenograms were taken at 27 $\frac{1}{16}$ inches, 60 kilovolts, 100 milliamperes, and 1 second exposure. There is some slight distortion of the image in such plates but this is far overshadowed by the variations recorded in the accompanying table.

The examination of the roentgen shadow and the gross material brings out certain very evident differences of caliber and contour. In the majority of cases

discrepancy is marked in certain instances, for example the figures for the right coronary artery of heart 1 show a decrease of caliber of the lumen of the collapsed artery to one-half or one-fourth that of the distended artery, except at one point, where it is three-fourths. Similar conditions obtain in the left coronary of heart 2 and the right coronary of heart 4. Rather extreme variations are found in both coronaries of heart 5, but particularly in the left, where in the cross section the lumen is pinpoint, or about 0.2 mm, and in the roentgenogram it is of the usual caliber, or 3 mm in diameter. Looking at the cross section of this artery as exhibited at the postmortem examination, it would appear that the blood flow at this point would have been greatly reduced, whereas the artery really had an adequate lumen, the same size here as elsewhere. Not all points of narrowing are listed and

the figures are not absolute, as precision instruments were not used. Those given certainly substantiate the very obvious differences seen between the x-ray caliber at mean aortic pressure and the gross caliber seen in the undistended artery.

A more graphic representation of the conditions is furnished by the accompanying illustrations. Figure 1

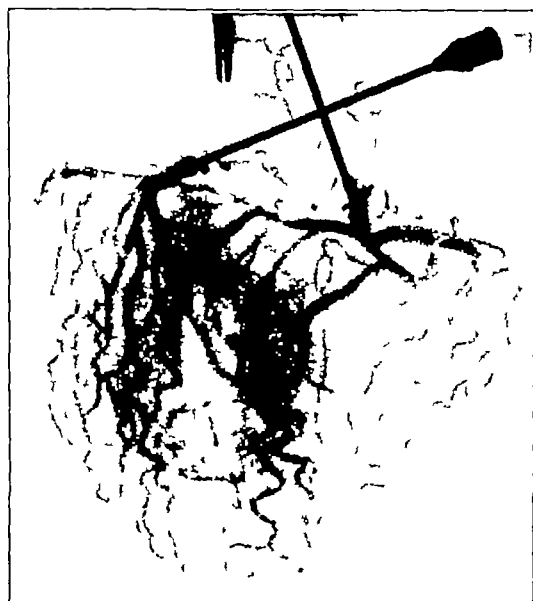


Fig 1—Heart in case 4 with the arteries distended under mean systolic pressure. The lumen of the large arteries is seen to be practically uniform despite the fact that their walls exhibited many sclerotic plaques which seemed to constrict them at many points.

shows the x-ray appearance of the heart in case 4. It will be seen that the cast of the lumen of the large coronary vessels indicates that the lumen is practically uniform throughout and gives no indication that there is anywhere any appreciable constriction by the numer-

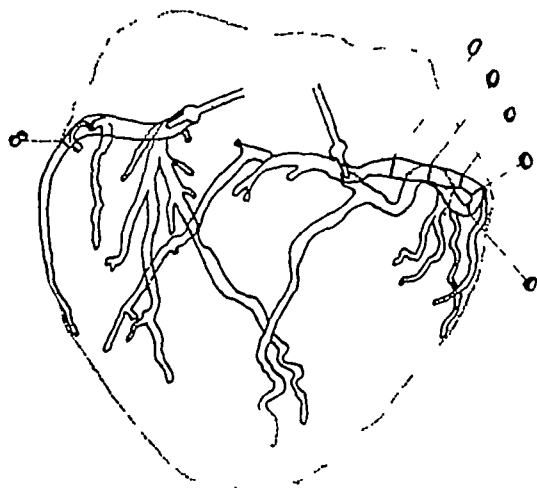


Fig 2—Drawn outline of the lumen of the coronary arteries in case 4 with exact reproductions of cross sections of the artery walls at various levels. It is seen that the lumen is quite free from constriction at levels where the artery walls are much thickened by sclerotic plaques.

ous atherosclerotic plaques that were present in the walls of these arteries.

Figure 2 is a drawing outlining the lumen of the injected coronary arteries of this heart, with exact reproduction of cross sections of these arteries at these points, made from photographs of the stained cross

sections. It will be seen that marked variations in the thickness of the artery walls at different levels, and apparent marked constrictions in the lumen, are not associated with any appreciable constriction in the artery when distended by mean systolic pressure.

Figure 3, a roentgenogram of an injected heart, shows that when a coronary artery is really occluded the method of injection used brings out the presence of the obstruction.

Surely, in the light of these rather marked variations in size and contour of the coronary arteries when distended and when collapsed, one must take into consideration the postmortem collapse of arteries in evaluating changes observed post mortem and realize that arteries with apparent narrowing on cross section may not really have been narrowed during life. This is particularly true in instances in which the plaque involves only a small portion of the circumference of the vessel. Fundamentally, these results on a small number of hearts seem to support the view of Thoma



Fig 3—Coronary vessels of a heart with fatal occlusion of right coronary artery showing that the method used demonstrates the presence of actual obstruction (case 9).

that atherosclerotic plaques fill defects in locally dilated vessels and may not encroach on the lumen, at least not to the extent that the postmortem appearance suggests. We would call attention also to the fact that large atherosclerotic portions of vessels when calcified, so that they form rigid casts of the vessels, always present a concave surface toward the lumen, showing that they have not encroached on the lumen during life. These natural casts are equivalent in significance to the original experimental casts made by Thoma.

SUMMARY

A small series of hearts has been examined to determine the relation between the size of the lumen of the coronary arteries at the site of atherosclerotic plaques, as seen in the collapsed artery in the usual postmortem examination, and the true size of the lumen when the artery is distended by the usual blood pressure. The results of this preliminary study indicate that coronary arteries exhibiting many atherosclerotic plaques which,

as seen at postmortem examination seem to cause marked local constrictions may when distended by the usual blood pressure possess a fairly uniform lumen without evidence of constriction. Apparently the atherosclerotic plaques in coronary arteries do not necessarily protrude into the lumen during life, and the apparent narrowings seen in the dead body may not have existed during life.

Clinical Notes, Suggestions and New Instruments

PRIMARY REPAIR OF SEVERED PAROTID DUCT METHOD OF FIXATION OF AN INLYING DOWEL

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Since 1926 there have appeared three articles¹ emphasizing the importance of the immediate repair of severed parotid ducts. Disfiguring and annoying external parotid fistulas are prevented by this procedure. Such fistulas, as is well known, are often difficult to close. All these authors have recorded successful cases. Tees, two; Dickinson, one; and Black and Flagge, one, four in all. The literature previous to 1926 is strangely silent on the subject of primary anastomosis, most discussions and case reports even those which appeared during and shortly after the World War concerned themselves with problems of secondary repair and with the control of the discharge. Because the war wounds were ragged, extensive and contaminated it was impracticable for the most part to attempt primary suture. Nevertheless, Schmieden² in 1916 reported the primary end-to-end repair of a severed duct on the field of battle, no particulars as to technic were included in his short note.

The authors of the recent articles have been confronted with fresh, reasonably clean wounds in which the ducts had been

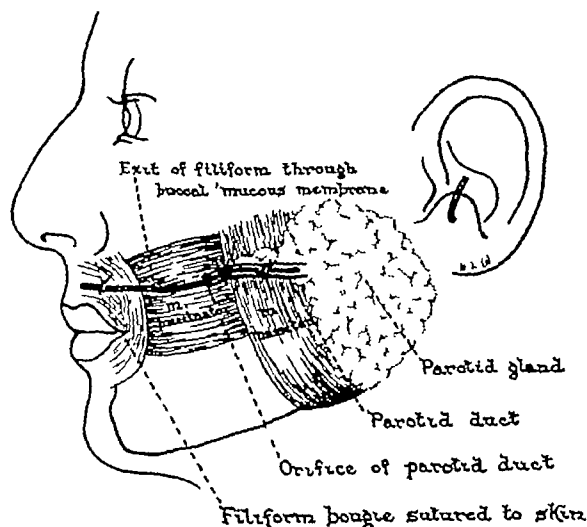


Fig 1—Diagram showing filiform bougie used as a dowel over which the parotid duct severed in two places was sutured. The filiform was passed out through the cheek and sutured to the skin.

severed sharply somewhere in their masseteric portions. In the cases of Tees a strand of catgut was inserted into the severed ends, where it served as a dowel (Tees) over which the duct

was approximated by means of two fine interrupted catgut sutures passed through the sheath. In one case the oral end of the catgut strand was left hanging out of the opening of Stensen's duct into the mouth; no fixation was used. In the other instance the short piece of catgut was left entirely within the duct and it is this arrangement which the author advises.



Fig 2—Five months after primary repair of severed parotid duct.

Dickinson utilized a strand of silkworm gut which was allowed to project into the mouth. He then fixed the silkworm gut at its point of entrance into the mouth by a suture. However the strand fell out into the mouth two days later. Black and Flagge used a small ureteral catheter as a dowel and cut it off leaving about one inch extending outside the duct into the mouth. The method of fixation as described in a recent letter from Dr. Black³ was by means of two or three interrupted linen sutures passed through the buccal tissues at the orifice of the duct and tied around the catheter. The catheter remained in position until it was removed on the ninth postoperative day. In his letter Black mentioned a subsequent case of primary repair and also one of secondary suture in which an external fistula had been present for two and one-half months. In both instances he used the technic described in his published case with perfect results.

An interesting case of secondary repair forty-one days after injury to the duct is reported by Butler and Guinan.⁴ Their technic included the use of a ureteral catheter, as in Black and Flagge's case, but they anchored it to the canine tooth of the upper jaw with a silk ligature, a technic familiar to oral surgeons.⁵ Whenever the lower jaw moved, the catheter slipped back and forth through the duct for about 0.5 cm.⁶ Butler feels that the motion is advantageous, provided the catheter is inserted far enough into the duct to prevent its tip from punching out between the sutures at the anastomosis. He removed the catheter on the third day, feeling that possibly there might be sufficient swelling, with the catheter in place, to obstruct the duct.

In the following case a filiform urethral bougie was anchored by passing it from the mouth out through the cheek and suturing it securely to the skin at the point of exit.

From the University of Louisville School of Medicine and the Department of Surgery, Louisville City Hospital.

¹ Tees, F. J. Primary Repair of Injuries to the Parotid Duct. *Canad. M. A. J.* 16:145-146 (Feb.) 1926. Dickinson, A. M. Injuries to Stensen's Duct. *New York State J. Med.* 27:548-549 (May 15) 1927. Black, H. S. and Flagge, P. W. Successful Anastomosis of Stensen's Duct. *South Med. & Surg.* 90:755-756 (July) 1928.

² Schmieden. Ueber die Naht des Ductus stenonianus. *Munchen med. Wchnschr.* 63:241-242 1916.

³ Black, H. S. Personal communication to the authors Aug. 24, 1934.

⁴ Butler, E. and Guinan, E. R. Successful Repair of Stensen's Duct. *S. Clin. North America* 13:1291-1293 (Dec.) 1933.

⁵ Ivy, R. H. War Injuries of the Face and Jaws. *Internat. Abstr. Surg.* 27:101-117 1918.

⁶ Butler, E. Personal communication to the authors Aug. 28, 1934.

March 10, 1934, W. M., a man, aged 22, was cut deeply with a sharp knife across the left cheek. The wound extended in an upward curve from a point 1 cm above and slightly medial to the corner of the mouth to a point 2 cm in front of the lobe of the ear. Under procaine infiltration anesthesia the cleanly incised tissues were washed thoroughly with warm saline solution and all bleeding points were tied with fine plain catgut. On inspection of the wound it was found that the parotid duct had been severed twice, thus isolating the short segment of the structure that curves sharply around the anterior border of the masseter muscle. The knife had passed deeply into the buccinator and anterior portion of the masseter muscles, but the wound was more superficial posteriorly and the parotid gland was uninjured.

A filiform bougie was cut in two and the blunt end of the small half was passed into the mouth through the distal portion of the duct. The smooth tip was threaded back through the isolated segment and into the remainder of the duct to the level of the gland. The anastomoses were then accomplished with interrupted split silk passed through the sheath on small French eyed needles. The sheaths of the muscles were united with fine chromic catgut sutures, the deep layer of the superficial fascia with fine plain catgut, and the skin with silk. No drainage was used.

Attention was now turned to the problem of anchoring the filiform bougie. Inspection of the oral mucous membrane showed a small rent about 1.5 cm anterior to the parotid opening. The filiform was cut off to a proper length inside the mouth and the end was passed through this rent to make its appearance through a nick in the skin halfway between the vermilion border of the lip and the ala nasi. It was securely fastened to the skin by a silk suture (fig. 1).

The wound healed by first intention and the sutures and filiform bougie were removed on the seventh postoperative day. Clear saliva was observed to flow from the opening of Stensen's duct at that time and continues to do so at present five months after operation. There has been no pain or swelling in the region of the gland. The scar of the main wound persists but it is impossible to detect the point of exit of the filiform bougie (fig. 2). There is no demonstrable weakness of any of the facial muscles.

The principles of the primary anastomosis of Stensen's duct appear to be established: (1) Repair the duct as soon as possible after the injury (certainly within eight hours); (2) use care in hemostasis; (3) insert a small ureteral catheter, a filiform bougie, a strand of silkworm gut or any other firm, pliable, sterilizable material which will not swell which may be made to act as a dowel and seton and which may be anchored in place; (4) suture the sheath of the duct over this dowel with fine interrupted silk or catgut, and (5) close the wound anatomically without drainage.

The only feature that appears to offer any difficulty is the matter of fixation of the dowel. It seems to us important that the dowel should be under control and that it should not come out prematurely. Whether or not it has a lumen is of no consequence (Dickinson), since most of the saliva will pass down between the mucous membrane and the dowel anyway, but there would be considerable likelihood of obstruction to the duct by collections of blood, leukocytes and serum and from pressure due to swelling of the cheek if the supporting dowel should not be in place during the first four or five days. Leakage at the suture line leads to collection of saliva outside the duct, which after removal through the skin of the cheek by means of a needle and syringe, may or may not result in a cutaneous fistula. In a controlled incising dowel there is safety.

The two methods of choice for the fixation it seems to us are, first to tie the dowel to a tooth or, second to pass it through the cheek and suture it to the skin. It might be objected that the latter method opens up fresh tissues to the possibility of infection. However, the dowel acts as its own drain and the likelihood of complications from this source is we are sure remote. The point of exit of the dowel through the skin leaves little or no trace after the tiny crust comes off. For an edentulous individual or for a child or adult who will be troubled by the end of the dowel in the mouth, the plan of exteriorization and suturing to the skin is preferable. A stitch passed through the opening of Stensen's duct and tied about

the dowel cuts through rapidly and does not provide certain fixation. The stitch in this position also results in local edema and a tendency toward obstruction to the flow of saliva. The dowel should lie freely in the duct as in the two methods of fixation which are recommended.

SUMMARY

The principles of primary repair bear repeating: (1) Operate as soon as possible after the injury; (2) use care in hemostasis; (3) insert a small ureteral catheter, filiform bougie, a strand of silkworm gut or any other firm, pliable, sterilizable material that will not swell, which may be made to act as a dowel and seton and which may be anchored in place; (4) suture the sheath of the duct with fine, interrupted silk or catgut, and (5) close the wound anatomically without drainage.

Fixation of the dowel is important and is best accomplished either by, first, tying it with silk to the upper canine tooth or, second as we have suggested, passing it through the cheek and suturing it to the skin.

Special Articles

PROSTATIC HYPERTROPHY

CLINICAL LECTURE AT CLEVELAND SESSION

N. G. ALCOCK, M.D.

IOWA CITY

The subject of treatment of hypertrophy of the prostate can be reduced to very simple terms by putting down at the outset the three following statements as facts and letting them form a basis for a discussion. I doubt whether there will be any one who will dispute them:

1. The enlarged prostate produces trouble only when it causes obstruction at the bladder neck.

2. The degree of obstruction is not in relation to the size of the gland but rather to the location and arrangement of the enlarged portion.

3. Obstruction is caused not by the entire enlarged portion but by enlargement in certain localities and certain directions.

In figure 1 is shown a cystogram of an enormously enlarged prostate that is causing the patient no trouble whatever while figure 2 shows a comparatively small gland that is producing almost the maximum trouble.

If the foregoing statements are true, it follows that the solution of the prostate problem is (1) to overcome bladder neck obstruction and (2) to restore as nearly as possible bladder function.

In any type of prostate surgery, not all the results are perfect even though the patient lives. Frequently some of the damage caused by the obstruction is permanent, and even though the obstruction is relieved and bladder function reestablished this permanent damage remains. Furthermore, surgery of the prostate is in a way plastic and in any plastic surgery on any organ instituted to reestablish function there will be varying degrees of perfection in the results. Therefore common sense indicates that not all the results of prostatectomy or resection will be perfect.

There are four methods of overcoming bladder neck obstruction:

1. The use of the urethral catheter either by intermittent catheterization or by the indwelling catheter. This overcomes the obstruction by putting a siphon over the dam but at best it is only temporary and it does not restore normal bladder function.

Read before the General Scientific Meeting at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 11, 1934.

2 The permanent suprapubic drain overcomes the obstruction by diverting the flow of urine through a new channel but it is inconvenient and unsatisfactory and more or less temporary and does not restore bladder function

These two methods can be used temporarily to overcome the obstruction and to repair temporary damage that the obstruction has produced These are the essential features of all preoperative treatment

3 Surgical prostatectomy, either suprapubic or perineal solves the problem by removing all the enlarged or hypertrophied



Fig 1—Prostatic hypertrophy. Patient aged 77 complained of pain in the lumbar region when doing heavy work. Family physician found a very large prostate on rectal examination and raised the question as to the prostate being the cause of the pain. No nocturia. No day frequency. No difficulty. Good stream. No residual. Urine normal. Kidney function normal. Prostate by rectum and by cysto-urethrogram shown to be very large but was producing no obstruction and therefore no operation was indicated. Back pain explained on basis of arthritis

portions of the gland. It overcomes the obstruction and it restores bladder function

So much has already been written about prostatectomy that no further discussion of that particular subject is needed here

4 Transurethral prostatic resection on the other hand, solves the problem first by determining accurately what portion, or



Fig 2—Prostatic hypertrophy in patient aged 67. Symptoms of bladder neck obstruction for two years. Much difficulty and frequency and residual urine of 500 cc loaded with pus. Prostate by rectum comparatively small and not more than a 1 on scale of 1 2 3 4. Cystogram and urethrogram (A and B) show small intravesical median lobe with typical and marked deformity of the bladder neck and prostatic urethra. Here is a very small degree of hypertrophy causing almost the maximum degree of obstruction. Resection indicated and done with satisfactory result.

portions of the gland are causing obstruction, and, secondly, by removing accurately only those portions. It overcomes the obstruction and it restores bladder function

The explanation of the recent popularity of transurethral prostatic resection is simple. An instrument that will enable the operator to determine accurately

what portion, or portions, of the gland are causing the obstruction and to remove accurately only those portions must be one that gives the operator (1) good vision, (2) facility to control hemorrhage perfectly, and (3) to remove accurately an adequate amount of tissue."

The Stearns-Davis resectoscope was the first instrument that approached these requirements, and the Stearns-McCarthy instrument is an improvement on the Stearns-Davis

There are two things that have made transurethral resection possible. Different lens systems have been adapted to the resectoscope, so that excellent vision is possible. Second, there have been developed high frequency machines that give currents that will control hemorrhage and cut tissue

Good vision with the resectoscope is possible. By means of the three lens systems—froblique, the indirect and the retroversion—the gland can be viewed

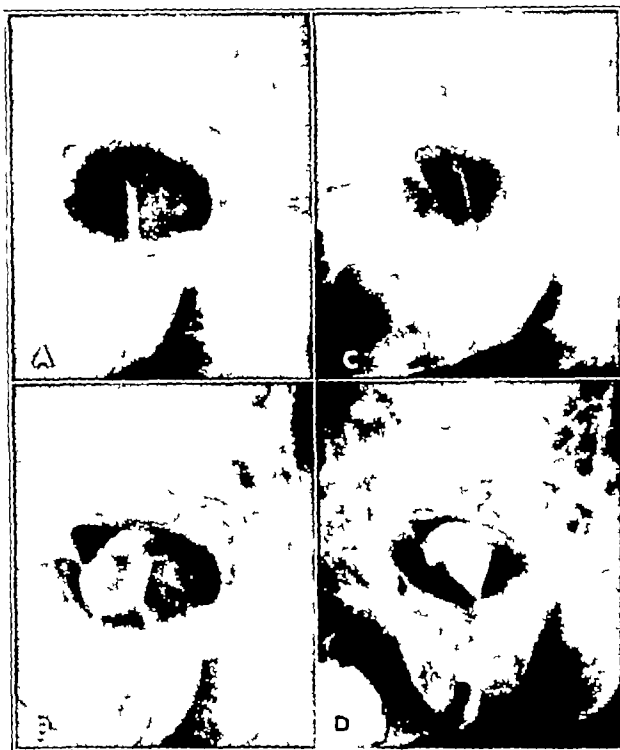


Fig 3—Prostatic hypertrophy in patient aged 84. Symptoms for five years. Complete retention ten times. Catheter almost daily for eight weeks. Residual urine 700 cc loaded with pus. Advanced arteriosclerosis. Very weak and feeble old man. Poor renal function. Very poor operative risk. Very large 3 prostate by rectum. Cystogram and urethrogram (A and B) show very large intravesical median and lateral lobes with considerable intraurethral enlargement of the laterals. Resected and 30 Gm of tissue removed. C and D show cystogram and urethrogram twelve days after resection. Note the absence of the filling defect at the bladder neck and the change in the prostatic urethra. At this time the patient was voiding easily and without difficulty and with residual urine of less than 15 cc. Much less pyuria

from every possible angle and direction. This observation when combined and coordinated with the accurate results of examination by means of the preoperative air cystogram and the urethrogram with jelly made of iodized oil gives one even a more accurate idea of the topography of the bladder neck and prostatic urethra than one could possibly get with the bladder cut wide open in front of one. This excellent vision plus experience—and I emphasize experience—enables one accurately to size up the situation and determine what portion or portions of the gland are causing the obstruction and, therefore, what tissue must be removed. This excellent vision plus the adequate high frequency

current enables one to make every cut with the greatest degree of accuracy to control all bleeding as one goes along, and to do the entire operation under the eye.

I doubt whether there are any who will dispute the statement that it is now pretty well established that the modern resectoscope does give one the means of doing accurately what one is supposed to do with it.

The first question that arises is this: How much tissue should be removed? This is easy to answer: the part or parts that are causing the obstruction should

adequate amount of tissue and I find as my experience has grown that I am removing larger and larger amounts of the gland. The largest amount removed at one sitting was 54 Gm., the largest amount removed from one patient was 134 Gm. in three sittings. In the bulk of the cases now being done, from 15 to 35 Gm. is removed. Usually it is not particularly difficult with experience to remove from 25 to 40 Gm. at one sitting. In the beginning the time consumed at a resection was from an hour and a half to two hours and a half. At present the patient is seldom kept on the table more than fifty minutes and in the average case the resection is completed in from twenty to twenty-five minutes. In general it may be said that from one third to three fourths of the gland is removed.

Figures 3, 4 and 5 represent preoperative and post-operative cysto-urethrograms in cases in which resection has been done and an inspection of these pictures I think will demonstrate that adequate amounts of tissue can be removed.

The tables give the results in numbers and percentage of 600 consecutive resection cases and 600 consecutive prostatectomies that I have done myself. This is simply a repetition of the tabulated results that I presented before the American Medical Association a year ago with the addition of 200 cases, and these tables add nothing to what the former ones showed. These 600

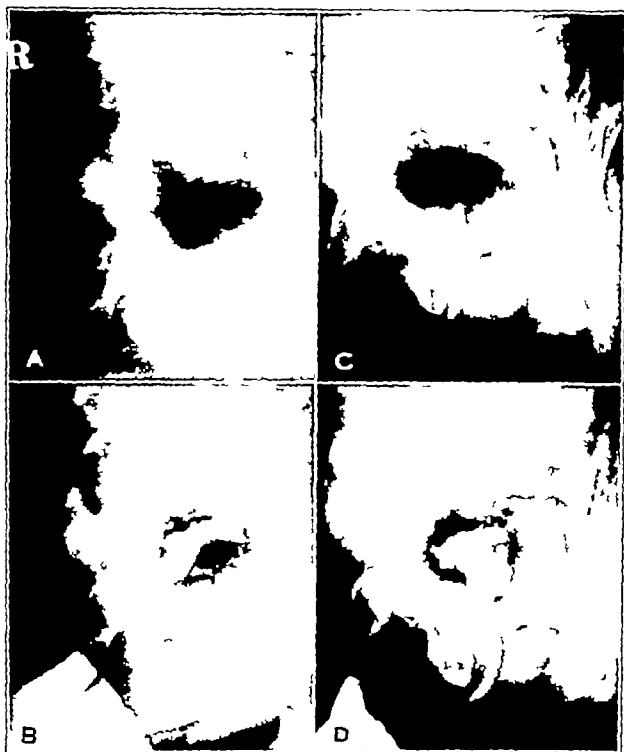


Fig 4—Prostatic hypertrophy. The patient aged 97 had symptoms for ten years. Complete retention many times. Residual as high as 1000 cc. Catheter daily for four weeks. A and B are the cystogram and urethrogram before resection. Note the quite large intravesical median lobe and the very large intra urethral lateral lobes. Resected at three sittings, not one of which was more than twenty-five minutes in duration. 56 Gm. of tissue removed. C and D are the cystogram and urethrogram three days after the third resection at which time there was complete relief of the obstruction. Patient voided easily and without difficulty and without residual. Note the change at the bladder neck and in the prostatic urethra.

be cut away. In some prostates this requires the removal of only a small amount of tissue while in others it may mean a considerable amount.

At this point it might be well to ask this question: How much does the average hypertrophied prostate that is removed surgically actually weigh? These prostates vary greatly in size. A gland the size of a golf ball weighs 43 Gm., one the size of a hen's egg weighs 51 Gm., one the size of a lemon weighs 140 Gm., and one the size of an orange weighs 314 Gm. In the records of my own prostatectomies the weight of the gland removed was recorded in each of 433 cases, the largest was 270 Gm. and the average weight of the 433 was 38.3 Gm. Therefore, if with the resectoscope one removes from 15 to 35 Gm. one is removing a very large part of the average gland. In 85 per cent of the first hundred cases that I did by the resection method I removed less than 10 Gm. of tissue, in the last hundred—the eighth hundred—more than 10 Gm. was removed in 90 per cent of the cases, and in only 2 per cent was less than 5 Gm. removed. I know from my experience that it is absolutely essential to remove an

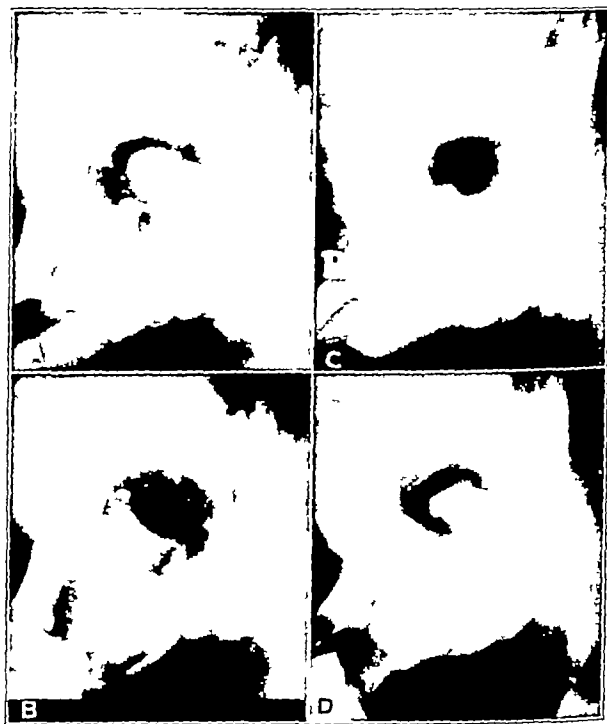


Fig 5—Prostatic hypertrophy. The patient aged 80 had symptoms for eight years. Complete retention eight times. Catheter four times daily for six weeks. Gross hematuria with clots for four weeks. Much loss of blood, hemoglobin 50 per cent. Much pyuria. Condition very poor. The preoperative cysto-urethrogram (A and B) shows an enormous intravesical median lobe with almost as much intra urethral enlargement of the laterals. Resected in three sittings at six day intervals with removal of 33, 51 and 50 Gm. respectively, a total of 134 Gm. C and D represent the cystogram and urethrogram eight days after the third resection. Note that the intravesical median lobe is gone and that the prostatic urethra is large and straight. Patient voids easily and freely. Residual 50 cc. and four days later there was none. Only slight pyuria. No hematuria since first resection. Hemoglobin 90 per cent. General condition much improved.

resections are the cases done up to December 1933. Since then 200 additional cases have been added to this list. Again I wish to emphasize the fact that in this

series there has been no selection of cases and that it does not include bars, contractures and small median lobes, or so called prophylactic prostatectomies. In every one of these 600 cases I would have formerly recommended a prostatectomy. There is this difference, however, even in these two series. It will be noted that the average age of the prostatectomy patients was 66,

TABLE 1—General Summary

	Number		Percentage	
	Resec- tion	Prostatec- tomy	Resec- tion	Prostatec- tomy
Total	600	600		
Benign	490	557	81.7	92.8
Malignant	110	43	18.3	7.2
Age				
00-100	2	0	0.3	0.0
80-90	43	20	7.2	3.3
70-80	323	202	53.5	33.7
60-70	200	301	33.3	50.0
50-60	22	68	3.7	11.3
40-50	0	5	0.0	0.8
Over 70	318	222	63.0	37.0
Under 70	222	318	37.0	63.0
Average age	72.3	66.3		
Hospital days	10.3	71.4		
Deaths	23	134	4.0	22.3

while that of the patients in whom resection was done was just about 73, and if I should add to this list the additional 200 cases that I have done since this table was made it brings the average age of resection patients to over 73 years. The average age of any series of prostate patients is quite a fair index as to the operative risk of the individual patient. It will be noted that 63 per cent of the resection patients were over 70 years of age and that only a very small percentage of them were under the age of 60. It has been my observation that there are very few men under the age of 60 who really need a prostatectomy or a prostatic resection. The youngest patient was 55 and the oldest 97.

The second thing that stands out is the difference in hospitalization. The prostatectomy patients were in the hospital for an average of seventy-one days, the resection patients were in for an average of sixteen and a fraction days and this sixteen and a fraction days includes the preoperative and postoperative period and it covers the entire period that these patients are under our observation. When they come to us they go immediately into the hospital and when they leave the hospital they leave us entirely and go back to their home physicians.

The third thing to which I wish to call attention is the difference in the mortality rate. In the prostatectomies the mortality rate is 22.3 per cent, while in the resections it was 4.6 per cent. It has been said that this 22.3 per cent mortality for prostatectomies is scandalous and I will admit the allegation, and yet when one considers that the bulk of these cases were in the charity service it is well within the range of the mortality rate that goes with prostatectomies in similar services and, in fact, it is lower than that reported from several charity services. Furthermore, I believe that 20 per cent is nearer the mortality rate of prostatectomies the country over than is the rate that is found in series reported in the literature. I have also shown that by the manipulation of figures such as dropping out those who died following the first operation and also dropping out the carcinoma cases, this 22.3 per cent mortality could be reduced to something like 5 per cent, but there is only one way of determining mor-

taity, and that is the question as to whether the patient is alive or dead. In the resection cases the mortality rate in the first hundred cases was 15 per cent. Not all of these deaths were due directly or indirectly to the resection but the patients died just the same. As experience has grown it will be noted that the mortality rate has consistently dropped. For the additional 200 cases done since this tabulation was made, the mortality rate is less than 2 per cent. The mortality rate for the last 500 cases done is 1.4 per cent and the average age of the dead patients in this group is over 78 years.

These tabulations give the results that can be set down in numbers and percentage but they do not give the true picture either pro or con. I believe that the only true picture that one can get of the difference in these two methods is that which one sees in his everyday experience in the hospital wards. I cannot put down in tabulated form or even in words the vast difference in the pictures of the two situations—all in favor of resection. I am convinced that resection carries with it much less risk to the patient and gives immediate postoperative results that are as good if not much better.

What then, are the ultimate results? There are two things that stand out against resection: one is infection and the other pertains to functional result.

Infection is a much more common condition following resection than following prostatectomy. I think that no one will dispute that. In my patients that have died infection has played the major role. Hemorrhage has had nothing whatever to do with any mortality. But even with this bad element the patients do get well. And a mortality of 1.4 per cent for the last 500 does not speak for the severity of this infection.

In the beginning, one of the most disturbing features in the functional result was the distressing frequency

TABLE 2—Mortality

	Number		Percentage	
	Resec- tion	Prostatec- tomy	Resec- tion	Prostatec- tomy
Total	28	134	4.0	22.3
Benign	19	112	3.3	20.1
Malignant	9	22	8.1	51.1
Postcystostomy		90		13.7
Postprostatectomy		44		8.6
Ages				
90-100	0	0		
80-90	4	7	9.3	35.0
70-80	18	57	5.4	28.2
60-70	0	50	2.0	19.3
50-60	0	11	0.0	16.2
1st 100	15	10	15.0	19.0
2d 100	4	22	4.0	22.0
3d 100	6	23	6.0	28.0
4th 100	1	25	1.0	23.0
5th 100	2	17	2.0	17.0
6th 100	0	20	0.0	20.0
Last 50	13	115	2.6	23.0
Last 400	9	93	2.2	23.2
Last 300	3	65	1.0	21.6
Last 200	2	37	1.0	18.5
Last 100	0	20	0.0	20.0
Average age	70.7	63.1		

of urination that many of these resection cases showed. In practically all of them there was considerable of it immediately following the operation and in many it continued for weeks and months. In some of these earlier cases it was so great that I considered the results very unsatisfactory but in a vast majority of them the condition eventually disappeared. In some of them the removal of additional tissue corrected it. In the later

cases, and particularly since I have been removing larger and larger amounts of tissue, this phenomenon has been of minor importance. All in all it is quite insignificant.

I do not doubt that some of the patients in whom I have performed resection have had, or will have, prostatectomies. I know of only one so far who has had his prostate removed. I do not doubt that if I could follow every one of them I would find probably several who have had this experience. Several of the earlier patients have returned for additional resection but I do not feel that this is anything against resection because I am conscious of the fact that at least the first 200 cases were not done as well as they might have been done. I do not doubt that some of the patients who are now being operated on and operated on well will come back later on for additional resection, but I am sure as I watch these cases that the number is going to be very small. Of course, some of them will come back just as some of the prostate patients had to be prostatectomized a second time.

Now the all important question arises as to what cases should be treated by resection and what cases should not. A year ago I said that there were two small groups of cases in which I felt that resections should not and could not be done. One group was those in which the instrument could not be introduced into the bladder. That still holds true, of course. This is a very small group. In a series of over 800 cases there have been five such cases. The second group that I said a year ago was not amenable to resection was those in which the enlargement of the prostate was considerable and was confined to the space between the two sphincter muscles. I believe now that resection can be done in those cases. I am therefore willing to go on record in saying that I believe it is possible to perform resection in any case in which the instrument can be introduced into the bladder.

Whether a man shall do resections or prostatectomies depends entirely on which method gives him the best results, and the only way that he can determine this is by looking his results squarely in the face and being guarded by what he sees and not by what some one else does. Therefore the question of doing resections or prostatectomies is purely a personal one. The results that one gets in resections depend almost entirely on how well the actual resection job is done and this is in turn determined largely by the amount of experience that the operator has had. This is, I think, the most serious drawback to resection. It is a thing that cannot be taught and can be learned only by hard, tedious experience. Therefore, if a man is going to become adept at doing it he must have access to a large volume of material and the number of men who have access to such a large volume of material is comparatively small. Therefore, resection is certainly not the operation for the occasional operator. In my own experience it took at least 200 cases crowded into a comparatively short period of time to teach me how to do them only fairly well.

There is one thing more that might be said. I believe that in the end it is going to be found that the question as to whether resections or prostatectomies are going to be done will be determined not by the general surgeon or the urologic surgeon but by the home physician. He is the man who sees the ultimate and final result and he is the one that is going to determine which of these operations his patients are going to have.

GLANDULAR PHYSIOLOGY AND THERAPY

THE POSTERIOR HYPOPHYSIS

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BALTIMORE

NOTE.—This article and the articles in the previous issues of THE JOURNAL are part of a series published under the auspices of the Council on Pharmacy and Chemistry. Other articles will appear in succeeding issues of THE JOURNAL. When completed, this series will be published in book form—Ed

The primary structural elements of the posterior lobe of the hypophysis are the neuroglial cells, the pituicytes and the nerve fibers. The neuroglial cells resemble those found elsewhere in the central nervous system. In the pituitary some of them have become differentiated to form pituicytes,¹ highly branched cells that have granules in the cytoplasm. The presence and significance of nerve fibers in the posterior lobe are still an open question.

ORIGIN AND PATH OF ESCAPE OF THE SECRETION

None of these structures, with the exception perhaps of the pituicytes, are regarded as secreting elements in the ordinary sense.

Many investigators believe that the secretion is formed by cells of the pars intermedia, which envelop and interdigitate the neural lobe to a greater or less extent, depending on the species.² This view is not in harmony with newer studies, which show that extracts from the neural lobe of the chick³ and whale possess pressor, oxytocic and antidiuretic properties, although in these animals the structure of the neural lobe is such that the possible admixture of pars intermedia in the extract is excluded. Another widely accepted hypothesis is that this secretion is derived from the Herring bodies.⁴ These acellular structural elements, irregular in number, size, shape, staining capacity and distribution, are considered to be a secretion antecedent migrating from cellular derivatives of the pars intermedia into the lumen of the third ventricle, hence the alleged presence of posterior lobe secretion in the cerebrospinal fluid. Experiments now in progress throw doubt on the reality of these Herring bodies and indicate that they may be fixation artefacts. These studies tend to show that the neuroglial tissue is infiltrated by a homogeneous stainable material which on fixation is precipitated out in the form of aggregates (Herring bodies). In addition, the most refined assay methods have failed to reveal the presence of the posterior lobe secretion in the cerebrospinal fluid.⁵

The simplest explanation not inconsistent with the facts is that the posterior lobe secretion is elaborated by the intrinsic elements of the lobe itself and enters

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1 Bucy P. C. The Hypophysis Cerebri. Cytology and Cellular Pathology of the Nervous System 2 707 1932.

2 Lewis Dean and Lee, F. C. On the Glandular Elements in the Posterior Lobe of the Human Hypophysis. Bull. Johns Hopkins Hosp. 41 241 (Nov.) 1927.

3 DeLawder A. M. Tarr Lloyd, and Geiling E. M. K. The Distribution in the Chicken's Hypophysis of the So-Called Posterior Lobe Principle. J. Pharmacol. & Exper. Therap. 51 142 (June) 1934.

4 Cushing Harvey. Neurohypophyseal Mechanisms. Lancet 2 119 (July 19) 175 (July 26) 1930.

5 Friedman G. S. and Friedman M. H. Examination of Cerebrospinal Fluid for Oxytocic Activity as Tested by Rabbit Uterine Fistula Preparation. Am. J. Physiol. 103 244 (Jan.) 1933. Simon A. The Secretion of the Posterior Lobe of the Hypophysis After the Administration of Drugs. J. Pharmacol. & Exper. Therap. 49 375 (Nov.) 1933. The Pressor and Oxytocic Content of the Hypophysis of Rats under Various Conditions. Am. J. Physiol. 107: 220 (Jan.) 1934.

directly into the general circulation by the blood channels recently described by Popa and Fielding⁶

It is generally conceded that the cells of the pars intermedia elaborate the melanophore expanding hormone, or intermedin, which is discussed in a separate paper by Professor Zondek⁷

THE CHEMISTRY OF POSTERIOR LOBE EXTRACTS

The active constituents present in posterior lobe extracts, although quite suitable for clinical work, have not as yet been isolated as chemical individuals. Abel and his associates⁸ have isolated a tartrate of high purity possessing pressor, oxytocic and antidiuretic properties. Kamm and his associates,⁹ and more recently Stehle¹⁰ and others, have separated from pituitary extracts two fractions, pitressin and pitocin which have been fairly highly purified. Pitressin has pressor and antidiuretic properties, and some melanophore activity which decreases with purification and is not due to a hormone derived from the pressor and oxytocic principles but to a separate entity elaborated by the cells of the pars intermedia.⁷ Pitocin has mainly oxytocic activity, its other effects are due to impurities. Gulland and Newton¹¹ have succeeded in making very potent preparations of this substance. Many of the problems relating to both the chemistry and the physiologic actions of these substances must await final solution until the "mother substance" of Abel,¹² or the fractions derived therefrom or existing separately,⁹ are obtained as chemically pure compounds. These should be of astounding potency, judging from the high degree of physiologic activity exhibited by impure preparations.

At present there is available an international pituitary powder against which all commercial preparations are standardized. The unit of pituitary is the activity contained in 0.5 mg of standard pituitary powder (U S P X).

PHYSIOLOGIC EFFECTS

Posterior pituitary extract (solution of pituitary, U S P X) exerts striking physiologic actions on the cardiovascular, respiratory and renal systems, on smooth muscle, on certain glandular structures and on the metabolism. The separation of pitressin and pitocin from pituitary extracts necessitated apportioning these multiple pharmacodynamic actions. Pitressin elicits the cardiovascular, respiratory, renal, intestinal and certain metabolic effects, and pitocin the oxytocic action. Both substances (and solution of pituitary also)¹³ cause hyperglycemia and act as antagonists to insulin. Since neither substance has been prepared free of the other, there is some overlapping of the physiologic effects that they produce.

CARDIOVASCULAR AND METABOLIC EFFECTS

In man, therapeutic doses of either solution of pituitary U S P or of pitressin given intramuscularly or subcutaneously do not cause any significant rise of blood pressure in spite of the marked pallor, which would lead one to infer that the arterial tension is elevated.¹⁴ There is a decided but brief fall in pulse rate, oxygen consumption and cardiac output, which is followed by a more prolonged rise.¹⁶ Pitocin causes only a slight increase in oxygen consumption and negligible changes in the circulation. The decreased cardiac output after solution of pituitary and pitressin may be due to a reflex initiated by the threatened increase in blood pressure that would result from the constriction of the cutaneous vessels. The subsequent elevation in cardiac output and pulse rate is due to the accumulation of catabolites during the period of decreased oxygen consumption after administration of these drugs. This accumulation of catabolites causes a condition of "oxygen debt," the liquidation of which is manifested in a later increase in oxygen consumption (chart 1).

In trained unanesthetized dogs the effects of these drugs in larger doses per kilogram of body weight

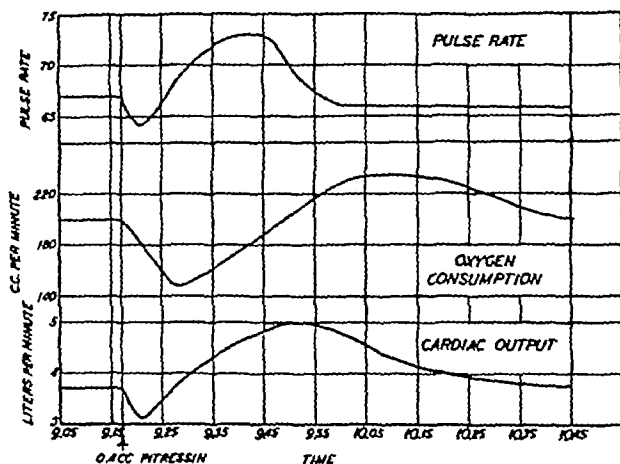


Chart 1.—The effect of an intramuscular injection of 0.4 cc of pitressin into a normal man. The pulse rate and cardiac output are decreased below the normal for a brief period followed by an increase of more prolonged duration. Similar changes occur in the oxygen consumption except that both the decrease and the increase are more prolonged than in the case of the cardiac functions.

given intravenously, are more intense but essentially similar to those found in man, except for the blood pressure.¹⁵ For a brief period the venous blood approaches an arterial character, owing to the failure of the body to take up oxygen, during this period the oxygen consumption falls markedly, lactic acid accumulates in the tissues (chart 2) and there is a diminished blood flow,¹⁷ as measured with a modified Reinstromuhr.

The blood pressure response in experimental animals to solution of pituitary and to pitressin is determined by several factors such as dosage, time interval between injections, type and depth of anesthesia and species of

6 Popa, G. T. and Fielding, U. A Portal Circulation from Pituitary to Hypothalamic Region, *J. Anat.* 65: 88 (Oct.) 1930. Espinasse, P. G. Development of Hypophyseoportal System in Man *ibid.* 68: 11 (Oct.) 1933.

7 Zondek, Bernhard. Chromatophorotropic Principle of the Pars Intermedia of the Pituitary Gland, *J. A. M. A.* 104: 637 (Feb. 23) 1935.

8 Abel, J. J., Rouiller, C. A., and Geiling, E. M. K. Further Investigations on the Oxytocic Pressor Diuretic Principle of the Infundibular Portion of the Pituitary Gland, *J. Pharmacol. & Exper. Therap.* 22: 289 (Nov.) 1923.

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10 Stehle, R. L. New Method for Separating Pressor and Oxytocic Substances from Posterior Lobe of Pituitary Gland, *J. Biol. Chem.* 102: 573 (Oct.) 1933.

11 Gulland, J. M., and Newton, W. H. The Oxytocic Principle of the Posterior Lobe of the Pituitary Gland, *Biochem. J.* 26: 337 1932.

12 Abel, J. J. On the Unitary Versus the Multiple Hormone Theory of Posterior Pituitary Principles, *J. Pharmacol. & Exper. Therap.* 40: 130 (Oct.) 1930.

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14 Moffat, W. M. The Effect of Pituitrin Injections on Blood Pressure in Man, *Am. J. M. Sc.* 186: 854 (Dec.) 1933.

15 Grollman, A., and Geiling, E. M. K. The Cardiovascular and Metabolic Reactions of Man to the Intramuscular Injection of Posterior Pituitary Liquid (Pituitrin), Pitressin and Pitocin, *J. Pharmacol. & Exper. Therap.* 46: 447 (Dec.) 1932.

16 Geiling, E. M. K., and DeLawder, A. M. Metabolic Changes Following the Intravenous Injection of Posterior Pituitary Extracts and Their Correlation with the Well Known Pharmacodynamic Action of the Drugs, *Bull. Johns Hopkins Hosp.* 51: 1 (July) 1932. Changes in Total Gaseous Metabolism of Unanesthetized Dogs After Intravenous Injection of Posterior Pituitary Extracts, *ibid.* 51: 335 (Dec.) 1932.

17 Geiling, E. M. K., Herck, J. F., and Essex, H. E. The Effect of Posterior Pituitary Preparations on the Blood Flow of the Normal Intact Dog, *J. Pharmacol. & Exper. Therap.* 51: 18 (May) 1934.

experimental subject. Small doses given to normal anesthetized dogs or cats cause a sharp rise of pressure due to peripheral vasoconstriction. Repeated doses give a lessened response, and tolerance is easily acquired. Larger doses given to intact animals with or without anesthesia¹⁸ may cause a fall in pressure followed by a rise. The depressor effect is due to coronary constriction¹⁹. In experiments in which cardiac effects are eliminated by the use of the Gibbs artificial heart, large doses of solution of pituitary or pitressin invariably cause a sharp rise of pressure, and subsequent injections produce little or no effect²⁰. Such experiments indicate that the depressor action is cardiac and that the tolerance factor is vested in the peripheral structures.

RESPIRATORY EFFECTS

The respiratory changes are secondary to the circulatory effects. In unanesthetized animals there is a quickening of the respiratory rate, interspersed with periods of cessation of breathing⁸.

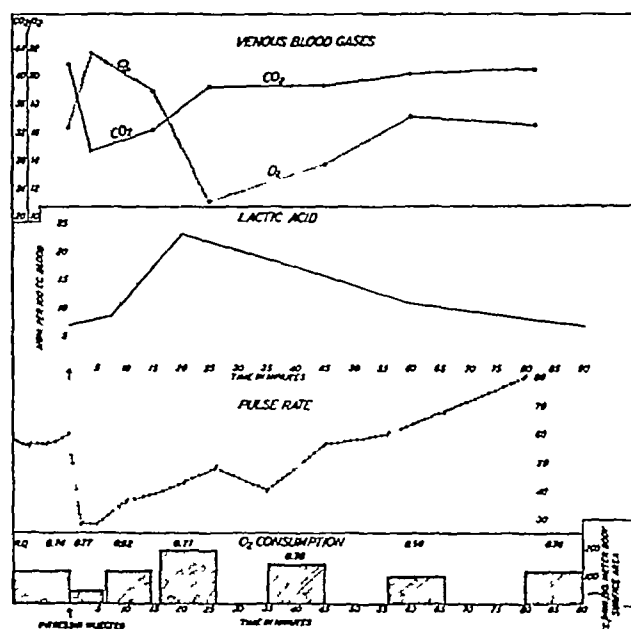


Chart 2.—The effect of intravenous injections of pitressin (from 0.4 to 0.5 cc.) on the venous blood gases, lactic acid, pulse rate and carbon dioxide consumption of a normal dog weighing 16 kg.

RENAL EFFECTS DIURETIC-ANTIDIURETIC ACTION

This property is associated with the pressor fraction of the extracts, the positive results obtained with pitocin are due to contamination of the latter with small amounts of the pressor principle. Therapeutic doses of either solution of pituitary or pitressin cause a marked antidiuretic effect, lasting some hours, in patients with diabetes insipidus or in normal subjects who have previously ingested water by mouth. This action is definitely an effect on the kidney²¹ and is

18 Gruber C. M. The Blood Pressure in Unanesthetized Animals as Affected by Vasopressin. Oxytocin Pituitary Extract and Other Drugs. *J Pharmacol & Exper Therap* 36: 155 (June) 1929.

19 Raginsky B. B. Ross, J. B. and Stehle R. L. The Action of Pituitary Extract upon Blood Pressure. *J Pharmacol & Exper Therap* 38: 473 (April) 1930. Melville K. I. Direct Observations of the Influence of Various Coronary Dilator Agents upon Coronary Constriction Produced by Pituitary Extract. *Arch internat de pharmacodyn et de therap* 44: 316 (Feb 15) 1933. Ross, J. B. Dreyer N. B. and Stehle R. L. The Cardiac Action of Pituitary Extract (Posterior Lobe). *J Pharmacol & Exper Therap* 38: 461 (April) 1930.

20 Gibbs O. S. and Geiling E. M. K. Unpublished data.

21 Burgess W. W. Harvey, A. M. and Marshall E. K. Jr. The Site of the Antidiuretic Action of Pituitary Extract. *J Pharmacol & Exper Therap* 40: 237 (Oct.) 1933. Gersh I. Reabsorption of Water During Pituitary Antidiuresis. *J Pharmacol & Exper Therap* 52: 231 (Oct.) 1934.

thought to be due to an increased reabsorption of water by certain cells of the tubule.

A diuretic effect is best elicited with small doses injected into anesthetized rabbits rendered diuretic either by green-feeding, by rapid intravenous infusion of isotonic sucrose, or by means of phlorhizin. Unanesthetized animals with low urine flow may also respond in this way. This diuresis may be due to an increased glomerular filtration or to a decreased reabsorption of water by the tubule.

OXYTIC EFFECTS

A number of workers (Knaus,²² Robson²³ and their respective co-workers, and Reynolds,²⁴ Moir²⁵ and others) have made it clear by *in vitro* and *in vivo* experiments on the uterus that the nature and the degree of the reaction of the uterine musculature to posterior lobe preparations depend on (a) species of the animal, (b) the phase of the menstrual or estrous cycle, (c) whether the uterus is gravid or nongravid, (d) the stage of pregnancy—early or late, during parturition, or in the puerperium. Some of the variations in the uterine response become more intelligible when viewed in the light of the newer researches dealing with the effect on the uterus of the estrogenic and corpus luteum hormones and their interplay with the hormones of the pituitary from both the anterior and the posterior lobes. Briefly stated, the reaction of the uterine muscle to pituitary preparations is markedly affected by the nature of that ovarian placental or anterior pituitary hormone whose influence is preponderant at the time of injection. During the early stages of pregnancy the human uterus does not react to pitocin, probably because of the inhibitory effect of the luteal secretion. It does, however, respond to small doses of pitressin, whether this is an effect of the drug *per se* or is due to mechanical factors remains a mooted point. Later in the gestation period the reactivity to pitocin returns, and during parturition the uterus is very reactive to this substance and also to solution of pituitary. It is at this time that these drugs are mainly used by obstetricians. The influence of theelin in rendering the uterus more highly reactive comes into play here. In the puerperium, however, while involution is in progress, pitocin evokes little or no response. The excised horns of the virgin guinea-pig's uterus are very reactive to solution of pituitary and to pitocin, this action forms the basis of the official method of assay of these drugs.

ACTION ON INTESTINE

Variations in species of animals, in technic and in the portion of the gastro-intestinal tract used account for the lack of concordant results obtained by different workers with these drugs on the intestine. Strips of rat's ileum are very reactive to pitressin, and this has been suggested as a method of assay for this drug²⁶. The constrictor effects are due to pitressin²⁷.

22 Knaus, Hermann. Die periodische Fruchtbarkeit und Unfruchtbarkeit des Weibes. Vienna W. Maudrich 1934.

23 Robson J. M. Recent Advances in Sex and Reproductive Physiology. Philadelphia P. Blakiston's Son & Co. 1934.

24 Reynolds S. R. M. The Effect of Certain Calcium Salts on the Rhythmically Contracting and Quiescent Uterine Fistula With Observations on the Action of Posterior Pituitary Extracts. *Am. J. Physiol.* 106: 358 (Aug.) 1933.

25 Moir, Chassar. Recording the Contraction of the Human Pregnant and Nonpregnant Uterus. *Edinburgh M. J.* 41: 93 (Aug. Tr. Obst. Soc.) 1934.

26 Simon.
27 Gaddum J. H. Some Properties of the Separated Active Principles of the Pituitary. *J. Physiol.* 65: 434 (Aug.) 1928. Isaac, S. and Siegel R. Therapeutische Versuche mit einer besonderen Fraktion des Hypophysenhinterlappens bei Diabetes insipidus nebst Bemerkungen über ihren Wirkungsmechanismus. *Klin. Wchnschr.* 8: 1700 (Sept. 10) 1929. Melville K. I. and Stehle R. L. The Actions of Pituitary Preparations upon the Intestines of the Dog and the Rabbit. *J. Pharmacol. & Exper. Therap.* 50: 165-174 (Feb.) 1934.

CLINICAL USES

Conservative obstetricians restrict the administration of posterior pituitary preparations largely to the treatment of postpartum hemorrhage and to cases of incomplete abortion in which repeated moderate doses (0.5 cc) frequently bring about spontaneous completion. Pituitary extracts are employed at times for the induction of labor, for example, intranasal application or the cautious use of small intramuscular doses following the administration of castor oil and quinine, the latter procedure however, is occasionally fraught with danger to the child. Intranasal applications are often an aid in producing satisfactory uterine contractions in cases of primary or secondary inertia. It is the practice in many clinics to use solution of pituitary intramuscularly immediately after the birth of the child to hasten separation of the placenta and to decrease bleeding during the third stage. Such a procedure, however, may produce an hour-glass contraction of the uterus and thus increase the incidence of manual removal of the placenta. In rare cases intramuscular injections of the drug will not overcome atony and in such instances excellent results are obtained by the intravenous use of from 3 to 5 minims (0.2 to 0.3 cc). No significant alterations of blood pressure or other untoward effects following solution of pituitary intramuscularly have been noted in the obstetric clinic of the Johns Hopkins Hospital and hence its use seems safe in the toxemias of pregnancy. In addition, no clinical advantage resulted from the employment of pitocin, in fact in the Hopkins clinic stronger contraction of the uterus was elicited with solution of pituitary than with pitocin. Contrary results are reported from other clinics.

Solution of pituitary and pitressin are also employed to allay postoperative abdominal distention and in the treatment of diabetes insipidus. Posterior pituitary preparations may also be used to overcome the effects of an overdose of insulin, since the two are antagonistic.

DISEASES ASCRIBED TO HYPERSECRETION

In recent years, attempts have been made to explain some of the baffling and serious diseases such as the toxemias of pregnancy, especially eclampsia, and angina pectoris, on the basis of an excess secretion by the posterior lobe.²⁸ The data on which these claims rest are not very convincing and more recent experiments have not substantiated the earlier work.²⁹

CONCLUSION

It seems that in spite of the huge volume of work on the posterior lobe secretion one cannot assign with certainty any specific physiologic role in the animal economy to this potent autopharmacologic agent. Possibly the pressor component acts as an efficient regulator of the exchange of metabolites between the blood and the tissues (capillary hormone) and exercises a renal function, and the oxytocic portion may function during parturition to quicken and render more effective the uterine contractions, which result in the expulsion of the products of conception.³⁰

28. Anselmino K. J., Hoffmann F. and Kennedy W. P. The Relation of Hyperfunction of the Posterior Lobe of the Hypophysis to Eclampsia and Nephropathy of Pregnancy. *Edinburgh M. J.* 39: 376 (June) 1932.

29. Byrom F. B. and Wilson C. The Alleged Pituitary Origin of Eclampsia and Preeclamptic Toxemias of Pregnancy. *Quart. J. Med.* 3: 361 (July) 1934.

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Therapeutics

THE THERAPEUTICS OF THE COOK
COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE—In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The articles will be continued from time to time in these columns. When completed the series will be published in book form.—ED

THERAPY OF FUSOSPIROCHETOSIS (FUSO-
SPIRILLOSIS)

Correct diagnosis is of great importance, because treatment is almost specific. Two special localizations of the infection are discussed here: oropharyngeal and bronchopulmonary. For localization on genitals, see Therapy of Chancroid and Bubo.

OROPHARYNGEAL FUSOSPIROCHETOSIS (VINCENT'S ANGINA,
VINCENT'S STOMATITIS, TRENCH MOUTH)

Diagnosis—Single or multiple, grayish white, foul smelling, necrotic patches are present in the mouth or throat, which are easily removed, leaving a bleeding ulcer with a characteristically slight zone of redness and usually little or no glandular reaction in the neck. The feeling of general well being is often in marked contrast to the local pathologic changes. Glandular involvement and fever may however, be present. The condition must be differentiated from diphtheria and syphilis, also from scurvy, granulopenic angina and mercurial stomatitis. It accompanies sprue or psoriasis.

The finding of the spirilla and fusiform bacilli easily stained by basic dyes, such as gentian violet, is not conclusively diagnostic, because such organisms occur in any dirty mouth. They are constant in pyorrhea pockets. They may therefore be found in diphtheria and in any other of the conditions requiring differentiation. Hence the absence of the characteristic manifestations of the diseases with which it may be confused is important for diagnosis.

Prophylaxis—1 As this is clearly a communicable disease, commonly conveyed by eating and drinking utensils, proper disinfection of these and daily mouth hygiene as well as dental asepsis are mandatory. Soap has a definitely spirillicidal effect, hence its presence in a dentifrice is of prophylactic value.

2 Improvement of general resistance is also of prophylactic as well as curative importance, because Vincent's spirochetes are probably pathogenic for man only when either local or general resistance is low.

Treatment—1 Oxidizing agents are efficient because lowered oxygen tension is a necessary factor for the development of these anaerobic organisms.

(a) Solution of Hydrogen Dioxide, diluted with an equal amount of warm water, should be used for the removal of the necrotic tissue and for exposing the infected area to direct treatment with any other agent.

(b) Sodium perborate made into a thick paste with water is spread over the ulcerated area and all over the teeth and kept in the mouth for about five minutes, then the mouth may be rinsed with warm water. While

the patient may be trained to do this, results are more reliable when the treatment is carried out by the physician. In addition, a 2 per cent solution of sodium perborate may be used as a mouth wash and gargle three times daily or even every hour. Sodium perborate is especially useful in the milder cases. Its solution must always be freshly prepared.

Sodium Perborate Aromatized

Gluside	0.01 Gm
Oil of peppermint	0.60 cc
Sodium perborate	30.0 Gm

M Label: Teaspoonful or two in tumblerful of warm water as mouth wash or gargle.

(c) Chromium trioxide may be employed as an alternative office procedure, for use most especially in the severer cases. Seven per cent solution of chromium trioxide is applied to the ulcers by means of cotton pledgets on stainless foil carriers, after the ulcers have been cleansed by hydrogen dioxide and dried and the mouth has been packed with gauze or cotton rolls. The chromic acid solution is permitted to dry, and the surface is covered with Compound Tincture of Benzoin, which retains the chromic acid in place for a longer time. A simpler method is to place crystals of chromium trioxide on the ulcers and then to give the patient a mouthful of Solution of Hydrogen Dioxide, which reacts with the chromium trioxide, forming a black substance that soon decomposes into chromic acid and nascent oxygen.

2 Nearsphenamine displays its spirillicidal powers in this disease so definitely that it may be used alone or as a succedaneum to one of the foregoing methods. After cleansing with Solution of Hydrogen Dioxide and careful removal of the oxidizing agent and drying, a 10 per cent solution of nearsphenamine in glycerin is thoroughly applied to the raw surfaces by means of cotton applicators once or even two or three times daily. It should remain in place for a few minutes before the patient is permitted to rinse his mouth. There is no harm in swallowing the excess nearsphenamine. The glycerin solution keeps well. In the intervals between applications, the patient may use 2 per cent sodium perborate solution every hour.

If the condition proves obstinate, 0.3 Gm of nearsphenamine may, in addition, be injected intravenously at intervals of several days. In children, a daily dose of acetarsone (one fourth of the 0.25 Gm tablet daily) dissolved in a tablespoonful of milk or of water is reported to give satisfactory results. For adults, one and one-half tablets daily are advocated.

Surgical work in the mouth, even scaling and polishing of the teeth should not be undertaken until the acute symptoms have subsided.

General Therapy—Smoking should be interdicted and a vitamin rich diet insisted on. Cathartics and analgesics may be administered as required.

BRONCHOPULMONARY FUSOSPIROCHETOSIS

Diagnosis—In cases of cough with rather copious greenish brown expectoration possibly blood tinged and generally foul smelling, which may resemble that of tuberculosis or pulmonary abscess, the microscopic examination of the sputum (preferably collected by means of the bronchoscope so as to be uncontaminated by mouth secretion) will make the diagnosis of the type of infection, whose localization may be determined by physical and roentgen examination as bronchial or bronchiectatic pneumonitic abscess, or gangrene.

Prophylaxis—Oral hygiene should be employed.

Treatment—1 Arsphenamine. The importance of the early recognition of this variety of infection lies in the fact that early cases respond to intensive arsphenamine therapy (see Therapy of Syphilis). Chronic lesions, especially if the abscess has acquired a fibrous capsule, are very stubborn.

2 Peroral Pulmonary Drainage. (a) As coughing acts as a powerful ally to ciliary action in drainage of the bronchial tract, nothing is more pernicious than to check it by means of opiates, including, of course, codeine, which should never be prescribed in any productive cough. An abundance of fluid and of an alkaline expectorant (see Therapy of Cough) is, on the other hand, likely to be helpful.

(b) Postural drainage is carried on by having the patient assume a head-down posture two or three times daily and accompany this by deep respirations, which are likely to provoke productive coughing. The patient selecting the times for this treatment when he feels the greatest inclination to cough. It might save him a great deal of coughing in the intervals, as well as favor healing.

(c) Bronchoscopic aspiration, at intervals of possibly a week or less, is likely to be a powerful adjunct.

3 Surgery. External drainage of suppurative foci may be considered in suitable cases of nontuberculous suppuration resisting the faithful use of the other methods of treatment. While pneumothorax and phrenicectomy have a large field of usefulness in suitable cases of pulmonary tuberculosis they should generally not be applied to nontuberculous pulmonary suppuration.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary

CEVITAMIC ACID—Crystalline vitamin C, *lactone*
 $\text{CH}_2\text{OH}(\text{CHOH})\text{OCHCOHCOHCO}$ (introduced as ascorbic

acid)—Cevitamic acid may be prepared from adrenal glands, citrus fruits, cabbage, paprika and other plant materials. It may also be prepared synthetically. It oxidizes on exposure to air and light and should be preserved in an oxygen-free atmosphere protected from light.

Actions and Uses—Cevitamic acid is indicated for prophylaxis and treatment of scurvy. Its use in caries, and in other conditions in which a deficiency of vitamin C may be a contributing factor, is not established.

Dosage—As a protective dose in infants, 0.01 Gm ($\frac{1}{100}$ gram), corresponding to from 15 to 30 cc. of fresh orange juice, the dosage for use in treatment has not been established.

Cevitamic acid occurs as white or yellowish white odorless monoclinic crystals often tabular—a few showing simple twinning. The optical properties are as follows: biaxial negative weakly pleochroic birefringence—strong (0.239) optic angle (2E) about 5 degrees extinction generally parallel but in some sections inclined about 12 degrees indexes of refraction $n = 1.466 \pm 0.002$, $n_g = 1.680 \pm 0.002$, $n_r = 1.705 \pm 0.002$. It is freely soluble in water, soluble in alcohol and insoluble in chloroform and ether. It melts between 189 and 192°C.

The rotation $[\alpha]_D^{25}$ of cevitamic acid determined in a solution containing the equivalent of 10 Gm in 100 cc. of the solution falls between +20.5 and +21.5.

To 1 cc. of a 2 per cent aqueous solution of cevitamic acid add 2 drops of sodium nitroprusside solution and make alkaline with tenth normal sodium hydroxide solution; a blue color is produced that changes to green and then to red. Add 2 cc. of 2 per cent aqueous solution of cevitamic acid to 5 cc. of Fehling's solution; the Fehling's solution is slowly reduced in the cold.

Transfer about 0.1 Gm. of cevitic acid, accurately weighed to a beaker containing 100 cc. of cooled distilled water that has just previously been boiled, and 25 cc. of diluted sulphuric acid titrate with tenth normal iodine solution using starch as an indicator (1 cc. of tenth normal iodine solution corresponds to 0.0088 Gm. of cevitic acid) the iodine used corresponds to not less than 98 per cent cevitic acid.

Transfer about 0.12 Gm. of cevitic acid accurately weighed to a beaker add 20 cc. of water and titrate with tenth normal sodium hydroxide using phenolphthalein as an indicator the alkali used is equivalent to not less than 99.5 per cent nor more than 100.5 per cent cevitic acid.

Transfer about 0.1 Gm. of cevitic acid accurately weighed to a wide-mouthed glass stoppered weighing bottle dry in a vacuum over phosphorus pentoxide for eighteen hours the loss is not greater than 0.3 per cent.

Transfer about 0.1 Gm. of cevitic acid to a platinum dish ignite to constant weight the ash is negligible.

Cebione-Merck—A brand of cevitic acid-N N R, obtained from vegetable sources

Merck & Co., Inc., New York distributor No U S patent U S trademark 318 [71]

Ampules Cebione Merck 0.1 Gm

Tablets Cebione-Merck 0.01 Gm

Tablets Cebione Merck, 0.05 Gm

DIPHThERIA TOXOID, ALUM PRECIPITATED (REFINED) (See New and Nonofficial Remedies, 1934, p. 393)

Jensen Salsbery Laboratories, Inc., Kansas City, Mo

Diphtheria Toxoid Alum Precipitated (Refined)—Prepared from diphtheria toxin having an M L D value of 0.0025 cc. or less. The toxin is treated with formaldehyde until its toxicity is so reduced that five human doses will cause no local or general symptoms of diphtheria poisoning when injected subcutaneously into guinea pigs. The toxoid is precipitated by the addition of not more than 2 per cent of potassium aluminum sulphate, the precipitate is washed with physiologic solution of sodium chloride and resuspended in a volume of physiologic solution of sodium chloride equivalent to the volume of the original toxoid. Merthiolate, 1:10,000 is added as a preservative. The product is tested for antigenic potency according to the method prescribed by the National Institute of Health guinea pigs weighing 500 Gm. given one human dose must produce at the end of six weeks at least two units of diphtheria antitoxin in each cubic centimeter of blood.

Marketed in packages of 1 cc. (1 immunizing treatment) and in packages of ten 1 cc. vials (10 immunizing treatments)

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT

RAYMOND HERTWIG Secretary

EXPRESSION OF APPRECIATION TO CONSULTANTS WHO HAVE ASSISTED THE COMMITTEE

During the past year a number of authorities in their respective scientific fields were consulted on questions of moment before the Committee arising out of its regular business. In recognition of the helpful cooperation and valuable assistance given, the Committee has voted to express publicly its appreciation by publishing the names of those who in this manner and without remuneration have gladly contributed of their time, experience and knowledge to the benefit of the Committee in its public welfare and health work.

The Committee is officially thanking the following who have served as consultants

BALDRIDGE, CLARENCE W. M.D. (Deceased) Associate Professor Theory and Practice of Medicine University of Iowa

BARGEN, J. A. M.D. Assistant Professor of Medicine University of Minnesota

BLACKFAN, KENNETH D. M.D., Professor of Pediatrics Harvard University

BOYD, JULIAN D. M.D. Associate Professor of Pediatrics University of Iowa

DARROW, D. C. M.D. Assistant Professor of Pediatrics Yale University

ELIOT, MARYHA M.D. Assistant Director Children's Bureau Washington D. C.

FISHER, HARRY J. Ph.D. Connecticut Agricultural Experiment Station New Haven Conn.

HAMILTON, BENGT L. K. M.D. Sc.D. Professor of Pediatrics University of Chicago

HOLT, L. E. JR. M.D. Associate Professor of Pediatrics Johns Hopkins University

MACLEOD, GRACE, Ph.D. Professor of Nutrition Teachers College Columbia University

PARK, E. A. M.D. Professor of Pediatrics Johns Hopkins University

SHERMAN, HENRI C. Ph.D. Sc.D. Mitchell Professor of Chemistry and Executive Officer of Department of Chemistry Columbia University

STEARNS, GEORGE F. Ph.D. Research Associate Professor of Pediatrics University of Iowa

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION

RAYMOND HERTWIG Secretary

IRRADIATED VITAMIN D HOMOGENIZED PASTEURIZED MILK

Distributors—David Butterick Company, Arlington, 74, Mass. Urbana Pure Milk Company, Urbana, Ill.

Description—Bottled homogenized pasteurized vitamin D milk irradiated with ultraviolet rays

Preparation—The milk complies with legal requirements and is homogenized, and pasteurized by the standard holding method. For description of irradiation, see THE JOURNAL, Oct. 7, 1933 page 1155

Vitamins—Clinical investigation shows this milk to be a reliable antirachitic agent, if the proper amount is used. Contains 135 U S P X (Revised, 1934) vitamin D units per quart.

Claims of Distributors—Irradiated antirachitic homogenized pasteurized milk having otherwise the flavor and food values of usual homogenized pasteurized milk. The cream does not separate.

KISMET BISCUIT FLOUR

Manufacturer—Noblesville Milling Company, Noblesville, Ind.

Description—Biscuit mix requiring only addition of liquid for baking, contains flour (bleached), vegetable shortening, dry skim milk, dextrose, sodium acid pyrophosphate, salt and soda.

Manufacture—The nonfat ingredients are thoroughly mixed, the shortening is cut in by means of special equipment. The mix of definite proportions of all ingredients is packed in paper sacks.

Analysis (submitted by manufacturer) —	per cent
Moisture	8.8
Ash	2.8
Fat (ether extraction method)	9.1
Protein (N X 6.25)	9.8
Crude fiber	0.4
Carbohydrates other than crude fiber (by difference)	70.0

Calories—4.0 per gram 114 per ounce.

Claims of Manufacturer—Requires only the addition of liquid for the preparation of biscuit dough.

(a) PALLAS BRAND CRYSTAL WHITE SYRUP

(b) NECTAR BRAND GOLDEN SYRUP

Distributor—Ridenour-Baker Grocery Company, Kansas City, Mo.

Packer—Bliss Syrup and Preserving Co., Kansas City, Mo.

Description—(a) A table syrup, corn syrup sweetened with sucrose syrup and flavored with vanilla.

(b) A table syrup, corn syrup flavored with refiners' syrup.

Manufacture—(a) The same as Bliss Pancake Crystal White Brand Syrup (THE JOURNAL, Nov. 18, 1933, p. 1635).

(b) The same as Bliss Pancake Brand Golden Syrup (THE JOURNAL, Oct. 28, 1933, p. 1393).

Claims of Manufacturer—Recommended for use as an easily digestible and readily assimilable carbohydrate supplement to milk in infant feeding and as a syrup for cooking, baking and the table.

SMITH'S HOLSUM BREAD SLICED

Manufacturer—Smith's Bakery, Inc. Mobile Ala.

Description—Sliced white bread made by the sponge dough method (method described in THE JOURNAL, March 5, 1932, p. 817) prepared from unbleached flour, water, cane sugar, powdered skimmed milk, shortening salt, yeast a bleaching agent consisting of corn and soya bean flours and vinegar.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY MARCH 2, 1935

SUDDEN AND UNEXPECTED DEATH

Sudden death may be violent, accidental, self inflicted, due to natural causes or unexpected. The suddenness with which death occurs may vary. The death may be unexpected by the victim's friends but anticipated by the person, family or physician. Violent death may be unexpected by the person but planned by others. The interpretation of the factors surrounding sudden death are therefore somewhat dependent on the point of view.

The medicolegal importance of sudden death is manifest. Medical testimony as to the exact cause of such death has done much to refute the now classic epigram "Witnesses may be divided into ordinary witnesses, liars, damned liars and expert witnesses." Thus Burke-Gaffney¹ cites several instances of sudden death apparently due to violence or poisons in which careful necropsy revealed a "natural cause" as the primary factor. Of equal legal and sociological interest are the cases in which the reverse situation has been found.

Numerous studies of sudden death resulting from "natural causes" have been made. A recent addition is that by Hamman,² who has reviewed the previous statistical observations. These he summarizes as follows. Ninety-one per cent of sudden deaths from natural causes are due to disease of the cardiovascular system, i. e., heart failure, hemorrhage and arterial embolism and thrombosis. Of the deaths from sudden heart failure, 65 per cent are due to diseases of the coronary arteries, 21 per cent occur with valvular heart disease, 10 per cent with myocardial disease, and 3 per cent with cardiac hypertrophy. Syphilis of the aorta is a conspicuously frequent cause of sudden death and occurs in about 20 per cent of all cases due to natural causes.

An accurate analysis of the mechanism involved is often fraught with great difficulties. Thus, as Hamman says, the circumstances attending sudden stopping of

the heart in the midst of apparent health have stirred endless curiosity. The gross anatomic alterations are usually extensive disease of heart muscle commonly due to obstruction of the blood flow in the coronary arteries. These changes must usually come about slowly. With the exception of abrupt occlusion of a large coronary artery there are no anatomic marks by which sudden cardiac death can be identified. In a small proportion of such cases, however, the mechanism has been demonstrated. There are, for example, a few recorded instances of patients dying while electrocardiographic records were being taken. The rapid regular rhythm immediately preceding death has been interpreted as ventricular flutter, the rapid irregular rate at the moment of death as evidence of ventricular fibrillation. It may be concluded that ventricular fibrillation occurs frequently in dying hearts and that it is the only mechanism so far discovered (except perhaps the abrupt onset of heart block or sino-auricular standstill) to account for sudden cardiac death. It is probably often the cause of temporary cessation of the heart beat, producing attacks of unconsciousness and convulsions.

The immediate results of fatal hemorrhage are due to loss of blood, the effects of pressure on a vital organ and damage to tissue from bleeding into its substance. The type of injury explains the less abrupt nature of "sudden death" occurring in this way. Thrombi formed in the systemic veins easily explain the method of pulmonary embolism. In man occlusion of the trunk or of both branches of the pulmonary artery is always followed by sudden death. Sometimes this follows when only one main branch is plugged. The latter does not occur in experimental animals, and some special explanation is therefore necessary to account for the difference in man. This factor may lie in the pre-existing condition of the heart. The mechanism of systemic arterial embolism is not always wholly clear. Paradoxical embolism, through a patent foramen ovale, may be preceded by pulmonary embolism, thereby increasing the right intra-auricular pressure and making the foramen ovale more patent.

About 9 per cent of the cases of sudden death are accounted for by other disorders. This group includes almost innumerable diseases which have occasionally been reported as a cause of sudden death. There is a recent tendency, backed by considerable evidence, to exclude so-called status thymicolymphaticus as non-existent as a clinical entity. Physical allergy, especially to cold, is now thought to be of some importance and perhaps to explain some of the deaths by drowning.

Nothing is so dramatic as sudden death. In cases due to accident or suicide, the cause is usually promptly apparent. Before our modern knowledge of heart disease, the cause in most other cases was a matter of conjecture. Now coronary thrombosis is the first thought. In 198 cases of sudden death on which postmortem was done in Leeds, 104, which constituted over 53 per cent

¹ Burke-Gaffney H. J. O. D. Some Medico-Legal Aspects of the Investigation of Sudden and Unexpected Death. East African M. J. 10: 232 (Nov.) 1933.

² Hamman Louis. Sudden Death. Bull. Johns Hopkins Hosp. 55: 387 (Dec.) 1934.

of all the cases, or 65 per cent of all of those over 40 years of age, were found to be due to diseases of the coronary arteries. In the prevention of sudden death, it must be remembered that irritation by any of a number of different causes may be secondarily responsible.

THE KUPFFER CELLS OF THE LIVER

Much has been published recently about the reticulo-endothelial system, which comprises large phagocytic cells present on the walls of the small blood vessels of many and perhaps all parenchymatous organs. Typical is the Kupffer cell in the vascular channels of the liver. The name refers to the Munich anatomist who first described these cells about 100 years ago. Not only are they intensely phagocytic, ridding the blood of all manner of harmful particles, especially bacteria, but also they are considered by many authorities to have other physiologic powers, notably the ability to form antibodies of various kinds in the development of resistance, and to be the site of normal blood destruction.

The existence and importance of this system of cells though almost generally accepted, have depended on rather indirect observations. It has been impossible to observe them apart from the neighboring and associated cells, which are present in overwhelming numbers especially in the spleen and liver. That observation *in vitro* is an important source of information is shown by the work on muscle, for example, which has been extensively studied because it can be observed in an isolated state. In other words, what was needed for further investigation of this reticulo-endothelial system was the isolation of the cells in pure culture. This has now been possible by means of an ingenious procedure recently described by Rous and Beard,¹ working at the Rockefeller Institute in New York.

The experiment starts with the repeated intravenous administration into the experimental animal of colloidal iron (gamma ferric oxide), which has strong magnetic properties. The particles are taken up by the cells of the reticulo-endothelial system, including the Kupffer cells of the liver. The liver is then perfused under pressure, so that the cells become detached and are carried along with many other cells. The wash fluid, rich in many kinds of cells, is then passed over the pole of a large electromagnet, which attracts only the cells containing iron. In this way all other cells are carried away and a more or less pure culture of Kupffer cells is obtained. Cultivation of the cells was carried out under appropriate conditions, and for at least ten days they lived and multiplied. Some of their functions were studied and many interesting observations were made.

The Kupffer cell as seen in pure culture is tremendous in size, varying between 40 and 100 microns in diameter, thus bringing it within the limits of visibility

with the naked eye. It contains a single nucleus and is surrounded by an immense circular membrane. The stickiness of the cell is remarkable, any particle with which it comes in contact adheres tenaciously to its surface. Indeed, the cells grow and multiplication depends on their attachment to some anchoring structure. The New York experimenters found that lens paper provided them with an excellent framework for growth. Without such a support they withered and died. Although similar in character to the tissue phagocyte (macrophage) the Kupffer cell is much more sensitive to injury than any other form of white cell. With the effectiveness of the method demonstrated, it should be relatively simple to extend observations of this remarkable type of cell to include studies of its function in the vast and important field of resistance and immunity.

SURGICAL RELIEF OF PAIN

Search for relief from pain leads more people to seek medical help than any other symptom. Fortunately in the majority of instances the cause of this pain can be determined and removed or treated with subsequent relief. There are, however, types of pain so severe or so constant and insusceptible to causal relief that medical aid is limited to supplying drugs or to surgery. Pain of this character has recently been discussed by Learmonth.¹

The pathways of the nerve fibers that mediate somatic pain sensibility are well known. The same anatomic clarity does not exist for visceral pain sensation. The fibers from the viscera probably travel by way of the splanchnic systems to the long paravertebral sympathetic chains and from there reach the parent spinal nerves along the rami communicantes of the sympathetic system. They finally enter the spinal cord along its posterior nerve roots. Some experimental and clinical evidence indicates that the fibers do not all pass toward the brain in the same tracts as do sensations of somatic pain but probably ascend by a series of relays of short fibers, the course of which is nearer the gray matter of the cord than that of the somatic pain tract. An exact understanding of these anatomic and physiologic factors is a necessary preliminary to surgical attempts for the relief of intractable pain.

Before any operation is undertaken that has for its primary object the denervation of a painful part, according to Learmonth, it must be proved that direct attack on the lesion is impossible. Decision of this question may be necessary under any one of three sets of circumstances. 1 When the site of the lesion and the site of the pain are the same. 2 When the painful area is more extensive than the local lesion, as when a rectal carcinoma invades the nerves of the sacral plexus. 3 When the pain is a "referred" pain and the real lesion distant.

¹ Rous, Peyton and Beard J. W. Selection with Magnet and Cultivation of Reticulo-Endothelial Cells (Kupffer-Cells) *J. Exper. Med.* 59: 57, (May) 1934.

¹ Learmonth J. R. The Surgeon and Pain *Brit. M. J.* 1: 47 (Jan. 12) 1935.

A plan of operation for the relief of pain must consider the different anatomic arrangements of pain fibers according to the somatic or visceral origin of the pain. Somatic pain fibers from the periphery are first concentrated in nerve trunks and may then pass through a plexus, spread out over posterior roots and finally be concentrated in the anterolateral tract. This tract is the most logical point of attack for the surgeon, for by dividing it properly maximal analgesia with minimal effect on other forms of neural conduction is obtained. Visceral pain fibers are concentrated in a strand or strands of one of the splanchnic nerves. They spread out again over the "roots" of the strand and possibly still further in the sympathetic paravertebral chains. There may then be a choice of many posterior roots over which to enter the cord. In the cord itself the fibers may pass by way either of the anterolateral tract or of the ground bundles close to the gray matter. Hence the most logical point to attack visceral pain fibers is the particular splanchnic strand in which they are first concentrated.

Learmonth discusses the possible operative procedures for the relief of somatic pain by attacking the peripheral nerves, the cranial nerves, the posterior roots and the anterolateral tract. Of these, with notable exceptions, division of the anterolateral tract appears to be the most promising. Indications for its application may be grouped into (1) pain due to the presence of an irremovable tumor that is pressing on or infiltrating contiguous nerves, (2) pain due to pressure on nerves by bony outgrowths, e. g., spondylitis, (3) pain due to intractable neuritis, e. g., diabetes and (4) pain in amputation stumps of the lower extremity. The operation (called chordotomy) may be performed for pain originating as high as the fifth thoracic segment and in rare instances has been used as high as the eighth cervical segment.

Many operations have been devised for the relief of purely visceral pain. Learmonth discusses only two of these. In angina pectoris it has been found possible to block afferent cardiac fibers outside the spinal canal by injecting alcohol into and around the upper five thoracic ganglions of the sympathetic chain on the left side. The procedure is not serious and many good results have followed its application. In pelvic visceral pain it must be remembered that the first "zone of concentration" of sympathetic fibers from the pelvic viscera is open to attack as the presacral nerve in front of the fifth lumbar vertebra. Presacral neurectomy is followed by little disturbance of function, and the only really undesirable sequel is sterility though not impotence in the male. The operation has been employed with success in certain cases of intractable cystitis and in the palliative treatment of inoperable malignant disease of the bladder and some other pelvic disorders.

When critically reviewed, surgical intervention aimed solely at the relief of pain seems to offer good prospects in certain diseases for which other methods of treat-

ment have proved insufficient or in themselves harmful. The great danger of such methods lies in the temptation to afford relief without preliminary intense efforts to determine and treat the underlying cause. This temptation must be resisted.

Current Comment

EVIDENCE OF LATENT BRUCELLA INFECTION

The method of spread of undulant fever has been the subject of discussion for a number of years. Hardy¹ and Thomsen² maintain that direct contact with the tissues of animals harboring some form of *Brucella* is perhaps the most frequent source of undulant fever in man. Opportunity for detailed investigation of this problem is offered by the packing plants in which workers are exposed to possible sources of infection over long periods. In the survey by Heathman³ in Minnesota, agglutination and allergic responses as observed by a delayed type of skin reaction were used as indexes of the extent of *Brucella* infection. A wide discrepancy was encountered between these two criteria, the skin test showing a strikingly high percentage of positive reactions among the workers in the packing plants while agglutination decreased with the length of service in the plant, that is, with the length of exposure to possible infection. Of the 1,096 workers observed, those in contact with the blood and the fresh tissues of beef showed the highest proportion of positive allergic responses (80.1 per cent positive as compared to 55 per cent in the group as a whole). Considering the entire group, the proportion of positive agglutinations was only 8.4 per cent. Hardy reported an equally high percentage among the general population of Iowa. In contrast, however, the percentage of positive allergic reactions was 54.7 among the workers in packing plants and 38.6 in a miscellaneous group. The percentage of positive skin reactions increased and remained high in the groups of workers that were most heavily exposed to the blood and the fresh tissue of beef. This may be the result of numerous and repeated exposures to small infecting doses or to bovine strains of *Brucella* of low virulence for man and causing only subclinical infections. That agglutination and skin reactions alone are not reliable criteria of the degree of infection with *Brucella* is evident from the high percentage of positive reactions in cases in which no clinical manifestations of the disease are observed or described. Agglutination was positive in virtually the same percentage of packing plant workers and of other groups apparently not exposed to infected material. The skin reaction, however, gave a greater percentage of positive results in the former group. Which of these tests may be considered a true index of the extent of exposure and resulting reaction can be determined only after further investigation.

1 Hardy A. V. Jordan C. F. and Borts I. H. Further Study of *Brucella* Infection in Iowa. Pub. Health Rep. 47: 187 (Jan. 22) 1932.
2 Thomsen A. Correlation of Occupation with Serologic Reactions from *Brucella* Abortus. J. Infect. Dis. 48: 484 (May) 1931.
3 Heathman Lucy S. A Survey of Workers in Packing Plants for Evidence of *Brucella* Infection. J. Infect. Dis. 55: 243 (Dec.) 1934.

PROCEEDINGS OF THE SPECIAL SESSION

MINUTES OF THE SPECIAL SESSION OF THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION, HELD AT CHICAGO, FEBRUARY 15 16, 1935

HOUSE OF DELEGATES

First Meeting—Friday Morning, February 15

The House of Delegates convened in the Red Lacquer Room of the Palmer House and was called to order at 10 a m by the Speaker, Dr F C Warnshuis

The Secretary read the call for the Special Session of the House of Delegates, as follows

Call for the Special Session

To the Members of the House of Delegates of the American Medical Association

In compliance with the official request of the Board of Trustees that the House of Delegates be convened in Special Session I, as Speaker, under authority of chapter III, section 2, of the By Laws, hereby officially call the House of Delegates of the American Medical Association to convene in Special Session in the city of Chicago, State of Illinois, at 10 a m, Central Standard Time, on the fifteenth day of February, 1935

The business to be transacted at this Special Session shall be limited to the consideration of the social and economic policies of the Association as related to pending and proposed legislation, to sickness insurance and to other matters which may be submitted by the Board of Trustees

The House shall remain in session, recessing from day to day, until its deliberations are concluded

Signed and Issued in San Francisco, California, January 21, 1935

FREDERICK C WARNSHUIS, M D

Speaker, House of Delegates, American Medical Association

Dr J D Brook Chairman of the Reference Committee on Credentials, stated that eighty-four delegates had filed proper credentials, and, on recommendation of Dr Brook, the House seated these delegates who then constituted the roll of the House

On motion of Dr Brook, seconded by Dr Arthur J Bedell, New York, and carried, alternate delegates were seated in accordance with the list presented by the Chairman

EXECUTIVE SESSION

Dr H B Everett, Tennessee, moved that the House resolve itself into executive session The motion was seconded by Dr A T McCormack, Kentucky, and carried

On motion of Dr A T McCormack, Kentucky, seconded by Dr A C Morgan, Pennsylvania, and carried, the presidents, presidents-elect and secretaries of state associations, the chairmen of committees on medical economics vouched for by their state secretaries, the officers of the American Medical Association, and the representatives of the Surgeon Generals of the Army, the Navy and the Public Health Service vouched for by them, were permitted to remain in the House.

On motions regularly made, seconded and carried, there were also admitted to the executive session representatives of the American Academy of Ophthalmology and Otolaryngology the executive secretary of the Wayne County Medical Society the deans of the class A medical schools the president president-elect and secretary of the Chicago Medical Society, the members of the Committee on Economics of the American Dental Association, and the president and executive secretary of the Medical Society of Milwaukee County

The Speaker appointed as Sergeants-at-Arms Dr R W Fouts, Nebraska, and Dr Morris Fishbein, Editor of THE JOURNAL

Statement by the Board of Trustees

Dr J H J Upham, Chairman, read an official statement from the Board of Trustees, as follows

The Board of Trustees requested that this special session of the House of Delegates be called for "the consideration of the social and economic policies of the Association as related to pending and proposed legislation, to sickness insurance and to other matters which may be submitted by the Board of Trustees"

In offering this subject for the consideration of the House of Delegates, the Board of Trustees feels that the members of the House should be properly oriented as to the manner by which we of the medical profession came into the present situation

The Board of Trustees deemed the present situation of such vital importance as to require that opportunity again be given for an expression through its official representatives of the well considered views of the organized medical profession of the United States on these subjects

SICKNESS INSURANCE

Sickness insurance is not unique as a subject for discussion in the House of Delegates In 1916 the American Medical Association developed a Committee on Industrial Insurance to study the whole question of social insurance for presentation to the House of Delegates At the same time the House of Delegates decided, through its committee to educate the American medical profession in the general principles of social insurance, to inform the profession concerning the subject, and to appear before legislative bodies in this country when advisable. In 1917 the Committee on Social Insurance presented a resolution to the House of Delegates authorizing a continuance of the study of social insurance and a molding of laws for the purpose so that the health of the community and the practice of medicine might be properly safeguarded At that time—in 1917—the principle was established that all such legislation should provide for freedom of choice of physician by the insured, for payment of the physician in proportion to the amount of work done, for separation of the functions of medical official supervision from the function of daily care of the sick, and for adequate representation of the medical profession on the appropriate administrative bodies

The committee presented reports to the House of Delegates at the sessions in 1916, 1917 and 1919, and the House of Delegates each year approved the report and directed the committee to continue its work In 1920 however, after a consideration of these reports, the American Medical Association, through its House of Delegates declared its opposition to the institution of any scheme embodying a system of compulsory contributory insurance against illness or any other scheme which provides for medical service to be rendered contributors or their dependents provided controlled or regulated by any state or federal government In 1922 the House of Delegates again declared its opposition to all forms of state medicine because of the ultimate harm that would come thereby to the public weal through such forms of medical practice And it defined state medicine as any form of medical treatment, provided, conducted, controlled or subsidized by the federal or any state government, excepting such service as is provided by the Army, Navy or Public Health Service and that which is necessitated by the control of communicable disease the treatment of mental disease or of the

indigent sick. This resolution was finally made to except also such other services as may be approved administered or conducted by local county medical societies and not disapproved by the state medical society of which it is a component part.

CHANGES IN THE NATURE OF THE PRACTICE OF MEDICINE

Since 1923 the medical profession of the United States has been increasingly aware of various plans for changing the nature of medical practice attempted in different communities under local auspices, in many instances with the approval of the county and state medical society directly concerned. In 1925, recognizing the influences at work leading toward a change in the nature of the practice of medicine, a Commission on Medical Education was developed which included representatives of the organized medical dental, nursing and hospital professions, distinguished educators and leaders of public thought. This commission undertook a complete study of the medical scheme with a view to the development of recommendations for modification for the benefit of the public health, for the improvement of medical service and for the advancement of medical science.

It should be recognized also that schemes of sickness insurance under governmental auspices had been developed from time to time in foreign countries, beginning with the German one proposed by Bismarck in 1883 and followed by similar systems in other countries, culminating in the British system in 1911, proposed by Lloyd George. From time to time social workers, economists and physicians from the United States have gone abroad to study such systems and on their return have published in American periodicals the results of their studies. Moreover, *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* and other periodicals have regularly reflected these activities in the letters of foreign correspondents and in special articles published in *THE JOURNAL* notably a series written by the Secretary of the British Medical Association especially for *THE JOURNAL*.

COMMITTEE ON THE COSTS OF MEDICAL CARE

In 1927, largely under the influence of three philanthropic foundations, the Twentieth Century Fund, the Milbank Fund and the Rosenwald Fund a committee of five was formed called the Committee on the Costs of Medical Care which was ultimately expanded to a committee of forty-eight. This committee also being planned to survey the entire medical setup in the United States and to bring out recommendations for providing the American people with what was called 'the best type of medical care at a price they could afford to pay'. Both the report of the Commission on Medical Education and of the Committee on the Costs of Medical Care were made available in 1932. These reports have had a considerable influence on the trend of American thought since the time of their publication relative to proposed changes in the nature of medical practice. In association with the development of this work, the American Medical Association established a Bureau of Medical Economics which was planned to compile correlate and make available the facts in relationship to medical practice in the United States and also to undertake studies of new forms of medical practice developed from time to time in various places.

When the economic depression swept the United States toward the end of the presidency of Herbert Hoover, all plans for social change were held in abeyance while the nation gave the larger portion of its attention to the problems of recovery and relief. It was recognized that the satisfaction of such fundamental needs as employment food fuel and housing were primary and that questions of social change must be secondary until these needs had been satisfied.

Nevertheless, continuing experimentation with new plans of medical service arousing discord in the medical profession in many places were brought increasingly to the attention of the official bodies of the American Medical Association so that the House of Delegates of the Association at its meeting in Cleveland in June 1934 adopted ten fundamental principles to guide the medical profession in the control of experiments with new forms of medical practice.

At the same time the Judicial Council of the American Medical Association introduced certain amendments to the Principles of Medical Ethics recognizing the necessity for control of hospital practice industrial practice the practice of medicine

by commercial groups and similar forms. The question of compulsory sickness insurance did not even in June 1934 seem to loom largely on the medical horizon. Then on June 8 1934, the President of the United States, just before departing on a vacation, announced his intention following his return to propose legislation for greater economic security for the people of the United States, and he indicated as primary objectives in such plans the question of unemployment and care of the aged.

THE COMMITTEE ON ECONOMIC SECURITY

In order to aid him in the development of these plans, a Committee on Economic Security was established including Frances Perkins Secretary of Labor, Henry Morgenthau Jr., Secretary of the Treasury, Homer S. Cummings, Attorney General, Henry A. Wallace, Secretary of Agriculture, and Harry L. Hopkins, Director of Relief. This committee in turn set up a technical advisory staff with an executive director and in this technical advisory staff there were included some thirteen divisions of the problem of social security with such departments as unemployment, old age, maternal welfare, child welfare care of the handicapped, dental care, hospital care, medical service and public health service. A technical director was installed for each of these departments and it was announced that the problem of medical service would be under a technical director.

Edgar Sydenstricker, an employee of the Milbank Fund who presented an individual minority report for the Committee on the Costs of Medical Care indicating his belief that its plans did not go far enough and that adequate provision for all of the people of food, fuel, clothing, housing and medical service must be the primary objectives of any social security plan, was made technical director for medical service.

Immediately on August 21, 1934, *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* made available to Hon. Frances Perkins an editorial in which it was pointed out that the medical profession must be adequately represented in any studies of the need for sickness insurance. To this Secretary Perkins replied with assurance that 'the advice of the medical profession will be obtained on all matters affecting it'. 'Moreover, she said, it is our intention to obtain that advice through the appointment of a group of outstanding physicians and surgeons who will be available for consultations from time to time as the study develops.'

THE MEDICAL ADVISORY BOARD

These communications were referred to the Board of Trustees of the American Medical Association, which officially offered to Secretary Perkins as representatives of an organization of approximately 100,000 physicians, all the observations and the results of investigations made by the Bureau of Medical Economics of the American Medical Association as well as information and advice of all the officials and of the headquarters personnel together with any facilities of the Association. A similar communication was sent by the Secretary and General Manager to Mr. Edwin E. Witte Executive Director of the Committee on Economic Security. In the meantime, efforts were made to determine the names of those who were to serve on the Medical Advisory Board. These names were held by the officials of the government in the greatest secrecy so that it was impossible to determine until just before the Medical Advisory Board's first meeting the names of those who had been asked to serve.

When the Medical Advisory Board met, the technical advisory staff for medical service was supplemented by the names of Dr. R. G. Leland and Mr. A. M. Simons of the Bureau of Medical Economics of the American Medical Association. Isidore Falk, a worker in the Milbank Fund, Michael M. Davis of the Rosenwald Fund and Nathan Sinai, who had conducted various investigations for the Michigan State Medical Society and who had drawn up an insurance plan for that society which however, the society finally failed to adopt, had been previously added to the technical staff.

The Medical Advisory Board was told at the time of this meeting that the technical studies would be completed and that it would have opportunity later to offer its advice relative to certain plans which would be drawn up by the technical advisory staff. In the meantime the members of the Committee on Eco

conomic Security had been provided by the headquarters office of the American Medical Association with a statement on compulsory sickness insurance prepared by the Bureau of Medical Economics of the American Medical Association

When the Congress of the United States convened shortly after the beginning of 1935, the President of the United States in his message delivered January 4 indicated his plans for social security. Thus he said

Closely related to the broad problem of livelihood is that of security against the major hazards of life. Here also a comprehensive survey of what has been attempted or accomplished in many nations and in many states proves to me that the time has come for action by the national government. I shall send to you, in a few days definite recommendations based on these studies. These recommendations will cover the broad subjects of unemployment insurance and old age insurance of benefits for children for mothers for the handicapped for maternity care and for other aspects of dependency and illness where a beginning can be made.

Interesting was the manner in which the President passed immediately from unemployment insurance and old age insurance to the question of benefits for children, for mothers for the handicapped and for maternity care, leaving the question of sickness insurance to the phrase in which he said for other aspects of dependency and illness where a beginning can be made."

THE PRESIDENT'S MESSAGE

However, on January 17, 1935, the President sent to Congress a message relative to unemployment insurance old age pensions federal aid to dependent children, the support of existing mothers' pension systems, appropriations for services for the protection and care of homeless, neglected, dependent and crippled children, and finally additional aid by the federal government to state and local public health agencies and for the strengthening of the federal Public Health Service. Of sickness insurance the President said specifically

I am not at this time recommending the adoption of so-called health insurance although groups representing the medical profession are cooperating with the federal government in the further study of the subject and definite progress is being made

Coincident with the message to Congress by the President came a message from the Committee on Economic Security to the President and the report that it submitted to the President. The committee indicated again in its report the difficulties inherent in a sickness insurance program but seemed to forecast quite definitely its plans in relationship to this problem. Thus it said

As a first measure for meeting the very serious problem of sickness in families with low income we recommend a nation wide preventive public health program. It should be largely financed by state and local governments and administered by state and local health departments the federal government to contribute financial and technical aid. The program contemplates (1) grants in aid to be allocated through state departments of health to local areas unable to finance public health programs from state and local resources (2) direct aid to states in the development of state health services and the training of personnel for state and local health work and (3) additional personnel in the United States Public Health Service to investigate health problems of interstate or national concern

The second major step we believe to be the application of the principles of insurance to this problem. We are not prepared at this time to make recommendations for a system of health insurance. We have enlisted the cooperation of advisory groups representing the medical and dental professions and hospital management in the development of a plan for health insurance which will be beneficial alike to the public and the professions concerned. We have asked these groups to complete their work by March 1, 1935 and expect to make a further report on this subject at that time or shortly thereafter. Elsewhere in our report we state principles on which our study of health insurance is proceeding which indicate clearly that we contemplate no action that will not be quite as much in the interests of the members of the professions concerned as of the families with low incomes

PLANS FOR HEALTH INSURANCE

The committee proceeded somewhat further along in its report to a brief consideration of so called health insurance, which still more elaborately hints at what is contemplated. Apparently the technical advisory staff of the Committee on Economic Security has made studies of the compulsory sickness insurance plans already established abroad. It has considered the possibilities of voluntary insurance and rejected them as well as the possibility of ordinary commercial insurance. It has already, it seems, prepared the basic principles for a tentative plan of insurance believed adequate for the needs

of American citizens with small means and appropriate to existing conditions in the United States. These are said to have been submitted to the professional advisory groups organized for the purpose. The advisory groups requested an extension of time and the extension was granted until March 1. The statement was made that 'arrangements have been effected for close cooperative study between the committee's technical staff and the technical experts of the American Medical Association'. In its report submitted to the President, the Committee on Economic Security offered the following information to the professions and to the public as to the main lines along which its studies are proceeding

1 The fundamental goals of health insurance are (a) the provision of adequate health and medical services to the insured population and their families (b) the development of a system whereby people are enabled to budget the costs of wage loss and of medical costs (c) the assurance of reasonably adequate remuneration to medical practitioners and institutions (d) the development under professional auspices of new incentives for improvement in the quality of medical services

2 In the administration of the services the medical professions should be accorded responsibility for the control of professional personnel and procedures and for the maintenance and improvement of the quality of service. Practitioners should have broad freedom to engage in insurance practice to accept or reject patients and to choose the procedure of remuneration for their services. Insured persons should have freedom to choose their physicians and institutions and the insurance plan shall recognize the continuance of the private practice of medicine and of the allied professions

3 Health insurance should exclude commercial or any other intermediary agents between the insured population and the professional agencies which serve them

4 The insurance benefits must be considered in two broad classes (a) cash payments in partial replacement of wage loss due to sickness and for maternity cases, and (b) health and medical services

5 The administration of cash payments should be designed along the same general lines as for unemployment insurance and so far as may be practical should be linked with the administration of unemployment benefits

6 The administration of health and medical services should be designed on a state wide basis under a federal law of a permissive character. The administrative provisions should be adapted to agricultural and sparsely settled areas as well as to industrial sections through the use of alternative procedures in raising the funds and furnishing the services

7 The costs of cash payments to serve in partial replacement of wage loss are estimated as from 1 to 1.5 per cent of pay roll

8 The costs of health and medical services, under health insurance for the employed population with family earnings up to \$3,000 a year is not primarily a problem of finding new funds but of budgeting present expenditures so that each family or worker carries an average risk rather than an uncertain risk. The population to be covered is accustomed to expend on the average about 4.5 per cent of its income for medical care

9 Existing health and medical services provided by public funds for certain diseases or for entire populations should be correlated with the services required under the contributory plan of health insurance

10 Health and medical services for persons without income now mainly provided by public funds could be absorbed into a contributory insurance system through the payment by relief or other public agencies of adjusted contributions for these classes

11 The rôle of the federal government is conceived to be principally (a) to establish minimum standards for health insurance practice and (b) to provide subsidies grants or other financial aids or incentives to states which undertake the development of health insurance systems which meet the federal standards

THE WAGNER-LEWIS BILL

Promptly on the submission of these messages and reports to the Congress of the United States, Senator Wagner of New York submitted in the Senate S 1130 which is known as the Wagner Bill for Social Insurance. It covers specifically old age assistance, aid to dependent children, earnings and employment excise taxes. It sets up a social insurance board composed of three persons appointed by the President, to be a part of the Department of Labor. This board is authorized, with the approval of the Secretary of Labor to appoint and fix compensation of all officers, attorneys and experts needed, without regard to civil service laws. Under this board will come the supervision of old age insurance unemployment compensation, accident compensation, health insurance and related subjects. Annuity certificates and taxes on payrolls of 3 per cent are provided as means of raising funds

Under the heading maternity and child welfare, this bill appropriates \$4,000,000 annually to enable the federal government to cooperate with the state agencies of health in extending and strengthening services for the health of mothers and children especially in rural areas and in areas suffering from

severe economic distress. This is to be administered by the Department of Labor. Each state is to get \$20,000 annually and \$1,000,000 is to be apportioned among states in proportion to the respective live birth rates. The Secretary of Labor may apportion \$800,000 among states that are unable to match the federal appropriation. Furthermore, the Secretary of Labor may use the remainder to make special demonstrations and conduct research in maternal care. To secure the federal funds, the states must submit their plans to the Children's Bureau and obtain approval.

For the care of crippled children the Wagner bill provides \$3,000,000 annually, to be handled in much the same way as the funds for maternal and child welfare are to be handled, also subject to approval of the Children's Bureau.

For child welfare services \$1,500,000 annually is allotted, also distributed and controlled along the same lines.

Finally the Wagner bill appropriates \$10,000,000 annually to be administered by the Bureau of the Public Health Service. The bureau is to allot \$8,000,000 to the states in amounts determined on the basis of the need of each state for such assistance, to develop state health services, including the training of personnel for state and local health work and for the purpose of assisting counties or other political subdivisions of the states in maintaining public health programs. The sum of \$2,000,000 is to be made available annually to the Public Health Service for the further investigations of diseases and problems of sanitation and related matters.

In the meantime, various proponents of changes in the social order had been exceedingly active in developing plans for the promotion of sickness insurance schemes in the individual states. Most active was the group known as the American Association for Social Security, of which the executive secretary, Abraham Epstein, is most widely known. This group prepared a so-called social security bill for health insurance which proposed to establish a system of compulsory and voluntary state health insurance including practically all manual workers and their dependents under its compulsory provisions. It also provided that certain other persons might voluntarily avail themselves of the supposed benefits of the act, so that it would include eventually 95 per cent of the entire population of the United States. This bill was immediately promoted in all the individual states, and it is understood that it is to be offered in the individual state legislatures from time to time as they convene throughout the country.

ACTIVITIES OF THE HEADQUARTERS OFFICE

In order to meet this situation, the headquarters office of the American Medical Association has made available an editorial analysis of the Epstein bill and, through its Bureau of Legal Medicine and Legislation, its Bureau of Medical Economics and its Secretary's office, has been in direct communication with the individual state medical societies and state organizations, supplying them with information and a suitable analysis of this proposed legislation. Moreover, the Bureau of Medical Economics to meet the arguments offered by proponents of compulsory sickness insurance on a federal basis has developed a Catechism on Sickness Insurance, a series of articles on the sickness insurance schemes now operative in foreign countries, and a vast amount of data published in various places on this subject.

In the meantime, the Medical Advisory Board has had another session and it is no secret that the technical advisory staff proposes to assume complete responsibility for the recommendations incorporated in the final report to be made to the Committee on Economic Security, which in turn, will offer its suggestions to the President. It will then be for the President of the United States to determine what he proposes to present to Congress in a further message on this subject, and also whether or not any special legislation of federal character is to be introduced as an administration bill.

Members of the House of Delegates should of course, also be advised that at the time of this writing the Administration Relief Bill of \$4,800,000,000 to be disposed of by the President on his own responsibility is still undergoing hearings and that the Wagner bill has not yet been reported out of either House or Senate committees.

This is the status of the situation at this time. It remains for the House of Delegates to determine the policies of this organization for the guidance of its members and of its representatives.

QUESTIONS FOR THE HOUSE OF DELEGATES

Dr Upham also presented six questions suggested for discussion by the House of Delegates, as follows:

1 Shall or shall not the House of Delegates again declare its opposition to all forms of state medicine, including any form of medical treatment provided, conducted, controlled or subsidized by the federal or by any state government, excepting such service as is provided by the Army, Navy or Public Health Service and such as is necessitated by the control of communicable disease or for the treatment of mental disease or of the indigent sick, and excepting also all such other service as may be approved, administered or conducted by local county medical societies and not disapproved by the state medical societies of which they are component parts?

2 What is the attitude of the House of Delegates toward the eleven principles proposed by the Committee on Economic Security as fundamental to any system of sickness insurance to be established by the federal government?

3 Shall or shall not the House of Delegates of the American Medical Association reaffirm its opposition to the principle of federal subsidies to individual states in relationship to the provision of medical service?

4 Will the House of Delegates express its position relative to that provision of the Wagner bill which places the control of medical affairs in the Department of Labor under a non-medical special board?

5 What attitude shall the House of Delegates take relative to the proposed sickness insurance legislation in the individual states as represented by the Epstein bill of the American Association for Social Security?

6 How may the American Medical Association initiate plans for still further improving the quality of medical service and for obtaining better distribution of medical service for all the people?

Actions of the House of Delegates

Dr B. F. Bailey, Nebraska, moved that a Special Reference Committee be appointed to crystallize the expressions of the delegates and bring recommendations to the House for final action. The motion was seconded by Dr H. B. Everett, Tennessee, and carried.

Dr Charles E. Humiston, Illinois, presented a resolution urging on the President and Congress of the United States the creation of a new department under a secretary of health, which was referred to the Special Reference Committee.

Dr John W. Ames, Colorado, presented a resolution recommending that the dangers of the lack of free choice of physicians be brought to the attention of the President of the United States, which was referred to the Special Reference Committee.

At the request of Dr J. C. Flippin, Virginia, the Secretary and the President explained the relation of the Committee on Economic Security, the Medical Advisory Board of that committee and the American Medical Association.

On motion of Dr Arthur J. Bedell, New York, seconded by Dr J. D. Brook, Michigan, and carried the House authorized the appointment of a Press Release Committee consisting of Dr Holman Taylor, Texas; Dr Wells Teachnor Sr., Ohio; Dr J. N. Baker, Alabama, and Dr Morris Fishbein, Editor of THE JOURNAL.

There was general discussion participated in by various delegates after which, on request of Dr J. N. Baker, Alabama, Dr R. G. Leland, director of the Bureau of Medical Economics, was asked to address the House. At Dr Leland's request, his appearance before the House was deferred until the afternoon session.

Special Reference Committee

The Speaker appointed the following members of the House of Delegates on the Special Reference Committee: Dr Harry H. Wilson, California, Chairman; Dr N. B. Van Etten, New York; Dr E. H. Cary, Texas; Dr W. F. Braasch, Minnesota; Dr Warren F. Draper, Virginia; Dr F. S. Crockett, Indiana; and Dr E. F. Cody, Massachusetts.

The meeting recessed at 12:50 to reconvene at 2:30 p. m.

Friday Afternoon, February 15

The House of Delegates reconvened at 2 30 p m, with Dr F C Warnshuis, Speaker, in the chair

Dr R G Leland, director of the Bureau of Medical Economics addressed the House, after which Dr William C Woodward, director of the Bureau of Legal Medicine and Legislation, on request, made a statement regarding his views of the situation

There ensued general discussion by the members of the House, during which Dr John F Hagerty, New Jersey, suggested that the proposals presented by the Board of Trustees at the morning session be restated and that the Board present its reaction to these proposals, and the suggestion was duly seconded There ensued further discussion, after which the Speaker presented his understanding of Dr Hagerty's suggestion, namely, that the House of Delegates consider the six points presented by the Board of Trustees during the discussion of which each delegate, as well as each member of the Board of Trustees, might give suggestions Dr Hagerty's suggestion was then adopted, and the six questions were restated and discussed seriatim by various members of the House

The Secretary read a telegram from Dr W G Ricker Vermont, who was unavoidably absent from the meeting This telegram, together with other similar telegrams, was referred to the Special Reference Committee

The House referred to the Special Reference Committee resolutions introduced by Dr R B Anderson, Texas requesting the House of Delegates to reaffirm its position in opposition to sickness insurance Other resolutions on the subject of sickness insurance, presented by Dr H C Macatee, District of Columbia, Dr Charles H Goodrich, New York, and Dr Walter E Vest, West Virginia, were also referred to the Special Reference Committee

A motion of Dr Isaac A Abt, Section on Pediatrics seconded by Dr J N Baker, Alabama, that a committee of nine be appointed to study all phases of this subject and report back to the House at the Atlantic City Session was referred to the Special Reference Committee

The House recessed at 5 25 p m, to reconvene at 10 a m, Saturday, February 16

Second Meeting—Saturday Morning, February 16

The House of Delegates was called to order at 10 a m Saturday, February 16, by the Speaker, Dr F C Warnshuis

Dr J D Brook, Chairman, presented the report of the Reference Committee on Credentials, offering credentials of additional alternate delegates, who were then seated by the House Dr Brook stated that there were 162 delegates registered

The action of the Secretary, in referring to the Special Reference Committee recommendations from the New Jersey delegates received at adjournment on Friday, was approved

The Secretary presented a communication from physicians in Boston requesting the House of Delegates to consider fully the Lundeen bill, H R 2827, and the workers health insurance bill

Resolutions urging the American Medical Association to sponsor and support actively legislation by Congress to remove the immigrant physician from his present exemptions from the quota under the 1917 immigration law, and a resolution in which the Section on Radiology endorsed such resolutions both introduced by Dr Albert Soiland, Section on Radiology, were adopted after discussion, on motions duly seconded and carried

Dr Hugh Cumming, Surgeon General of the United States Public Health Service, addressed the House

The Secretary then read the minutes of the Friday session of the House, which were adopted on motion of Dr George W Kosmak, New York, seconded by Dr J D Brook, Michigan, and carried

Dr E A Hines South Carolina moved that the minutes of the Special Session of the House be reported in the usual manner in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and the motion was seconded by Dr Arthur J Bedell, New York and carried

Dr Harry H Wilson, Chairman, read the report of the Special Reference Committee, which, after prolonged discussion, was referred back to the committee for redrafting

The House recessed at 12 noon to reconvene at 2 p m, and all those desiring to recommend revision of the report of the Special Reference Committee were invited to meet with the committee during the recess

Saturday Afternoon, February 16

The House reconvened at 2 p m, Saturday, February 16, with Dr F C Warnshuis Speaker, presiding

Dr Harry H Wilson, Chairman of the Special Reference Committee presented the following report, which, on motions duly seconded and carried, was unanimously adopted

REPORT OF THE SPECIAL REFERENCE COMMITTEE

Your reference committee, believing that regimentation of the medical profession and lay control of medical practice will be fatal to medical progress and inevitably lower the quality of medical service now available to the American people, condemns unreservedly all propaganda, legislation or political manipulation leading to these ends

Your reference committee has given careful consideration to the record by the Board of Trustees of the previous actions of this House of Delegates concerning sickness insurance and organized medical care and to the account of the measures taken by the Board of Trustees and the officials of the Association to present this point of view to the government and to the people

The American Medical Association, embracing in its membership some 100,000 of the physicians of the United States, is by far the largest medical organization in this country The House of Delegates would point out that the American Medical Association is the only medical organization open to all reputable physicians and established on truly democratic principles, and that this House of Delegates, as constituted, is the only body truly representative of the medical profession

The House of Delegates commends the Board of Trustees and the officers of the Association for their efforts in presenting correctly, maintaining and promoting the policies and principles, heretofore established by this body

The primary considerations of the physicians constituting the American Medical Association are the welfare of the people, the preservation of their health and their care in sickness the advancement of medical science, the improvement of medical care and the provision of adequate medical service to all the people These physicians are the only body in the United States qualified by experience and training to guide and suitably control plans for the provision of medical care The fact that the quality of medical service to the people of the United States today is better than that of any other country in the world is evidence of the extent to which the American medical profession has fulfilled its obligations

The House of Delegates of the American Medical Association reaffirms its opposition to all forms of compulsory sickness insurance whether administered by the federal government, the governments of the individual states or by any individual industry, community or similar body It reaffirms, also, its encouragement to local medical organizations to establish plans for the provision of adequate medical service for all of the people, adjusted to present economic conditions, by voluntary budgeting to meet the costs of illness

The medical profession has given of its utmost to the American people, not only in this but in every previous emergency It has never required compulsion but has always volunteered its services in anticipation of their need

The Committee on Economic Security, appointed by the President of the United States, presented in a preliminary report to Congress on January 17 eleven principles which that committee considered fundamental to a proposed plan of compulsory health insurance The House of Delegates is glad to recognize that some of the fundamental considerations for an adequate, reliable and safe medical service established by the medical profession through years of experience in medical practice are found by the committee to be essential to its own plans

However, so many inconsistencies and incompatibilities are apparent in the report of the President's Committee on Economic Security thus far presented that many more facts and details are necessary for a proper consideration.

The House of Delegates recognizes the necessity under conditions of emergency for federal aid in meeting basic needs of the indigent. It deprecates, however, any provision whereby federal subsidies for medical services are administered and controlled by a lay bureau. While the desirability of adequate medical service for crippled children and for the preservation of child and maternal health is beyond question, the House of Delegates deplors and protests those sections of the Wagner bill which place in the Children's Bureau of the Department of Labor the responsibility for the administration of funds for these purposes.

The House of Delegates condemns as pernicious that section of the Wagner bill which creates a social insurance board without specification of the character of its personnel to administer functions essentially medical in character and demanding technical knowledge not available to those without medical training.

The so called Epstein bill proposed by the American Association for Social Security, now being promoted with propaganda in the individual states, is a vicious, deceptive, dangerous and demoralizing measure. An analysis of this proposed law has been published by the American Medical Association. It introduces such hazardous principles as multiple taxation, inordinate costs, extravagant administration and an inevitable trend toward social and financial bankruptcy.

The committee has studied this matter from a broad standpoint considering many plans submitted by the Bureau of Medical Economics as well as those conveyed in resolutions from the floor of the House of Delegates. It reiterates the fact that there is no model plan which is a cure-all for the social ills any more than there is a panacea for the physical ills that affect mankind. There are now more than 150 plans for medical service undergoing study and trial in various communities in the United States. Your Bureau of Medical Economics has studied these plans and is now ready and willing to advise medical societies in the creation and operation of such plans. The plans developed by the Bureau of Medical Economics will serve the people of the community in the prevention of disease, the maintenance of health and with curative care in illness. They must at the same time meet apparent economic factors and protect the public welfare by safeguarding to the medical profession the functions of control of medical standards and the continued advancement of medical educational requirements. They must not destroy that initiative which is vital to the highest type of medical service.

In the establishment of all such plans, county medical societies must be guided by the ten fundamental principles adopted by this House of Delegates at the annual session in June 1934. The House of Delegates would again emphasize particularly the necessity for separate provision for hospital facilities and the physician's services. Payment for medical service, whether by prepayment plans, instalment purchase or so called voluntary hospital insurance plans, must hold as absolutely distinct, remuneration for hospital care on the one hand and the individual personal, scientific ministrations of the physician on the other.

Your reference committee suggests that the Board of Trustees request the Bureau of Medical Economics to study further the plans now existing and such as may develop, with special reference to the way in which they meet the needs of their communities, to the costs of operation, to the quality of service rendered, to the effects of such service on the medical profession and to the applicability to rural, village, urban and industrial population, and to develop for presentation at the meeting of the American Medical Association in June model skeleton plans adapted to the needs of populations of various types.

The gist of the resolution introduced by Dr. Charles H. Goodrich, New York, has been included in the preamble of the report of your reference committee.

The resolution introduced by Dr. Walter E. Vest, West Virginia, relative to representation of the Association in Washington and the communication introduced by Dr. G. Milton

Linthicum, Maryland, relative to presentation of the views of the profession to the government, are referred to the Board of Trustees.

The resolution presented by Dr. C. E. Humiston, Illinois, for the appointment of a secretary of health in the cabinet is referred to the Bureau of Legal Medicine and Legislation and to the Board of Trustees.

A proposed program asking for the drafting of a model law embodying principles not yet approved by this House of Delegates and is therefore referred to the Bureau of Legal Medicine and Legislation and to the Board of Trustees.

The resolution introduced by Dr. J. W. Ames, Colorado, protesting interference with the right of free choice of physician in the Federal Relief Administration is referred to the Bureau of Legal Medicine and Legislation.

Resolutions offered by Dr. R. B. Anderson, Texas, and by Dr. H. C. Macatee, District of Columbia, the motion of Dr. I. A. Abt, Section on Pediatrics, and a group of recommendations emanating from the Interstate Medical Economics Conference are covered by sections of the report of your Special Reference Committee.

Harry H. Wilson, Chairman, California
Warren F. Draper, Virginia
E. F. Cody, Massachusetts
E. H. Cary, Texas
N. B. Van Etten, New York
F. S. Crockett, Indiana
W. F. Braasch, Minnesota

Dr. Wilson then moved that comments on the principles of insurance that had been submitted by Dr. H. H. Shoulders, Tennessee, be referred by the House of Delegates to the Bureau of Medical Economics. The motion was seconded by Dr. E. G. Wood, Tennessee, and carried.

It was moved by Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, seconded by Dr. C. E. Kiely, Ohio, and carried, that the report of the Special Reference Committee be given the widest possible publicity. It was suggested by Dr. Holman Taylor, Texas, that a professional propagandist be employed to publicize the report and to meet the propaganda of the opposition. Dr. Morris Fishbein, Editor of *THE JOURNAL*, stated that arrangements for publicity had already been made, such as broadcasts and publication in *THE JOURNAL* and in *HYGIEA*.

Dr. C. B. Reed, Illinois, presented resolutions urging that all clinics, child welfare groups of whatever nature, and other social or charitable organizations having to do with medical problems be regarded as a part and attribute of medical practice, and moved the adoption of these resolutions. The motion was seconded by Dr. C. S. Skaggs, Illinois, and carried.

Dr. McLain Rogers, Oklahoma, suggested that a committee be appointed to contact the President of the United States.

It was moved by Dr. F. S. Crockett, Indiana, that the House of Delegates instruct its members that immediately on returning home they should contact their state association officers to call meetings of their respective houses of delegates to consider and act on the report of the Special Reference Committee concerning sickness insurance just adopted by this House of Delegates and report their action to the Secretary of the American Medical Association. The motion was seconded by Dr. Charles J. Whalen, Illinois, and after discussion, was lost by a vote of 55 to 63.

The motion of Dr. Frederic E. Sondern, New York, seconded by Dr. A. R. McComas, Missouri, was adopted, as amended by Dr. E. H. Cary, Texas, namely, "It is the sense of the members of this House of Delegates that they are willing immediately to take the leadership of calling together the doctors of the states of the respective delegates to help inform them and solidify professional opinion as expressed here."

The Secretary read the minutes of the Saturday morning session of the House which were adopted.

It was moved by Dr. Arthur J. Bedell, New York, seconded by Dr. H. B. Everett, Tennessee, and carried that the House arise from executive session.

Dr. Austin A. Hayden, Secretary of the Board of Trustees, Dr. J. H. J. Upham, Chairman of the Board of Trustees, Dr.

Walter L. Biering, President, and Dr. James S. McLester, President Elect, addressed the House.

Dr. Albert Soiland, Section on Radiology, requested that a message of the proper sort be sent to Surgeon General P. S. Rossiter, expressing sorrow for the illness of, and hope of recovery for, Captain McDowell of the Medical Corps of the United States Navy. The Speaker stated that such a message would be sent by the Secretary.

Dr. C. A. Dukes, California, extended greetings from Dr. George Reinle, Vice President of the American Medical Association, who was unable to attend the Special Session.

The Speaker declared the House adjourned, sine die, at 3:50 p. m.

Association News

ABSTRACT OF MINUTES OF MEETINGS OF BOARD OF TRUSTEES HELD IN CHICAGO, FEBRUARY 14 TO 17

The Board of Trustees met at the headquarters office of the Association on February 14 and at the Palmer House on the 15th, 16th and 17th and gave careful consideration to the affairs of the Association.

SICKNESS INSURANCE

At its meeting on Thursday the Board of Trustees prepared a statement to be presented to the House of Delegates the following day giving an outline of the subject of sickness insurance, also a number of questions which the Board felt should be answered by the House of Delegates.

ELECTIONS

The following appointments were made for the various councils, committees and editorial boards: Council on Pharmacy and Chemistry—Drs. Morris Fishbein, G. W. McCoy and E. M. Bailey to succeed themselves, Dr. Howard J. Brown to succeed Dr. Stanhope Bayne-Jones, Dr. E. M. Nelson to succeed Dr. G. H. Simmons, and Dr. G. H. Simmons honorary member for life. Committee on Foods—Drs. G. F. Powers and Morris Fishbein to succeed themselves. Council on Physical Therapy—Drs. W. E. Garrey, W. W. Coblentz and John S. Coulter to succeed themselves. *Archives of Internal Medicine*—Dr. J. H. Musser, *Archives of Neurology and Psychiatry*—Dr. Adolph Meyer, *Archives of Otolaryngology*—Dr. George M. Coates, *Archives of Ophthalmology*—Dr. William Zentmayer, *American Journal of Diseases of Children*—Dr. H. F. Helmholtz, *Archives of Pathology*—Dr. Alfred Stengel—all to succeed themselves. *Archives of Dermatology and Syphilology*—Dr. Harold N. Cole to succeed Dr. W. T. Corlett. *Archives of Surgery*—Dr. Alton Ochsner to succeed Dr. Hugh Cabot. Committee on Scientific Research—Dr. Martin H. Fischer to succeed himself.

PUBLICITY OF INCOME TAX RETURNS

The Board of Trustees disapproved of the giving of publicity to income tax returns, and the director of the Bureau of Legal Medicine and Legislation was instructed to appear at the hearing on this new requirement and to present the views of the Board of Trustees.

APPROPRIATIONS

Appropriations were made for conducting the work of the various councils, bureaus and committees in the headquarters office as well as for exhibits and for research work.

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45 central standard time. The next three broadcasts will be delivered by Dr. W. W. Bauer. The titles will be as follows:

- March 7 Headache.
- March 14 Physical Defects.
- March 21 Rickets.

National Broadcasting Company

The American Medical Association broadcasts under the title 'Your Health' on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next three broadcasts will be as follows:

March 5 Surgery in Diabetes. Ieland S. McKinnick, M.D., who will speak from the National Broadcasting Company's studios in Boston, by special arrangement.

March 12 Food and Drug Law Revisions. Paul N. Leech, Ph.D.

March 19 White Collar Hazards. W. W. Bauer, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Bill Introduced—H. 88 proposes to create a board of naturopathic examiners and to regulate the practice of naturopathy. Applicants for licenses must be high school graduates or have an equivalent education and be graduates of a school or schools of drugless therapeutics, approved by the board, requiring residential studies of not less than four years of eight months each. The bill states that naturopathy, which includes all forms of physiotherapy, is hereby defined to be a system of treating the abnormalities of the human mind and body by the use of drugless and nonsurgical methods, and includes the use of physical, electrical, hygienic, and sanitary measures incident thereto.

ARKANSAS

Bill Passed—S. 141 has passed the senate, proposing to repeal the laws regulating the sale, distribution or possession of narcotics and to enact what apparently is the uniform narcotic drug act.

Eclectic Licentiate Must Register—Within sixty days after Feb. 7, 1935 every licentiate of the Arkansas eclectic medical examining board must register with the secretary of the board. Failure to do so automatically suspends his right to practice. Registration must be accompanied by a fee of \$2 if the licentiate is a resident of Arkansas and by a fee of \$4 if he is a nonresident.

Bills Introduced—S. 184 proposes to authorize cities and incorporated towns to impose occupational taxes on physicians practicing within their jurisdiction. S. 213, to supplement the state food and drug act, proposes to transfer the administration of that act to the state board of health. It is to be the specific duty of every prosecuting attorney to whom the state health officer or any health or food or drug officer or agent of any county shall present satisfactory evidence of any violation of the act to institute appropriate proceedings for the enforcement of the act. S. 267 proposes to require the homeopathic medical board, the eclectic medical board, the "State Medical Board of the Arkansas Medical Society," the board of osteopathic examiners, and the board of chiropractic examiners to file with the secretary of state a list of all persons who have been licensed within the past twenty years giving the date the licenses were issued, the last known postoffice address of the licentiates and information as to whether the several licenses were issued after examination, or by reciprocity or if granted on a diploma. The boards referred to are to file with the secretary of state such information with respect to all licenses to be issued in the future by them, within one week of the issuance of the licenses. H. 217, to supplement the pharmacy practice act, proposes (1) to define drugs as follows: "Drugs means any drug or compound listed in the United States Pharmacopoeia or the National Formulary, or both, which are [sic] used for the prevention, mitigation or cure of disease"; (2) to prohibit the retail sale and distribution of drugs, as defined, except by registered pharmacists by physicians and by persons in communities not accessible to a registered pharmacy licensed by the board of pharmacy to sell and distribute drugs "conforming to the standards set by the United States Pharmacopoeia, or the National Formulary, or both"; and (3) to permit a court on the application of the board of pharmacy to enjoin the operation of any store not complying with the pharmacy laws.

CALIFORNIA

Correction—Bill Introduced—S 155 proposes to amend the medical practice act so as to authorize the board of medical examiners to issue a physician's and surgeon's certificate to an applicant who, although failing to furnish documentary evidence satisfactory to the board that he has completed a resident course of instruction fulfilling the requirements of the act, presents a diploma issued to him by a medical school approved by the board, and in addition files satisfactory documentary evidence of having either completed the fourth year in an approved medical school in the United States or having served at least one year in residence in a hospital in the United States approved by the board for internship. The item in *THE JOURNAL*, February 9, page 480, indicating that this bill tended to lower educational requirements, was based on an erroneous construction of the language of the bill.

Bills Introduced—S 820, to amend the medical practice act, proposes (1) to require persons who are licentiates of the board of osteopathic examiners on or before the first day of January annually to pay to the secretary-treasurer of the osteopathic board an annual registration fee of \$5 and (2) to provide that, in lieu of the requirement that an applicant for a license by reciprocity must have been a resident of the state which issued the certificate used as the basis of application for one year subsequent to the issuance of such certificate, the board may accept evidence of two years of licensed practice in another state. A 1009 proposes to raise to \$20 the annual permit fee required of clinics and dispensaries. A 1046 proposes to make it lawful for any practitioner of the healing art to enter into contracts or agreements with any of his patients to furnish them professional services or hospitalization and to exempt such agreements from the provisions of the insurance law. A 1096 and A 1097 propose to provide for the establishment of systems of health service insurance. These bills however were introduced by title only and presumably the committee to which they were referred, Social Service and Welfare, is to draft the bills. A 1202, to amend the law requiring hospitals, pharmacies and physicians treating persons suffering from wounds inflicted by knives, guns or other deadly weapons, to report such facts to appropriate police officials, proposes to require such reports of 'every person who renders or assists in rendering any treatment aid or service to any such injured person'. Reports are to be required to be made immediately after first treating or caring for such persons. A 1552 proposes to require applicants for licenses to practice any form of the healing art, as a condition precedent to examination by their professional boards to pass an examination to be given by a state board of qualifying certificate examiners in at least five of the following subjects: anatomy, physiology, chemistry, physics, botany, zoology, biology, hygiene, bacteriology and English. The board of qualifying certificate examiners is to be appointed by the Regents of the University of California and is to consist of five members, one member selected from the faculty of the University of California, one from the faculty of Stanford University, one from the faculty of the University of Santa Clara, one from the faculty of the University of Southern California and one from the faculty of the California Institute of Technology. The members of this board are to be selected because of their knowledge of the fundamental sciences enumerated. No member of the board is to be actively engaged in the practice of the healing art. A 1690, to amend the workmen's compensation act proposes that when an injured workman suffers from any disease or other physical impairment which delays or prevents the cure or relief from the disability caused by an industrial injury the employer is to be liable only for the reasonable cost of such medical, surgical and hospital treatment including nursing, as would have been required to cure or relieve the injury if such illness or physical impairment had not existed. A 1918 to amend the workmen's compensation act, proposes that the records of any hospital with respect to services rendered to any injured workman shall be exhibited to the patient or to his representative. The injured workman or his representative is to be permitted to make copies of such records including, but not restricted to, photostatic copies. A 1925, to amend the law relating to the use and disposition of unclaimed dead bodies, proposes that such bodies may be used for the purpose of instruction and study in the promotion of chiropractic education. A 2158 proposes to make it unlawful for any hospital clinic, physician or other person or institution possessing records concerning the condition of health of any person made while said person was in the care of such person or institution to refuse to exhibit such records to an attorney at law, designated by the patient in writing and to allow copies of the records to be made.

COLORADO

Bill Introduced—S 228 proposes to make it the duty of any physician, nurse or midwife, assisting in or in charge at the birth of any infant, or having its care after birth, to treat its eyes with a prophylaxis approved by the state board of health. This treatment is to be given as soon as practicable after birth but always within one hour.

Bills Passed—H 138 has passed the house, proposing to repeal the laws regulating the sale, distribution or possession of narcotic drugs and to enact what appears to be the uniform narcotic drug act. H 557 has passed the house, proposing to prohibit the retail sale or distribution of barbitol or other hypnotic or somnifacient drugs except on the prescription of a duly licensed physician, dentist or veterinarian. The prohibited drugs are barbitol, malonylurea, sulphonethylmethane (trional), sulphonmethane (sulphonol), diethyl-sulphon diethylmethane (tetronal), paraldehyde, chloral or chloral hydrate.

CONNECTICUT

Dr Chambers Gives Ferris Lecture—Robert Chambers, Ph.D., research professor of biology, New York University, New York, presented the Harry Burr Ferris Lecture in Anatomy at Yale University School of Medicine, New Haven, January 11. His subject was 'Mechanics of Cell Division.' It was illustrated by micromotion pictures of dividing cells manipulated by a microdissection technic.

Cancer Conferences—A series of conferences on problems relating to cancer research was conducted, January 24-31, at Yale University School of Medicine, New Haven by Dr Ernest Laurence Kennaway, director of the Research Institute of the Cancer Hospital, London. The purpose was an interchange of ideas between investigators in related fields. They were made possible by the trustees of the Anna Fuller Memorial Fund established in 1931 by the bequest of the late Egbert C. Fuller of New Haven for the study of cancer.

Social Aspects of Medicine—Edward Sapir, Sc.D., professor and head of the department of anthropology, Yale University, New Haven, made an address on "Human Beings as Personalities," March 4, in the series of lectures on the backgrounds of medical practice, which opened at the university January 14. These lectures are under the auspices of the department of public health of the university and are designed to help medical students especially to gain a broader view of human society and the role of medicine in it. Dr Sapir's lecture, February 18, on "Human Beings as Defined by Culture," was also included in the series. The first three lectures were given by Dr Henry E. Sigerist, director, Institute of the History of Medicine, Johns Hopkins University, Baltimore.

Bills Introduced—S 389 and S 396 propose to require both parties to proposed marriages as a condition precedent to obtaining licenses to wed to present statements from licensed physicians that both parties have submitted to a Wassermann or Kahn or other similar standard laboratory blood test and that the result of such test has proved negative. H 241, to supplement the naturopathic practice act, proposes to authorize the board of naturopathic examiners to issue a license to any naturopath who was engaged in practice within the state prior to July 1, 1923, and who is a graduate of a legally chartered reputable school or college of naturopathy approved by the board. H 443 proposes to appropriate \$1,000 to the state department of health to be used for such treatment of indigent typhoid or paratyphoid fever germ carriers as may be necessary to relieve them of the carrier state. H 577 proposes that on the conviction of a woman for violating the law prohibiting prostitution and lewdness she shall be examined for venereal disease. If she is found infected she is to be placed under treatment and is to be detained until she is no longer a menace to the public health. H 633 proposes to amend the law requiring physicians and midwives in attendance at the birth of a child to instill a prophylactic solution in the eyes of the baby by requiring such prophylactic solutions to be approved by the state department of health. H 814 proposes that any person, committed to any penal or charitable institution by any court, who is afflicted with any venereal disease, be detained in such institution and treated until he may be discharged therefrom without danger to the public health. H 853, to amend the medical practice act, proposes that "the use of the roentgen or x-ray or of radium in any manner for the treatment of any person shall be deemed to constitute the practice of medicine and surgery." H 1162, to amend the naturopathic practice act, proposes to raise the annual registration fee required of licentiates to \$5. H 1163 to amend the workmen's compensation act, proposes to permit chiropractors to render the "medical" treatment which the employer is required to furnish an injured workman.

DISTRICT OF COLUMBIA

Medical Bills in Congress—S 1016 has been reported to the Senate, proposing to empower the health officer of the District of Columbia to authorize the disinterment and reinterment of bodies in cases in which death has been caused by certain contagious diseases (S Rept No 124)

GEORGIA

Bills Introduced—H 204 proposes to authorize the sterilization of certain socially inadequate inmates of state institutions. H 561 proposes, among other things to levy an annual occupational tax of \$15 on practitioners of medicine, osteopathy, chiropractic, chiropody and dentistry. H 178 proposes to repeal the laws regulating the sale, distribution or possession of narcotic drugs and to enact what apparently is the uniform narcotic drug act.

Bills Passed—S 82 has passed the senate proposing to create a board of physiotherapy examiners and to regulate the practice of physiotherapy. The practice of physiotherapy is defined as "the diagnosis and treatment of human ailments by the use of any natural force or agency, the basis of which is water, heat, sunlight, electricity or electrically produced energies, mechanical appliances, ultra-violet light, infra-red light, manipulations, corrective exercises, dietetics, massage, external applications and mineral baths." The bill proposes to prohibit anybody but a licentiate of the board from practicing physiotherapy as above defined but exempts (a) persons authorized by law to practice medicine and surgery and (b) persons who at the time of the enactment of the bill are members of the Georgia State Association of Physical Therapy or who have been engaged in the practice of physiotherapy for one or more consecutive years prior to the enactment of the bill. Applicants for licenses must be graduates from high schools or have equivalent education, must have studied physiotherapy for two years in a school of physiotherapy, approved by the board, and must pass a satisfactory examination in histology, anatomy, physiology, chemistry, pathology, diagnosis and treatment, bacteriology, massage, therapeutics, clinical physiotherapy and such added subjects as shall subsequently be taught by accredited schools of physiotherapy. S 60 has passed the senate, proposing to repeal the laws regulating the sale, distribution or possession of narcotic drugs and to enact what apparently is the uniform narcotic drug act.

ILLINOIS

Bills Introduced—H 319 proposes that no one shall be employed to teach in the common schools of the state who does not present a physician's certificate showing that the applicant is free from contagious, infectious or communicable diseases. H 320, to amend the medical practice act, proposes to authorize the revocation of the license of any practitioner who knowingly issues "a false certificate to any person to aid such person to obtain an appointment as a teacher in the schools of the state and showing such person to be free from contagious, infectious and communicable diseases."

Chicago

Lectures in Ophthalmology—Dr Karl Lindner, professor of ophthalmology, University of Vienna, will give a series of lectures at Northwestern University School of Medicine, April 9-12. He will discuss retinal detachment, trachoma, pathology underlying fundus diseases, and bacteriology of the eye. There will be a charge of \$10 for the course. Reservations may be made with Dr Earle B. Fowler, 55 East Washington Street.

Faculty to Present Program—Members of the faculty of the University of Illinois College of Medicine will present the program before the Chicago Medical Society at its meeting March 6. Drs George B. Hassin and Eric Oldberg will discuss respectively, the clinicopathologic features and surgical treatment of spastic paraplegias, and Drs H. Douglas Singer and Abraham A. Low will consider "Psychotic Symptoms and Their Significance."

INDIANA

Bills Introduced—H 365 proposes to authorize the construction and maintenance of hospitals by cities of the fourth and fifth classes. Such hospitals are to be open to all persons on reasonable terms and are also to be open on reasonable terms to all physicians who desire to place patients therein. S 234 proposes to authorize the establishment of an additional state hospital for the treatment of tuberculosis.

IOWA

Tuberculosis Survey—Linn County has been selected for a tuberculosis survey, according to the bulletin of the county medical society to be made as a federal public health project. Its purposes are to determine the physical condition of persons who have been patients in a tuberculosis sanatorium, to examine tuberculosis contacts by means of diagnostic tuberculin and the x-rays, and to do mass tuberculin testing when feasible and desirable locally. State and local health agencies are cooperating in the project, which was to have begun early in February.

Lectures for the Public—The speakers' bureau of the Iowa State Medical Society sponsored a course of health lectures for lay audiences when it opened a series, January 16, in Grinnell. Dr Milford E. Barnes, Iowa City, was the speaker on infectious diseases and their control. Dr Thomas U. McManus, Waterloo, discussed the common cold, January 23. Dr Arthur Steindler, Iowa City, infantile paralysis, January 30 and Dr Douglas N. Gibson, Des Moines, February 6, accidents. Should the response to these lectures be favorable the bureau plans to present similar series in other communities.

KANSAS

Bills Introduced—H 357 proposes to authorize the state board of health to secure, prepare and distribute infantile paralysis serum to serum stations throughout the state. H 471 and S 411 propose to authorize Fort Hays Kansas State College to provide local and traveling clinics and adequate psychologic clinical facilities for unusual and abnormal children of school age. H 516 to amend the law relating to the qualification and personnel of the state board of health, proposes to authorize the governor to appoint as a member thereon a licensed dentist.

Bill Passed—H 257 has passed the house, proposing that, whenever in the opinion of the warden of the state penitentiary at Lansing asexualization will be beneficial to the physical, mental or moral condition of any recidivist confined therein or any inmate who is a sexual pervert or degenerate, or any convict serving a life term for premeditated murder, or any convict who escapes or attempts to escape from the penitentiary, it shall be the duty of the board of administration to institute proceedings looking toward the sexual sterilization of such persons.

MAINE

Bills Introduced—S 394, to amend the chiropractic practice act, proposes (1) to require an applicant for a license, in addition to the qualifications now required by law, to be a graduate of a legally chartered chiropractic college in good standing requiring personal attendance and conferring degrees on the completion of a course of four school years of not less than six months each, and of a total of 2,600 sixty minute school hours. (2) to provide that a license to practice chiropractic shall entitle the holder thereof to practice chiropractic in all its branches as taught and practiced by the recognized schools and colleges of chiropractic, but it shall not authorize the practice of obstetrics so far as the same relates to parturition or to administration of drugs or the performance of surgical operations with the use of instruments and (3) to define chiropractic as "the science of locating and correcting interference with nerve transmission and expression, without the use of drugs or surgery, by such methods as are taught in reputable chiropractic schools and colleges." H 1348, to amend the chiropractic practice act, proposes to eliminate those provisions of the act requiring applicants for licenses to pass examinations.

MASSACHUSETTS

Dr Cannon to Lecture in China—Dr Walter B. Cannon, George Higginson professor of physiology, Harvard Medical School, Boston, will serve as visiting professor of physiology at the Peiping Union Medical College from April 15 to June 1, Science reports. He plans to attend the International Physiological Congress in Leningrad and Moscow in August.

Dr Faxon Appointed Director of Massachusetts General Hospital—Dr Nathaniel Wales Faxon, since 1922 director of Strong Memorial Hospital, University of Rochester, Rochester, N. Y., has been appointed director of the Massachusetts General Hospital and the Massachusetts Eye and Ear Infirmary, Boston. Dr Faxon, who graduated from Harvard Medical School in 1905, was assistant director of the Massachusetts General Hospital from 1919 to 1922. He is 54 years old and a former president of the American Hospital Association. He will succeed Dr George H. Bigelow who has been missing since December 1934.

MICHIGAN

Faculty Farewell to Dr Novy—An embossed plaque was presented to Dr Frederick G Novy, retiring dean of the University of Michigan Medical School, Ann Arbor, at a special executive faculty meeting, February 7. The meeting also marked the induction into office of Dr Albert C Furstenberg as dean. The resolution inscribed on the plaque acknowledged Dr Novy's years of service to the university and noted the regret of his colleagues that he will no longer be associated with them.

Bills Introduced—H 212 proposes to exempt from the provisions of the state sales tax law proceeds from the retail sale of medicines. S 121, to amend the chiropractic practice act, proposes that all moneys received by the board of chiropractic examiners be paid promptly into the state treasury and be credited to the general fund of the state to be disbursed as otherwise appropriated by the legislature. Under the present law the board is required to pay monthly all moneys received to the state treasurer.

MINNESOTA

Bill Passed—H 7 has passed the house, proposing to make it unlawful for any person to raise marijuana or prepare or manufacture marijuana into any product usable for smoking purposes.

Jackson Lecture Postponed—Dr Logan Clendening, professor of clinical medicine, University of Kansas School of Medicine, will deliver the second Clarence Martin Jackson lecture of the University of Minnesota School of Medicine March 8 instead of February 20 as formerly announced. Dr Clendening's lecture will be entitled "The Human Side of Medicine."

Society News—Speakers before the Hennepin County Medical Society at its February meetings included Drs Elmer L Seyringhaus, Madison Wis., February 4 on "Diagnostic and Therapeutic Questions in the Menopause," February 6 Emil Goetsch, Brooklyn, "Phases of the Gout Problem with Particular Reference to Iodine Therapy," February 13 Aaron Friedell, Minneapolis, "Medical Cooperation with Independence or State Medicine—Which Shall It Be?" and Chester A Stewart, Minneapolis, "Primary Tuberculosis Infection: An Asset or a Liability." February 20 William B Roberts, "Relation of Vital Capacity and Allied Tests to Circulatory Capacity of Ambulant Cases" and Gilbert Seashore, "Duties, Responsibilities and Powers of the Coroner's Office." Dr William A O'Brien, St. Paul conducted a pathologic conference February 27. Plans to employ a full time executive secretary have been approved by the executive committee of the society.

MISSOURI

Bill Passed—S 28 has passed the senate proposing to make it unlawful for any person to cultivate, cure, prepare, distribute in any manner or possess marijuana. Physicians, dentists and osteopaths however are to be permitted to prescribe marijuana.

Bills Introduced—H 423 proposes to repeal the laws regulating the sale, distribution or possession of narcotic drugs and to enact what apparently is the uniform narcotic drug act. H 307 to amend the medical practice act proposes (1) that applicants for licenses in addition to the qualification now required by law be at least 21 years of age, be citizens of the United States, have actually lived in the United States one year prior to the making of their applications, be able to read and write in the English language and have received a diploma from some medical college in the United States prescribed [sic] by the board and/or recognized and approved by the American Medical College Association, (2) that the board of health shall have the exclusive right to determine the reputability of medical schools or at its discretion may accept a medical school recognized and approved by the American Medical College Association, and (3) to raise from \$15 to \$25 the fee required of applicants.

MONTANA

Bill Introduced—H 360 to amend the medical practice act, proposes to forbid so-called "Chinese Doctors," "Chinese Herb Doctors," "Chinese Specialists" and "Chinese Herbalists" from selling, advertising, prescribing, directing or recommending any herbs, roots, barks or berries or any compound, liquid or otherwise for the cure, relief or palliation of any ailment or disease of either mind or body, without a license to practice medicine.

NEBRASKA

Society News—Drs Donald R Black and James G Montgomery, Kansas City, Mo., addressed the Omaha Douglas County Medical Society, Omaha, February 12, on "Modern Treatment of Diabetes" and "Surgery of the Spleen," respectively.

Bill Introduced—S 326 proposes to authorize the county board of commissioners or supervisors of any county to create a public health department to prevent the introduction and spread of contagious, infectious and malignant diseases in the county. Such county public health department, when created, is to assume the duties of the health departments in villages, towns and cities in counties of less than 40,000 population. In counties where there are cities of 40,000 or more inhabitants, the governing bodies may make arrangements with the county boards to consolidate their public health departments or to coordinate the public health work. Two or more contiguous counties are also authorized to make arrangements to consolidate their public health departments and to coordinate their public health work.

NEVADA

Society News—Dr Albert G Clark, Boulder City, addressed the Clark County Medical Society, January 8, on "Renal Tuberculosis." A paper on "Blood Transfusion" was presented before the Washoe County Medical Society at its meeting, January 8, by Dr Lawrence Parsons, Reno.

Bill Introduced—S 57 proposes to require applicants for licenses to practice medicine, osteopathy, chiropractic, naturopathy or any other system of healing that may hereafter be legalized in the state, as a condition precedent to examination by their professional boards, to pass examinations to be given by an impartial board in human anatomy, human physiology, human pathology, chemistry and hygiene. The examining board is to be appointed by the Board of Regents of the University of Nevada from the faculties of the University of Nevada. No member is to be actually engaged in the practice of any method or system of healing or have any financial interest in or be a member of the faculty of any school of medicine and surgery, osteopathy, chiropractic or any other school of healing.

NEW HAMPSHIRE

Bills Passed—H 196 proposing to limit the administration of anesthetics to licensed physicians and dentists, passed the house but has been recalled by the house public health committee for redrafting. H 270 has passed the house, proposing to amend the chiropody practice act so as to define a chiropodist as "one who examines, diagnoses or treats medically, mechanically, surgically, or by electrical and manipulating means, or by bandaging and strapping, the ailments of the human foot, not requiring the use of anesthetics other than local."

NEW JERSEY

Bills Introduced—S 134 proposes to grant to physicians liens for their reasonable charges in treating persons injured by the negligence of others, on any judgments or settlements obtained by such injured persons by reason of their injuries. Such liens, however, are to be limited to an amount not over 25 per cent of the amount of said judgments or settlements. The existing law on the subject contains no such limitation. A 142, A 143 and A 144, to supplement the workmen's compensation act are companion bills, introduced at the same time and constitute a single operative arrangement for preventing, controlling, and compensating for silicosis. A 151, to amend the laws regulating the practice of chiropody, proposes to create an independent board of chiropody examiners, to examine and license applicants for licenses to practice chiropody. Under the present law, the state board of medical examiners examines and licenses applicants. A 182, to amend the laws regulating the sale, distribution or possession of narcotic drugs, proposes to prohibit any person other than a dealer in surgical instruments, an apothecary, a physician, a dentist, a veterinarian, a nurse or an intern from possessing a hypodermic needle or hypodermic syringe, or any other instrument adapted for the use of cocaine or narcotic drugs by subcutaneous injections, unless such possession is obtained by means of the prescription of a physician, dentist or veterinarian, issued within the preceding year. A 184, to amend the workmen's compensation act proposes to ameliorate the conditions under which workmen can receive compensation for hernias arising in the course of employment. The bill proposes that when there is traumatic hernia resulting directly from the application of force directly to the abdominal wall, either puncturing or tearing it, compensation will be allowed. All other cases will be compensable.

provided a preponderance of proof is offered that the hernia was caused by such sudden effort or severe strain that the descent of the hernia followed within twenty-four hours of the cause, that there was severe pain in the hernial region, that the workman was compelled to cease work within twenty-four hours, that the foregoing facts were of such severity that they were noted by the workman and communicated to his employer within forty-eight hours after the occurrence of the hernia, and that there was such physical distress that the attendance of a physician was required within forty eight hours after the occurrence of the hernia. A 185 to amend the law providing liens for hospitals and physicians caring for persons injured through the negligence of others on rights of action, claims and demands accruing to the injured persons by reason of their injuries, proposes to make the lien applicable only to hospitals. A 238, to amend the provisions of the medical practice act relating to osteopathy, proposes to authorize such osteopaths to practice surgery as, after graduating from a four year course in a reputable osteopathic school including courses in the principles and practice of surgery, have served as interns for at least one year in a reputable hospital or postgraduate school or as full time assistants to licensed surgeons. The bill proposes to eliminate those provisions in the present law which specifically prohibit osteopaths from prescribing or administering medicine and also proposes to denominate the practice of osteopathy as the practice of osteopathic medicine which, the bill states, 'shall include the diagnosing, treating, operating or prescribing for any human disease, pain, injury, deformity, physical or mental condition

NEW MEXICO

Bill Introduced—S 41 proposes to amend the law prohibiting the planting, cultivating production or sale or other distribution of cannabis indica so as to prohibit also its possession except on the written prescription of a licensed physician

Bill Passed—H 181 has passed the house, proposing to create a board of naturopathic examiners and to regulate the practice of naturopathy. Naturopaths who have had actual practice in the state for two years are to be licensed without examination. Other applicants must be graduates of chartered schools or colleges of naturopathy, teaching resident courses of not less than 3 600 hours and which require a high school education or its equivalent as a condition to admittance. A license to practice naturopathy is to entitle the holder thereof to administer any and all natural and constructive treatment in human ailments which are calculated to relieve suffering and/or restore health without the internal use of medicines, drugs or iodines, and to issue birth health and death certificates

NEW YORK

Practitioners' Clinics at Rochester—Strong Memorial Hospital, Rochester, began a series of clinics for registered physicians, January 17 which will be continued through November on the third Thursday of each month. Dr Charles L. Scudder, Boston, was guest clinician at the first meeting discussing 'The Bases of the Treatment of Fractures'. Later clinics will be conducted by members of the staff

Health at Utica—Telegraphic reports to the U S Department of Commerce from eighty-six cities with a population of 37 million for the week ended February 16, indicate that the highest rate (24.2) appears for Utica and the rate for the group of cities as a whole, 12.6. The mortality rate for Utica and for the group of cities as a whole for the corresponding week of 1934 was 13.6. The annual rate for the group of cities for the seven weeks of 1935 was 13.1 as compared with 12.6 for the corresponding period of last year. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate

Bills Introduced—S 957 to amend the education law proposes to authorize the establishment of colleges of natural therapy. The commissioner of education is to prescribe rules and regulations for the establishment and regulation of such colleges which are to be authorized to issue degrees to matriculated students who have completed a four year course of study. The bill states that "a doctor of natural therapy shall be deemed to be a person who has successfully taken a course of study prescribed by the regents of the University of the State of New York in a college recognized by it in 1. Hydrotherapy (mineral waters) 2. Balneology (mineral bathing) 3. Cibology (preparation of foods for the sick) 4. Dietology (dietetics and metabolism) 5. Hirudology (application of leeches) 6. Hygiene (sanitation sterilization antiseptic [sic] and aseptic work) 7. Chismology (lavage of

stomach, bladder and colonic irrigation) 8. Lavatology (the relaxation of muscles, tendons, joints) 9. Massage (kneading [sic], exercise, under water exercise) 10. Phlebotomy (application of cupping, plasters, salves) 11. Potology (drinks, teas in sickness) 12. Rotology (rotation of various parts of the body to relax and release) 13. Electrolysis (removal of hair by electricity) 14. Scalp treatment (to prevent hair falling and baldness) 15. Physiotherapy (the application of diatermy [sic], ultraviolet and other radiations under physicians orders)". The bill is not clear whether or not such a 'doctor' would be permitted, without the examination and licensure required by the medical practice act, to practice the tenets of this school of natural therapy. A 123 and A 166 propose that whenever it is relevant to the prosecution or defense of an action, the court may require any party to the action and the child of any such party to submit to blood tests to be made by duly qualified physicians under such restrictions and directions, as the court or judge deems proper. The results of the tests made by the physicians are to be admissible in evidence

New York City

Diphtheria Immunization Record—The largest number of diphtheria immunizations in any year since 1929 185,586, was reported by Dr John L. Rice, health commissioner, for the year 1934. Of the number of children immunized 117,569 or 64 per cent were under 6 years old. In 1929, when the Diphtheria Prevention Commission began its intensive drive, 211,985 children were immunized. Since this commission ceased to function in 1931, the work has been carried on by the health department without outside funds. In 1932 there were 166,243 immunizations, in 1933 there were 161,611. Deaths in the three year period 1932-1934 fell to an average of 133 per year, contrasted with 750 when the demonstration was begun in 1929

Personal—Dr Jacob J. Golub, director of the Hospital for Joint Diseases will be consultant to the building committee of the Rothschild-Hadassah-University Hospital in Jerusalem which is shortly to be built.—Roy Chapman Andrews, explorer and naturalist has been appointed director of the American Museum of Natural History to succeed George H. Sherwood who resigned. Mr Andrews has been connected with the museum for many years as the leader of field expeditions into Central and Far Eastern Asia.—Dr Adam Eberle, medical superintendent of Kings County Hospital, has been appointed acting general medical superintendent of all city hospitals.—Dr John F. Erdmann, for more than twenty years director of the department of surgery of the New York Post-Graduate Medical School and Hospital, was the guest of honor at the annual dinner of the faculty association January 26. A bust of Dr Erdmann was unveiled at the dinner and it was announced that a new amphitheater at the school is named for him

NORTH CAROLINA

Bill Introduced—H 293, to amend the workmen's compensation act proposes to make some twenty-five occupational diseases compensable, included among which are anthrax, compressed air illness, chrome ulceration, silicosis, asbestosis, tenosynovitis, bursitis, miners' nystagmus, and poisoning from arsenic, brass, zinc, manganese, lead, mercury, phosphorus, carbon bisulphide, methanol, naphtha, halogenated hydrocarbons, benzol, nitro and amido derivatives of benzol, radium, carbon monoxide, sulphuric, hydrochloric and hydrofluoric acid

NORTH DAKOTA

Bill Introduced—H 201 proposes a procedure whereby county commissioners may levy a tax of not exceeding 6 mills on every taxable dollar of real estate and personal property within the county to pay for medical, surgical and hospital care for all of the residents of the county. Residents apparently are to be permitted to choose any physician or hospital they desire and the county will pay for the services according to a stated schedule

OHIO

Bills Introduced—S 95 proposes to authorize the asexualization of feeble-minded and epileptic inmates or patients of hospitals or other state or county institutions supported in whole or in part by public funds. S 97 proposes to amend those provisions of the medical practice act relating to the examination to be given by the state medical board to osteopaths who desire to practice surgery and obstetrics. The bill proposes that the grades made by an osteopath in the examinations in anatomy, physiology, obstetrics, surgery and diagnosis conducted by the state medical board, shall be averaged

by the state medical board with the various grades received in his examination before the osteopathic examining committee. The bill proposes, too, to eliminate that provision of the present law which provides that an osteopath licensed to practice surgery and obstetrics shall not be permitted to prescribe or administer drugs, except anesthetics and antiseptics. It proposes also that the signature or witness of an osteopathic physician and surgeon shall be accorded the same rights and privileges as are accorded the signature of a doctor of medicine and surgery. S 105, to amend the workmen's compensation act, proposes to make the following occupational diseases compensable, in addition to the diseases now stated in the law: stone workers or grinders' phthisis, pneumoconiosis and silicosis. H 14 to amend the workmen's compensation act, proposes to make the following occupational diseases compensable in addition to the diseases now stated in the law: silicosis, calcinosis, asbestosis and anthracosis.

OKLAHOMA

Bill Passed—S 14 has passed the senate, proposing to authorize the sexual sterilization of habitual criminals and to define as a habitual criminal any person convicted to final judgment three times for the commission of felonies.

OREGON

Bill Passed—H 180 has passed the house and the senate, proposing to limit the distribution of appliances, drugs or medicinal preparations intended or having special utility for the prevention of conception and/or venereal diseases, to licensed physicians and to persons licensed to do so by the state board of pharmacy.

Bills Introduced—S 250 proposes to repeal the laws regulating the sale, distribution and possession of narcotic drugs and to enact what apparently is the uniform narcotic drug act. H 266 proposes that any person using the title "Doctor" in connection with the practice of any form of the healing art shall use in conjunction therewith the appropriate designation of the branch of the healing art he is licensed to practice. H 373 proposes to authorize the state board of health to make such rules and regulations as it deems necessary for the operation of laboratories in which human or animal body fluids, secretions or excretions are examined for the determination of the presence or absence of an infectious agent. Every person, corporation or municipal corporation maintaining such a laboratory is required to register annually with the state board of health. H 377, to amend the laws relating to the state board of health, proposes that the secretary of the board, who ipso facto is the state health officer, shall have a degree of doctor of medicine from a reputable medical school, shall have been licensed to practice medicine in the state, and shall have had at least five years' experience as a full time health officer or two years' residence at a recognized school of public health. The present law merely requires the secretary to be a regularly graduated and reputable physician.

PENNSYLVANIA

Society News—Dr. I. Newton Kugelmass, New York, addressed the Cambria County Medical Society, February 14, on "Recent Advances in Treatment of Nutritional Disturbances in Infancy and Childhood."

Philadelphia

Society News—Speakers at a meeting of the Philadelphia Laryngological Society, February 5, were Drs. Henry Dintenas, "Accidental Injury of the Lateral Sinus", Louis H. Clerf, "Cough—From the Rhinological Viewpoint," and Gabriel Fucker, "Difficulty in Swallowing—Esophagoscopic Observations."—The Philadelphia County Medical Society devoted its program to a discussion of the barbiturates. February 13 speakers were Drs. Harold W. Jones on "Clinical Manifestations and Treatment of Barbiturate Poisoning and Barbiturate Intoxication," and Thomas Fitzhugh Jr., "Role of Amido-pyrimine and Other Medicinal Substances in the Etiology of Agranulocytic Angina" and John Howard Graham M.A., professor of chemistry at Temple University, "Toxicity of Barbituric Acid."

SOUTH CAROLINA

Bills Introduced—S 204 to amend the insurance law proposes to authorize any ten or more persons to associate themselves together as a mutual protection association for the indemnifying of each other for losses on the assessment plan, and not for profit "to insure the lives or health of members against death or disability by accident or disease or

hospitalization benefits." H 21 proposes to create a board of chiropody examiners and to regulate the practice of chiropody [podiatry]. "Chiropody," sometimes called podiatry," states the bill, "shall for the purposes of this act mean the diagnosis, surgical medical and mechanical treatment of ailments of the human foot, except the correction of deformities requiring the use of the knife, amputation of the foot or toes, or the use of an anaesthetic other than local." H 228 proposes that any person or corporation manufacturing, or selling arsenate of lead or other poisonous article, color such article plainly marking on its container in red the word "poison." H 308 proposes to authorize the sexual sterilization of certain socially inadequate inmates of state institutions.

SOUTH DAKOTA

Bill Introduced—S 82 proposes to authorize county sub-commissions for the control of the feeble-minded to order the sexual sterilization of feeble-minded persons they may determine to be capable of procreation.

TENNESSEE

Bills Introduced—S 297, to amend the medical practice act proposes (1) to provide that members of the board of medical examiners be appointed by the governor from a list of names submitted by the Tennessee State Medical Association and (2) that no license shall be revoked until the licensee has been notified in writing of the charges against him and has been given an opportunity for a full and complete hearing, with the right to be represented by counsel. H 473 proposes to make the incurable insanity of either spouse grounds for divorce.

TEXAS

Bill Introduced—H 464 proposes that no hospital shall be exempt from taxation unless it permits its facilities to be available to "each and every reputable physician" licensed by the state board of medical examiners.

UTAH

Bills Introduced—H 114 and S 145 propose to authorize the department of registration to appoint a committee of three to examine applicants for licenses to practice massage and to exempt massage from the definition of the practice of medicine. H 169 proposes to authorize the establishment of a hospital to be called the State General Hospital for the care and treatment of indigent sick.

VERMONT

Bills Introduced—H 203, to amend the osteopathic practice act, proposes to authorize the board of osteopathic examiners to refuse to issue licenses and to revoke licenses for the following causes: (1) conviction for procuring a criminal abortion, (2) obtaining practice or money by false or fraudulent representation, (3) assumption by an applicant or a licensee of a name other than his own and (4) other immoral, unprofessional or dishonorable conduct. The phrase "unprofessional or dishonorable conduct" is to mean (1) advertising which has a tendency to deceive the public, (2) conviction of any offense involving moral turpitude (3) habitual intoxication and (4) habitual use of habit-forming drugs. H 162 proposes to limit the retail sale or distribution to licensed physicians and registered pharmacists of articles or medicinal preparations that may be used as prophylactics or contraceptives. H 161 proposes that the provisions of the pharmacy practice act shall not apply to the sale in properly labeled original packages of the following drugs: bicarbonate of soda, citric acid cod liver oil, epsom salt, magnesium saltpeter, turpentine, quinine, cathartic pills, seidlitz powders, spirit of ammonia and spirit of camphor.

WASHINGTON

Bill Passed—S 32 has passed the house and the senate, proposing to eliminate from the criminal code those provisions prohibiting the possession, sale or other distribution or the use, of contraceptives.

Bills Introduced—S 145 proposes to create a board of physio-medical examiners and to regulate the practice of physio-medicine and surgery. Applicants for such licenses must successfully pass a basic science examination before they may be examined by the board. The bill defines physio-medicine as "that system of medical practice which uses botanical and biological substances and derivatives therefrom for internal and external administration in conjunction with surgery and electro-therapeutical agents and all other manual and mechanical

manipulations for the correction of abnormal or diseased conditions of mind and body' S 234 proposes that both parties to proposed marriages, as a condition precedent to their right to obtain licenses to wed, present certificates from licensed physicians showing that each is free from contagious or infectious venereal diseases H 385 proposes that actions for malpractice must be brought within two years, instead of three years, of the accrual of the cause of action H 397 proposes to prohibit the retail sale and distribution of veronal, barbitol or any of its salts, derivatives or compounds, except on the prescription of a licensed physician, dentist or veterinarian H 382, to supplement the dental practice act, proposes to make it unlawful for any person, firm, or association engaged in the practice of dentistry to advertise in any manner any price or fee for any service or the price charged for any material to be used in the practice of dentistry

WEST VIRGINIA

Bills Introduced—H 342 proposes to repeal the laws regulating the possession and distribution of narcotic drugs and to enact what the draftsman of this bill cites as the 'uniform narcotic drug act' The bill, however, differs from the model uniform narcotic drug act in some important particulars It omits the provisions in the model bill intended to limit the gross quantity of a habit-forming drug a person can buy, in exempt preparations within a period of forty-eight hours S 69 and H 160 to amend the workmen's compensation act, propose (1) to require the compensation commissioner to pay such sums for medical surgical and hospital treatment as may reasonably be required to relieve an injured employee, the present law limiting such payments to \$800 and (2) to eliminate those portions of the present law which prohibit the commissioner from paying for medical and hospital services furnished an injured workman if the workman is entitled under a contract connected with his employment or by reason of a subscription list, to receive medical, surgical and hospital treatment without further charge to him S 112, to amend the workmen's compensation act, proposes to make silicosis compensable The bill proposes to create a "silicosis medical board" to consist of three licensed physicians, to which the compensation commissioner is to refer all claims for compensation on account of silicosis The board is to investigate, examine and report its findings to the commissioner S 155 and H 317, to supplement the insurance laws, propose to permit stock companies to incorporate under the general incorporation laws of the state Companies so incorporated may issue policies providing "every coverage appertaining to accident and health insurance." Specifically they may issue policies providing reimbursement for expenses incident to personal injury sickness or death," but they may issue also policies of accident and health insurance covering personal injury disablement or death by accident disability resulting from sickness' The provisions of this bill may be construed to authorize a corporation organized under it to furnish directly to its policyholders medical, nursing, laboratory and hospital services

WISCONSIN

Research on Hormones—A grant of \$57,500 from the Rockefeller Foundation has been accepted by the University of Wisconsin to continue research on hormones which is carried on by Dr Elmer L Seyringhaus, professor of medicine Frederick L Hisaw Ph.D., professor of zoology, and Leon J Cole, Ph.D. professor of genetics

Bills Introduced—S 160 makes it unlawful for any person to operate or experiment in any manner whatsoever on any living dog for any purpose other than the healing or curing of such dog Any person the bill proposes, violating the provisions of this bill shall be punished by a fine of from \$100 to \$500 and/or imprisoned for from three months to one year A 226 proposes to prohibit a pound master from (1) using or permitting any live animal in his possession to be used for experimental or commercial purposes or (2) turning over any animal in his custody to any person, school, university, research laboratory, or experimental station to be used for medical, scientific or experimental purposes of any nature A 262 proposes to repeal the laws regulating the sale, distribution and possession of narcotic drugs and to enact what apparently is the uniform narcotic drug act A 188 proposes to make it the duty of any police officer who has in his custody any person whom he believes to be under the influence of an intoxicant to obtain from such person a sample of his blood or urine, if such sample can be obtained without objection from the prisoner and make or cause to be made within twenty-four hours thereafter a test for the determination of its alcoholic content

GENERAL

Grants Available for Research—The Committee on Scientific Research of the American Medical Association invites applications for grants of money to aid in research on problems bearing more or less directly on clinical medicine Preference is given to requests for moderate amounts to meet specific needs For application forms address the Committee on Scientific Research at 535 North Dearborn Street, Chicago

Two Free Public Health Surveys Offered—The American Public Health Association and the U S Chamber of Commerce are cooperating in an offer of two free surveys in connection with the annual health conservation contests One will be made in a city and the other in a county or district The surveys will consist of analyses of the local health programs the facilities and the extent to which these are meeting public health needs, and the final reports will include recommendations for readjustments or changes The field staff of the public health association will make the surveys, choosing communities according to their need and the likelihood that they will make effective use of such a survey

Medical Bills in Congress—*Changes in Status* S 883 has been reported to the Senate, directing the retirement of acting assistant surgeons of the United States Public Health Service at the age of 64 years (S Rept No 150) H R 5913, the War Department Appropriation Bill, has passed the House Among other things, this bill authorizes an appropriation of \$70,000 for the library of the Surgeon General's Office. It further proposes to limit the number of medical officers who may draw flying pay to five and to limit the flying pay of all nonflying officers to a maximum rate of \$1,400 per annum *Bills Introduced* S 1956 introduced by Senator McAdoo, California, proposes to provide for entry upon public lands for the purpose of establishing "health habitations" H R 5594, introduced (by request) by Representative McSwain South Carolina, proposes to create in the medical department of the regular army a medical auxiliary corps

Revision of Terminology—At the request of the Anatomical Society of Great Britain and Ireland, the American Association of Anatomists has appointed a committee to consider, with a view to international agreement, a revision of the standard terminology of human gross anatomy (the BNA) which has been in use in American textbooks since its adoption in 1895 The committee, under the chairmanship of Dr Clarence M Jackson professor of anatomy, University of Minnesota Medical School is studying both the British proposal and another suggested revision prepared by a committee of the German Anatomical Society For the benefit of those interested in solution of the problems involved in revising anatomic nomenclature, a triple list of the BNA and the British and the German revisions, in parallel has been prepared A limited number of copies are available for general distribution and may be obtained without charge from the secretary of the American Association of Anatomists, Dr George W Corner, University of Rochester School of Medicine, Rochester, N Y

Grants of National Research Council—The National Research Council announces that funds for grants in aid of research are now available and that applications for grants must be filed on or before April 1 Action on these applications will be taken about the middle of May At meetings in November and December 1934 the following grants were made in the field of medical science

Dr. Garner Howard Bailey associate professor of immunology Johns Hopkins University School of Hygiene and Public Health Baltimore the heterophile antigens of bacteria

David M. Greenberg, Ph.D., associate professor of biochemistry University of California, Berkeley, the effect of diets low in magnesium on Vitamin G requirements

Dr. Louis N. Katz assistant professor of physiology Division of Biological Sciences University of Chicago factors operating to modify the coronary blood flow

Pearl Kendrick bacteriologist, Michigan Department of Health Grand Rapids antigenic properties of bacillus pertussis

Dr. Albert P. Krueger lecturer in medicine, University of California Berkeley the nature of bacteriophage

Dr. Orthello R. Langworthy associate professor of neurology Johns Hopkins University School of Medicine Baltimore control of the urinary bladder by the peripheral and central nervous system

John P. Quigley Ph.D. assistant professor of physiology Western Reserve University School of Medicine Cleveland the rate of absorption of oxygen from the intestinal lumen of unanesthetized dogs

Dr. Harold D. Senior professor of anatomy University and Bellevue Hospital Medical College New York, anomalies of the limb arteries in embryos.

Application blanks for the new grants will be furnished on request to the secretary of the committee, 2101 Constitution Avenue, Washington, D C

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb 9, 1935

Successful Corneal Grafting

In 1930-1931 Mr J W Tudor Thomas evolved a successful technic in corneal grafting by experimental work on rabbits. He then applied it to the treatment of dense corneal opacities in man with remarkable success. At the Oxford Ophthalmic Congress last July he demonstrated a successful corneal graft on each eye, apparently the first of the kind on record. This patient, a woman, was recently demonstrated at a medical congress in Boston, Massachusetts. At a meeting of the Section of Ophthalmology of the Royal Society of Medicine, Mr Thomas showed his fifteenth case of corneal grafting in man. The patient, a man, aged 57 suffered at the age of 17 from corneal ulcers, which left central corneal opacities and very defective sight. Seventeen years later, peritomy was performed on each eye. About twenty years ago the eyes became ulcerated again. Last June Mr Thomas performed corneal grafting at the Central London Ophthalmic Hospital. Before operation the right eye showed a dense central corneal opacity, with considerable haze of the surrounding cornea and some degenerative epithelial changes in the opaque area. Vision amounted to finger counting at 15 inches. The left eye had still less vision—only hand movements. There was an extensive central leukoma with some superficial blood vessels passing on to it and a few small interstitial vessels. The periphery of the cornea was hazy. Unless in a familiar place, the patient had to be led about. A donor's eye became available when the right eye of a man aged 60, was excised for choroidal sarcoma. A portion of cornea about $4\frac{1}{3}$ mm in diameter was removed by means of a trephine and scissors. The margin was cut in a shelving manner and the graft placed in a watch glass of sterile olive oil. A larger trephine ($4\frac{3}{4}$ mm) was used to outline the piece to be removed from the middle of the patient's opaque left cornea and two cross sutures were inserted. The removal was then effected with trephine and scissors, the margins being cut shelving. Citrated saline solution and epinephrine were used to ensure freedom from adhesion of the iris. The leukoma consisted of comparatively soft tissue and was not very vascular. After the removal the pupil was seen to be small and in the center of the opening. The graft was laid on, the sutures were tied, 1 per cent scopolamine in olive oil was applied and a shield was placed on the eye, with gauze on the anterior surface. The operation was performed under cocaine anesthesia with premedication by pentobarbital sodium.

After the operation the eye progressed well without pain. There was only a little soft mucoid discharge. On the eighth day the stitches were removed. The graft was well in place, clear and united, flat and round, and the eye was hardly at all red. At fourteen days the graft was clear with one minute white spot on the posterior surface near the lower margin. In the shelving margin of the graft a few small blood vessels took a circular course. From the eighth to the twentieth day the eyes were covered by pads and a bandage, and after that dark glasses were worn. On the thirty-third day vision was 1/60, on the thirty-fourth 2/60 and on the thirty-fifth 3/60. About this time he could read notices in shops at a distance of 2 yards. Four and a half months after operation the graft was clear with a small opacity near the lower margin and a similar but separate nodule on the iris, suggesting that the two were in contact at an earlier stage. He could see and was able to go about London by himself. Six months after operation his vision was 6/60.

Mr Thomas has now treated sixteen cases of corneal opacity by grafting. Five were not really suitable cases. One case is too recent for report. In all the remaining ten suitable cases the graft became united. In one case the graft was successful but the small pupil did not correspond to the center of the graft. Seven cases can be termed "successful," the graft retaining considerable transparency and there being considerable improvement in vision.

Interruption in the Falling of the Birth Rate

Provisional figures for 1934 show an increase of 0.4 per thousand in the birth rate for England and Wales above the low record of 1933 and the only increase since 1920, except in 1928, when a slight rise of 0.1 followed the exceptional fall in the previous year. The figure for 1934 was 14.8 per thousand. The crude death rate was 11.8 and the infant mortality rate (deaths under 1 year per thousand live births) 59, which is 5 below 1933 and the lowest recorded, which was 60 in 1930.

No explanation is given of this slight rise in the birth rate following an almost uninterrupted fall, which has been in progress for more than half a century. In the decade 1871-1880 the annual rate averaged 35.4, and in 1926 it had been almost halved by the figure of 17.8 and in subsequent years more than halved. The rise is probably only a temporary interruption of the long progressive fall. It may be due to the improvement in the industrial situation, which also is only slight. The falling birth rate is also reflected in a volume on housing, just published relating to the census of 1931. A table showing the average size of families gives for 1931, 3.72 for 1921, 4.14, for 1911 4.36. The two-person family now amounts to 21.9 per cent of the total families and the three-person to 24.1 per cent.

National Council for the Disposal of the Dead

The National Council for the Disposition of the Dead, which has been in the course of formation since 1933, has been formally constituted. Lord Horder, who presided, explained that the word "disposition" had been used because it was the officially recognized term. Hygienic disposal of the dead had long been considered one of the fundamentals of public health. Yet though official activity had been extended to drainage, water supply, ventilation, sewerage, purity of food and other problems affecting the health of the community the important matter of the disposal of the dead was left entirely to private enterprise. To remedy this defect a committee representing cremation authorities, undertakers and cemetery superintendents set to work and in 1933 defined their objects as follows: (1) revision and codification of the laws governing the disposal of the dead, (2) preservation of land in the interests of the living, (3) improvement of the status of those concerned with the disposal of the dead, (4) safeguarding of public interests in all matters affecting the disposal. The law today had no relation to the circumstances of our times, and there was pressing need for its revision and codification. The committee had decided that the most important immediate task was to obtain public recognition of the undertaker for the national duty he performed. This could be done through the registration of qualified undertakers, who would observe a high standard of service. Registration would establish a barrier against crime and insure a further means for detecting it. Resolutions were carried for formally constituting the council, with a legal and parliamentary committee.

Road Accidents

In 1934 there were 7,273 persons killed and 231,698 injured in road accidents in Great Britain in which horses or vehicles were concerned. This is an increase on the figures for 1933 which were 7,202 and 216,238 respectively. The number of recorded accidents involving personal injury was 204,800 of which 7,088 were fatal. The corresponding figures for 1933

were 191,782 and 7,001. There was thus an increase of 6.8 per cent in the total number of accidents (as compared with an increase of 4.2 per cent last year) and an increase of 1.2 per cent in the number of fatal accidents (as compared with an increase of 7.9 per cent last year).

The figures for London show an increase in the number of persons injured and a decrease in the number of persons killed, the totals for 1934 being 59,029 and 1,418 respectively, while the figures for 1933 were 56,912 and 1,441.

PARIS

(From Our Regular Correspondent)

Jan 14 1935

Warning Against American "Interviews"

The medical profession in France has noticed that certain American lay periodicals carry advertisements in which some physicians, chiefly those connected with large Paris hospitals, endorse the particular product advertised and even allow their photographs to be published. As a result of the growth of this method of exploitation of the medical profession not only of France but also of Germany and Austria an effort is being made in France to end this unethical practice. The following article appears in the *Presse medicale* January 12, signed by one of its editors, Dr. P. Desfosses:

"The sale of certain pharmaceutical specialties to the general public through the medium of advertisements in the daily press has assumed considerable importance from the financial point of view for the past thirty-five years. Those who advertise their products advise the public to use the particular preparation without consulting a physician. Nevertheless, whenever a report is made by some member of the medical profession before a society, advantage is taken of such communications to incorporate them in the advertising inserted in journals read by the laity. Some of these papers read at medical society meetings cannot be used for advertising purposes so a new method has been devised, which consists in sending a suave representative to 'interview' the various professors in the larger medical centers of Europe on some question of medical practice and then to utilize these conversations in altered form as recommendations of the particular drug or food product which the interviewer represents. The interview is then published and the various titles held by the professor who has been interviewed and even his photograph added to show the genuineness of the endorsement. The photographs of all leading medical men on the continent of Europe are on sale at the medical bookstores, so that it is unnecessary to ask for a photograph for insertion in the advertisement.

'The minister of foreign affairs of France has recently sent to the society that has charge of foreign medical relations a large number of clippings of such advertisements from American periodicals, which no doubt have made a bad impression on the medical profession of the United States and Canada as to the ethical standing of those who have allowed themselves to be 'interviewed' by representatives of American food products and others. The fear is expressed that those who see this publicity do not realize that the photographs and accompanying endorsements have been published without the consent or knowledge of the respective medical men. Hence the minister of foreign affairs warns the profession in France against these suave interviewers, who by flattery and under the cloak of a desire to benefit humanity seek to secure endorsements which are altered so as to make good publicity. Such a practice is considered very unethical by the French medical profession."

Resistance to Insulin

In the January *Gazette medicale de France*, the question of resistance to insulin is discussed by Labbe and Boulin, who have a service that specializes in the treatment of diabetes at a public hospital of Paris. The cases that are considered resistant to insulin are not nearly so common as one would think. Most of the reported cases of this kind are the result of the faulty use of insulin. The patient is frequently to blame

because the diet is not followed as it should be. On the other hand, the physician is to blame often because a diet that contains too much carbohydrate is ordered. In some cases the doses of insulin are not high enough or the injections are given at too frequent intervals. Again, insulin is prescribed in cases of nondiabetic glycosuria, in which its use is contraindicated. Excluding all these cases, is there such a condition as insulin resistance? In order to establish 'insulin resistance,' two conditions must be complied with:

First, that the insulin has no effect on the blood sugar. This is the essential feature indicating insulin resistance.

Second, if the diet is an unvarying factor and the blood sugar and acetonuria also are constant, the administration of insulin should not determine any decrease in either the glycosuria or the acetonuria.

There are few cases in which both of these conditions of insulin resistance are found, hence one can consider insulin resistance very rare. Labbe and Boulin have observed only one case in which insulin had no influence on the blood sugar, glycosuria and acetonuria. They concede that one may encounter cases in which there is a partial insulin resistance, in which the hypoglycemia insulin test reduces the blood sugar by only 49 per cent as an average instead of the maximum of 81 per cent and secondly, that the quantity of carbohydrates that a unit of insulin will metabolize is much less than a gram instead of the normal 15 Gm. It is well known that larger doses of insulin are needed in cases of diabetes complicated by infection than when the latter does not exist. A certain degree of insulin resistance is observed also in cases of diabetes associated with hypophyseal growths, in exophthalmic goiter or in cirrhosis of the liver. Aside from these instances of partial insulin resistance, too much importance ought not to be attributed to the frequency of the condition. Aside from cases of diabetes complicated by infection, insulin resistance for all practical purposes occurs but rarely.

Paroxysmal Hypertension

Two recent meetings of the society composed of chiefs of medical services of the large Parisian public hospitals (*Societe medicale des hopitaux de Paris*) were devoted to papers on this relatively new clinical entity.

Donzelet divided paroxysmal hypertension into three clinical groups: 1. Cases in which it appears in individuals suffering from permanent hypertension. 2. Those in which there is a well defined clinical syndrome. 3. Those found in certain patients with adrenal tumors. In the first of these the attacks of paroxysmal rise of blood pressure above the average found in the particular case of hypertension may pass unnoticed unless the blood pressure happens to be observed during such an exacerbation. In other cases, one observes definite evidence in the form of polyuria, cramps in the calves of the legs, angina-like pains, severe headache, and a syndrome called "cerebral eclipse," in the form of amnesia, transitory amaurosis or aphasia, word blindness, deafness or paralysis. These "eclipses" are interpreted as due to an arterial spasm.

A paroxysmal hypertension can frequently provoke serious accidents in cases of hypertension, in the form of cerebral hemorrhage or acute left ventricle insufficiency. Such paroxysmal exacerbations are hence a constant menace in hypertension cases. In the second group one finds paroxysms of hypertension associated with lead poisoning, eclampsia, irritations of the peripheral sensory nerves, and so on. The familiar lead colic occurs during such a paroxysmal rise of blood pressure and ceases when the latter falls. The same is true of some of the cerebral symptoms observed in cases of lead poisoning. Convulsions in eclampsia synchronize with transitory rises of blood pressure. During the last twelve years the attention of clinicians has been called to the fact that tumors involving the

chromaffin cells of the adrenals are accompanied by crises of hypertension, which may be very severe. Donzelet describes such a case in which the attacks occurred daily. This paroxysmal hypertension is accompanied by albuminuria and a rise in blood urea and at times by a hyperglycemia with or without concomitant glycosuria. There is also an increase in the number of red and white corpuscles in the blood. If the adrenal tumor is not removed, the hypertensive attacks increase in frequency, there is accentuation of the disturbances of elimination, and death occurs as the result of a vascular rupture or acute pulmonary edema. One should always suspect a neoplasm of chromaffin origin whenever such paroxysmal hypertensive crises occur. The only available treatment in the first two groups is to attempt to lessen the severity of the attacks by the administration of barbiturates, opiates, organic nitrites and bleeding.

Benard and Merklen discussed the relation between the carotid sinus and changes in blood pressure. In 1923 Hering called attention to a slight swelling at the point of origin of the internal carotids, which plays an important part in the regulation of arterial tension. His observations have been confirmed by others, including Benard and Merklen. Stimulation of this carotid sinus is followed by a fall in blood pressure, and suppression of its physiologic action is followed by hypertension and tachycardia. The nerves of Hering, as they are termed, which arise from this center, are veritable "brakes" on arterial tension. There exists a "permanent sinocarotidian depressor tonus," which assures the regulation of blood pressure by acting as a "brake" against the constant tendency on the part of the organism toward hypertension. It is tempting to ascribe clinically pathologic changes in arterial tension to functional disturbances of this carotid sinus and sensitive cardio aortic zone, which latter heretofore has been considered to play the chief part in alterations of blood pressure. Clinically, one encounters many objections to the theory that the carotid sinus regulates blood pressure, hence the possibility of treating cases of permanent hypertension by operations on such a center does not offer as good prospects as that of drugs that will influence this carotid sinus center.

Mouquin stated that paroxysmal hypertension is due to a sudden disturbance of the regulatory mechanism of arterial tension. For practical purposes, one could place the cases of paroxysmal hypertension under three etiologic headings. First, those of central origin in which, as a result of an acidosis or of an anoxemia or a brain tumor, there is a stimulation of the hypertensive tonus of the vasopressor centers. Second, those of cranial nerve origin. Of recent years, two cranial nerves have been considered as responsible, the fifth in cases of zona and the tenth in a cancer of the esophagus involving also the larynx and also in a case of lymphosarcoma of the mediastinum. Third, those of adrenal tumor origin. These clinical observations are the most common and the most characteristic. These tumors seem to act by an excessive, either gradual or sudden, discharge of epinephrine secretion into the blood stream, which causes a dysfunction of the regulatory mechanism for arterial tension, thus resulting in an intense vasoconstriction and subsequent rise in blood pressure. Such a hypersecretion of epinephrine has never been demonstrated. Stimulation of the splanchnic nerves has also been held responsible for the hypertension in these adrenal tumor cases. Further observations are needed as to the part played respectively by the adrenal and the splanchnic. Perhaps one will find cases of tumors of paraganglionic structures, which, with the adrenals, form the chromaffin system. One should always keep in mind clinically the distinction between cases of permanent and those of paroxysmal hypertension.

Marcel Labbe had previously reported two cases of paroxysmal hypertension occurring in association with adrenal tumors.

He corroborated the hyperadrenalinemia theory of the previous speaker and said that methods for determining the amount of epinephrine in the blood are still imperfect. One does not always find renal lesions in cases of paroxysmal hypertension, and, when they occur, they do not resemble those of a typical nephritis.

De Gennes, who did not agree with this view, thinks that there is a disturbance of renal function during every attack of paroxysmal hypertension and that they persist for some time afterward. In certain cases the paroxysmal hypertension is followed by a true chronic nephritis. On the other hand, one sees cases of even advanced permanent hypertension without disturbances in renal function.

Laubry agreed with Donzelet and de Gennes as to the absence of any constant relation between hypertension and nephritis. A paroxysmal hypertension, if the attacks occur frequently enough, may undergo transition into a permanent hypertension. In such cases the renal lesions as found at necropsy are either absent or only slight.

Society for Anesthesia Formed

Although there are almost innumerable societies, no special one in France for the study of anesthesia had been formed until recently, when such a society was organized with Professor Forgue as honorary president and Professor Gosset as president. The society will hold four meetings a year in Paris and an extra session in the fall during the French Surgical Congress. A special journal devoted to anesthesia will be published.

Prof Caesar Roux of Lausanne

Although not a French surgeon, Professor Roux, who died at Lausanne at the age of 77 years, was so active in the surgical congress held annually here that he was regarded as an international figure. The city in which his clinic was situated, although not a portion of France, is in that portion of Switzerland where only French is spoken. His clientèle included patients from all countries, especially France and the United States. His skill as an operator and his equal treatment of the rich and the poor have commanded the admiration of all.

BERLIN

(From Our Regular Correspondent)

Dec. 24, 1934

The German Dermatologic Society

After the omission of several annual sessions, the Deutsche Dermatologische Gesellschaft met recently in Berlin, under the chairmanship of Professor Zieler of Würzburg. The first paper was presented by Professor Bering of Cologne on "Scientific Bases for the Diagnosis of Industrial Diseases of the Skin and for the Estimation of the Degree of Disability." In the official list of occupational diseases of 1929 are found all the occupational dermatoses entitling the patient to compensation. Eczemas are the most common manifestation. Occupational eczema is an allergic disease. In inquiring into the right to compensation, if the presence of an occupational eczema is recognized, an existing idiosyncrasy must not be overestimated. The stronger the sensitizing power of a substance is, the more likely the appearance of an occupational eczema. The longer a single hypersensitiveness is fanned, the more likely general sensitiveness will result. Careful skin tests are needed. A positive test proves sensitization but a negative test does not justify rejection of an occupational eczema. The substances used by the patient in his occupation must, if necessary, be examined and tested. The diagnosis "chronic eczema" is justified after a duration of eight weeks and the diagnosis "chronic recurrent eczema" after an occupational eczema has appeared three times. A reduction of the number of cases of

occupational eczema may, in the opinion of Bering, be attained by excluding all persons with idiosyncrasies (allergic and seborrheic persons) from occupations in which strongly sensitizing substances are used.

Professor Curschmann brought out in a paper that the precise estimation of the degree of disability is hampered by the diagnostic difficulties. Cutaneous disease may be the sole expression of an occupational injury or only the symptom of a systemic disease as a result of occupational injury. Occupational acne is promoted by disturbances of metabolism, an undermined general condition, and sensitive skin. In Curschmann's opinion, however, the paroxysmal appearance of an occupational acne is the expression of an already acquired sensitiveness. Among workmen one often observes eczemas that are not occupational eczemas. Compulsory declaration of all substances used in a given industry should be demanded, together with a complete statement as to the possibility of injuries and the necessary preventive measures, furthermore hygienic measures should be taken, proper skin and wound treatment, and, if need be, protection of the skin with zinc ointments. General skin tests before workmen are employed cannot as yet be demanded. The number of occupational skin diseases is small and has been decreasing in recent years.

The interpretation of psoriasis as a primary lipoidosis, as set forth by Grütz, has not found as yet any uniform recognition. In psoriasis, according to Grüneberg of Halle, a subordinate function of the adrenal cortex has causal importance. By the application of suitable therapy, manifestations of psoriasis were eliminated in a striking manner, the vitamin C content of the remedy is said to have played no part.

Lomholt of Copenhagen reported his results with chaulmoogra oil in other than leprosy disorders, for example lupus erythematosus and mycosis fungoides. In lupus vulgaris the results were nil.

Gold therapy in syphilis, according to Heuck and Vonkennel of Munich, has given good serologic results, it may gain importance also in resistance to therapy, in seroreaction remaining stubbornly positive, and as a substitute for fever therapy. An oily preparation was employed. But more observations must be reported before any definitive statements can be made.

In the treatment of lupus, Stühmer regards the present method as adequate. According to Lomholt, Denmark has made greater progress in this field than Germany, owing to more intensive study of lupus patients. Hospital treatment is commonly employed from the start (Finsen light locally, general light exposure and administration of vitamin preparations).

The Examination of Aviators

In the Eppendorf Hospital in Hamburg there was established, years ago, an institute to deal with the medical problems of aviation (Institut für Luftfahrtmedizin). Since practical aviation makes special demands on medical research and cooperation, the testing of the aptitude of aviation candidates was organized in this institute in a systematic manner. Night flying and flying through fog, altitude flights, diving and stunt flying are limited by the capacity of the human body to endure hardships. These problems the aviation physician must study in detail. While physical fitness is indispensable to the aviator, the most important matter in his success is such qualities as mental alertness and firmness of character. A candidate's aptitude, as Dr. Lotzig brought out in addressing the Hamburg Medical Society, must not be based, as was formerly done, on mechanical and psychotechnical experiments but must take into account the candidate's personal qualities as learned from most intimate association with him under varying circumstances. The effects of great altitudes on the mental behavior of a person must not be overlooked. Excitation and mild disorganization accompanied by a certain lack of judgment and

resoluteness may, under some circumstances, be a serious danger for the aviator. These conditions can be studied, in testing the aptitude of aviation candidates, in the subpressure chamber.

Continuation Courses for Physicians

A new kind of continuation courses for physicians will be organized the coming spring, in the Rudolf Virchow Hospital in Berlin. The courses will provide whole-day instruction at the bedside and in the laboratory, so that practitioners will have the opportunity to renew their experiences with hospital routine. They will participate also in the seminar drills that the head physicians will hold on the principles of diagnosis and therapy. It is also planned to give certain lectures on subjects selected by the visiting physicians. The physicians taking the continuation courses may choose an institution where they will work or they may divide their activities among several institutions. The participants can secure room and board in hospitals for 2.50 marks (\$1) a day. Like all municipal continuation courses for physicians given in Berlin, these courses will be open only to physicians of Aryan race.

The Number of Miscarriages

Since 1924 the city of Lübeck has collected systematic statistics in regard to miscarriages on the basis of confidential report cards filled out by physicians, midwives, hospitals and the office of the Ortskrankenkasse. These interesting figures are not entirely complete, but they are fairly comprehensive. According to these statistics, the number of miscarriages in 1932 was 1,036 or almost two thirds of the notifiable living births and stillbirths combined. The proportion of miscarriages in relation to the number of announced pregnancies (that is, the notifiable pregnancies and the miscarriages taken together) was in 1924, in which year the absolute number of miscarriages was 434, 16.8 per cent. In 1927, owing doubtless to a more complete registration, the proportion increased to 33.6 per cent, the absolute number being 947. Then, during the more favorable economic conditions that followed, it receded a little (30.9 per cent in 1929) and later, during the economic crisis, rose again to 33.7 per cent in 1931 and to 39.4 per cent in 1932. The proportion was 35.6 per cent for married persons in 1932 and 56 per cent for unmarried persons. Classification of the miscarriages (so far as possible) revealed that in 1932, among married persons, 53.8 per cent of all miscarriages were reported as the first, 26.9 per cent as the second, 9.9 per cent as the third, and 4.6 per cent as the fourth miscarriage. Among unmarried persons the first miscarriages predominated, with a proportion of 84.2 per cent, the second miscarriages were represented by 12.5 per cent.

NETHERLANDS

(From Our Regular Correspondent)

Jan 14, 1935

New Convalescent Centers

Under the name "Parkherstellingsoorden" Dr. Hartogh of Amsterdam has founded a society to provide suitable centers for convalescents. He observed that many patients, on being discharged from hospitals, supposedly cured were still in a physical condition that precluded their resuming their occupation, and it was for this class chiefly that the new centers were founded. Many patients without resources are allowed the privileges of the centers free of charge. The city of Amsterdam has placed at the disposal of the society large parcels of ground, on which temporary shelters have been erected, where convalescents may spend the day, from 9 a. m. to 5 p. m. New guests are examined, on first entering, by a physician without charge. Infectious and tuberculous patients are not admitted. Patients spend their time reading, resting in comfortable chairs or doing bits of handiwork. The work

of the society has been taken up by other cities and similar centers have been created.

Because of the low prices charged and frequent remission of all charges, these societies often get into debt, in which event the Red Cross, the city of Amsterdam and many private donors come to the rescue.

Traffic Accidents

Table 1 gives a survey of the traffic accidents causing deaths in the Netherlands in 1931

With 491 deaths, automobile accidents occupy first place. It is easy to understand why the greatest number of deaths occur among children under 10 years of age, and why boys are in the majority.

Accidents are not more frequent, in proportion to the population, in the large centers than in the small towns. The mortality rate in cities of more than 100,000 population was 5.9 per hundred thousand inhabitants, in cities of from 20,000 to 50,000, 7.6 per hundred thousand and in cities of 5,000 or less, 6.2.

As the best prophylactic measure, closer supervision of children is recommended, also previous examination of drivers, although it is admitted that experienced drivers, as well as beginners, are involved. A psychiatric examination of professional drivers has been proposed. The length of the working

TABLE 1—Fatal Traffic Accidents in the Netherlands

Age of Victim		Train	Tram way	Auto cars	Other Vehicles	Totals
1-4 yrs	Male	3	4	32	0	49
	Female		3	17	3	23
5-9 yrs	Male	2	3	56	9	70
	Female		1	21	3	25
10-14 yrs	Male	2	1	27	5	35
	Female		2	8	2	12
15-19 yrs	Male	7	4	23	2	36
	Female	1	1	6		8
20-24 yrs	Male	5	6	43	5	61
	Female		3	6		9
25-29 yrs	Male	5	1	20	3	35
	Female	1	1	2		4
30-34 yrs	Male	7	2	27	3	39
	Female		2	0		2
35-39 yrs	Male	0	5	16		21
	Female		2	3		5
40-44 yrs	Male	0	2	23	1	26
	Female			3	2	5
45-49 yrs	Male	7	1	23	7	38
	Female	1	1	3		5
50-54 yrs	Male	7	4	17	4	32
	Female	2		2	1	5
55-59 yrs	Male	0	3	16	2	21
	Female			2		2
60-64 yrs	Male	1	3	23	1	28
	Female		1	1		2
65-69 yrs	Male	3	7	37	6	53
	Female	1	2	0	3	12
70 and above	Male	1	2	0	2	14
	Female		1	3		4
Totals		74	68	401	73	706

day and condition of the vehicles are to be considered. Proper police control and adequate lighting of streets also enter into the problem.

The Crusade Against Trachoma

Trachoma may be regarded as endemic in the Netherlands. It appears, however, that, owing to an effective campaign carried on in recent years, this disease is about to disappear—as far as Amsterdam is concerned, at least. In 1870 45 per cent of the Jewish school children were trachomatous. Aroused by the frequency of this disease, the ophthalmologists launched a campaign of hygienic education. In 1913 there were still about 3,000 children affected. The authorities then appointed a commission to organize a systematic crusade against the disease.

In the report presented for the period 1914-1917 there were 8.8 per cent of the Jewish school children affected, as against only 0.6 per cent of the non-Jewish children. The commission found that it is not the school that plays the principal part in

propagating the disease, but the family environment. The commission proposed to the municipal authorities the following means of defense: (1) the installation of a polyclinic in the Jewish quarter, where the patients could go for treatment, (2) appointment of an ophthalmologist for the regular supervision of the schools, (3) regular treatment by the school physician of all trachomatous children attending the schools. Those not submitting to this treatment were to be excluded from courses of instruction.

TABLE 2—Incidence of Trachomatous Disease in the Elementary Public Schools

Year	Jews per Cent	Non-Jews per Cent
1914	56.2	5.2
1916	52.1	6.1
1923	39.1	1.8
1927	14.4	0.9
1928	10.1	1.0

TABLE 3—Total Number of Trachomatous Patients in the Jewish Schools with 2,000 Pupils

Year	No. of Patients	New Cases
1918	176	57
1920	170	30
1921	177	23
1927	59	0
1928	44	2

As a result of these measures, all the children were brought under treatment and most of them were cured. The duration of the treatment ranges from one to four years, depending on whether the children come regularly for treatment, and also on the degree of cleanliness in the home surroundings.

Tables 2 and 3 reveal in a graphic manner the retrogression of trachoma among the children in the public schools.

These figures justify the hope that, ten years from now, trachoma will have entirely disappeared from Amsterdam. It would be dangerous, however, to abandon treatment at this juncture.

VIENNA

(From Our Regular Correspondent)

Jan 2, 1935

Is Cancer on the Increase?

Contrary to the assumption that malignant disorders have undergone a marked increase in recent decades, Dr. Bashford of the Imperial Cancer Research Fund expressed the conviction, twenty-five years ago, that this view is incorrect, and since then other statisticians have supported his assertion. The Vienna investigator Dr. Peller, who has made an extensive study of the question, declares that the apparent increase is due to the marked increase in the average age of the population. Owing to the reduction in the birth rate, a considerable modification of the representation of the respective age groups of the population has occurred. In 1900 there were thirty-six births a year per thousand of population, but in 1930 only 17½. The progress of hygiene, which has markedly reduced the incidence of smallpox, typhoid and cholera and likewise diminished the mortality of tuberculosis and children's diseases, has brought about an increase in the representation of the older age groups. The average life expectancy has increased, during this period, by not less than fifteen years. In 1900 there were 125 persons more than 50 years old per thousand of population, by 1930 the number had increased to 205. Thus many more persons belong to the age groups menaced by cancer than thirty years ago. The statistics must therefore be so elaborated that only like age groups are compared, that is, a principle of equalization must be applied. If that is done the remarkable

fact is developed that cancer mortality in the middle age groups has not increased but, on the contrary, shows a distinct retrogression. That is shown clearly in the table that Dr Peller has prepared for Vienna. The table shows the number of deaths from cancer per 10,000 of population in the various groups

Periods	20 30	30-40	40 50	50-60	60 70	70 and above
1901-1905	0.89	3.6	15.45	43.45	90.62	122.0
1906-1914	0.93	3.2	13.90	41.60	88.8	116.9
1919-1923	0.97	2.9	11.35	39.9	85.6	124.7
1928-1929	1.06	3.0	11.25	40.90	104.1	159.8

It will be seen that the mortality has increased only in the 20-30 age group and in the age groups beyond 60. The first group, however, has little significance, since cancer in these years is rare. The retrogression in the case of women is more significant. Only from the sixtieth year in men and from the sixty-fifth year in women is an increase to be noted in the standardized table, but improvements in diagnosis make the increase appear greater than it really is. The actual retrogression of cancer mortality in the middle age groups is greater than the statistics reveal. Similar results have been reached for Switzerland, America and Germany as Dr Fritz Greger shows in the work cited. These investigations establish the fact that cancer mortality is not increasing. It is true that there appears to be a shifting in the localization of cancer in that the cancer cases more accessible to treatment have become more frequent (skin, tongue). It is also certain that cancer is diagnosed more frequently in well-to-do circles than formerly but this is due to the fact that in these circles medical care has improved. With the increase of early diagnosis the prospects of a cure are increased. Dr Greger emphasizes however that, just as infectious diseases present wavelike fluctuations neoplasms appear to show periods of increase and decrease in cycles of from sixty to eighty years. As for the special conditions obtaining in Austria, it must be borne in mind that 30 per cent of the population of the republic is massed in the city of Vienna, where the diagnosis of cancer is much easier than in the rural sections. Hence it is evident that in Vienna the number of cancer cases diagnosed will show a higher per capita basis than Austria as a whole. Vienna has almost 34 per cent of all the cancer cases but only 30 per cent of the population of the republic. In cancer about 75 per cent of the deaths occur after the fiftieth year of life, while in tuberculosis they occur before that age, but numerically the number of deaths from tuberculosis is less than the number due to cancer. With a better understanding by the public, the early recognition and cure of malignant disease will be advanced so that the diagnostic and therapeutic successes (surgery and ray treatment) will have a favorable effect on the mortality.

Pay Patients in the Ambulatoriums

The complaints against the ambulatoriums have to do primarily with the many patients in them who are able to pay ordinary fees. The fees thus lost during the year by the practicing physicians represent large sums, the loss being felt especially by the specialists. The League of Vienna Specialists has therefore sent a request to the directors of the Vienna hospitals that they cease to accept such patients but refer them to the private specialists, on the ground that it is not the purpose of the ambulatoriums to render gratuitous medical aid to pay patients. Petitions were addressed also to the physicians in the provinces, urging them not to send to the ambulatoriums patients they wish to be subjected to a careful examination but to refer them to private specialists. Suggestions made by the league for the remedying of the conditions provoking complaints were to the effect that every patient who visits the ambula-

toriums be subjected to careful control before being admitted to examination or treatment. Only patients without funds and those who can present a recommendation from their panel physician and a confirmation from their *krankenkasse* should be admitted.

Use of Sodium Citrate in Hemophilia

At a recent session of the Vienna Medical Society, Dr Schürer reported the good results that he had seen in grave hemorrhages following extractions of teeth from the use of a combination of blood transfusion with subcutaneous injection of a 35 per cent solution of sodium citrate. Also in other cases of grave hemorrhages from the kidney, following traumas this medication offers in hemophilia the best prospects for a prompt control of the bleeding. The effect is brought about by a reduction of the usually lengthened coagulation period. The normal coagulation period is from four to eight minutes but in the cases observed by Schürer he observed before the injection twenty-one, after the injection sixteen, and on the day of the transfusion thirteen minutes. A blood transfusion should be combined with the sodium citrate. The speaker introduced a man aged 34 who was known as a hemophiliac subject and in whom following a tooth extraction, a grave submucous bleeding in the mouth and a hematoma of the face developed. In spite of all various preparations applied, the hematoma assumed huge proportions and dyspnea appeared. After a venesection of 800 cc a transfusion of 600 cc was given and the sodium citrate was injected daily. The effect was excellent. From 10 to 20 cc should be injected once a day—with children one may begin with 5 cc—but always combined with a blood transfusion. Blood transfusion appears to be the sovereign remedy in hemophilia, but its effects are greatly enhanced by a preceding injection of sodium citrate.

Prof Hans Lorenz

A few days ago Prof Dr Hans Lorenz of the Spital der Kaufmannschaft (not to be confused with the orthopedist Prof Dr Albert Lorenz or his son Adolf) brought his life to a close by his own hand at the age of 59 years. Financial difficulties appear to have been the chief cause. A short time before his death he performed a difficult operation with success. Professor Lorenz was noted for his skill and rapidity in operating which were especially valuable in connection with abdominal interventions, his chief field of activity. He did not publish many articles but before the medical societies he demonstrated many interesting cases. As a young physician he became "assistant" in the Chirurgische Klinik in Vienna, where his brilliant work in the surgical field soon attracted attention. In Hochenegg's *Handbuch der Chirurgie* he prepared the chapters on abdominal operations.

Marriages

MARVIN L. LATIMER, New Haven, Conn., to Miss Mildred Stansill of New York, in Norfolk, Va., Dec 21, 1934

BADIE T. CLARK, Rocky Mount, N. C., to Miss Margaret Page Smith of Atlanta, Ga., January 19

FREDERICK B. HAAR, Greenville, N. C., to Miss Nell Venable Hubbard of Wilmington, January 16

DUNCAN ROLAND McEACHERN to Miss Eloise M. Shepherd, both of Richmond, Va., January 23

ROBERT H. WISEHEART, North Salem, Ind., to Miss Betty Ramey of Indianapolis, January 5

DONALD BROCK KOONCE to Miss Louise Bellamy Wood, both of Wilmington, N. C., January 19

JOHN M. BREWER to Miss Jean Reynolds Culvera, both of Kershaw, S. C., January 12

MARY ELIZABETH LEHMAN to Mr Wallace Windus, both of Bristol, Pa., Nov 24 1934

Deaths

Granville MacGowan ♂ Los Angeles, University of Pennsylvania Department of Medicine, Philadelphia, 1879 Member of the House of Delegates of the American Medical Association, 1909-1911, and chairman of the Section on Genito-Urinary Diseases, 1914-1915, emeritus professor of surgery, University of Southern California School of Medicine professor emeritus of urology, College of Medical Evangelists, member and in 1912-1913 president of the American Urological Association, fellow of the American College of Surgeons, past president of the California Medical Association and the Los Angeles County Medical Association, one of the organizers and formerly member of the health department of Los Angeles and for four years health commissioner, one of the founders and for many years chief of staff of the California Hospital, aged 77, died, January 31, of arteriosclerosis and chronic myocarditis

Thomas James O'Brien ♂ Boston, Harvard University Medical School, Boston, 1899 also a pharmacist taught analytic and organic chemistry at the Massachusetts College of Pharmacy, 1901-1905 a trustee, 1907-1912, and dean, 1911-1912 since 1920 professor of clinical medicine, Tufts College Medical School, in 1914 assistant visiting physician at the Boston City Hospital, from 1919 to 1931 secretary of the medical staff, from 1932 to 1934 member of the senior staff and later appointed consulting physician consulting physician at St Elizabeths Hospital, Boston Marlboro (Mass) Hospital and the Leonard Morse Hospital, Natick, aged 62 died, February 5

Alonzo Marston Garcelon, Lewiston, Maine, College of Physicians and Surgeons Medical Department of Columbia College, New York, 1876 was a Trustee of the American Medical Association, 1883-1901, and in 1901 was elected Vice President formerly state senator and member of the state legislature, at one time mayor of Lewiston and member of the board of education on the staff of St Mary's General Hospital, aged 83, died, January 14, of acute dilatation of the heart and hepatitis

Daniel Hunt Fuller ♂ Philadelphia Harvard University Medical School, Boston, 1891 member of the American Psychiatric Association and the New England Society of Psychiatry, associate in psychiatry University of Pennsylvania Graduate School of Medicine, on the staffs of the Pennsylvania Hospital and the Pennsylvania Hospital Department for Mental Diseases aged 70 died, February 1, of carcinoma of the pancreas

Norman Charles Goodwin, Richmond Hill N Y Albany (N Y) Medical College, 1907 member of the Medical Society of the State of New York on the staffs of the Jamaica Hospital, Richmond Hill the Mary Immaculate Hospital and the Queensboro Hospital for Communicable Diseases Jamaica aged 53 died, January 19, of infectious arthritis and cerebral arteriosclerosis

Lewis E Maire, Grosse Pointe, Mich Detroit Medical College, 1881, member of the Michigan State Medical Society and the American Academy of Ophthalmology and Oto-Laryngology, past president of the Wayne County Medical Society, formerly member of the board of education and board of health, aged 79, died, January 9, of carcinoma of the prostate.

Ernest Marsh Poate ♂ Southern Pines, N C., Cornell University Medical College, New York 1906, also a lawyer member of the American Psychiatric Association, formerly professor of psychiatry Duke University School of Medicine, Durham, served during the World War aged 50, died, February 1, of pneumonia and pulmonary tuberculosis

Sidney Walker, Dublin, Ga., Hospital College of Medicine, Louisville, Ky., 1904, member of the Medical Association of Georgia past president of the Laurens County Medical Society served during the World War, formerly on the staff of the Claxton Sanitarium aged 55, died, January 22, at Piedmont Hospital, Atlanta, of atrophic cirrhosis of the liver

Harry Samuel Wagner ♂ Pocasset Mass University of Michigan Department of Medicine and Surgery Ann Arbor 1903, fellow of the American College of Physicians, superintendent of the Barnstable County Sanatorium aged 57 died February 8 in the Baker Memorial Hospital Boston, of carcinoma of the urinary bladder

William J Herman ♂ Boston Harvard University Medical School, Boston 1920 member of the American Neurological Association and the American Psychoanalytic Association instructor in psychiatry at his alma mater on the staff of the Massachusetts General Hospital aged 43 died January 26 of coronary arteriosclerosis

William R Stringham ♂ Cheboygan, Mich., Michigan College of Medicine, Detroit, 1884, also a pharmacist, past president of the Cheboygan County Medical Society on the staff of the Petoskey (Mich) Hospital, aged 77, died, January 31 in the Lockwood Hospital, Petoskey, of carcinoma of the sigmoid

William Edwin Fellows, Bangor, Maine, Hahnemann Medical College of Philadelphia, 1876, member of the Maine Medical Association, past president of the Penobscot County Medical Society, on the consulting staff of the Eastern Maine General Hospital, aged 83, died, January 18, of arteriosclerosis.

John Willingham Du Pree, Greenville, S C, Medical College of the State of South Carolina, Charleston, 1913, member of the South Carolina Medical Association, aged 47, died, January 19, in the Greenville City Hospital, of coronary thrombosis and essential hypertension

Dowdell M Jordan, Oglesby, Texas, Tulane University of Louisiana Medical Department, New Orleans, 1893, member of the State Medical Association of Texas past president of the Coryell County Medical Society, aged 77, died, January 2 of lobar pneumonia

Nathan R Phillips, Piper, Ala., University of the South Medical Department, Sewanee, 1901, member of the Medical Association of the State of Alabama past president of the Bibb County Medical Society, aged 57, died, Dec 19, 1934, of cerebral hemorrhage

Herbert Theodore Wagner ♂ Indianapolis, Indiana University School of Medicine Indianapolis, 1908, served during the World War, aged 48 on the staff of the Methodist Episcopal Hospital, where he died, January 30 of cerebral hemorrhage

Florence Vincent Guinee, New York Fordham University School of Medicine, New York 1921, member of the Medical Society of the State of New York, on the staff of the Lenox Hill Hospital, aged 38, died, February 5, of nephritis and heart disease

Joseph Taney McGinity ♂ Springfield, Mass., University of Vermont College of Medicine Burlington, 1905 member of the Vermont State Medical Society aged 54, on the staff of the Mercy Hospital, where he died, Dec 24, 1934, of heart disease

Samuel Polk Vineyard ♂ Amarillo Texas, Medico-Chirurgical College of Kansas City, 1900 past president of the Potter County Medical Society, aged 58 on the staff of the Northwest Texas Hospital, where he died, Nov 28, 1934

Franklin George Warner, Peterboro, N H Albany (N Y) Medical College, 1892, member of the New Hampshire Medical Society on the staff of the Peterboro Hospital, aged 71 died Dec 25, 1934, of carcinoma of the pancreas

Harold Johnson Weaver, Hamptonville, N C, Jefferson Medical College of Philadelphia, 1925, member of the Medical Society of the State of North Carolina, aged 37 died, January 14, in the Davis Hospital, Statesville, of pneumonia

Joseph Claybaugh Smith, Grants Pass, Ore., State University of Iowa College of Medicine, Iowa City, 1889, county health officer formerly mayor, state senator and member of the state legislature aged 75, died, Dec 9, 1934

James L Turnbull, Vancouver, B C., Canada Victoria University Medical Department, Coburg, 1889 University of Toronto Faculty of Medicine, 1889 fellow of the American College of Surgeons, aged 72, died, Dec. 26 1934

Hjalmar Kylberg, Merced, Calif., California Medical College, San Francisco 1893, member of the California Medical Association, past president and secretary of the Merced County Medical Society aged 69, died, Dec. 30 1934

Edwin Merriman Brown, Sheldon Vt. University of Vermont College of Medicine, Burlington, 1879, member of the Vermont State Medical Society, formerly state senator, aged 79 died, February 3 of arteriosclerosis

Frank Marberry Acree Dover, Tenn., Kentucky School of Medicine, Louisville 1889 aged 78, on the visiting staff of the Clarksville (Tenn) Hospital, where he died, January 29 of senile gangrene with arteriosclerosis

Charles Lucien Lavender, Columbia, Mo., Missouri Medical College, St. Louis, 1885, member of the Missouri State Medical Association, formerly coroner of Warren County aged 74 died, Dec. 3, 1934, of heart disease

Walter Evan Lee, Clearwater Fla. Maryland Medical College Baltimore 1905 Hahnemann Medical College and Hospital of Philadelphia, 1906 aged 56 died Nov 23 1934 of leukemia and secondary anemia

William David Sloan, Stockton Ga University of Georgia Medical Department, Augusta, 1910, served during the World War, aged 55, died, January 10, in a hospital at Atlanta, of chronic nephritis and heart disease

John Gibson Davis Jr • Christiansburg, Va, Medical College of Virginia, Richmond, 1923, in associate surgeon to the New Altamont Hospital, aged 35, died, January 28, of influenza and gastric hemorrhage

Vertner Kenerson, Eden, N Y Yale University School of Medicine, New Haven, Conn, 1895, veteran of the Spanish-American War, aged 68, died, February 2, of arteriosclerosis, hemiplegia and diabetes mellitus

David Edwin Sloan, Charleroi, Pa Western Pennsylvania Medical College Pittsburgh, 1893, on the staff of the Charleroi Monessen Hospital, Lock No 4, aged 70, died, January 8, of myocarditis and arteriosclerosis

Frederick Lewis Singrey, Mount Vernon, Ohio Starling Medical College, Columbus, 1898, member of the Ohio State Medical Association, formerly county coroner, aged 58, died, January 28, of heart disease.

Marius John Pace, Brooklyn, University and Bellevue Hospital Medical College, New York 1933 aged 28, intern at the Newark (N J) City Hospital, where he died, Dec 23, 1934, of carcinoma of the lung

Douglas Wyatt, New Florence Mo Kansas City Medical College, 1904, served during the World War, aged 57, died, January 11, in the Veterans' Administration Facility, Jefferson Barracks, of pneumonia

George Almon Kelley • Canton, Ohio Homeopathic Hospital College Cleveland 1880, on the staff of the Aultman Hospital, aged 77, died, January 31, of chronic myocarditis and cerebral hemorrhage

Eugene J Gregg, Cleveland, Meharry Medical College, Nashville 1905, formerly member of the city council aged 53, died, January 4, in the Lakeside Hospital, of empyema and lymphosarcoma

John Louis Hennemuth, Modesto, Calif, University of Minnesota College of Medicine and Surgery, Minneapolis, 1890, member of the California Medical Association, aged 66, died, Dec. 9, 1934

Edward Aloysius Tracy, Boston, Harvard University Medical School Boston, 1891, member of the Massachusetts Medical Society, aged 70, died January 12, of carcinoma of the liver

R Watson Graham, Los Angeles, McGill University Faculty of Medicine, Montreal, Que., Canada 1904 fellow of the American College of Surgeons, aged 58, died, Dec 30, 1934

John Harding-Mason • San Francisco, California Medical College San Francisco 1900, aged 72, died, Dec. 13, 1934, in St. Francis Hospital, of arteriosclerosis and diabetes mellitus

Edward Everett Pease, Nichols, N Y, University of Michigan Department of Medicine and Surgery, Ann Arbor 1873, died, Dec. 21, 1934, of an intestinal malignant condition

Victor Emmanuel Campbell, Fresno, Calif University of Colorado School of Medicine, Denver 1930, member of the California Medical Association, aged 32, died Nov 28, 1934

John Thorne Nicholson, Bath, N C College of Physicians and Surgeons Baltimore, 1885, aged 76, died, January 31, in the Riverview Hospital, Washington of angina pectoris

Zachary T Gabbert, Casey Creek Ky, University of Louisville School of Medicine, 1881, aged 85, died, Dec 22, 1934, of gangrene of the left foot and bronchopneumonia.

Arthur Clarkson Smith, Oakland Calif, Oakland College of Medicine and Surgery, 1907, member of the California Medical Association, aged 52, died Nov 25, 1934

Esther Concordia Johnson, Moline, Ill University of Illinois College of Medicine, Chicago 1931, also a medical missionary, aged 35, died, January 22, of malaria

Eisuke Ishikawa, Stockton, Calif, Tokyo Charity Hospital Medical College, Tokyo, Japan, 1907 member of the California Medical Association, aged 51, died, Nov 28, 1934

Bernard Conried Zall • Philadelphia Medico-Chirurgical College of Philadelphia, 1909, aged 54, died Dec. 22, 1934, in the Mount Sinai Hospital, of angina pectoris

Wilbur LaVerne Sprong, Montreal, Que., Canada Johns Hopkins University School of Medicine Baltimore, 1930, aged 31, died, Nov 23, 1934, in Los Angeles

Trafford Brasee Salisbury, New York, Columbia University College of Physicians and Surgeons, New York 1896, aged 60, died January 12, of pneumonia

William Tilden Smith, Norfolk, Va, Medical College of Virginia, Richmond, 1904, member of the Medical Society of Virginia, aged 57, died, Dec 28, 1934

Leon Gilbert Verrill, Weeks Mills, Maine Dartmouth Medical School, Hanover, N H, 1896, aged 67, died, recently, of edema of the lungs and appendicitis

Francis Fletcher Joyner, Roxbury, Mass, University of Vermont College of Medicine, Burlington, 1900, aged 59, died, January 12, of bronchopneumonia

James Michael O'Brien • Oregon, Wis Rush Medical College, Chicago, 1890, aged 71, died, January 20, in St Mary's Hospital, Madison, of pneumonia

Samuel Richard Arthur Jr • Sacramento, Calif, University of California Medical School, San Francisco, 1931, aged 29, died, Nov 25, 1934

William Forest Young, Statesville, Tenn, University of Tennessee Medical Department, Nashville, 1889, aged 72, died, January 27, of pneumonia

Edward Gustav Grahn, Indianapolis Medical College of Indiana Indianapolis 1884, aged 85, died, recently, of arteriosclerosis and myocarditis

David William Vaux • Pittsburgh, Western Pennsylvania Medical College Pittsburgh, 1905, aged 63, died, January 29, of cardiorenal disease

Eugene Gaspard Courteau, St Jacques, Que, Canada, School of Medicine and Surgery of Montreal, 1894, aged 66, died, Dec 28, 1934

John Alexander L McAlpine, Vancouver, B C, Canada, Marion-Sims College of Medicine, St Louis, 1898, aged 67, died, Dec 6, 1934

Joseph Bedford Smart, Marble, N C, Chattanooga (Tenn) Medical College, 1900, aged 63, died, Dec 22, 1934, of bronchopneumonia

Enrique M Aidana, San Francisco, Universidad Nacional Facultad de Medicina, Mexico, D F, 1899, aged 61, died Nov 28, 1934

Howard Felix Adler • San Francisco Harvard University Medical School, Boston, 1908, aged 50, died, January 24, of heart disease.

Carl Forsythe Payne, Franklin, Ind Jefferson Medical College of Philadelphia, 1888, aged 71, died, January 20, of heart disease.

Irwin S Townsend, Detroit, American Eclectic Medical College, Cincinnati, 1879, aged 89, died, Dec 27, 1934, of myocarditis

Alfred S Oliver, St Marys, Ga, Louisville (Ky) Medical College, 1879, aged 77, died, Dec 24, 1934, of hypostatic pneumonia

William David Steen, New York, Columbus (Ohio) Medical College, 1883, aged 73, died, Nov 20, 1934, of arteriosclerosis

William Enville Richardson, Los Angeles College of Physicians and Surgeons, Boston, 1910, aged 57, died, Dec. 19, 1934

George Henry French, Long Beach Calif Dartmouth Medical School, Hanover, N H 1886, aged 70, died Nov 28, 1934

Lorenzo Stephenson Webb, Creswell N C University of North Carolina School of Medicine 1905, aged 60, died recently

Eugene Francis Shea, Howard R I Baltimore Medical College, 1894, aged 65, died, Dec 31, 1934, of cerebral hemorrhage

Amanda Maria Congdon, Los Angeles, University of Buffalo School of Medicine 1892, aged 77, died, Dec. 30, 1934

Lester Reginald Weeks, Trenton, Fla, Atlanta College of Physicians and Surgeons, 1908, aged 57, died Dec. 26, 1934

Thomas J Acton, Eubank, Ky, Eclectic Medical Institute, Cincinnati, 1891, aged 70, died, January 23, of pneumonia

Harry Orson Miller, Hemet Calif, Cooper Medical College, San Francisco, 1893, aged 62, died, Dec 3, 1934

Will C Strother, Bowling Green, Ky, Louisville Medical College, 1897, aged 64, died, January 29, of heart disease

Llewellyn James Williams, Los Angeles, Louisville (Ky) Medical College, 1906, aged 55, died, Nov 14, 1934

Hugh O Morgan, White, S D, Fort Wayne (Ind) College of Medicine, 1894, aged 66, died, January 2

Frank Stacy Hawley, Los Angeles, Rush Medical College, Chicago, 1904, aged 62, died Nov 5, 1934

Bureau of Investigation

ANOTHER QUESTIONNAIRE

Expert Testimony Required, Price Six Bottles of Beer

Repeatedly has this department of THE JOURNAL discussed the plague of questionnaires that is visited on the medical profession. In its essentials the questionnaire nuisance, as it afflicts the physician, is usually a letter written, occasionally openly and frankly on the stationery of some advertising agency but more often written on the stationery of an organization that exists only on paper and described as some sort of 'Research Bureau'. Such bureaus are in reality merely names adopted by advertising agents or advertising agencies for the purpose of impressing the physician in their attempt to get expert testimony at no cost.

The entire scheme is an outgrowth of the deplorable tendency on the part of advertisers of all kinds of merchandise nowadays to adopt the old 'patent medicine' angle in advertising their wares. 'The medical profession says —,' "Science declares —," 'Physicians are of the opinion —,' Such are the leads used by the sellers of soap, of toilet papers, of food products of household utilities and what not in the great game of breaking down sales resistance on the part of the ultimate consumer and the ballyhooing of the products.

The first of what seems likely to be another flood of questionnaires has just been sent in by a California physician. It is a three-page affair. The first page bears the letterhead 'Lord & Thomas, Advertising, 235 Montgomery Street, San Francisco', it is signed 'M. Campbell, Director, Division of Research, Lord & Thomas'. The letter itself apparently mimeographed and, as usual, addressed 'Dear Doctor' opens thus:

As between hard liquor and beer for regular consumption very probably you would advise your patients as a whole to drink beer and you would have certain reasons for this.

Will you do us a favor? We think you will be repaid for your courtesy in the suggestions that we expect to make to millions of people urging that they see their physicians with regard to the drinking of beer in connection with such troubles as indigestion, nervousness, sleeplessness, etc.

Then follows another paragraph in which Lord & Thomas state that they believe that they are 'going to do a great deal of good along the lines of *temperance* in an advertising campaign for a client'. The client apparently is somebody who sells beer, and Lord & Thomas ask the physician to make a check-mark opposite a "yes" or a "no" which will only take the physician a moment and will be a contribution 'to the cause of better public enlightenment'.

The two pages that accompany the descriptive letter are mimeographed sheets in which questions are asked and after which "Yes" and "No" squares are placed for the physician to mark with a cross if he is so inclined. There is however considerable space left after each question for 'Additional comment, if any'. The questionnaire proper is prefaced with this paragraph:

Assuming that people are fairly normal in health and that the indispositions referred to are not chronic ailments requiring the immediate attention of a physician, would you say that the following statements are fair assertions of the qualifications of beer as a beneficial beverage?

After stating that the company would not use the physician's name in connection with any publicity without his consent, there then follows the general heading 'STATEMENTS FOR YOUR AGREEMENT, IF YOU ARE IN AGREEMENT' under which are to be found the following categorical statements and questions to which the physician is expected to answer 'Yes' or "No":

1 Beer with meals aids digestion due to its moderate and well balanced content of alcohol.

2 Beer is soothing to the nerves due to the mildly sedative properties of the hops used in the brewing process.

3 Beer taken before retiring at night tends to induce sleep or to aid people in getting to sleep due to the nourishment it puts into the stomach and its mildly relaxing effect.

4 Beer in many cases acts as a mild general tonic tending towards raising the body tone of people who although not actually ill may be said to be under par.

5 The mere additional consumption of liquid by the body that the drinking of beer represents is beneficial to the general body tone and the skin because it tends to flush the system of impurities.

6 Have you ever prescribed beer in connection with the following disorders: Digestive Nervous Sleeplessness Run Down Condition Need of Tonic Underweight Insufficient Liquid Intake Convalescence Nursing Mothers?

7 Is beer fattening and under what conditions?

8 Is beer non fattening and under what conditions?

9 Do you regard the general drinking of beer instead of hard liquors as promotion of a beneficial temperance?

These are the statements and questions after which the doctor is asked to place either "Yes" or "No" and write any additional comments that he may care to make. At the end of the questionnaire is a space for the doctor's name and address. A business reply envelop requiring no postage is enclosed.

Most of the questionnaires that physicians receive are, as has already been stated, sent out under false representations as coming from some imposingly named but non-existent research bureau. Furthermore, the only thing the physician is usually offered for his expert testimony is thanks, although there have been some exceptions to this. One may recall the questionnaire that was sent out by Lord & Thomas and Logan of New York in 1927, when physicians were asked to give their expert opinion on the question of whether or not the 'toasting process' applied to tobacco was likely to free the cigaret from irritation to the throat. Lord & Thomas and Logan in that case wrote frankly on the company's stationery and stated at the outset that the physician to whom the question was addressed was being sent a carton of 100 Lucky Strike cigarettes from the American Tobacco Company, the agency's client!

In the present instance Lord & Thomas of San Francisco state at the end of their questionnaire that if the physician would sign his name and address they would have sent to his office or his home a half-dozen bottles of beer (which we hope you will accept with our compliments)."

The sequel to the questionnaire on Lucky Strikes was that the exploiters of that particular brand of cigarettes claimed that over 18,000 physicians answered the question in the affirmative—although it was obviously a question that not one physician in a thousand had the technical knowledge on which a scientific opinion could be predicated.

One wonders just how many physicians will consider six bottles of beer (retail value, presumably, about 90 cents) a recompense for specialized knowledge asked by Lord & Thomas.

The questionnaire nuisance will persist as long as physicians play the part of easy marks. Can one imagine for a moment any advertising agency trying to get free legal advice by the questionnaire method? One cannot in this connection do better than call to mind an incident already brought to the attention of the readers of this department of THE JOURNAL in the case of another questionnaire. In May 1926, Lord & Thomas—this time of Los Angeles—sent letters to dermatologists stating that in the interests of their client, the California Fruit Growers Exchange, they were 'making a special investigation of the effect of lemon juice when used as a hair rinse' and would be grateful if the physician would answer the questions that Lord & Thomas were sending. There were nine such questions each technical and calling for special knowledge. A well known eastern dermatologist who received one of these pieces of circularization instead of returning the questionnaire, wrote to the agency as follows:

If your client desires to investigate the effect of lemon juice as a hair rinse, I have no doubt that you can employ reputable experimenters to make such an investigation. Your request for filling out of questionnaire and obtaining of information gratuitously from physicians, I consider an excellent example of colossal nerve and impertinence.

We believe this physician's attitude was 100 per cent sound. The questionnaire nuisance can be abolished overnight if the medical profession will refuse to play into the hands of advertising agencies and would consign all questionnaires from such sources to the wastebasket.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted, on request.

TREATMENT OF ASTHMA

To the Editor—I have a patient aged 29 the wife of a dentist who has been having severe attacks of asthma for some time. All tests have been essentially negative and medication does not give much relief except temporarily. She cannot stand a high altitude and when she is in this city, which has an elevation of 1010 feet, the attacks are daily and in the last week have been constant. Change of climate even for short distances seems to help. Will you be kind enough to give me some suggestions for this condition which I believe to be one of true bronchial asthma and also what climate and elevation would be desirable. Please omit name. M D West Virginia

ANSWER—In answering this query it is to be assumed first of all that the diagnosis is correct and, secondly, that the skin tests have been carefully and completely carried out. Wheezing and dyspnea occur in other conditions besides bronchial asthma.

The diagnosis should be supported by a history of attacks by a history of allergy in other members of the family, by other allergic conditions in the patient herself e. g. urticaria or hay fever, by an eosinophilia in the blood and sputum and by a favorable response to injections of epinephrine. The tests should be carried out as thoroughly as possible and should be done by one trained in this type of work, not by an ordinary laboratory technician with no clinical experience. If anything is uncovered by these tests, elimination of the offending substance is the best method of treatment.

Granting that the diagnostic procedures have been carried out and have failed to disclose the cause of attacks one is forced to fall back on nonspecific treatment which while helpful, does not as a rule yield such good results as specific treatment. Climate itself helps in a few cases, but as there is no one climate suitable for all asthmatic persons it is necessary to try various places. Tucson El Paso and similar climates seem to help some patients. On the whole warmth helps most asthmatic patients unless the asthma happens to be due to pollens. A simple procedure is to sew in the pillows and mattress with a light rubber sheeting, this helps those sensitive to feathers and house dust, the rubber covering should be washed once a week. Removal of any animals such as cats or dogs should be insisted on no matter what the tests show. The face powder should be changed to a nonallergic brand.

Some cases are aided by removal of from 5 to 10 cc of blood and injection of this quickly intramuscularly (autohemotherapy) some seem to be helped by intramuscular injections of a foreign protein as boiled milk. Other nonspecific measures are also available, if these fail. If the asthma is due to some inhalant, a week or two in a hospital room equipped with an air filter and with rubber-covered mattress and pillows should clear up the condition, temporarily at least.

For the attacks, epinephrine hypodermically and ephedrine by mouth are best, opiates should be avoided as much as possible.

TREATMENT OF SYPHILIS

To the Editor—At the age of 19 a man developed a chancre of the lower lip and gave a positive Wassermann reaction. He was given ten injections of neosarsphenamine and twenty injections intramuscularly of compounds of the heavy metals, bismuth and arsenic. The Wassermann reaction after a rest period was plus minus in the alcoholic antigen and negative in the cholesterinized antigen. A second course was given in which only four neosarsphenamine injections were given, plus twenty of a bismuth compound. Then again following a rest period, a Wassermann reaction of the blood was negative. The man is now 29 years of age eleven years having elapsed since the primary chancre occurred. He has had periodic semiannual Wassermann examinations which have all been negative. About a year ago a spinal puncture was done which came back negative. Now this man is a social service worker and happened to hear Dr. Stokes give a lecture on syphilis last week. Dr. Stokes contention at that time was that all early cases such as he had, should receive at least thirty to forty injections of neosarsphenamine and many more injections of a bismuth compound than he had received. The man is quite concerned about the question as to whether he had adequate treatment at that time and has asked me to advise him accordingly. At the present time he shows no signs or symptoms of syphilis. Blood Wassermann and Kahn tests were both negative. Would you advise him to have any further treatment or merely tell him to go about his business and that he is cured as far as can be humanly told? Kindly omit name and address. M.D. New York.

ANSWER—In considering a situation of this sort, it is necessary to take into account the fact that much or little treatment may, under unknown favoring circumstances, produce

a "cure" of syphilis. In fact, spontaneous cure is well supported by such evidence as that of the Bruusgaard series. From the standpoint of a standardized system of treatment for early syphilis, there can be no doubt that the management of the case was inadequate from the standpoint of the amount of treatment, the introduction of rest periods, the presence of weak or doubtful positives and the use of the Wassermann test as an indication for cessation and resumption of treatment. It is against all these undesirable practices that the recently published standardization has been directed. The situation so far as this man is concerned, however, is that the disease is probably arrested but that he must remain under lifelong observation. Particular attention in situations of this sort should be paid to the cardiovascular mechanism and the patient should at once receive a complete heart study, including teleroentgenogram study of the physical signs, visualization of the aorta with the fluoroscope, and electrocardiograms. Under no circumstances should he be told 'to go about his business, that he is cured so far as can be humanly told.' Lifelong observation in view of the still existing uncertainties regarding the complete curability of the disease is not an unreasonable requirement and if tactfully presented to the patient assumes the guise of a health measure and need not give rise to phobias.

CEREBRAL HEMORRHAGE—AMYL NITRITE TEST—SILENT AREAS—QUININE SALICYLATE

To the Editor—1. In either a cerebral hemorrhage or a thrombosis is the improvement of the ensuing symptoms brought about by the absorption of the clot or by the collateral circulation? Are there any methods or signs whereby the extent of cerebral arteriosclerosis can be determined? 2. Of how much value is the amyl nitrite test of Steiglitz? 3. Can a patient suffer a cerebral hemorrhage of the so-called silent places without pronounced symptoms? 4. Does quinine salicylate raise blood pressure in ordinary doses? Kindly omit name. M.D. Illinois

ANSWER—1. The gradual improvement that follows the acute and profound symptoms of cerebral accident is due primarily neither to absorption of the clot nor to the development of a collateral circulation but should be attributed to the subsidence of the generalized cerebral edema, which is subsequent to either cerebral hemorrhage or thrombosis. The coma of apoplexy is probably largely a result of increased intracranial pressure from edema of the brain. With the subsidence of this edema the cerebral vessels are less compressed and the general asphyxia of the brain is relieved. The areas actually destroyed by pressure or infiltration of the hemorrhage and by the profound histanoxia are irrevocably destroyed. This destruction is responsible for the persistence of the permanent neurologic symptoms. When only small areas are involved, and especially the cortex rather than the deep tracts the permanent evidences of nerve tissue destruction may be most inconspicuous. Acute angiospasm, if sufficiently brief so that no necrosis results may cause symptoms closely simulating apoplexy but without permanent signs of destruction of nervous tissue.

Clinical determination of cerebral arteriosclerosis (scarring of the intima of the larger vessels) is almost impossible. Arteriosclerosis frequently exists with no demonstrable impairment of the circulation until sudden thrombosis and/or hemorrhage precipitates the critical picture of apoplexy. Indirectly evidence of arteriosclerosis of the aorta or main arterial trunks is presumptive of some cerebral involvement. On the other hand, arteriosclerosis of the smaller arteries and arterioles, due primarily to changes in the media, may be estimated with a fair degree of accuracy. Arteriosclerosis is a consequence of hypertensive arterial disease and therefore invariably associated with hypertension. The progressive degeneration in the arterioles probably is the result of the arteriolar spasticity which is likewise responsible for the hypertension. The rate of progression of these degenerative changes is not uniform but varies greatly both in different individuals and in different areas of the body. Therefore the duration of the hypertensive disease is a totally inadequate guide to the extent of sclerosis. Neither is the height of the blood pressure an effective criterion.

2. The amyl nitrite test of Steiglitz has proved to be of great usefulness in estimating the average extent of arteriosclerosis of the body as a whole. Sclerotic vessels are not relaxable by amyl nitrite, whereas spastic arterioles are temporarily relaxed. The test does not and cannot be expected to yield information regarding the condition of the arterioles of specific areas. A marked reduction of the diastolic tension on inhalation of amyl nitrite indicates that there is little or no sclerosis and therefore is presumptive evidence of fairly normal cerebral vessels. On the other hand, a failure of the diastolic tension to fall notably is strong evidence of generalized arteriosclerosis in which the cerebral vessels are probably also involved. Cerebral sclerosis may be somewhat more or less

marked than the test indicates, but it gives one most useful information regarding the condition of the arterioles as a whole. Ophthalmoscopic inspection of the retinal arteries is the most direct method of evaluation of the condition of the cerebral vessels. Cerebral and retinal arteriosclerosis usually, although not invariably, are approximately parallel in degree. As the retina is truly an extension of the brain, this is not surprising. With an extensive drop in the diastolic tension on inhalation of amyl nitrite and nearly normal retinal arteries as observed on ophthalmoscopic examination, one may justifiably conclude that cerebral arteriosclerosis is absent or but minor. The converse, of course, is also true.

3 Verv minute cerebral hemorrhages into the so-called silent areas could occur without pronounced symptoms. Involvement of anything but the smallest branches of the arteries however, would cause generalized symptoms at the time of the accident because of the increased intracranial pressure due to edema. After subsidence of the acute phenomena, no permanent injury may be detectable. It is quite probable that many of the acute and transient attacks of aphasia, hemiparesis and monoplegia are due to arterial spasm or vascular crises (Reisman) rather than to hemorrhage or thrombosis.

4 Ordinary doses of quinine salicylate do not raise the arterial tension. In individuals abnormally sensitive to either salicylates or quinine, even small doses may upset the equilibrium of the vasomotor tone.

FUNGI IN SHOES

To the Editor—An intelligent and observant patient has noticed that after he has worn a pair of new shoes for a month or so a green fungoid growth appears inside the shoe near the toe. This is accompanied by a marked odor. He is clean washing daily changing his socks every morning and alternating between two sets of shoes. This fungus does not occur in all shoes and is more noticeable in warm weather. In cold weather the fungus disappears and the disagreeable odor vanishes. He is not suffering with epidermophytosis or any other skin lesion of his feet that could possibly be transmitted to the shoes. He is anxious to know what to do to destroy the fungus and what deodorant is recommended since the ordinary remedies and disinfectants are useless besides the expense of having to discard comparatively new shoes. Please omit name.

M D New York

ANSWER.—The infecting fungus is introduced into the shoe by the sock. The patient probably wears silk socks, which, though washed, are not boiled and so retain the infection or, if they are boiled, become reinfected in some way. Silk can be sterilized by soaking it for twelve hours in a 1:1,000 solution of corrosive mercuric chloride before washing.

After as much as possible of the fungus has been wiped out of the shoe, it should then be sponged inside with strong formaldehyde solution, care being taken not to get it on the hands. Then a piece of cotton or blotting paper saturated with formaldehyde should be left in the toe of the shoe and the shoe should be wrapped securely in paper. After twenty-four hours the cotton or blotter should be removed and the shoe aired thoroughly before it is again worn. Fungi are very difficult to remove from leather, and repeated treatments may be necessary.

ASTHMA AND CONTINUED USE OF EPINEPHRINE

To the Editor—A man who for many years has been troubled with hay fever and an associated asthma has been in the habit of purchasing epinephrine at the drug store and administering it hypodermically for relief from attacks. Over a period of several years he has steadily developed a tolerance for the drug and consequently has had to increase it from time to time in dosage. When I first saw him he came in complaining of dizziness and extreme weakness of the asthmatic type. The most pertinent finding in the examination was a blood pressure reading of 88 systolic 60 diastolic. Second to this was the hemoglobin 58 in Sahli units. He also had several abscessed teeth. What I should like to know is whether or not the taking of epinephrine in large doses has had any thing to do with the hypotension. Since the systolic pressure is high enough to give a pulse pressure of 28 mm of mercury it would seem to be primarily a vascular weakness and not so much myocardial. There are no evidences aside from that mentioned of Addison's disease. The man is 42 years old. The anemia is of the hypochromic type. Please omit name.

M D Minnesota

ANSWER.—Many patients with chronic asthma have been forced to use epinephrine for long periods. It is the unanimous opinion of all specialists in this field that the continued use of epinephrine does not tend to cause habit formation. It is likewise agreed that the continued use of epinephrine has no effect whatever on the blood pressure, it neither increases it nor decreases it (von Gordon L. Schweitz *med Wchenschr* 54:330 [April 3] 352 [April 10] 1924. Pagniez, P., and Escalier, A. *Bull Soc méd d hop de Paris* 50:619 [April 23] 1926. *abstr THE JOURNAL*, June 19 1926, p 1948). As

a matter of fact, if a patient has a hypertension and also has an attack of bronchial asthma epinephrine is given as if the hypertension did not exist. The blood pressure usually falls after the attack is over.

In this case the hypotension and the anemia may have little to do with the bronchial asthma. The dizziness described probably results from the continued use of epinephrine and along with this one often finds pallor, tachycardia, palpitation and blurring of vision. These symptoms all cease when the epinephrine is withdrawn.

If they have not already been done, a complete examination and skin tests should be made to try to find the cause of the asthma.

PHLEBITIS

To the Editor—A woman aged 45 has a network of superficial varicosities in both legs and extending above both knees. Each time she has to be in bed for a few days she develops thrombosis and she has been advised by good men never to be operated on. When she is up however and wears good elastic stockings, she has very little trouble. Routine tests for deep venous involvements are positive. In fact a few years ago a physician attempted the injection method of treatment but had to discontinue it on account of ill results. It seems that an operation (gallbladder) is inevitable for this woman and I should like to know the best precaution to take against thrombosis and phlebitis. I might add that the patient has no cardiorenal involvement. Please omit name.

M D Texas

ANSWER.—In patients of the type described, a thorough search for sources of infection should be made, the teeth, tonsils and low grade pelvic infection are the chief foci. Nothing is mentioned about the onset of these varicosities, but if there is a deep venous obstruction it probably originated from a pelvic thrombosis following childbirth, operation or some infectious disease. The activity of the phlebitis can be gaged by the determination of the sedimentation time. There is no absolute safeguard against postoperative phlebitis, but the following measures seem to diminish its incidence. 1 A fluid intake of 3,000 cc. before and the first two weeks after the operation. 2 The maintenance of normal blood pressure and circulation with the help of caffeine and ephedrine after the operation. 3 A Trendelenburg position of 30 degrees after the operation which should be maintained so long as the patient is immobilized. 4 Early respiratory and muscular exercises and early mobilization of the patient.

OPERATION ON FISSURE OF LIP

To the Editor—I would like information as to the best method of operating on a central fissure of the lower lip. The lesion has been treated in every conceivable manner over a period of several years by several different physicians and is steadily becoming worse. A small amount of granulation-like tissue on either side of the fissure covering an area about the size of a flat surface of a split pea proved at biopsy to be benign and apparently is tissue reaction to the chronic inflammation resulting about the region of the fissure. The patient is a white man aged 35. Kindly omit name.

M D California

ANSWER.—The preferable method of treating such a persistent fissure of the lip is to excise it including a V extending down on the lower lip some distance below the red margin. This will permit a good plastic closure with no puckering and no noticeable deformity if the red margins are carefully approximated and the edges sutured accurately with fine silk. The slightly narrower lower lip will be scarcely noticeable after a few months.

LAVENDER COLORATION OF GRAY HAIR

To the Editor—A woman aged 42 has been under treatment for four years for hypertension and coronary sclerosis. Twice during this period her hair naturally gray has assumed a lavender tint. No applications have been made and she has not changed her shampooing materials. Her medication has been largely barbiturates and other sedatives though she has recently taken dinitrophenol. Can you suggest any reason for this peculiar discoloration of the hair?

EDWARD F. MALLOY, M.D. Stamford Conn

ANSWER.—Isn't the patient using bluing in her rinsing water after the shampoo? If so she should cease the use of it. Any such change of color must be from an external cause. It may be that on these occasions the bluing was used too lavishly.

THYROID EXTRACT AND BLOOD SUGAR

To the Editor—Will thyroid extract in suitable doses have a tendency to raise the blood sugar in an obese elderly white woman with diabetes?

N. L. MISTACHIN, M.D. St. Louis

ANSWER.—Yes

Council on Medical Education and Hospitals

ABSTRACT OF MINUTES OF THE COUNCIL BUSINESS MEETING HELD AT CHICAGO, FEB 17, 1935

1 In September 1933 the Council on Medical Education and Hospitals recognized the necessity of a restudy of medical education and decided on a reinspection and reclassification of the medical schools of the country. In February 1934 a special appropriation was voted by the Board of Trustees of the American Medical Association and in September of that year Dr Herman G Weiskotten began the personal inspection of some of the schools. It is the policy of the Council to employ two inspectors in each visit in order to eliminate as far as possible the personal equation and to secure well balanced and dependable reports. In addition to the class A medical schools of the United States, Canadian schools have voluntarily requested that they be included in this study. The Council has also determined to include in the survey the unrecognized medical schools. To date, twenty-eight schools have been visited.

2 During the year 1934, inspections of hospitals and technician schools were made as follows

(a) Hospitals

Tuberculosis sanatoriums	230
Intern hospitals	157
Residency hospitals	30
Small hospitals	152
Other registered hospitals	23
Total	592*

* Twenty of these hospitals are maintained exclusively for Negroes

(b) Schools for Technicians

Schools of laboratory technic	85
Schools of physical therapy	23
Schools of occupational therapy	6
Total	114

Total number of inspections 706

3 It was resolved that the approval of a medical school be withdrawn at the first meeting of the Council if on inspection it is found that it does not and cannot possibly meet the standards of the Council.

4 It was resolved that at the close of the current academic year the Council should review all inspections that have been made and take appropriate action.

5 It was resolved that a communication be sent officers of medical schools calling attention to the following paragraph from the Essentials of an Acceptable Medical School:

The number of students to whom an adequate medical education can be given by a college is related approximately to the laboratory and hospital facilities available and to the size and qualifications of the teaching staff. A close personal contact between students and members of the teaching staff results in an efficiency which is not possible in an institution where the number of students is excessive.

Although only about one third of the schools have been visited, it is already apparent that this requirement of the Essentials is not being generally met and that a large proportion of the schools are accepting larger numbers of students than they can properly teach.

6 The Council's survey of medical education was discussed at a luncheon with the executive council of the Association of American Medical Colleges and it was suggested that a survey of postgraduate medical education should be undertaken. The Council requested that this suggestion be placed on record to be considered at a later date.

7 It was resolved that the proposed Essentials of an Approved School of Occupational Therapy be approved.

8 It was resolved that section A, No 3, of the Essentials for Examining Boards in Specialties, be changed to include the words italicized as follows:

Membership in the American Medical Association or by courtesy, membership in such Canadian or other medical societies as are recognized for

this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Except as here provided membership in other societies should not be required.

9 It was resolved that section III, C, No 3, of the Essentials for Examining Boards in Specialties, be amended to include the words italicized as follows:

An additional period of not less than two years of study and/or practice

10 It was resolved that special boards applying for approval should file copies of their official records with the Council as well as with the Advisory Board for Medical Specialties.

11 It was resolved that, if competent, a physician might be certified by more than one special examining board.

WILLIAM D CUTTER, M D, Secretary

ADDITIONAL HOSPITALS APPROVED

The Council on Medical Education and Hospitals of the American Medical Association has given its approval to the following hospitals since the publication of the last previous list in THE JOURNAL, Nov 10, 1934.

Hospitals Approved for Intern Training

ARMY HOSPITALS

Letterman General Hospital San Francisco
Fitzsimons General Hospital Denver
Walter Reed General Hospital Washington D C
William Beaumont General Hospital El Paso Texas
Station Hospital Fort Sam Houston San Antonio Texas

PUBLIC HEALTH SERVICE HOSPITALS

U S Marine Hospital San Francisco
U S Marine Hospital Chicago
U S Marine Hospital New Orleans
U S Marine Hospital Baltimore
U S Marine Hospital Ellis Island New York City
U S Marine Hospital Staten Island N Y
U S Marine Hospital Norfolk Va
U S Marine Hospital Seattle

Evangelical Hospital Chicago
St Joseph's Hospital Joliet Ill
Wichita Hospital Wichita Kan
Evangelical Deaconess Hospital Detroit
Burlington County Hospital Mount Holly, N J
St Joseph Hospital, Paterson N J
Bushwick Hospital Brooklyn
Kingston Hospital Kingston N Y
Misericordia Hospital New York City
Trinity Hospital Minot N D
Knoxville General Hospital Knoxville Tenn
St Mary's Hospital Milwaukee

Hospitals Approved for Residencies in Specialties

Compton Sanitarium Compton Calif Psychiatry
Central Dispensary and Emergency Hospital Washington D C
Medicine and surgery
Freedmen's Hospital Washington D C Medicine surgery pediatrics
gynecology and obstetrics
Western Maine Sanatorium Greenwood Mountain Me Tuberculosis
Rutland State Sanatorium Rutland Mass Tuberculosis
Shriners Hospital for Crippled Children Springfield Mass
Orthopedics
Middlesex County Sanatorium Waltham Mass Tuberculosis
Dr William J Seymour Hospital, Eloise Mich Medicine, surgery
urology, ophthalmology and otolaryngology
Wheatley Provident Hospital, Kansas City Mo Pediatrics
Atlantic City Hospital, Atlantic City N J Mixed
New Jersey State Hospital Greystone Park, N J Psychiatry
Burlington County Hospital, Mount Holly N J Surgery
Bender Hygienic Laboratory Albany N Y Pathology
Norwegian Lutheran Deaconesses Home and Hospital, Brooklyn
Medicine surgery pediatrics and obstetrics
U S Marine Hospital Ellis Island New York City Psychiatry
St Anthony's Hospital Oklahoma City Okla Surgery and mixed
Eagleville Sanatorium for Consumptives Eagleville Pa Tuberculosis
Roper Hospital Charleston S C Medicine and surgery
Medical Arts Hospital, Dallas Texas Mixed

Hospitals Approved for Additional Residencies

Indianapolis City Hospital Indianapolis Urology and psychiatry
Kings County Hospital Brooklyn Tuberculosis orthopedics neuro-
surgery plastic surgery radiology pathology and dermatology
syphilology
City Hospital, Cleveland Radiology and urology
Rhode Island Hospital Providence R I Fractures
John Sealy Hospital Galveston Texas Radiology

Medical Examinations and Licensure

COMING EXAMINATIONS

ALASKA Juneau March 5 Sec Dr W W Council Juneau
AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *Written (Group B candidates)* The examination will be held in various cities throughout the country April 29 *Oral (Group A and Group B candidates)* New York June 10 Sec Dr C Guy Lane 416 Marlborough St Boston

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written (Group B candidates)* The examination will be held in various cities of the United States and Canada March 23 *Final oral and clinical examination (Group A and Group B candidates)* Atlantic City N J June 10 11 Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh

AMERICAN BOARD OF OPHTHALMOLOGY Philadelphia June 8 and New York June 10 *Application must be filed at least sixty days prior to date of examination* Sec Dr William H Wilder 122 S Michigan Blvd Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY New York June 8 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha

AMERICAN BOARD OF PEDIATRICS Atlantic City N J June 10 and St Louis Nov 19 Sec Dr C A Aldrich 723 Elm St Winnetka Ill

ARIZONA *Basic Science* March 19 Sec Dr Robert L Nugent Science Hall University of Arizona Tucson *Medical* Phoenix April 23 Sec Dr J H Patterson 826 Security Bldg Phoenix

CALIFORNIA *Reciprocity* Los Angeles March 13 Sec Dr Charles B Pinkham 420 State Office Building Sacramento

COLORADO Denver April 3 Sec Dr Wm Whitridge Williams 422 State Office Bldg Denver

CONNECTICUT *Regular* Hartford March 12 13 *Endorsement* Hartford March 26 Sec Dr Thomas P Mordock 147 W Main St Meriden *Homeopathic* March 12 Sec Dr J H Evans 1488 Chapel St New Haven

IDAHO Boise April 2 Commissioner of Law Enforcement Hon Emmitt Pfost 203 State House Boise

ILLINOIS Chicago April 9 11 Superintendent of Registration Department of Registration and Education Mr Eugene R Schwartz Springfield

MAINE Portland March 12 13 Sec Board of Registration of Medicine Dr Adam P Leighton Jr 192 State St Portland

MASSACHUSETTS Boston March 12 14 Sec Board of Registration in Medicine Dr Stephen Rushmore 144 State House Boston

MINNESOTA *Basic Science* Minneapolis April 23 Sec Dr J Charnley McKinley 126 Millard Hall, University of Minnesota Minneapolis *Medical* Minneapolis April 16 18 Sec Dr E J Engberg 350 St Peter St St Paul

MONTANA Helena April 2 Sec Dr S A Cooney 7 W 6th Ave Helena

NATIONAL BOARD OF MEDICAL EXAMINERS The examination will be held in all centers where there are Class A medical schools and five or more candidates desiring to take the examination June 24 26 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia

NEW HAMPSHIRE Concord March 14 15 Sec Board of Registration in Medicine Dr Charles Duncan State House Concord

NEW MEXICO Santa Fe April 8 9 Sec Dr P G Cornish Jr 221 W Central Ave, Albuquerque

OKLAHOMA Oklahoma City March 12 13 Sec Dr J M Byrum, Mammoth Bldg Shawnee

PUERTO RICO San Juan March 5 Act Sec Dr Ramon M Suarez Box 536 San Juan

RHODE ISLAND Providence April 4 5 Dir Public Health Commission Dr Lester A Round 319 State Office Bldg Providence

WEST VIRGINIA Charleston March 18 State Health Commissioner Dr Arthur E McClue Charleston

WISCONSIN *Basic Science* Madison March 16 Sec Prof Robert N Bauer 3414 W Wisconsin Ave Milwaukee

Minnesota October Report

Dr E J Engberg, secretary, Minnesota State Board of Medical Examiners, reports the oral, written and practical examination held in Minneapolis, Oct 16 18, 1934. The examination covered 12 subjects and included 60 written questions. An average of 75 per cent was required to pass. Sixty candidates were examined, all of whom passed. One physician was licensed by reciprocity and 1 physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad	Per Cent
University of California Medical School	(1934)	92.5	
Emory University School of Medicine	(1932)	93.3	
Northwestern University Medical School	(1932)	90.4	
(1933) 91.2 (1934) 89.4			
Rush Medical College	(1933) 86.6 (1934)	88.4	
School of Medicine of the Division of the Biological Sciences	(1932)	86	
Indiana University School of Medicine	(1930)	82.3	
State University of Iowa College of Medicine	(1933)	89.6	
University of Maryland School of Medicine and College of Physicians and Surgeons	(1932)	89.5	
Tufts College Medical School	(1932)	92	
University of Michigan Medical School	(1931)	85.3	
University of Minnesota Medical School	(1932)	87.2	
(1933) 85.4 86.2 86.3 86.3 88.8 89.5 * 89.1 * 90.1 90.2 90.4 93 * (1934) 83.5 * 84 * 84.6 86 86.2 87.3 87.3 87.6 * 88 88.1 * 88.3 88.5 * 89.1 89.2 89.4 89.4 * 90.1 90.2 * 90.5 90.5 * 90.5 * 91.2 * 92.3 * 94 * 94.6			
University of Nebraska College of Medicine	(1929)	86.3	
University of Pittsburgh School of Medicine	(1933)	91.3	
Medical College of Virginia	(1933)	89	
University of Virginia Department of Medicine	(1933)	90.6	
Marquette University School of Medicine	(1934)	89.1	
University of Wisconsin Medical School	(1933)	88.4	

University of Manitoba Faculty of Medicine	(1933)	91.4
Dalhousie University Faculty of Medicine	(1933)	87.3
McGill University Faculty of Medicine	(1928) 85.2 (1933)	90.1

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Rush Medical College	(1923)		Illinois

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Syracuse University College of Medicine	(1933) N B M Ex		

One physician was licensed by endorsement on December 8. The following school was represented:

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
New York University University and Bellevue Hospital Medical College	(1932) N B M Ex		

* This applicant has received his M B degree and will receive his M D degree on completion of internship.

Missouri October Examination

Dr E T McGaugh, state health commissioner, reports the written examination held in Kansas City, Oct 24 26, 1934. The examination covered 14 subjects. An average of 75 per cent was required to pass. Fourteen candidates were examined, 12 of whom passed and 2 failed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
University of Illinois College of Medicine	(1934)	84.8	
University of Kansas School of Medicine	(1930)	88	
(1931) 86.2 (1934) 84.5 85.5 89.6			
Washington University School of Medicine	(1934)	83.2	
University of Pennsylvania School of Medicine	(1934)	83.9	
Friedrich Wilhelms Universität Medizinische Fakultät Berlin Prussia Germany	(1919)	76.1	
Julius Maximilians Universität Medizinische Fakultät Würzburg, Bavaria Germany	(1931)	81.1†	
Ludwig Maximilians Universität Medizinische Fakultät München Bavaria Germany	(1912)	80.2†	
Licentiate of the Royal College of Physicians of the Royal College of Surgeons Edinburgh and of the Royal Faculty of Physicians and Surgeons of Glasgow	(1934)	87.5†	
School	FAILED	Year Grad	Per Cent
Schleissheim Friedrich Wilhelms Universität Medizinische Fakultät Breslau, Prussia Germany	(1934)	72.7†	
Regia Università degli Studi di Palermo Facoltà di Medicina e Chirurgia	(1929)‡		

Eight physicians were licensed by reciprocity and 3 physicians were licensed by endorsement from September 12 to November 14. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Arkansas School of Medicine (1933, 2)	(1934)		Arkansas
Northwestern University Medical School	(1933)		California
Rush Medical College	(1934)		Illinois
University of Kansas School of Medicine	(1933)		Kansas
University of Buffalo School of Medicine	(1925)		New York
University of Pennsylvania School of Medicine	(1930)		Mass
School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Harvard University Medical School	(1927) N B M Ex		
University of Minnesota Medical School	(1934) N B M Ex		
St Louis University School of Medicine	(1933) N B M Ex		

* This applicant has completed his medical course and will receive his M D degree on completion of internship.

† Verification of graduation in process.

‡ Average grade not reported. Verification of graduation in process.

Ohio Reciprocity and Endorsement Report

Dr H M Platter secretary, Ohio State Medical Board, reports 30 physicians licensed by reciprocity and 2 physicians licensed by endorsement, Oct 2, 1934. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Yale University School of Medicine	(1928)		Maryland
Howard University College of Medicine	(1931)		Kansas
(1933) Missouri			
Emory University School of Medicine	(1930)		Georgia
Rush Medical College	(1933) W		Virginia
Indiana University School of Medicine	(1933)		Indiana
University of Louisville School of Medicine (1928)			
(1929) (1933 2) Kentucky			
University of Michigan Medical School	(1929 2)		
(1930) (1931), (1932) (1933 2) Michigan			
Wayne University College of Medicine	(1934)		Michigan 2 Utah
St Louis University School of Medicine	(1931 2)		Missouri
University of Buffalo School of Medicine	(1933)		New York
Hahnemann Medical College and Hospital of Philadelphia	(1933)		New Jersey
University of Pittsburgh School of Medicine	(1933)		Penn
Meharry Medical College	(1928)		Texas
(1933) Missouri Tennessee			
University of Tennessee College of Medicine	(1933)		Tennessee
Baylor University College of Medicine	(1929)		Texas
School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Rush Medical College	(1929) N B M Ex		
University of Cincinnati College of Medicine	(1934) N B M Ex		

Book Notices

Recent Advances in Neurology By W. Russell Brain M.A. D.M. F.R.C.P. Physician to the London Hospital and J. B. Strauss M.A. D.M. M.R.C.P. Assistant Physician to the Cassel Hospital for Functional Nervous Disorders. Third edition. Cloth Price \$5. Pp 442 with 40 illustrations. Philadelphia: P. Blakiston's Son & Company Inc. 1934.

The previous editions of this book have received favorable reviews. As in all books dealing with such highly technical material differences of opinions by reviewers have indicated that there are parts in the present work that might be severely criticized. Probably the criticisms of previous editions were based on the fact that too much physiology and not enough clinical neurology was given. If one compares the past editions with the present one, a marked change for the better can be detected. A number of purely physiologic topics have been left in, but they have a more significant relationship to the clinical information given than did the topics that have been omitted. Between the second and third editions a number of important researches have been reported, and the most important of these are included in the present book. There is much material devoted to encephalomyelitis; also there is a good summary of the observations made during the St. Louis encephalitis epidemic. This book continues to hold its own as one of the best volumes in the 'Recent Advances' series. The multifarious information available to the practitioner in neurology makes it necessary for him and his students to have a volume such as this for quick reference. Neurologists with individual hobbies to ride will continue to differ with the authors' treatment of almost every subject but they will probably be forced to admit that outside of their own particular interest the book will appear to be satisfactory. The authors should be commended for their painstaking work and the amount of improvement they have brought about between the first and latest editions.

Éléments de chimie organique biologique. Introduction chimique à l'étude de la biologie générale. Par Michel Polonorski professeur à la Faculté de médecine et de pharmacie de Lille et Albert Lespagnol agrégé de pharmacie à la Faculté de médecine et de pharmacie de Lille. Préface de A. Desgrez. Paper. Price 100 francs. Pp 594 with illustrations. Paris: Masson & Cie. 1934.

This is an encyclopedic presentation of the structural relations and properties of organic compounds of biologic importance or interest. The fundamental facts and reactions of elementary organic chemistry are not presented but most of these reactions are applied in developing the evidence for the structural formulas for the numerous substances under consideration. This evidence is given in the usual manner, however, without any emphasis on the quantitative character of the reaction involved. In common with most textbooks in organic chemistry, this volume is inaccurate on the biologic aspects, thus the synthesis of carbohydrates and amino acids in plants, the true nature of hormones and their action and the origin and fate of the organic compounds are treated too simply. Insulin is simply considered as a protein without any suggestion as to the incompleteness of present knowledge of its composition. The testis hormone is stated as having been separated in crystalline form and that its actions were discovered by Brown Seward. Carbohydrates are discussed from the organic point of view. The evidence for the structure of the disaccharides and trisaccharides is presented together with valuable tables covering the physical and chemical properties of the substances. Polysaccharides and heterosides are adequately treated from the chemical point of view, but the statements about enzyme action on carbohydrates are entirely too brief to be accurate. Interesting information on phenols, terpenes and plant pigment is followed by the discussion of lipins. Here is a good presentation on the chemistry of the sterols, but the treatment of fats and phospholipins would have been much improved if a more quantitative point of view had been taken. The amino acids are treated very satisfactorily as such and their structural relations to bases and other products are presented clearly. Relatively little is given on the structure of the proteins. The blood and bile pigments, other porphyrins and chlorophyll are presented quite completely. Many chapters contain short sections covering inadequately qualitative and quantitative methods for some of the substances discussed.

Gynecology By Brooke M. Anspach M.D. Professor of Gynecology Jefferson Medical College. With the assistance of Philip F. Williams M.D. Assistant Professor of Obstetrics School of Medicine University of Pennsylvania and Lewis C. Schoffey M.D. Assistant Professor of Gynecology Jefferson Medical College. Fifth edition. Cloth. Price \$9. Pp 832 with 670 illustrations. Philadelphia: London & Montreal: J. B. Lippincott Company. 1934.

In this edition of one of the best of American textbooks on diseases of women, many of the chapters have been rewritten entirely, such as those on endometriosis, ovarian tumors and the various menstrual disorders, and all the material in the book has been brought down to date by extensive reediting and resetting. The order of the chapters is traditional but logical, and this, together with easy readability, enhances the value of the book to both student and practitioner. The numerous illustrations are excellent and well selected, although some of them especially those depicting obsolete procedures such as the Dudley and Pozzi operations on the cervix, might well have been omitted. By all the customary standards, therefore, the book may be warmly recommended. The only question would seem to be as to the size and scope of the volume. It is rather bulky, much larger and more closely set than in the early editions, and this detracts somewhat from its value for the student. There are textbooks that go to the opposite extreme, their brevity and condensation being attractive to the average student but making them less useful for the general practitioner or the gynecologist looking for fuller discussion. The large size of the present work is due chiefly to the inclusion of a good many rather general chapters, with chapters also on diseases of the urinary organs, diseases of the anus and rectum, and diseases of the abdominal viscera associated with pelvic disorders, as well as chapters on such subjects as the relation between nervous and gynecologic disorders and vaccine and serum treatment. Every one knows that the gynecologist, like all other specialists, must know something of other fields, but whether a treatise on one specialty should include a smattering of discussion of allied fields is at least open to question, particularly as every intelligent specialist has at command fuller sources of information on allied subjects. The size of the work could have been cut down materially without lessening its attractiveness to most readers, and with a real increase of its value to the medical student. This one criticism, however, does not alter the fact that the Anspach work is an excellent one and that it fully merits the popularity which it has had for so many years.

Histoire de la chirurgie française (1790-1920). Par J. de Fourmestreaux. Préface du Professeur J. L. Faure. Paper. Price 30 francs. Pp 232. Paris: Masson & Cie. 1934.

No more romantic or thrilling times can be conceived than those occurring in France from 1790 to the end of the Great War in 1920. It is natural that the turbulent days as well as the calm ones should be reflected in the personalities of the men living and working, studying and fighting during this period. It is not surprising, therefore, that a history of French surgery of these times, especially if well written should abound with interesting characters, characters which like the times were turbulent or calm, passive or aggressive, overly ambitious or surprisingly self-effacing. This history is well written and as a result it reads not like a textbook but like a novel. The history commences while surgery was living under the refulgent light of the Royal Academy, which light was forever dimmed in 1793. The early chapters have to do with the tragic hours of the Revolution—hours through which strong personalities such as Desault, Chopart, Deschamps and Alexis Boyer lived, bowed down or unaffected by the times according to the personalities. The chapter on Dupuytren and his contemporaries is extremely good reading leading up into the equally stimulating events following the description of the first introduction of general anesthesia. It is natural, of course, that the period of Pasteur, Champignonniere and others involved in the introduction of antiseptics in surgery should be replete with incidents of interest especially to the modern surgeon, because during these periods much of what is in common use today was born. The actual history ends with the chapter on the war, although the final analysis, by the author, of the evolution and the future of surgery is a fitting closure for the work. The French is simple and can be easily read by any one with a moderate working knowledge of the language. The book is to be recommended to any physicians having interest in the history of medicine.

Heredity and Disease By Otto L. Mohr M.D. Professor of Medicine the Royal Frederiks University Oslo. Cloth. Price \$3.50. Pp. 253 with 107 illustrations. New York: W. W. Norton & Company, Inc. 1934.

This volume contains the Edward K. Dunham lectures at the Harvard Medical School in 1933 on Genetics and Pathology. The first half of the book explains in direct, lucid and simple terms the complicated mechanisms of heredity. The second half critically summarizes the major accumulations of data derived from medicine which reveal evidences of the factor of heredity in relation to disease, pathologic susceptibilities and abnormality in man.

Landsteiner's normal blood groups present a typical case of multiple allelomorphism. Falsely alleged paternity lends itself to partial determination by testing the blood group of mother, child and alleged father. In two thirds of such tests no answer in either direction can be given, but in one third of them a particular man might be excluded from the paternity in question, even in this third, however, no particular man can be proved to be the father, since the test merely reveals the blood group to which the father belongs.

Representative cases of hereditary disease and congenital defect are best known in the eye, since this organ is subjected to a great refinement of diagnosis. Thus both dominant and recessive types of microphthalmus are known, one of which is sex-linked. This defect is often associated with cleft iris, cataract, opaque lens or lens luxation. Hereditary degeneration of the macula and retinitis pigmentosa both occur in dominant and recessive sex-linked forms and in 22 per cent of 366 pedigrees were associated with deafness. Optic atrophy is a fatal sex-linked recessive developing after puberty. Moon eye, or congenital night-blindness, is a simple dominant traced for ten generations but recessive sex-linked cases also occur. Red-green blindness in four distinct types is also perfectly sex-linked. Glaucoma is both dominant and recessive sex-linked, cataract mostly dominant and a considerable number of pupils in schools for the blind are genetically blind. In the field of neuropathology (nerve diseases) different hereditary types of progressive muscular, neural or spinal dystrophies, of spastic spinal paralysis and paraplegia, of spinal ataxia (Friedreich's type) and cerebellar ataxia occur, conditions that all involve paralysis or lack of coordination of different parts of the muscular system. Further, Huntington's chorea, 'St. Vitus' dance,' associated with progressive mental disturbances, is typically dominant, while the progressive hepatolenticular degeneration known as Wilson's disease, in which both the liver and one of the so-called basal ganglions of gray matter in the brain are simultaneously affected, is recessive.

Deafness may be induced by different simple recessive genes, otosclerosis by a simple recessive gene, and harelip in varying degrees by a single dominant gene. Diabetes mellitus is inherited as a recessive, but cases of incomplete dominance are also known, while diabetes insipidus is a clear-cut dominant.

From case histories it appeared that various types of protein hypersensitiveness in man were inherited, but recently Ratner has shown that sensitizing antibodies pass through the placenta into the blood of the fetus. A varied body of evidence from plants and animals indicates that immunity may be distinctly hereditary. Examples are constantly multiplying of monofactorial mendelian inheritance of pathologic states in different fields of pathology, including dermatology, otology, orthopedics and dentistry. Mutations paralleling conditions in man are being recorded in laboratory animals though it is not improbable that not a few of these are in reality of genetic origin.

Lethal genes are well known in experimental plants and animals and have been detected in domesticated animals. Ichthyosis congenita in man is due to a lethal gene, xeroderma pigmentosum and infantile amaurotic idiocy to sublethal ones. The primary sex ratio of 150 boys to 100 girls with a selective intra-uterine death rate, which reduces this ratio to 106 to 100 at birth has been inferred to be due to lethal and sublethal sex-linked genes.

There is an extended discussion of disease in fraternal (dizygotic) and identical (monozygotic) twins, the upshot of which is marked support of the hereditary aspect of disease or of susceptibility to it, along with some evidence of the modifying effect of environmental conditions on its incidence. There are also discussions of intersexuality, sex reversal, pseudo-hermaphroditism, freemartins, genes and hormones, and x-rays and heredity.

While x-rays produce heritable mutation, there appears to be no sound evidence for the belief that alcohol, lead or other chemicals can cause genotypical changes.

The evidence on the inheritance of cancer is as yet quite limited. Malignant pigmented tumor in *Drosophila* has been traced by genetic analysis to single autosomal or sex-linked recessive genes. A certain strain of Arabian horses has a dominant gene for gray coloration and turns gray with age, at which time pigmented spindle cell sarcomas develop around the openings of the body, under the scapula, and in the axillary glands. In the light of cancer investigations, tumor formation seems to be a function of two sets of influences, local irritation and genetic susceptibility. The pathologic history of identical twins supports the idea of a hereditary susceptibility.

Genetics is related to human affairs, but Dr. Mohr is far from supporting the claim of eugenic reformers. His chapter on this theme should be widely read. His conclusions brief, and categorically stated are that, though not always accepted inbreeding or intermarriage, as such, has no harmful effects at all. Such effects arise only when the genes are bad and tend to be expressed whenever a child gets a double dose from seemingly normal parents each conveying the undesirable gene as a recessive. Inbreeding as such is not the cause of degeneration of families or races. Disappearance of the family name does not eliminate descent of family traits through female lines. Race crossing as a cause of degeneration is deprecated with emphasis because of political use of genetic ideas, especially in Germany. The author has no Nordic illusions, from the standpoint of a pure bred dog we are all curs. He is even more disdainful of "blue blood" and the significance of eminent ancestors, treating this aspect of human heredity with the same fine scorn with which he attacks maternal impressions rationalized human breeding, and sterilization. This attitude is in sharp contrast with his insistence on the hereditary aspects of pathologic states of the human body. There is no reference in these connections to the significance of Galton's studies on human genius. As a matter of fact the doctor seems to be quite like most men when he descends from the relations of heredity to disease to its relations to the fields of social and political action.

Radiologie de la vésicule biliaire. Etude anatomique fonctionnelle et clinique. Par Nemours Auguste radiologiste de l'Hospice Paul Brousseau. Préface du Professeur Roussay. Paper. Price 45 francs. Pp. 186 with 129 illustrations. Paris: Masson & Cie 1934.

The clinician, the surgeon and the radiologist all place a different value on the merits of cholecystography. Without making any comparisons, the author of this work has attempted to explain the lack of agreement between the clinician and the radiologist in the diagnosis of diseases of the gallbladder. Less than the usual number of half-tone reproductions of cholecystograms appear in the work, but there are numerous diagrams sketched from x-ray films, which serve well the purposes of illustration. After an excellent historical review of the role of roentgen examinations in gallbladder diagnosis, the author enters into a full description of the radiologic anatomy of the biliary tract, including an interesting study of the extrahepatic biliary ducts and their variations. A lengthy discussion concerns the known functions of the gallbladder in relation to the cholecystographic observations. Technical considerations are fully elaborated, as well as the normal and pathologic aspects of the visualized gallbladder. Final chapters deal with the unusual lesions such as cancer and other tumors of the gallbladder, and the indirect radiologic signs of gallbladder disease.

Aids to Operative Surgery. By Cecil P. G. Wakeley D.Sc. F.R.C.S. F.R.S. Senior Surgeon King's College Hospital London. Second edition. Cloth. Price \$1.25. Pp. 225 with 3 illustrations. London: Baillière Tindall & Cox. Baltimore: William Wood & Co. 1934.

It is more than a decade since the first edition of this little book was written by Mr. H. C. Orrin. During that time many innovations have developed in the field of surgery. The present author has practically rewritten the work, rearranged the chapters in conformity with the accepted chronological order of subject matter presentation, and has added some illustrations. Mr. T. Keith Lyle has assisted in the reconstruction of this valuable 'aid,' which in view of the rapid revision in the practice of surgery will find a useful place in the working library of younger and less experienced surgeons.

Lehrbuch der Differentialdiagnose Innerer Krankheiten Von Professor Dr. M. Matthes. Fortgeführt von Professor Dr. Hans Curschmann. Direktor der medizinischen Universitätsklinik in Rostock. 1. M. Seventh edition. Paper. Price 28 marks. 1 p. 804 with 126 illustrations. Berlin Julius Springer 1934.

This volume, which has established itself as a classic, constitutes one of the best works on differential diagnosis of internal diseases in any language. The book, originally written by Matthes, has been completely revised by Curschmann, who has omitted obsolete and added new material. The discussion is so thorough and complete, including symptomatology in addition to the differential diagnosis in the strict sense of the word, that the book can be considered a real cyclopedia in this field. It is written in a fluent style and the text generously illustrated with numerous temperature charts, schematic drawings, and excellent reproductions of roentgenograms and electrocardiograms. Bibliographic references are confined chiefly to the German literature. The symptoms under discussion are specified in the margin, thus facilitating a rapid survey of the subject. Several omissions have been noticed: tularemia, undulant fever, and the occurrence of a postprandial attack as characteristic for acute pancreatic necrosis. The description of allergic conditions is rather inadequate. A statement that only seventy extracts are available for skin tests is obsolete. All in all, as a reference book this work is unsurpassed, it may be considered as one of the most valuable contributions to the German medical literature in recent years.

Facts and Theories of Psychoanalysis By Ives Hendrick M.D. Cloth. Price \$3. Pp. 308. New York Alfred A. Knopf 1934.

Although it is probable that psychoanalysis as a technique has come to stay, there still remain many questions about justifying the theories behind it. There are dissensions between members of the analytic and nonanalytic groups of psychiatrists and even some differences of interpretation and opinions among the Freudian psychoanalysts themselves. Nevertheless, when those who have a proper background discuss psychoanalysis, they usually agree on the fundamentals. Much of the dissension has arisen from the lack of a good book on the basic theories and beliefs that are held by properly qualified psychoanalysts. The present volume is a compendium of psychoanalytic theories. There is little in it that is controversial and its facts are largely those presented by Freud himself rather than the products of some of his more bizarre disciples. The first part of the book presents the history of Freudian psychology and the meaning of psychosexuality, the second part treats of the theories of psychoanalysis in which principles such as pleasure and reality are discussed. Aggressive behavior toward parents is included here. Thirdly, there is a clear outline of psychoanalytic therapy, such associated phenomena as transference, also a discussion of treatment methods and the types of patients that are suitable for such treatment. The results of analysis are chiefly set forth, possibly with a little tendency to overvalue some of them. The only part of the volume subject to criticism, and that only mild is the fourth part, in which the author's view seems to be too rosy about the place of psychoanalysis and a little too condemnatory to other schools of psychotherapy. This work should be an excellent basic book for any one who wishes to understand psychoanalysis as it is presented today. It should supersede most of the older books devoted to the presentation of psychoanalysis for the beginner.

Anatomie der Hörrinde als Grundlage des physiologischen und pathologischen Geschehens der Gehörswahrnehmung Von Professor Dr. Max de Crizia. Direktor der Psychiatrischen und Nervenklinik an der Universität Köln. Paper. Price 6.00 marks. Pp. 44 with 22 illustrations. Berlin Julius Springer 1934.

In this excellent and concise monograph the author reviews the fundamental works of Heschl, Wernicke, Flechsig, Brodman, Economo, Cajal and others in conjunction with his own histologic studies in which a special silver impregnation method was used. He charts the various fields described by different authors and presents slides demonstrating variations in architectonic structure peculiar to these fields. With this foundation the author proceeds to a consideration of the physiology of the hearing centers, discussing the conclusions of his predecessors in the light of animal experiments and postmortem observations in cases of trauma, tumor and destruction of the peripheral end organs. The relationship between tone and noise perception, the musical sense and similar topics are considered together with the psychic interpretation and certain analogies drawn between

hearing and vision and the other senses. Stress is laid on the similarity between the Cajal acoustic cells found in the temporal lobe and those of the spiral ganglion. He points out that, when degeneration takes place in the ganglion cells, the Cajal and Korner cells in the brain are found to be the earliest and most markedly involved. As to Hensche's teachings regarding the role of the transverse convolution and its overlying cortical convolutions, the author is not in complete agreement.

Human Values in Psychological Medicine By C. P. Blacker M.C. M.A. M.D. Cloth. Price \$2.50. Pp. 170. New York & London Oxford University Press 1933.

This volume is an unusual one to find in a medical collection. While its title would indicate that it treats of psychiatric matters, it is necessary to wait until one reaches the last three of the ten chapters before anything distinctly psychiatric is obtained. By use of quotations from philosophic, biologic and psychoanalytic literature, taking matters from miscellaneous sources without a great deal of self criticism, the author has derived a theory which postulates that human capacity and human reactions are largely based on the values which the biologic entity places on life. These values may be distinct from what are called facts yet serve a biologic purpose. They are often esthetic in nature. Case histories and experiments have no place in the presentation, but the author can justify the fact that he applies his theory to psychologic medicine by pointing out that it is the presence of abnormal values which makes the patient seem abnormal. He also links up his theory with Freud's theory of life and death instincts, but he shows that in some respects his attitude toward such fundamental phenomena is different from those of Freud. He apologizes for not having an adequate philosophical background—and this he should do because the book is not a definite application of any clear-cut philosophical doctrine. He also expresses a debt of gratitude to Freud, which seems to have no relation to his theory as he expresses it. The chief value of this book lies in the fact that it may be food for thought for those who can plow through it. As a source or textbook for the busy psychiatric clinician, it would seem to have no value.

Medizinische Praxis. Sammlung für ärztliche Fortbildung. Herausgegeben von Prof. Dr. L. R. Grote, leitender Arzt der medizinischen Klinik des Staatlichen Krankenhauses Zwettkau. Prof. Dr. A. Fromme, Direktor der chirurgischen Abteilung des Stadtkrankenhauses Dresden-Friedrichstadt und Prof. Dr. K. Warnekros, Direktor der staatlichen Frauenklinik zu Dresden. Band XVIII. Erbpathologie. Ein Lehrbuch für Ärzte von Dr. Otmar Ehrh v. Verschuier, a. o. Professor der Universität Berlin. Paper. Price 8 marks. Pp. 218 with 32 illustrations. Dresden & Leipzig Theodor Steinkopff 1934.

This monograph is intended for the instruction of physicians, especially in Germany, in matters relating to the heredity of disease. It deals mainly with the fundamental general principles of heredity, with the influence of heredity especially in human diseases and with the practical application of the knowledge of heredity in medical practice and in public health, with particular reference to the conditions in Germany at the present time.

Early Forerunners of Man. A Morphological Study of the Evolutionary Origin of the Primates. By W. E. Le Gros Clark D.Sc. F.R.C.S. Professor Elect of Anatomy University of Oxford. Cloth. Price \$5. Pp. 296 with 89 illustrations. Baltimore William Wood & Company 1934.

The author has been for many years a careful student of comparative anatomy, especially interested in the nervous system and the skull. The student of comparative anatomy sees spread out before him a picture of progressive evolution. That picture is presented in this book as the author follows evolution from the basal mammalian stock in the Jurassic period up through the higher mammals and the primates to man. In successive chapters he shows parts of the evolutionary picture as presented by skulls, teeth, limbs, brains, special senses, the digestive system and the reproductive system. Of all these the most important part is the brain. Since it is the dominant part of animal structure, the study of its evolution throws the most reliable and significant light on human origins. Professor Clark believes that his study reveals the working of the principle of orthogenesis, early and somewhat intemperately championed by Theodore Eimer, according to which variations are definitely, progressively and irreversibly directed along certain lines. Whitman and others found in their work facts that forced them to accept this principle. The author finds it

"increasingly difficult to conceive of evolution as a matter of action and reaction between the physicochemical factors of the environment and those of a passive organism." The many instances of obvious parallelism in the evolution of primates can be interpreted only by the conception of predetermined trends of development, operating independently of natural selection. "But if the mysteries of the living and evolving germplasm are even deeper and more enigmatical than we have been inclined to believe it were better to recognize the fact." The book is a valuable contribution to the study of evolution and of human origin. Thoughtful biologists and philosophers cannot fail to consider seriously the facts presented.

Medicolegal

Autopsies Liability of Charitable Hospital for Unauthorized Autopsy—The plaintiff's husband died in the defendant hospital, Dec 5 1929, at 8 p m. The body was removed to the hospital morgue. The following morning at 9 o'clock an undertaker procured by the plaintiff, called at the hospital for the body but was told by the hospital authorities that it was not then ready for delivery. He was compelled to wait until 2 o'clock in the afternoon before he obtained the body. It was later discovered that without the consent of the plaintiff an autopsy had been performed on the body in the hospital the vital organs removed, and the space formerly occupied by them filled with cotton. The plaintiff sued the hospital, and the trial court, after reducing the amount of damages awarded by the jury, gave judgment for the plaintiff. Both the plaintiff and the defendant hospital appealed to the supreme court of New York, appellate division, second department.

The defendant hospital contended that since it was a charitable institution it was not liable unless the plaintiff proved that the hospital actively participated in the unlawful act and that no such proof was presented to the trial court. The defendant apparently relied on the case of *Hasselbach v Mount Sinai Hospital*, 173 App Div 89, 159 N Y Supp 376, wherein a widow sought damages for an unauthorized autopsy on the body of her deceased husband. The court in that case said:

The question is therefore squarely presented whether or not the defendant owed an absolute duty to plaintiff to protect her husband's body against a post mortem autopsy by any person whomsoever and to deliver said body to her in the same condition that it was immediately after death. The plaintiff insists the defendant was under such a duty. We do not so understand the law. Certainly no reported case has gone to this extent.

It is well settled that in the absence of a contrary testamentary disposition the right to the possession of the body of one who has died belongs to the surviving husband or wife or next of kin for the purposes of preservation and burial and that this right is infringed upon by any one who unlawfully mutilates such a body without the consent of the person entitled to the possession thereof (*Darcy v Presbyterian Hospital* [in City of New York], 202 N Y 259 [95 N E 695 Ann Cas 1912D 1238], *Foley v Phelps* 1 App Div 551 [37 N Y S 471] *Larson v Chase* 47 Minn 307 [50 N W 238 14 L R A 85 28 Am St Rep 370]) and for a violation of this right damages may be recovered for the injury to the feelings and the mental sufferings resulting from the unlawful act. In all the cases however in which such a right of action has been upheld the person held liable has either been the one who committed the unlawful act as in *Foley v Phelps* or one who caused or procured the autopsy to be made as in *Darcy v Presbyterian Hospital*. None of them therefore are authority for the proposition contended for by the plaintiff in this action.

The plaintiff in the *Hasselbach* case, observed the court, failed to allege in her complaint that the autopsy was performed by the defendant hospital, or by any of its servants or by its consent, knowledge, privity or procurement. In the case under consideration, however, the plaintiff, in substance, alleged in her complaint that the unlawful act was committed by the defendant, its agents or employees while the defendant had the exclusive and absolute possession and control of the body. The *Hasselbach* case is therefore not in point, the court pointed out.

Another case cited by the defendant hospital, *Phillips v Buffalo General Hospital* 239 N Y 188, 146 N E 199, involved an injury to a patient through the alleged negligence of an orderly, engaged in nursing. In the present case the plaintiff was not a patient of the hospital said the court, and her action was based not on mere negligence but on a separate

and independent tort, namely, the unauthorized mutilation of her deceased husband's body. The reasons that have led to the adoption of the rule that a charitable institution is immune from liability to patients because of the wrongful act of its servants are not applicable when the sufferer is not a patient. The plaintiff in this case charged that the defendant hospital had interfered with her right to receive her deceased husband's body whole and un mutilated. Testimony that the body was mutilated and its vital organs missing at the time the undertaker received it at the hospital was uncontradicted. The defendant hospital placed in evidence its rule that autopsies were performed at the hospital only with the written consent of the family of the deceased, and then only by the pathologist. The pathologist testified that he did not perform the autopsy or direct it to be performed. Each member of the staff denied that he had performed the autopsy.

In the opinion of the Supreme Court, a hospital should not be held as an insurer of the safety of a dead body in its possession nor should it be held liable because of the mutilation of a body in its possession by any person or from any cause whatsoever. The evidence in this case clearly showed that the body was mutilated while in the exclusive possession and control of the hospital. The plaintiff, of course said the court, could furnish no proof as to who did the unlawful act. The defendant hospital disclaimed all knowledge of this particular autopsy and called attention to its rules concerning the performance of autopsies. These rules, however, were not observed or in force in this instance, and might have been nonexistent so far as the plaintiff was concerned. The defendant, which should have knowledge of all the facts, did not show that some person pursuing an independent calling and not acting under the authority or direction of the hospital performed the autopsy. The defendant alone knew what transpired within its walls during the night and morning following the death of the plaintiff's husband. A hospital has the means to exercise control over what goes on within its building. Requiring it to take some precaution to prevent the unlawful mutilation of deceased patients, said the court is not placing an undue burden on it, and it should not be allowed to avoid all liability by professing ignorance of what has happened within its own confines. In view of all the facts, it was possible concluded the court, for the jury by reasonable inferences to find that this unlawful autopsy was performed by the direction or with the consent, knowledge or permission of the defendant hospital. The judgment in favor of the plaintiff was consequently affirmed—*Gratwander v Beth Israel Hospital Assn* (N Y) 272 N Y S 171.

Society Proceedings

COMING MEETINGS

- Alabama Medical Association of the State of Mobile April 16-18
Dr D L Cannon 519 Dexter Avenue Montgomery Secretary
- American Association of Anatomists St Louis April 18-20 Dr George W Corner University of Rochester School of Medicine Rochester N Y Secretary
- American Association of Pathologists and Bacteriologists New York, April 18-19 Dr Howard T Karsner 2085 Adelbert Road Cleveland Secretary
- American Association on Mental Deficiency Chicago April 25-27 Dr Groves B Smith Beverly Farms Godfrey Ill Secretary
- American Physiological Society Detroit April 10-13 Dr Frank C Mann Mayo Clinic, Rochester Minn Secretary
- American Society for Experimental Pathology Detroit April 10-13 Dr Shields Warren 195 Pilgrim Road Boston, Secretary
- American Society for Pharmacology and Experimental Therapeutics Detroit April 10-13 Dr E M K Geilling 710 N Washington Street, Baltimore Secretary
- American Society of Biological Chemistry Detroit April 10-13 Dr H A Mattill State University of Iowa Iowa City Secretary
- Arizona State Medical Association Phoenix, April 25-27 Dr D F Harbridge 15 East Monroe Street, Phoenix Secretary
- Arkansas Medical Society Fort Smith, April 15-17 Dr W R Brooksher 602 Garrison Avenue, Fort Smith Secretary
- Federation of American Societies for Experimental Biology, Detroit April 10-13 Dr H A Mattill State University of Iowa Iowa City Secretary
- Maryland Medical and Chirurgical Faculty of Baltimore April 23-24 Dr Walter Dent Wise 1211 Cathedral Street Baltimore Secretary
- South Carolina Medical Association Florence April 23-25 Dr E A Hines Seneca Secretary
- Southeastern Surgical Congress, Jacksonville Fla March 11-13 Dr Benjamin T Beasley 478 Peachtree Street, N E Atlanta Ga Secretary
- Tennessee State Medical Association Nashville April 9-11 Dr H H Shoulders 706 Church Street Nashville Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1935 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery
4:197-236 (Dec.) 1934

- Massive Atelectasis in Relation to Lobar Pneumonia G Walsh Fairfield—p 197
*Cranio cerebral Injuries and Complications W S Littlejohn Birmingham—p 210
Surgical Treatment of Diseases of Biliary Tract R. V. Taylor Jr Mobile—p 216
Congenital Polycystic Kidneys C. Thornton Montgomery—p 218

Cranio cerebral Injuries and Complications—Littlejohn points out that cranial trauma is rapidly on the increase and that probably 15 per cent of the admissions to city hospitals present injuries of the head. Most of these show involvement of the nervous system. Loss of consciousness, for a few minutes or longer, occurs in probably 95 per cent of the cases of fractured skull. Treatment should be directed primarily toward relief of increased intracranial pressure. These patients should be put to bed immediately, and, if there is coma for any appreciable length of time, they should remain in bed for six weeks or longer. Conservative treatment of simple, uncomplicated skull fractures is indicated. Examination should be made for hemorrhage or leakage of cerebrospinal fluid from any of the cranial orifices. Careful neurologic examination for cranial nerve paralysis or paralysis of the extremities is essential. Unless there is a compound fracture, diagnostic spinal puncture should be done. Hypertonic solution of dextrose, given intravenously, is most valuable in reducing the intracranial pressure. Morphine is liable to obscure important diagnostic signs and in addition raises the intracranial pressure. Intracranial hemorrhage must be guardedly anticipated and cannot always be shown by spinal puncture. Immediate debridement is imperative in compound fractures. Hemorrhage may complicate severe concussion, obscuring the diagnosis. Posttraumatic epilepsy must always be anticipated. Posttraumatic sequels are the rule rather than the exception following injuries of the head. Sequels persisting more than eighteen months are probably permanent. Many of the sequels may be forestalled. The conclusions and suggestions that the author sets forth have resulted from the observations of 1,000 patients seen with major cranio cerebral injuries over a period of seven years.

American Journal of Ophthalmology, St. Louis

17:1099-1194 (Dec.) 1934

- Physiologic Considerations in Treatment of Pulsating Exophthalmos G M Dorrance and P E. Loudenslager Philadelphia—p 1099
Experimental Detachment of Retina. Permanent Detachments Produced in Rabbits Eyes. R. Castrovejo New York—p 1112
Lens Extraction in Myopia A. Elsching Marienbad Czechoslovakia—p 1118
Diathermy in Retinal Detachment. Report of Case with Severe Nyctagmus as Complication M H Post St. Louis—p 1122
*Histopathology of Coloboma of Choroid and Optic Nerve Entrance M L. Folk Chicago—p 1126
Studies in Protein Content of Human Aqueous I Influence of Therapeutic Measures II Significance in Papilledema, Papillitis and Other Conditions. E. Selinger Chicago—p 1130
Retinitis Proliferans in Diabetes Case Report. G C Struble St. Louis—p 1137
Xanthomatosis of the Orbit (Lipogranuloma) R M Rogers Brooklyn—p 1141
Malnutrition in Relation to Ulceration of Cornea in Gonorrheal Ophthalmia Neonatorum C E. Walker Jr Boston—p 1146
Testing of Visual Acuity III Types of Test Field and Projection Apparatus C E. Ferree and C. Rand Baltimore—p 1147

Histopathology of Coloboma of Choroid—Folk reports the microscopic study of a coloboma of the choroid. In this specimen, no inflammatory products or mesodermal strands were

found in the region of the coloboma. Retinal folds seemed to be the cause of the formation of the latter thus supporting the ectodermal theory of coloboma formation. The defect at the disk was not in the optic nerve or its sheath but at its entrance. The choroid and pigment epithelium were absent, the retina was in a state of maldevelopment but showed no fatal gap.

American Journal of Surgery, New York

27:1-186 (Jan.) 1935

- Treatment of Primary Malignant Bone Tumors. The Memorial Hospital Conference on Treatment of Bone Sarcoma E A Codman Boston—p 3
Endothelial Myeloma or Ewing's Sarcoma W B Coley New York—p 7
Primary Malignant Bone Tumors. Differential Diagnosis. Its Importance in Selection of Treatment C C Simmons, Boston—p 19
*Place of Biopsy in Bone Sarcoma J Ewing New York—p 26
Surgical Treatment of Osteogenic Sarcoma H W Meyerding Rochester Minn—p 29
*Value of Preoperative Irradiation in Bone Tumors. Whether for Biopsy or Any Type of Operative Procedure Including Amputation J C Bloodgood Baltimore—p 35
*Treatment of Osteogenic Sarcoma by Irradiation B L Coley New York—p 43
Five Year Course of Osteogenic Sarcoma and of Ewing's Sarcoma Accepted by the Registry of Bone Sarcoma B C Crowell Chicago—p 48
Carcinoma of Bronchus. Suppurative Pneumonitis and Bronchiectasis. Interlobar Empyema H Ienthal New York—p 50
Intrathoracic Tumors C Eggers New York—p 52
Persistent Infected Pneumothorax Following Aspiration. Treatment of Pleural Suppuration A S W Touroff New York—p 57
Surgical Treatment of Pleuropulmonary Adhesions in One Hundred Thoracoscopies G L Stivers Fall River Mass—p 59
Catgut Allergy with Note on Use of Alloy Steel Wire for Sutures and Ligatures W W Babcock Philadelphia—p 67
Results of Treatment in Tumors of Testicle A L Desjardins A S Counseller Rochester Minn and C Gianturco Urbana Ill—p 71
*Twisted Ovarian Cyst. Procedure to Prevent Fatality from Embolism C L Davidson Jamaica N Y—p 79
Ectopic Pregnancy P T Brown Phoenix Ariz—p 80
Anticipating Some Difficulties During Transfusion of Unmodified Blood M DeBakey New Orleans—p 85
Adrenal Cortical Hyperfunction M Goldzieher and H Koster Brooklyn—p 93
Spinal Anesthesia in Treatment of Megacolon and Obstinate Constipation S J Stabins J J Morton and W J M Scott Rochester N Y—p 107
Prevention of Late Postoperative Complications in Acute Suppurative Appendicitis. Three Case Reports J J McGrath and S Eiss, New York—p 112
Primary Carcinoma of Jejunum M E Gabor and R I Hiller Milwaukee—p 121
Anomalies of Intestine. New Operative Approach W W Sager and O Solnitzky Washington D C—p 126
Acute Gallbladder Disease C R Steinke Akron Ohio—p 15
Modern Treatment of Duodenal Fistula D Warshaw, New York—p 139
Permanent Extirpation of Nails in Chronic Onychomycosis K P A Taylor Havana Cuba—p 145

Biopsy in Bone Sarcoma—Ewing offers the following considerations in support of the fact that biopsy should be the last step in the diagnosis of bone sarcoma. 1 The clinical history and the roentgen observations in experienced hands yield a practically certain diagnosis in the great majority of cases. When the clinician forms the habit of relying on a hasty biopsy, he invariably forms the habit of a hasty review of the clinical and roentgen evidence, and thus a vicious circle is established and the actual need of a biopsy tends to increase. 2 The whole clinical and roentgen picture of the case of bone sarcoma usually furnishes a better conception of the diagnostic and therapeutic problem than can be obtained from a biopsy. The pathologist works under a great handicap when he undertakes to make clinical diagnoses and advise treatment without full knowledge of the clinical and roentgenologic data. 3 Few surgeons realize the limitations in the histologic diagnosis of bone tumors and the conditions that simulate or accompany them. The sources of error are numerous. 4 Numerous unexpected complications arise from biopsies on bone tumors and, while the individual surgeon may claim that he has not encountered them very often, the total damage done forms a serious objection to the biopsy. There may be uncontrollable hemorrhage requiring immediate amputation or a more serious emergency measure than the simple biopsy. Infection may follow either low grade and chronic or acute and serious. In any such case, treatment by any other than surgical measures

is generally precluded. The biopsy interferes with proper radiation treatment. 5 Bone sarcomas are allowed to run along in the hands of all types of practitioners until the disease becomes so obvious that no further delay can be tolerated and resort is finally had to the roentgenograph and then to the biopsy. So long as this attitude prevails, there will be few cures of these diseases. When the disease reaches the biopsy stage it is often disseminated in the neighboring veins or already in the lungs. When the condition is readily recognized in the roentgenogram also it is often disseminated. Unless the policy of suspecting bone sarcoma on clinical signs is adopted, the chief of which is persistent pain, worse at night, the melancholy history of this disease will be indefinitely perpetuated. 6 An aspiration biopsy by an 18 bore needle has been remarkably successful in revealing the structure of bone tumors. Most objections to the surgical biopsy are avoided. When this method becomes a familiar routine, there remains a restricted field for the old surgical biopsy.

Preoperative Irradiation in Bone Tumors—Bloodgood gives a brief review of the evidence that justifies giving every suggestive lesion of bone, even before biopsy, a course of irradiation and a thorough course, with high voltage x-rays, or a 4 Gm pack, or larger amounts of emanations in packs. The majority of pathologists, radiotherapists and operators favor and practice this preliminary preoperative and prebiopsy irradiation. It should not be carried too far, at least before biopsy. If distinct improvement does not occur after the first thorough course of treatment, the tumor should be explored or aspiration biopsy performed (for microscopic section). If there is any doubt about the nature of the lesion, sections should be submitted to a number of pathologists of great experience in the study of bone tumors. The case should be registered with the American College of Surgeons. During this time, from one week to one month, the second course of irradiation may be given or there should be a period after the first irradiation of at least two weeks in which no operation, except biopsy, should be done. So, if there is no improvement after the first irradiation, there can be a biopsy immediately, and one will have at least two weeks to get the pathologic view.

Irradiation of Osteogenic Sarcoma—Coley states that of seventy patients with osteogenic sarcoma treated by irradiation sixty-four are dead. Of the six patients known to be alive, four have fibrosarcomas and one a sarcoma developing on an old osteitis fibrosa cystica, and the remaining case is by roentgenographic appearance a sclerosing osteogenic sarcoma but lacks histologic confirmation. Of the six patients, only one has survived more than five years. At present the author feels that irradiation should be offered in preference to amputation only (1) when of doubtful operability, (2) when the histologic picture suggests definite radiosensitivity, (3) when a small periosteal lesion affords opportunity for combined external and interstitial irradiation and (4) in medullary osteogenic fibrosarcomas of low malignancy. All inoperable cases and those in which amputation is refused should receive thorough, well planned irradiation. If improvement is noted, it should be an indication for further use of irradiation up to the limits of skin tolerance. At present prolonged treatment by the fractional dose method is favored by the author. With few exceptions his results in the treatment of pulmonary metastases have not been encouraging.

Procedure in Twisted Ovarian Cyst—Davidson believes that the following procedure will tend to prevent a fatal termination in twisted ovarian cysts from cerebral embolism. The abdomen is opened and explored. The patient is placed in a Trendelenburg position. The cyst is delivered. There may be one or more twists in the pedicle. It may or may not show stagnation of blood, discoloration or even necrosis. The cyst should not be untwisted. The cyst is held in one hand and with the other a Kelly hemostat is placed well below the last twist on the broad ligament. This should be beyond any discoloration or hemorrhagic areas in the pedicle. A suture ligature is placed in the broad ligament beneath the hemostat. The untwisting of the cyst before amputation allows its material to get into the circulation and cause embolism. The cyst is amputated between hemostat and suture ligature and repaired as usual. The abdomen is closed in layers.

American Review of Tuberculosis, New York

31 1120 (Jan.) 1935

- *Amyloid Degeneration of Adrenals as Factor in Producing Symptoms of Addison's Disease in Chronic Pulmonary Tuberculosis. I. D. Bronfin and P. H. Guttman. Denver—p. 1.
- Pulmonary Asbestosis. Report of Case with Necropsy Findings. D. S. Egbert. New Haven, Conn.—p. 25.
- Vitamin Therapy in Intestinal Tuberculosis. M. M. Steinbach and M. B. Rosenblatt. New York—p. 35.
- Bronchial Obstruction as Complication of Pulmonary Tuberculosis Under Artificial Pneumothorax. Case Report. W. I. Werner. Pontiac, Mich.—p. 44.
- Pregnancy Following Extrapleural Thoracoplasty. Case Report. H. S. Boquist, J. H. Simons and J. A. Myers. Minneapolis—p. 48.
- *Double Exposure Roentgenologic Chest Technic. H. L. Sampson. Trudeau, N. Y.—p. 50.
- *Complement Fixation as Related to Resistance and Allergy in Experimental Tuberculosis. A. B. Baker. Minneapolis—p. 54.
- Follow Up Information on Two Thousand and Thirty One Tuberculous Patients One to Thirteen Years After Discharge from Sanatoriums. G. J. Wherrett, Fort San Sash—p. 62.
- Statistic Study of Tuberculosis Clinics in Grays Harbor County. Washington. H. L. Hull. Yakima, Wash.—p. 74.
- Survey of Artificial Pneumothorax in Representative American Tuberculosis Sanatoriums 1915-1930 with Especial Attention to Question of Termination of Treatment and Later Results. A. Peters. Lake George, N. Y. A. S. Pope. Boston. W. H. Morris. Wallingford, Conn. E. N. Packard. Saranac Lake, N. Y. and O. O. Miller. Louisville, Ky.—p. 85.

Amyloid Degeneration of Adrenals in Tuberculosis—Bronfin and Guttman found eighteen cases of amyloid disease in a series of 100 tuberculous patients that came to necropsy. Of these, fourteen showed also amyloid infiltration of the adrenals involving mainly the cortex. Clinically, they could be classified into three groups. In the "positive group" there were five patients in whom a diagnosis of Addison's disease was made during life. Of these, one patient was temporarily benefited by the administration of cortical extract and another by the Muirhead regimen. In the second group there were suggestive symptoms of Addison's disease but a diagnosis was not warranted, and the third group did not show any symptoms of Addison's disease during life. Histologic study of the adrenals in those cases seems to show a definite relationship between the extent of amyloid involvement of the adrenal cortex and the symptomatology, notably the asthenia and gastro-intestinal symptoms. Attention is called to the possibility that in many cases of far advanced pulmonary tuberculosis there are symptoms of Addison's disease which are usually unrecognized and attributed to the existing tuberculosis. The recognition of these symptoms should prove helpful not only by way of therapy when cortical extract becomes available commercially but also to prevent the institution of surgical procedures, which invariably hasten a fatal termination in such cases. In the light of this study, amyloid of the adrenals, which, as a rule involves only the cortex, should be given a better recognized position in the etiology of Addison's disease.

Roentgen Technic for Double Exposure of Chest—Sampson outlines a roentgen technic for double exposure of the chest in which one half of each film is covered with a sheet of lead of sufficient thickness to ensure protection. The unprotected side is then exposed to register the "good" lung. The protecting lead is then shifted to the half of the film that now has a registration of the "good" lung. The cassettes are then placed in either a horizontal or a vertical Potter-Bucky grid apparatus. To obtain proper perspective, the cassette used with the tube in the high position for the good lung must be used again with the high tube position for the compressed lung. The exposure for the dense side will depend somewhat on how great the density is. For heavy densities a spine technic is used and for lighter densities the exposure is shortened. Because there is little or no movement on the "diseased" side reasonably long exposures (approximately five seconds) do not appear to be objectionable. However, the shorter the exposure the less danger there is from blurring caused by motion. A small focal-spot radiator type of Coolidge tube is used to compensate for the short focal spot film distance, which is to a great extent determined by the type of Potter-Bucky grid used. An average technic is kilovolts variable 10 milliamperes, distance of 30 inches and time of five seconds. The kilovolt is varied for different depths of chests. The perspective on the Potter-Bucky grid side of the film is usually satisfactory and one is able to evaluate the relative position

of pulmonary and thoracic structures. However, too much reliance should not be placed on it if further surgical procedure is contemplated, unless the surgeon and the roentgenologist can check the perspective by known anatomic landmarks. The author has not attempted to evaluate statistically the foregoing method. It has become a routine procedure when one side of the chest is dense and the opposite side is amenable to the usual chest technic.

Complement Fixation in Experimental Tuberculosis—In his experimental work with tuberculosis, Baker observed that vaccinated rabbits can be definitely differentiated from the nonvaccinated controls by the aid of the complement fixation test. The antibody titer in vaccinated animals does not measure the existing allergy but does appear to parallel the resistance of the animals to experimentally produced tuberculosis. The humoral antibody produced by vaccination is not destroyed when it cannot be detected by the complement fixation test but leaves the circulation and can be exfoliated by various stimuli.

Archives of Neurology and Psychiatry, Chicago

33: 1 246 (Jan.) 1935

- *Insulin Hypoglycemia: Mechanism of Neurologic Symptoms W Dameshek and A Myerson with technical assistance of Caroline Stephenson, Boston—p 1
- Treatment for Primary Myopathies H H Reese E M Burns and Carol M Rice Madison, Wis—p 19
- Vasomotor Changes Associated with Paralysis of Cerebral Origin P C Bucy Chicago—p 30
- Central Nervous System in Mushroom Poisoning: Report of Two Cases with Toxic Encephalitis E Marcovitz and B J Alpers, Philadelphia—p 53
- Cerebral Changes in Gastro-Intestinal Infections with Terminal Cachexia: Histopathologic Studies on Dysentery with Comments on Similar Observations in Intestinal Tuberculosis L Alexander, Boston and T T Wu Shanghai, China—p 72
- *Changes in Cerebral Cortex Produced by Thermocoagulation: Suggestion to Neurosurgery J G Dusser de Barenne and H M Zimmerman New Haven, Conn—p 123

Insulin Hypoglycemia.—Dameshek and Myerson studied the mechanism of the neurologic symptoms of insulin hypoglycemia in man, chiefly by comparing the contents of dextrose and oxygen in the vessels supplying the brain and the arm before and after the intravenous administration of insulin. The chemical changes in the blood usually varied directly with the severity of the reaction. The uptake of dextrose by the brain (as measured by the difference in the dextrose content of an artery and the internal jugular vein) became materially reduced during the severe hypoglycemic reaction, although that of the arm usually became increased. The uptake of oxygen by the brain (as determined by arteriovenous differences in the content of oxygen) varied indirectly with the severity of the insulin reaction, becoming much reduced during the most severe reactions. The blood lactic acid became increased during the reaction, no differences between vessels being noted. The spinal fluid pressure regularly became increased before the objective phenomena of the hypoglycemic reaction could be seen. There was no essential change in the dextrose content of the spinal fluid during the period of observation (from forty-five to ninety minutes). The pulse pressure usually became increased, owing to a slight rise in systolic pressure and to a more marked fall in diastolic pressure. An injection of epinephrine regularly diminished the symptoms of the insulin reaction. The marked diminution in the arteriovenous difference in the content of oxygen during the severe insulin reaction may signify actual diminution in the uptake of oxygen by the brain and arm. If this is true the neurologic symptoms of the insulin reaction may be due to the effects of a lack of oxygen on brain tissue.

Changes in Cerebral Cortex Produced by Thermocoagulation.—Dusser de Barenne and Zimmerman discuss changes in the cerebral cortex produced in monkeys by thermocoagulation through local application of heat at from 56 to 80 C for short periods of time. The most suitable temperatures for laminar thermocoagulation of the cortex are from 65 to 80 C. The depth of the lesion depends on the temperature applied and the duration of the application. Following thermocoagulation at a temperature between 65 and 80 C, all the nerve cells have disappeared in the heated area after thirty-six hours. After from seven to twelve days the heated area

appears as a devastated region, sharply delimited from the normal surrounding cortex by a wall of proliferated glia and fibroblasts. Inside the heated area the glia cells are still present and staining after twelve days. Application of lower, though still supernormal, temperatures to the cortex results in typical changes. Even the application of 50 C for half a minute to the cortex results in the death of all the nerve cells in the heated area. They have disappeared after thirty-six hours. It is of interest that in the chronic preparations (survival period of four months) the whole devastated area has disappeared. Not only the nerve cells but also the neuroglia, the blood vessels, the interstitial tissue and the wall of proliferated glia and fibroblasts have disappeared. This fact proves that the glia present and staining in the "acute" preparations is no longer alive but also has been killed by the thermocoagulation. Scar formation and retraction of the adjacent cortex are absent in "chronic" preparations. This observation suggests the usefulness of this method in neurosurgical procedures on man.

Canadian Public Health Journal, Toronto

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- Study of Maternal Deaths in Province of Ontario J T Phair and A H Sellers Toronto—p 563
- What the Dairyman Expects from Medical Officer of Health W H Forster—p 580
- Prevention of Scarlet Fever in a Children's Hospital Beverley Hannah Toronto—p 587
- Recent Advances in Treatment of Cyanide Poisoning O M Solandt Toronto—p 592

Illinois Medical Journal, Chicago

67: 1 100 (Jan.) 1935

- Premature Infants: Report of Sixteen Hundred and Twenty Three Consecutive Cases J H Hess Chicago—p 14
- The Lighter Vein in Medicine E J Kuh Chicago—p 25
- Cystic Disease of Lungs: Report of Eight Cases E F Pearson, Springfield—p 28
- Sacrocoaxalgia J E Allegretti Chicago—p 37
- Immediate Treatment of Compound Injuries S L Koch Chicago—p 40
- Spinal Anesthesia W L Waner Evanston—p 45
- Acute Intestinal Obstruction: Its Early Recognition E I Greene and J M Greene Chicago—p 51
- *Relation Between Preoperative Condition of Patient and Operative Mortality in Exophthalmic Goiter W O Thompson S G Taylor 3d and K A Meyer Chicago—p 53
- Agranulocytosis F W Burcky Evanston—p 59
- Retinitis Pigmentosa R A Perritt Chicago—p 64
- *Modified Technic for Suspected Gallbladder Disease A Hartung and T J Wachowski Chicago—p 71
- X Rays and Health H A Olim Chicago—p 76
- Control of Undulant Fever from Standpoint of the Veterinarian W H Welch Lexington—p 78
- Studies in Tuberculous Meningitis, with Especial Reference to Racial Susceptibility L H Berry Chicago—p 82
- Morbidity and Mortality in Prostatic Surgery C O Ritch Chicago—p 90
- Surgical Drainage in Glaucoma M Goldenburg Chicago—p 92
- Value of Friedman Modification of Aschheim Zondek Test J J Moore Chicago—p 96

Operative Mortality in Exophthalmic Goiter.—Thompson and his associates believe that, apart from surgical skill, the most important factor in determining the risk of thyroidectomy for exophthalmic goiter is the preoperative condition of the patient. Great attention should be paid not only to the administration of iodine but also to emotional instability, muscular weakness, rest, body weight and infection. The two most important factors in gauging the risk of operation, regardless of the height of the basal metabolism, would appear to be emotional instability and muscular weakness. When the two are marked in the same patient, an unfavorable outcome of the operation is common. Because of the beneficial effect exercised on the course of the disease by rest, patients should be prepared for operation in the hospital. In patients in whom the disease is refractory to iodine, roentgen treatment may be used to prepare the patient for operation, but this form of therapy should never be used in desperately ill patients because it produces a temporary increase in the severity of the disease. The treatments should not be given at intervals of less than one week and no improvement should be expected in most cases for a period of several weeks. A gain in body weight is a favorable sign, therefore the caloric intake in most cases must exceed the basal by at least 100 per cent. Following mild

infections of the upper respiratory tract, no operative procedures should be carried out for at least two weeks after the temperature is normal, and following severe infections of the upper respiratory tract for at least four weeks. The criteria for gaging the risk of operation are the same in patients who have cardiac irregularities as in those who do not. The time to prevent postoperative crises is in the pre-operative period.

Diagnosis of Gallbladder Disease—Hartung and Wachowski present a modified procedure for diagnosis in cases suggesting disease of the gallbladder. The procedure in sixty-three cases was as follows. In most of these cases the dye was administered orally and the patients were first seen by the authors after its administration. Fourteen hours after the oral or six hours after the intravenous administration of the dye, roentgenograms were made and developed immediately. If they were satisfactory and showed a good outline of the gallbladder of approximately normal density, the patient was given a meal consisting of egg yolks and cream. Otherwise additional roentgenograms were made after an interval before the fat meal was administered. One hour after the fat meal, roentgenograms were made to show contraction or other observations that might be of value. An opaque meal was then given under fluoroscopic control and special attention was paid to possible secondary signs. Subsequent examinations were made in individual cases in which additional information might be obtained thereby. A written report was then incorporated with the history of the patient and if the patient came to operation, this was compared with the surgeon's observations. No attempt was made to ascertain the exact nature of the pathologic condition present when a pathologic gallbladder was reported. Special stress was placed on adhesions or other changes that might explain the roentgen signs observed. Of these, evidences of abnormal fixation, gallbladder 'seats' and functional disturbances were recorded, although note was made if other abnormalities were present. Correct diagnoses were arrived at in more than 96 per cent of the cases. In forty-two of them the same conclusions may have been reached from the cholecystographic examination alone. In the other twenty-one, secondary signs elicited from the opaque meal examination prevented errors in diagnosis in almost half of them which would have been made if the observations obtained from the dye test had been the sole criteria.

Iowa State Medical Society Journal, Des Moines

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- Conjunctivitis in the New Born C. W. Rutherford Iowa City—p. 7
Erythroblastic Anemia D. H. Kelly and L. F. Hills Des Moines—p. 9
Pulmonary Atelectasis in the New Born R. I. Theisen Dubuque—p. 14
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Skin Infections in the New Born J. Dunn Davenport—p. 17
Child Nature and the Child's Emotional Needs Martha M. Link Dubuque—p. 19
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Sepsis in the New Born J. M. Hayek Cedar Rapids—p. 27

Johns Hopkins Hospital Bulletin, Baltimore

55 361 440 (Dec.) 1934

- *Primary Tumor of Ureter New Method for Complete Nephro-ureterectomy J. A. C. Colston Baltimore—p. 361
Sudden Death L. Hamman Baltimore—p. 387
Glomerular Changes in Nephritis W. G. MacCallum Baltimore—p. 416

Unusual Case of Primary Tumor of Ureter—Colston reports a case of primary papillary epithelioma of the ureter with the complication of implantation in a probably preexisting bladder diverticulum. The treatment consisted of nephrectomy followed by complete ureterectomy nine months later when the correct diagnosis was made. Six months after the second operation, the diverticulum containing the tumor implant was removed. The correct diagnosis was not made until persistent bleeding from the ureter was discovered by cystoscopic examination and the ureterogram presented a typical picture. That complete nephro-ureterectomy is the method of choice and should be employed for all patients whose condition will permit

this operation is the conclusion of all observers. The inadequacy of many methods of so-called complete nephro-ureterectomy is emphasized, since the mucous membrane of the distal stump of the ureter is not removed or destroyed. The extreme importance of complete eradication or destruction of the entire ureteral mucous membrane, especially the portion in the intramural part of the ureter where tumor implantation has been shown to occur, is emphasized. A method of complete ureteronephrectomy, combining the previously well known steps but adding the heretofore unreported technic by which the mucous membrane of the distal stump of the ureter throughout its whole course through the bladder wall is completely destroyed with the high frequency current, is reported.

Journal of General Physiology, New York

18: 283-432 (Jan. 20) 1935 Partial Index

- Sulfhydryl and Disulphide Groups of Proteins I. Methods of Estimation A. E. Mirsky and M. L. Anson New York—p. 307
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Some Temperature Characteristics in Man H. Hoagland and C. T. Perkins Worcester Mass.—p. 399
Spreading of Pepsin and of Trypsin E. Gorter Haarlem Holland—p. 421

Journal of Pharmacology & Exper. Therap., Baltimore

52 355 506 (Dec.) 1934

- Pharmacology of Acetylene Dibromide (s Dibromo Ethylene) A. W. Downs and D. R. Climenko Edmonton Alta.—p. 353
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Studies on Effects of Intravenous Injections of Colloids I. Deposition of Acacia in Liver and Other Organs and Its Excretion in Urine and Bile Marie Andersch and R. B. Gibson Iowa City—p. 390
Effect of Digitalis on Acute Cardiac Dilatation Produced by Anoxemia E. J. Van Liere G. Crisler and J. E. Hall Morgantown W. Va.—p. 408
Effects of Potassium Antimonyl Tartrate on Blood and Hematopoietic Organs S. P. Lucia and J. W. Brown San Francisco—p. 418
Elimination of Theobromine and Caffeine from Circulation R. A. Hatcher and N. T. Kwik New York—p. 430
Morphine Acidosis N. Rakieten H. E. Himwich and D. Du Bois New Haven Conn.—p. 437
Control of Cyanide Action Cyanohydrin Equilibria in Vivo and in Vitro E. K. Marshall Jr. and M. Rosenfeld Baltimore—p. 445
*Sodium Formaldehyde Sulphoxylate in Experimental Acute Mercurial Poisoning H. Brown and J. A. Kolmer Philadelphia—p. 462
Studies of Morphine Codeine and Their Derivatives VII. Dihydromorphine (Paramorphine) Dihydromorphinone (Dilaudid) and Dihydrocodeinone (Diacode) N. B. Eddy and J. G. Reid Ann Arbor Mich.—p. 468

Effect of Digitalis on Cardiac Dilatation Produced by Anoxemia—Van Liere and his co-workers subjected twenty-three normal dogs to anoxemia of various grades of intensity so as to produce cardiac dilatation. They found that, if these animals were given digitalis and again subjected to anoxemia, the amount of cardiac dilatation was appreciably lessened. The action of digitalis was more efficacious in the less extreme ranges of anoxemia, although even in very severe degrees of anoxemia it exerted a distinct influence. Differences in cardiac rate could not account for a smaller heart after digitalis had been given and anoxemia administered, as the heart actually beat slower. Even though this allowed more time for relaxation, the cardiac silhouette was smaller. If the vagi were cut, however, the heart beat much faster and the more striking results obtained during anoxemia when the vagi were sectioned would be explained by a more rapid heart. Venous pressure changes could not explain the smaller cardiac silhouette, as digitalis in the normal dog produces slight changes in the venous pressure. It was felt that digitalis acted directly on the cardiac musculature so that the tone of the heart was increased and the contraction was more complete. The muscle fibers were capable of withstanding greater strain and so allowed less cardiac dilatation. The effect might be the same or even be more striking in certain types of abnormal hearts. The data suggest in view of the clinical reports of Kaufmann and Meyer and those of Somervell that it might prove beneficial to administer small but effective doses of digitalis as a

prophylactic measure to certain patients who will be exposed to high altitudes and who have not been properly acclimated.

Sodium Formaldehyde Sulphoxylate in Mercurial Poisoning—Brown and Kolmer were unsuccessful in their endeavor to corroborate the results obtained by Rosenthal with sodium formaldehyde sulphoxylate in mercurial poisoning. In their experiments, using only the minimal lethal dose of mercuric chloride, they had but indifferent success in saving the rabbits with sodium formaldehyde sulphoxylate. If the mercury is allowed to get a sufficient start, the antidote is of no value in saving the rabbits. That is, if a single intravenous injection of the antidote is not administered before the kidneys have become irreparably damaged, a second injection is apparently of no avail. Intravenous injections are unnecessary as good results were obtained if the sulphoxylate was administered by mouth within the time necessary to prevent absorption of sufficient mercury to be toxic. Evidence of a direct alleviating action of sulphoxylate on the kidneys was not obtained. Repeated injections have never prevented the death of any rabbits from nephritis if the first injection has been given more than one hour after the mercuric chloride has been administered. The primary action of the sulphoxylate is apparently its reducing action, the effect being to decrease the amount of corrosive mercury absorbed by the formation of insoluble metallic mercury. Of the rabbits that survived as a result of the administration of sulphoxylate, all showed some increase in urea nitrogen, which ranged from about twice normal in those animals in which the antidote was administered just before the mercurial to about five times normal when the antidote was given after the mercurial. In the surviving animals, all the urea values returned to normal in from three to five days. The authors believe that the chief value of sodium formaldehyde sulphoxylate as an antidote in acute mercurial poisoning lies in its use by mouth in sufficient quantities and sufficiently early. Intravenous treatment should be used cautiously and in somewhat lower dosage than that recommended by Rosenthal in order to prevent complications due to the fact that the sulphoxylate is more toxic to a person poisoned by mercury than to a normal organism.

Medical Annals of District of Columbia, Washington

3: 295-320 (Dec.) 1934

- Surgery in Treatment of Pulmonary Tuberculosis W. R. Morris Washington—p. 295
Value of Artificial Pneumothorax in Tuberculosis W. D. Tewksbury Washington—p. 302
Repair of Vesicovaginal Fistulas Report of Two Cases H. A. Fowler Washington—p. 304
Congenital Gonorrhea of Female Genitalia Report of Three Cases B. Notes and H. Newman Washington—p. 306
Does the Child Health Conference Interfere with Private Practice? V. L. Elliott Rockville Md.—p. 308

Michigan State M. Society Journal, Grand Rapids

34: 158 (Jan.) 1935

- Tannic Acid Treatment of Burns G. C. Penberthy Detroit—p. 1
Uterine Fibroids Importance of Diagnostic Curettage in Their Management N. F. Miller and G. H. Sebring Ann Arbor—p. 4
Malignant Neutropenia Its Etiology and Treatment W. H. Gordon Detroit—p. 7
Management of Glaucoma F. B. Frahm Ann Arbor—p. 11
Solitary Intramural Fibroma of Pylorus Case Report D. J. Leithausser and M. O. Cantor Detroit—p. 15
Pneumonia Short Clinical Lecture W. M. Donald Detroit—p. 17
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Temporal Lobe Abscess of Otic Origin O. B. McGillicuddy Lansing—p. 32
Coronary Thrombosis with Paroxysmal Ventricular Tachycardia H. Stalker Detroit—p. 36

Malignant Neutropenia—Gordon believes that the absolute etiology of malignant neutropenia is still unknown. The apparent best results obtained in its treatment have been through the use of blood transfusions, nucleotides or their derivatives and roentgen therapy. Possibly these forms of treatment have the same effect on the system by giving to it the products of the destroyed nucleus which are necessary in the production of the white blood cell. The routine in treatment that the author has followed and found to be most successful includes the general and specific forms of therapy that lead to an increase in nuclein or its by-products. General

systemic stimulation is given, accompanied by intravenous dextrose and saline solution, mouth washes, irrigations and oral hygiene. A high nuclein diet is given. Small blood transfusions of whole or citrated blood have been most valuable. When there are signs of jaundice or of liver exhaustion, blood transfusions should not be given. Whole blood (40 cc.) is given intramuscularly twice a day in the same site of injection. The irritation of the muscular tissue probably produces a substance that stimulates the bone marrow. Also it is of value because a concentrated form of nuclear material is given to the body. Another reason is that possibly a substance exists in the normal blood that is lacking in the patient having malignant neutropenia. Nucleotide and nucleic acid are next in importance in the treatment. This produces an irritating stimulation and supplies a concentrated form of nuclein to the body to stimulate the production of white blood cells.

Military Surgeon, Washington, D. C.

70: 156 (Jan.) 1935

- Recent Developments in Medical Field Equipment and Transport at the Medical Department Equipment Laboratory U. S. Army G. I. McKinney—p. 11
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Treatment of Phenol Poisoning with Methylene Blue W. M. Sheppe—p. 30
Health Insurance in Germany A. W. Hankwitz—p. 33

New England Journal of Medicine, Boston

211: 1127-1178 (Dec. 20) 1934

- Value of Prolonged Preoperative Drainage in Prostatic Obstruction J. D. Barney and S. B. Kelley Boston—p. 1127
*Retinitis in Diabetes H. P. Wagener, T. J. S. Dry and R. M. Wilder Rochester Minn.—p. 1131
Artificial Menopause in Carcinoma of Breast G. W. Taylor Boston—p. 1138
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211: 1179-1232 (Dec. 27) 1934

- Slipping Epiphysis of Head of Femur J. W. Sever, Boston—p. 1179
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Coarctation of Aorta in Father and Son W. G. Walker Brockton Mass.—p. 1192
Clinical Remarks on Hypertension and the Kidney A. M. Fishberg New York—p. 1195
Indications for and Principles of Surgical Therapy in Disorders of the Kidney and Ureter P. W. Aschner, New York—p. 1196

212: 1-42 (Jan. 3) 1935

- Limitations of Enterostomy and Undesirable Effects Incident to Its Use I. M. Webber Portland Maine—p. 1
Eukoplasia Buccalis and Cancer S. H. Sturgis and C. C. Lund Boston—p. 7
Acute Anaphylactic Shock Following Intracutaneous Test for Sensitivity to Horse Serum Report of Fatal Case H. J. Freedman, Boston—p. 10
Relation of Arcus Senilis to Arteriosclerosis and Senility C. E. White, Taunton Mass.—p. 10

Retinitis in Diabetes—Wagener and his associates observed that of 1,052 patients having diabetes 177 per cent had hemorrhagic lesions of the retina, 55 per cent hemorrhage alone and 12.2 per cent hemorrhage associated with exudates. They believe that the very existence of retinitis in cases in which patients have no other signs of vascular disease must mean that diabetes alone does something to injure the finer arterioles or venules of the retina. The retinal disease in question seems to pass progressively through successive stages, beginning with hemorrhages only and eventuating in very evident disease of the veins. The final stage is manifested by hemorrhage into the vitreous and the fully developed picture of retinitis proliferans. Injury to the retinal vessels may occur in all cases of diabetes. If so, it is insufficient in degree in most cases to bring about visible abnormalities in the vessels or to give rise to actual hemorrhages or exudates. In a few cases it does do so, and when the circulation of the retina is

adversely influenced by the presence of arterial or arteriolar sclerosis, it is more likely to be manifest. In that case a lesion characteristic of diabetes is added to a retinal vascular lesion otherwise characteristic of hypertension, this gives a composite picture from which the trained observer can diagnose diabetes. By what means diabetes injures the retinal vessels in this characteristic manner, whether because of its accompanying hyperglycemia or hypercholesterinemia or because of the presence intermittently of the products of ketosis, the authors cannot say. The lesions are observed in cases of mild diabetes as frequently as in cases of severe diabetes, in those in which insulin is used as well as in those in which diabetes is controlled without insulin, early in the disease as well as late, although more frequently late, and when the carbohydrate of the diet has been unlimited as well as when it has been restricted and more fat has been fed. The possibility occurs to the authors that lesions like those observed in the retina may also occur in the peripheral nerves and thus account for the high incidence of peripheral neuritis among patients with retinitis.

New Orleans Medical and Surgical Journal

87 425-498 (Jan.) 1935

- Analysis of the Hookworm Problem in Mississippi W S Leathers and A E Keller Nashville Tenn.—p 425
 *Some Observations on Newer Methods of Malaria Control A M Wynne, Merigold Miss.—p 435
 The General Practitioner and Tuberculosis H Boswell, Sanatorium, Miss.—p 443
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 Disappearance of Creatinuria After Lactic Acid Therapy G Fasting New Orleans.—p 467
 Some Laxative Foods O W Bethea New Orleans.—p 468

Newer Methods of Malaria Control—Wynne bases his statements on his experience in treating 476 cases of malaria. Of the 159 completed treatments, sixty-nine were tertian and ninety estivo-autumnal. One patient had both tertian and estivo-autumnal parasites. The following treatment was carried out as closely as possible in all cases. A thick smear of the patient's blood was taken. He was given sufficient acetylsalicylic acid to control temperature, a purgative, and one tablet of atabrine before each meal for five days. Alcoholic drinks were prohibited and the diet was restricted to one-half the usual amount of meat. If the blood was estivo autumnal positive, the patient was given atabrine, one tablet before each meal and one-sixth grain (0.01 Gm) of plasmochin three times daily, the dietary instructions were the same as for the tertian type. The patient with the mixed infection was given atabrine and plasmochin. Of the 159 patients treated with atabrine and plasmochin, 152, or 95.6 per cent, had a negative report on every blood test for the required five weeks. Of the remaining seven, all of whom had tertian malaria, one had a positive blood test the second week when atabrine was repeated, the blood remaining negative since, two had a positive blood the fourth week, received atabrine and have been negative since completing the second treatment, a fourth patient, who had a relapse, has been given three atabrine treatments and is still under observation. Relapses occurred in the three remaining patients, each having a distinct malarial paroxysm and positive tertian blood, receiving 60 grains (4 Gm) of quinine in twenty-four hours, then atabrine, and having had negative blood tests since. Of the cases treated with quinine, the results are as follows. The six patients given intravenous quinine and the twelve treated intramuscularly had no relapses and no bad results from the drugs as given. As for the 159 cases treated with 20 grains (1.4 Gm) of quinine daily by mouth, there were seventeen relapses during the course of the treatment or while quinine was being taken and eight relapses within two weeks following completion of the treatment. Of the group treated with 20 grains (1.4 Gm) of quinine magnesium sulphate solution, there were seven relapses during treatment and six relapses within two weeks following completion of the treatment.

New York State Journal of Medicine, New York

35 140 (Jan 1) 1935

- Choice of Operations in Treatment of Peptic Ulcer G J Heuer New York.—p 1
 Diagnosis and Treatment of Anemia S L Vaughan Buffalo.—p 10
 Sulpharsphenamine Its Use and Status in New York State A Pfeiffer Albany.—p 13
 Results Obtained in a Relatively Small Community Using Single Dose Toxoid Method for Immunization Against Diphtheria H J Shelley Middletown.—p 19
 Some Pitfalls in Treatment of Gastric Ulcer W J M Scott and H L Segal Rochester.—p 21
 Obstetric Practice in Northeastern New York State E M Jameson Saranac Lake.—p 25

Public Health Reports, Washington, D C

49: 1557 1600 (Dec 28) 1934

- The Official United States and International Unit for Standardizing Gas Gangrene Antitoxin (Vibrio Septique) Ida A Bengtson.—p 1557
 *Influence of Vitamin B on Hematopoiesis in Experimental Anemia of Albino Rat M I Smith and E F Stohlman.—p 1569

50 136 (Jan 4) 1935

- Effects of Inhalation of Asbestos Dust on Lungs of Asbestos Workers Preliminary Study A J Lanza W J McConnell and J W Fehnel.—p 1
 Endemic Typhus in Alabama, J N Baker J G McAlpine and D G Gill.—p 12
 The Educator's Point of View of Psychiatric Service in a Penal Institution R A McGee.—p 21

Influence of Vitamin B₂ on Hematopoiesis in Anemia.—Smith and Stohlman compared the rate of hemoglobin and red blood cell regeneration in animals with a standard degree of anemia under adequate dietary conditions with that under conditions of B deficiency. Albino rats were used. The type of experimental anemia was produced by means of phenylhydrazine. In the normal rat this anemia is transient in character, complete recovery taking place in about ten days. The early stages of recovery are accompanied by pronounced reticulocytosis. Elimination of the B₂ vitamin from the dietary of the rat does not materially affect the progress of recovery from the standard phenylhydrazine anemia. Vitamin B₂ does not appear to be concerned with hematopoiesis in the albino rat.

Southern Medical Journal, Birmingham, Ala.

28 1106 (Jan.) 1935

- Undulant Fever Report of Case Simulating Pott's Disease. V W Archer University Va.—p 1
 *Traumatic Lesions of Thorax Three Cases of Cardiac Contusion D C Elkin Atlanta Ga.—p 4
 Syphilis of Clavicle Report of Five Cases H E Conwell Birmingham Ala.—p 11
 Intravenous Urography for the General Practitioner M B Wesson, San Francisco.—p 16
 *Pathology of Milk Anemia E von Haam New Orleans.—p 22
 Idiopathic Anemias of the Aplastic Type E B Bradley Lexington Ky.—p 27
 Pulmonary Emphysema Important Sequel of Chronic Lung Lesions K Dunham Cincinnati.—p 32
 Treatment of Bronchial Asthma L Unger Chicago.—p 35
 Prevention of Nervous and Mental Instability O W Hill Knoxville, Tenn.—p 39
 Importance of Immature White Blood Cells in Diseases of Children W A. McGee Richmond Va.—p 43
 Further Observation on Evils of Too Much Milk. E. Rosamond Memphis Tenn.—p 46
 Asymptomatic Neurosyphilis P A O Leary Rochester, Minn.—p 47
 Some Results from a Conservative Obstetric Clinic. J R McCord Atlanta Ga.—p 53
 Traumatic Ulnar Neuritis S O Black Spartanburg S C.—p 55
 Some Observations Concerning Laryngeal Neoplasms J H Foster Houston Texas.—p 59
 So-Called Hidden Type of Mastoiditis as Causative Factor of Diarrhea in Infancy C K Lewis Memphis Tenn.—p 62
 The Practical Side of Public Health L Banov Charleston S C.—p 65
 Lone Calculus of Bile Ducts G Baz Mexico City Mexico.—p 67
 Rupture of Male Urethra W M Coppridge Durham N C.—p 69
 Morphologic Effects of Excess Amounts of Iodine on Thyroid Gland of the Cat W F Abercrombie W H Crane and J L Brakefield Birmingham Ala.—p 72

Cardiac Contusions—Elkin reports three cases of cardiac contusion. The most common cause of such an injury is an automobile accident in which an individual is suddenly thrown forward against the steering wheel. The sternum and ribs may be broken and their ends directly injure the heart, or the sudden compression of the heart may injure it, although a break has not occurred. The three cases reported are exam-

ples of nonpenetrating cardiac injuries in which recovery took place. Any patient who is struck in the chest must be suspected of such an injury, particularly if such symptoms as precordial pain, dyspnea and tachycardia are present. Persistence of these symptoms, together with irregularity of the heart, cyanosis and a peculiar tick-tick quality of the heart sounds, makes the diagnosis almost certain. The treatment is symptomatic. The chief reliance is to be placed on morphine and sedatives for quiet and rest, and on oxygen for dyspnea and cyanosis.

The Pathology of Milk Anemia—Von Hram describes the pathologic changes in albino rats suffering from goat's and cow's milk anemia. Hypertrophy of the cardiac muscle, atrophy of the spleen and fatty degeneration of the liver were the most characteristic gross anatomic features. Histologic study confirmed the gross pathologic observations and showed as the only differential diagnostic sign between the two types of anemia a disturbance of leukopoiesis in the animals fed with goat's milk. The pathologic changes in goat's milk anemia are not similar to the pathologic observations in human cases of pernicious anemia, and any near relationship between the two types of anemia has to be declined. Control animals showed none of the foregoing changes, which therefore can be regarded as characteristic of nutritional anemia in the albino rat.

Western J Surg, Obst & Gynecology, Portland, Ore

42 669 724 (Dec) 1934

Infection of Immature Vagina. Observations and Results. Study of One Hundred and Eighty Nine Patients. G C Schauflier. Portland Ore. R. Duke. Seattle. S F Crynes and Caroline Schauflier. Portland Ore.—p 669

*Typhoid Spine. Its Pathogenesis. Clinical Aspects and Surgical Care. L P Gambee, Portland Ore.—p 685

High Mortality in Obstetrics. B Bakewell. Santa Barbara Calif.—p 692

Carcinoma of Large Intestine and Its Surgical Treatment. C T Sweeney. Medford, Ore.—p 697

Severe Gunshot Wound of the Abdomen. Report of Case. K J May. Republic, Wash.—p 705

Typhoid Spine—Gambee says that diagnosis of typhoid spine is based on an unmistakable history of typhoid, followed weeks or months or years later by a painful sore back. If the history affords no other explanation for the pathologic changes and the roentgenogram reveals dense bony deposits in the intervertebral ligaments or destruction or narrowing of one intervertebral disk, the diagnosis is quite probable and becomes more certain when the Widal test is positive. The author reports a case in which a vertebral abscess developed four years after the patient had apparently recovered from a typhoid spine. The operation that he resorted to in draining the abscess represents a new departure in the management of this complication of typhoid. The patient was given a general anesthetic and an incision was made along the lower border of the twelfth rib on the left, forward to the outer border of the rectus and then downward far enough to give free exposure. The parietal peritoneum was stripped mesially, the sigmoid and other intra-abdominal viscera being taken with it. The infiltration of the soft tissues made it easy to identify the involved part of the spinal column. These superficial soft tissues were incised close to the abdominal aorta and a pocket containing about 10 cc. of yellow pus was entered. Cultures of this pus were taken. Roughened bone constituted the floor of the abscess which was definitely circumscribed. A drill hole was then made through the center of this exposed bone and it was found that the bone was only egg-shell in thickness and that there was an underlying round abscess about 2 cm in its greatest diameter. It also contained yellow pus. Cultures of this pus were taken. The abscess evidently lay between the two abutted vertebrae. A Penrose drain was placed in the abscess and taken out through a stab wound just above the left anterior superior spine of the ilium. The wound was then closed in layers without further drainage. The patient recovered rapidly. The wound healed without infection and at the end of four days the patient's temperature was normal. He left the hospital on the tenth postoperative day. There still was a small amount of drainage. Ten weeks later roentgenograms showed considerable bone repair. The operation is proposed as a rational way of handling osteomyelitis of the lumbar vertebrae, whether caused by typhoid bacilli or by pyogenic organisms.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

57: 355 540 (Dec) 1934

The Berger Rhythm. Potential Changes from Occipital Lobes in Man. E D Adrian and B H C Matthews.—p 355

Spinal Shock and Some Features in Isolation. Alteration of Spinal Cord in Cats. E G T Liddell.—p 386

*Congenital Dermal Sinuses. Source of Spinal Meningeal Infection and Subdural Abscesses. A E Walker and P C Bucy.—p 401

Some Aspects of Sweat Secretion in Man with Especial Reference to Action of Pilocarpine. W C Wilson.—p 422

*Localized Abnormal Flushing and Sweating on Eating. V Uprus, J B Gaylor and E. A Carmichael.—p 443

Spinal Terminations of Projection Fibers from Motor Cortex of Primates. E C Hoff and H E Hoff.—p 454

Acoustic Value of Several Components of Auditory Pathway. F A Mettler, G Finch, E Girden and E Culler.—p 475

Some Observations on Cerebral Veins. J E A O Connell.—p 484

Hemichorea Associated with Lesion of Corpus Luysii. J P Martin and N S Alcock.—p 504

Disturbances After Laminar Thermocoagulation of Motor Cerebral Cortex. J G Dusser de Barenne.—p 517

Congenital Dermal Sinuses—Walker and Bucy cite seven cases. A congenital dermal sinus manifested externally by a small dimple in the midline of the back, becoming infected, discharges periodically serous or purulent material. This sinus extends to the meninges and its lumen acts as a pathway for infection to reach these structures. When this occurs, producing abscess formation, fever develops, the back becomes painful and rigid and the neck becomes stiff. Weakness of the lower extremities ensues, but sensory disturbances are slight or absent. The spinal fluid, usually sterile, shows a pleocytosis. Surgical removal of the sinus and subdural abscess with drainage produces a complete cure in almost every case. The relation of this congenital dermal sinus to spina bifida occulta is discussed and the incidence of the latter in a series of 7,500 roentgenograms taken of the spine in a general medical and surgical clinic is given. The etiology of these congenital dermal sinuses and pilonidal cysts is discussed.

Localized Abnormal Sweating on Eating—Uprus and his co-workers submit the case of a woman, aged 22, in whom at the age of 5 glands were removed in the right side of the neck through a horizontal incision over the middle of the sternocleidomastoid muscle. One year later, when she was eating, well localized flushing occurred in the right submental region—a triangular area bounded medially by the midline, laterally by the ramus of the jaw to a point 1 cm in front of the angle of the jaw and posteriorly by the line of the hyoid bone. With the responses of the skin of the face and the normal side of the chin when indifferent limbs were heated taken as controls the response of the abnormal area is definitely pathologic. When the patient ate, flushing indicative of vasodilatation in the abnormal area occurred even when vasoconstriction was in progress. The same stimulus that produced salivation caused a combination of vasodilator and secretory phenomena in the abnormal area of skin independent of general vasomotor activity. The stronger the stimulus for salivation, the more rapidly did the abnormal skin reaction occur. Anesthetization of the abnormal area by blocking the nervus cutaneus colli was ineffective in stopping the abnormal reaction. On anesthetization of the lingual nerve with the chorda tympani the abnormal reaction of the vessels and sweating in the right submental region were not observed. The anesthetization of afferent pathways might be invoked to explain the failure of this response, but the authors are convinced that stimuli from either side of the mouth were equally effective, and no difference in response was observed when half the tongue and the gums and cheek of the right side were cocaineized. The efferent pathway would therefore appear to be in the chorda tympani. The chorda was involved by the anesthetization since observation of the orifices of Wharton's ducts in the floor of the mouth showed profuse salivation from the left side and none from the right. The period of latency between the original trauma and the onset of symptoms is consistent with an unusual regenerative phenomenon having occurred.

East African Medical Journal, Nairobi

11 273 304 (Dec.) 1934

- Some Subjects for Medical Research in East Africa R. P. Cormack —p. 276
 Some Indian Methods of Midwifery S. D. Karve —p. 296
 Unusually Large Retroperitoneal Cyst in African Native D. O. Iatham —p. 291
 Unusual Case of Dracontiasis D. Brimundaga —p. 292

Edinburgh Medical Journal

42 148 (Jan.) 1935

- Suggested Hypothesis of Kidney Mechanism A. R. M. Clure —p. 1
 Innervation of Distal Colon C. A. C. Mitchell —p. 11
 Intertarsal Developmental Ankylosis D. M. Greig —p. 21

Hypothesis of Kidney Mechanism—M. Clure suggests a modification of Cushman's hypothesis of kidney mechanism. The stage of ultrafiltration is assumed. But instead of pure reabsorption in the tubules it is supposed that the cells reabsorb substances relatively valuable to the body and simultaneously secrete unwanted substances and further that the amounts of material reabsorbed and material secreted are in equilibrium—in other words, that an exchange is effected by the kidney cells as between the filtrate and the general blood stream. An equimolecular basis is assumed for the exchange that an equivalent amount of solids is simultaneously secreted to take the place of solids reabsorbed. The idea of mixed reabsorption and secretion in the tubules is not new. It has been suggested by Wilkinson. The only difference is that the author is assuming a numerical relationship between the two processes in order to put the resulting theory on a quantitative basis.

Lancet, London

2 1323 1378 (Dec. 15) 1934

- Functional Derangement of Intestine That Follows Abdominal Operations V. Bonney —p. 1323
 Mean Diameter of Erythrocytes in Alcoholic Family Jaundice and Effects of Splenectomy I. C. Hawkesley and Ursula M. Bailey —p. 1329
 *Periodicity of Influenza B. E. Spear —p. 1331
 The Mantoux Test in General Hospital Population Note on Intradermal Syringe of Pictet C. G. Kayne —p. 1333
 Some Observations on Treatment of Tabes with Malaria A. G. Yates —p. 1335

Periodicity of Influenza—To determine the periodicity of influenza, Spear studied the material contained in the "Weekly Return" of the Registrar-General for the last forty-four years. During this period there have been forty-three prevalences or epidemics in London of widely differing degrees of severity, the analysis of which indicates that the conditions associated with the approach of summer exercise a restraining influence on an established prevalence of influenza, but that on the return toward the winter solstice the prevalence is renewed—generally with greater mortality—at a seasonal phase approximately the same as that at which the first prevalence occurred, and that in the case of a prevalence associated with an approaching winter solstice the epidemic impulse is completely exhausted and a year or more of freedom from epidemic prevalence follows. The author gives rules that enable an approximate forecast of a prevalence to be made.

2 1379 1430 (Dec. 22) 1934

- Dosage Above Pharmacopoeial Maximum A. F. Hurst —p. 1379
 Pulmonary Asbestosis Review of One Hundred Cases W. B. Wood and S. R. Gloyne —p. 1383
 *Surgical Aspects of Spastic Colon and Predisiverticular State A. L. d'Abreu —p. 1385
 Synergism Between Estrin and Pituitrin E. Møller Christensen —p. 1388
 Hematuria in Appendicitis W. McKissock —p. 1389
 Recent Wave of Streptococcal Infection H. L. Wallace and A. B. Smith —p. 1391

Surgical Aspects of Spastic Colon and Predisiverticular State—D'Abreu studied four cases shown roentgenographically to be in the predisiverticular state unaccompanied by diverticulosis and in which laparotomy was carried out because of pain and the passage of blood and mucus. In one of the cases laparotomy was done under general anesthesia and no abnormality was discovered. A barium sulphate enema taken some months later showed the appearance of predisiverticulosis. Abnormalities of the predisiverticular stage during life can be studied only under spinal anesthesia. Peristalsis in the large intestine

depends on the automaticity of the muscular fibers, the myenteric plexuses of Meissner and Auerbach and nervous impulses from the vagus and the sacral parasympathetic, relaxation, except in the case of the sphincters, depends on sympathetic nervous influences. General narcosis paralyzes the parasympathetic system, while spinal anesthesia, on the other hand, prevents the action of those sympathetic fibers which flow out to the abdominal viscera and either leaves the parasympathetic unaffected and in undisputed domination or more probably allows the intrinsic dynamics of the intestine free unimpeded action. Learmonth has produced evidence that there is a high degree of autonomy in the plain muscle of the intestine and its intrinsic nerves. In portions of intestine in the predisiverticular state removed along with areas of established diverticulation, the most notable change seen is hypertrophy of the circular muscle coat which projects as bands into the lumen of the intestine. The author has found hyperchlorhydria present in spastic predisiverticular subjects. In cases in which presacral and lumbar colonic neurectomy has been done, subsequent barium sulphate enemas may present roentgen appearances reminiscent of those seen in the predisiverticular state. In a series of cases after lumbar sympathectomy had been performed for vasospastic conditions in the legs there is no alteration in the normal barium sulphate enema picture of the intestine. Tobacco smoking frequently aggravates the symptoms of these predisiverticular and spastic colon subjects. Nicotine diminishes activity in both the sympathetic and the parasympathetic systems, but as the normal balance favors the vagus and the sacral autonomic outflow, increased activity of the motor function leads to excessive peristalsis and spasticity. Pylorospasm is often present in heavy smokers. The pathogenesis as observed in the change from the predisiverticular state to that of diverticulosis leaves little room for a developmental theory of causation.

Medical Journal of Australia, Sydney

21 737 768 (Dec. 8) 1934

- Cancer and Tuberculosis \ Approach to Problem of Stomach T. Cherry —p. 737
 Psittacosis in Australian Parrots F. M. Burnet —p. 743
 *Observations on Guanidine Glucose and Calcium Content in Blood in Eclampsia Vera I. Krieger —p. 746
 Symptom Producing Factors in Right Visceroptosis A. E. Lee —p. 750
 2 769 798 (Dec. 15) 1934
 Mental Aspects of Gynecology H. Leaver —p. 769
 Psychiatric Aspects of Gynecologic Conditions J. A. McGeorge —p. 777

2 799 830 (Dec. 22) 1934

- Cesarean Section Review of Four Hundred and Eighty Six Consecutive Operations at the Women's Hospital Melbourne W. I. Hayes —p. 799
 Retained Tracheotomy Tube P. L. Hipsley —p. 807
 Allergy in Otorhinolaryngologic Practice A. B. K. Watkins —p. 810.

Guanidine, Dextrose and Calcium Content in Blood in Eclampsia—Krieger correlated the guanidine content in the blood in a series of thirty cases of eclampsia with dextrose and calcium concentrations. No appreciable rise in guanidine was observed. In 33 per cent of the specimens of blood examined the blood sugar value was below 0.8 per cent, although only isolated estimations, without reference to the phase of eclamptic seizure, were performed. This indicated the probability that hypoglycemia did exist at some phase in relation to the convulsion. In 39 per cent of the eclamptic cases the calcium content of the blood was less than 9 mg. per hundred cubic centimeters of blood. The statement of Minot and Cutler that eclampsia was characterized by high guanidine associated with low dextrose and low calcium concentration in the blood has thus been disproved.

Medical Press and Circular, London

189: 575 596 (Dec. 26) 1934

- *Treatment of Acute Infective Osteomyelitis Plea for Diaphysectomy R. A. Ramsay —p. 581
 Intracranial Calcifications C. P. G. Wakeley —p. 586

Diaphysectomy in Osteomyelitis—Ramsay advocates diaphysectomy as the ideal treatment of acute infective osteomyelitis or subperiosteal resection of all that part of the bone which is infected. Such an operation leaves a widely open and at first soft-walled space which is well drained, the soft

walls form new bone in a surprisingly short time and thus new bone does not enclose a large infected dead mass requiring removal at a later date and causing prolongation of the illness. In performing diaphysectomy, the operative details naturally vary according to the bone affected. In all other methods of treatment, large sequestrums are formed and have to be dealt with, and when they are removed large cavities remain which persist for a considerable time and may require repeated operations for their treatment, even so, the end result may be far from satisfactory. Diaphysectomy prevents the formation of sequestrums and does not leave a large, rigid walled cavity, so that the extent of any secondary operations is reduced and the final satisfactory result is attained in a much shorter time than by any other method, therefore it may justly be asserted that diaphysectomy hastens recovery and lessens the number and extent of secondary operations. Diaphysectomy is a radical operation which offers the advantages of life, limb and time saving, and this consideration of the subject is put forward in the hope that this method of treatment may receive the recognition which, in the opinion of the author, it deserves.

Practitioner, London

133: 657-764 (Dec.) 1934

- Treatment of Hernia G. Keynes—p. 657
 Treatment of Hernia in Children L. E. Barrington Ward—p. 669
 Hernia as Surgical Emergency N. C. Lake—p. 675
 Postoperative Chest Complications and Their Treatment C. J. Fuller—p. 685
 Athletic and Training Dietetics A. Abrahams—p. 695
 Nonspecific Colitis D. C. Hare—p. 705
 Cancer of Nasal Accessory Sinuses Reports of Thirteen Cases E. Watson Williams—p. 717
 Cancer of Larynx C. Horsford—p. 724
 Symptomatic Treatment for the Common Cold A. T. Todd—p. 730
 Short Study of Psychoanalysis C. W. J. Brasher—p. 733
 Medicolegal Problems in General Practice XI. Neuroses and Psychoses in Relation to Violence W. A. Brend—p. 741

South African Medical Journal, Cape Town

8: 861-900 (Dec. 8) 1934

- Dangers of X Rays and Radioactive Bodies and Methods of Protection Against Them F. H. Dommissie—p. 863
 Climate as an Essential in Treatment of Tuberculosis G. H. Evans—p. 865
 Surgical Conditions of the Liver Including the Gallbladder I. W. Brebner—p. 867
 Diagnosis and Treatment of Anemias M. M. Suzman—p. 871
 Meteorological Factors in Incidence of Malaria in Pietermaritzburg C. C. P. Anning—p. 875
 The Workmen's Compensation Act II G. Williams—p. 879

Tubercle, London

16: 97-144 (Dec.) 1934

- Effect of Dilute Solutions of Certain Antiseptics on Viability of Tubercle Bacilli S. R. Douglas and P. Hartley—p. 97
 Sensitization of Guinea Pigs Following Single Injection of Small Dose of Dead Tubercle Bacilli S. R. Douglas and P. Hartley—p. 100
 Preparation of Old Tuberculin by Use of Synthetic Mediums with Observations on Its Properties and Stability S. R. Douglas and P. Hartley—p. 105
 Tuberculosis in Relation to Blood Groups F. C. S. Bradbury—p. 113
 First Attempts at Artificial Pneumothorax in Pulmonary Phthisis C. Forlanini—p. 121

Tuberculosis in Relation to Blood Groups—Bradbury believes that tuberculous persons show a higher proportion of blood group 4 than do nontuberculous persons. The difference is appreciable in practice, and he was impressed by the correspondence between blood grouping and diagnosis, in the sense that a doubtful case which was found to belong to blood groups 1, 2 or 3 more often turned out to be nontuberculous than tuberculous. He does not suggest that the test should be used as a routine diagnostic aid, but it appears that it may have some value as such. In carrying out this investigation he has had in mind the possible application of blood group testing to the preventive side of tuberculosis. There is no really satisfactory explanation of the manner in which tuberculosis selects its victims, or of the means by which a husband or wife resists the consequences of infection from a diseased partner. If it is a fact that the blood grouping of tuberculous persons is different from that of nontuberculous persons, it becomes possible

to theorize as to the reasons for this difference. The author is convinced that there is a difference in the blood group distribution of tuberculous and nontuberculous persons. In support of the evidence that he gives to this effect he states that international statistics are available which have a bearing on the matter.

Chinese Medical Journal, Peiping

48: 1101-1180 (Nov.) 1934

- *Sedimentation Rate of Blood of Patients with Kala Azar H. L. Chung—p. 1101
 Acute Monocytic Leukemia Case Report with Autopsy Findings Julia Morgan and Y. T. Hsu—p. 1113
 Orr Treatment of Osteomyelitis and Compound Fractures C. Chang—p. 1126
 Behavior of Wassermann and Kahn Reactions in Response to Anti-syphilitic Treatment C. L. Cheng and F. K. Chen—p. 1134
 Examination of Prisoners at Paoshan Kuangsu Province for Microfilariae of Wuchereria Bancrofti Cobbold S. M. K. Hu—p. 1143

Sedimentation Rate in Kala-Azar—Chung determined the erythrocytic sedimentation rates of thirty-six patients having kala-azar by the time method, and in many cases by the distance method. At the same time the hematocrit value and the plasma proteins were measured in the majority of cases. For control and comparison, the sedimentation rates of fourteen normal persons, nine with miscellaneous diseases, seven with active tuberculosis and fifteen with syphilis were determined. To eliminate the influence of anemia, the blood of twelve patients with kala-azar was artificially converted into a fixed concentration having a hematocrit value of 50 volumes per cent before shaking it up again for the sedimentation test. The sedimentation rate in the fourteen normal Chinese subjects varied from 270 minutes to 3960 minutes by the time method, and from 1 to 7 mm by the distance method. The sedimentation rate was uniformly and markedly increased in all thirty-six cases of kala-azar. This was associated with a decrease in plasma albumin and an increase in plasma globulin, euglobulin and fibrinogen. After correction for the anemia that was present, the sedimentation rate was still uniformly above the normal value. The factors possibly involved in this phenomenon are discussed.

Japanese Journal of Experimental Medicine, Tokyo

12: 411-502 (Oct. 20) 1934

- Influence of Parenterally Introduced Pancreatic Cell Constituents on External Secretion of Pancreas First Report Influence on External Secretion of Pancreas of Pancreatic Cell Constituents Parenterally Introduced in Dog with Pavlov's Permanent Pancreatic Fistula K. Tabuchi—p. 411
 Id. Second Report Influence of Cell Constituents of Various Organs Parenterally Introduced in Dog with Pavlov's Permanent Pancreatic Fistula K. Tabuchi—p. 419
 Id. Third Report Influence of Extracts of Pancreatic and Other Organ Cell Constituents Parenterally Introduced in Dog with Pavlov's Permanent Pancreatic Fistula K. Tabuchi—p. 423
 Id. Fourth Report Mechanism of Pancreatic Juice Hypersecretion Due to Extract of Pancreatic Cell Constituents and Active Substance Exciting Pancreatic Juice Secretion K. Tabuchi—p. 427
 Studies on Ricin Second Report H. Moriyama—p. 437
 Influences of Lipoid on Carbohydrate Metabolism I. Changes in Content of Glucose and Lactic Acid in Blood and of Lactic Acid in Urine of Rabbits Caused by Injection of Cholesterol and Lecithin N. Hosaka—p. 455
 Attempt to Purify Filtrable Agent of Rous Chicken Sarcoma by Means of Hosoya and Miyata's Method for Purification of Bacterial Toxin W. Nakahara and H. Nakajima—p. 497

Japanese Journal of Gastroenterology, Kyoto

6: 13-50 (July) 1934

- Change in Gastric Function in Case of Impaired Function of Liver and Kidneys S. Kaya—p. 13
 Significance of Liver in Metabolism of Lipoid Bodies IV Lipoid Bodies in Blood and Bile in Cases of Peroral Administration of Glucose to Rabbits Y. Asoda—p. 42
 Stomach Juice in Patients Suffering from Gastric and Duodenal Ulcers Y. Terauchi and K. Watanabe—p. 46
 General Symptoms in Patients Suffering from Gastric and Duodenal Ulcers Y. Terauchi and K. Watanabe—p. 48

6: 51-60 (Oct.) 1934

- Influence of Calcium Diet on Disturbances of Liver Function I. Calcium Diet and Bilirubin Metabolism Y. Asoda—p. 51
 Id. II Calcium Diet and Metabolism of Urobilin Bodies Y. Asoda—p. 56

Gynecologie et Obstetrique, Paris

30 497 575 (Dec.) 1934

- *Autovaccines in Treatment of Pylonephritis of Pregnancy P Trillat —p 497
 Network and Segmentary Arrangement of Ovary I Wallart —p 517
 *Delayed Rupture of Water Bag J Leon —p 529
 Some Observations of Myoma and Pregnancy H Perli —p 539
 Vitality of Spermatozoa E Magias de Torrès —p 544

Autovaccines in Pylonephritis of Pregnancy—Trillat has treated patients with pylonephritis of pregnancy by means of autovaccines made with organisms from the urine. In preparing the vaccines, one should use a relatively short time (maximum of twelve hours) of incubation to avoid abnormally high numbers of colon bacilli. The ampules contain 2 cc. of the vaccine with two, three or four billion bacteria per cubic centimeter. The vaccines are administered subcutaneously, beginning with a dose of 0.5 cc. and increasing 0.5 cc. at a time until 2 cc. is given. Individual variations in dosage are sometimes necessary. The treatment should be begun early and should be prolonged. The majority (seventeen) of the author's cases of pylonephritis were pure colon bacillus infections. Only one case of pure enterococcus infection was treated successfully. All the others were mixed infections. No complications of severity were noted from the vaccine treatment. Five results were excellent and seventeen satisfactory, three patients were lost from view and in three no results were obtained. One of the last three died from septicemia. Usually there was some improvement between the third and sixth injections, pain is the first to recede, then the temperature drops and the urine becomes clarified but the bacteriuria persists for a relatively long time. The author feels that autovaccine therapy has given some remarkable results and is virtually indicated in all pyelonephritides.

Delayed Rupture of Amnion—Numerous factors, according to Leon, determine the moment of rupture of the bag of waters. The principal one is the mechanical and depends on the relation existing between the intra amniotic pressure during uterine contraction and the elastic properties of the membrane. In delayed rupture, however, the preservation of the amniotic sac is more than merely increased resistance of these tissues alone. The author has attempted to reconstruct the existing conditions by means of an experimental apparatus consisting of connecting chambers representing the forces of the segments of the uterus and the amniotic sac. As a result he believes that transverse expansion of the inferior segment (without marked elevation of the contraction ring) explains the failure of the sac to rupture by increasing the resistance. This is the most common explanation for delayed rupture.

Journal de Chirurgie, Paris

43 1160 (Jan.) 1935

- Studies on Postoperative Calcemias. One Hundred and Fifty Examinations R Leriche and A Jung —p 1
 *Peripheral Facial Paralysis Treated by Cervical Ganglionectomy T Ostrowski and W Dobrzaniecki —p 16
 *Experimental Studies and First Clinical Application of New Operation Designed to Increase and Equalize Neuromuscular Function in Partial Nerve Paralysis A M Dogliotti —p 30
 Massive Removal of Cancerous Breast and Supraclavicular Glands. Technique M Fiolle —p 49
 Resection of Erector Nerves and Hypogastric Ganglions V Richer —p 54

Facial Paralysis Treated by Cervical Ganglionectomy—Ostrowski and W Dobrzaniecki treated five patients with peripheral facial palsy by resection of the superior cervical ganglion. The treatment is based on Leriche's paper of 1919. The clinical reports are given with photographs before and after cervical ganglion resection. One fact emerges clearly from those observations. In a persistent paralysis with complete or even partial reaction of degeneration all medical, physical and electrical treatments merely arouse false hopes and are entirely ineffective. In these cases operative treatment is indicated because a prolonged delay inevitably results in secondary muscular contracture. From the standpoint of clinical results, cervical ganglionectomy constitutes a definite advance in operative treatment since, even with the persistence of neurologic degeneration the external signs of paralysis disappear, thanks to change of muscular forms.

Operation for Partial Nerve Paralysis—Dogliotti reviews the knowledge concerning the regeneration of nerve

fibers. He reports experiments on four dogs, operated on under ether anesthesia. After exposure of the sciatic nerve on the posterior side of the thigh, the nerve was sectioned transversely with a razor a few centimeters below the point of exit of the nerve from the sciatic notch. The superior trunk was divided into two parts, one large (about two thirds) and the other smaller. The larger portion was loosened as high as possible by blunt dissection. This portion was then passed through the body of the posterolateral muscle of the thigh and its free end fixed in the subcutaneous tissue. Following this procedure the animals showed the characteristic paralysis due to sciatic section. They were allowed to run several hours a day. A muscular atrophy occurred in the limb operated on in all instances. After three or four months, functional restoration began to appear. After six or seven months the muscles had reacquired a volume almost equal to that of the other limb. Microscopic examination of the muscles and nerves showed that the regenerated myelin fibers of movement had penetrated and were homogeneously distributed in all the fascicles. These observations demonstrate the peripheral anatomic and functional regeneration of the nerve fibers from a decreased central source. A similar section of the left sciatic nerve was performed on a boy, aged 10, so severely paralyzed by poliomyelitis that no other hope of restored function could be considered. After about four years there was increased movement possible in this limb as compared with the other. The author feels that the operation does no harm, may be accompanied by some improvement, and facilitates other therapeutic measures.

Presse Medicale, Paris

42 2093 2108 (Dec. 29) 1934

- Metastatic Cerebral Tumors H Roger and J E Paillas —p 2093
 Inferior Auricular Rhythm R Lutembacher —p 2096
 Hyperinsulinism and Hypoglycemia in Course of Adenocarcinoma of Pancreas W Berardinelli —p 2098
 Lasting Cure of Bronchial Asthma by Malaria Therapy Case C Costanzi —p 2099
 *Application of Histidine to Local Treatment of Certain Cutaneous Lesions M Craps and A Alechinsky —p 2100
 What May be Expected from Evipan Sodium M Guy —p 2101

Histidine Treatment of Skin Lesions—Craps and Alechinsky treated ten patients presenting certain local skin lesions by direct daily applications of an aqueous solution of 1/1000 histidine. The lesions treated were a trophic ulcer of the crest of the tibia, an infected traumatic ulcer, several varicose ulcers, an ulcerated syphilitic gumma, and an ulceration resulting from the curetting of a large verrucous tuberculous lesion on the palm of the hand. In general, without the use of an antiseptic or other treatment the ulcers became rapidly cleansed and soon took on a good color. Tolerance to these repeated dressings was good. In only one case was improvement not noted.

Schweizerische medizinische Wochenschrift, Basel

65 25-48 (Jan 12) 1935 Partial Index

- Plastic Repair of Defect of Cheek A Eiselberg —p 25
 Surgery of Intramedullary Neoplasms F Sauerbruch and F Hartmann —p 26
 Exploratory Excision by Means of Boring Apparatus. Kirschner —p 28
 *Artificially Induced Rigidity of Anterior Mediastinum and Mediastinography E Rehn —p 30
 Precordial Thoracotomy in Cardiopathies Other Than Pericardial Symphysis C Lenormant —p 33
 Termination of Large Gastroduodenal Resection with Terminolateral Gastroduodenostomy H von Haberer —p 36
 Pancreatic Fistulas Following Gastric and Duodenal Resections. H Finsterer —p 40
 *Diagnosis and Treatment of Pancreatic Cysts E von Redwitz —p 42

Artificial Stiffening of Anterior Mediastinum—Rehn shows that the anterior upper portion of the mediastinum plays a special part in the processes of respiration and in the flow of the blood which becomes evident only in space limiting pathologic processes originating in the sternum, the lungs, the organs of the mediastinal space and the loose connective tissue of the anterior mediastinum itself. It is known, from surgical observations that in disorders of this nature a rigid mediastinum shows an entirely different behavior from that of a loose mediastinum. Rehn devised a method by which rigidity of the mediastinum may be induced, and he also perfected a method of mediastinography that involves no danger for the patient.

Artificial stiffening of the mediastinum was done first by injection of rapidly resorbable fluids, such as physiologic solution of sodium chloride or gum solution, but later the author changed to a coagulable, sterile animal plasma preparation, which is absorbed slowly. He was further encouraged in his attempts at stiffening of the mediastinum by Naegeli's cinematographic roentgen film which demonstrated that by means of infiltration of the anterior mediastinum it is possible to prevent, even in case of a wide open pneumothorax, the otherwise regularly occurring mediastinal flutter and the dangerous shifting of the heart. He shows that the efficacy of Graf's method of thoracoplasty is due to the preliminary operation, the resection of the first three ribs, an intervention that results in a stiffening of the mediastinum, and he recommends the resection for other thoracic interventions that require a rigid mediastinum and for cases in which a preliminary operation is feasible, otherwise he induces rigidity by infiltration with the coagulable, sterile animal plasma preparation. The author briefly reviews the technique of mediastinography.

Treatment of Pancreatic Cysts—Von Redwitz treated three cases of pancreatic cysts. A woman, aged 39 complained of a feeling of pressure in the upper portion of the abdomen and also of a nodule which constantly increased in size. Examination revealed intense pressure pain below the left costal arch. Palpation disclosed a long tumor, the size of a child's head. The lower pole reached almost to the umbilicus. The surface of the tumor seemed to be smooth and its consistency was tense and elastic. The tumor was not moved by respiration or against its base, but the abdominal walls could be moved freely against it. The transverse colon was detectable below the tumor. Demarcation of the spleen was possible by percussion. The following conditions were considered possible: pancreatic tumor, pancreatic cyst, mesenteric cyst or retroperitoneal ganglioneuroma. Following examination of the blood, gastric contents and feces, and after several roentgenograms had been made, it was finally assumed that the patient had a pancreatic cyst, although all reactions indicating disorders of the pancreas were negative. The diagnosis was verified by operation. The difference between pseudocyst and genuine cyst is that the wall of the first has no epithelial covering while the wall of the second has. Pseudocysts are usually of traumatic origin and are the results of encapsulation of an exudate or a pancreatic sequestrum after injury or necrosis of the pancreas. Genuine cysts are probably due to retention or proliferation. The differentiation of pseudocysts and true cysts frequently requires histologic examination. The author considers surgical treatment the best. The function of the pancreas became abnormal following removal of the cyst from this patient. The carbohydrate metabolism of such patients should be kept under control.

Folia Haematologica, Leipzig

53 1112 (Dec.) 1934

Original Form of Basophile Substance in Erythrocytes. Hilde Daum—p. 1

Therapeutic Action Mechanism of Parenterally Introduced Concentrated Normal Gastric Juice in Course of Pernicious Anemia. L. Tochowicz—p. 16

Mechanism of Therapeutic Action of Castle's Principle in Pernicious Anemia. B. Braun—p. 27

Appearance of Pathologically Granulated Leukocytes in Lead Poisoning in Children. M. Kasahara and M. Nagahama—p. 37

Aplastic Anemia or Panmyelophthisis. S. Osato, T. Hashimoto and T. Takigawa—p. 42

Action Mechanism of Gastric Juice in Pernicious Anemia—Tochowicz condensed the gastric juice of hogs or of man in the vacuum at a temperature of 38 C., from which he prepared an acetone extract and, following neutralization and determination of sterility, injected it intramuscularly in doses of from 10 to 30 addisin units, one addisin unit being equivalent to the active principle contained in 100 cc. of the not condensed gastric juice. While this unit cannot be constant, since the quality of gastric juices varies, he thinks that, as long as the blood-forming factor in the stomach has not been identified, a more exact determination of the dose will be impossible. He employed this extract of the gastric juice with success in two cases of pernicious anemia. Reticulocytosis was

noticeable only after an adequate amount of the extract had been administered (35 and 30 units, respectively) and it persisted for a long period. There was an increase in the leukocytes up to the normal and a percental reduction of the lymphocytes in favor of the eosinophil and neutrophil granulocytes and the simultaneous disappearance of the signs of degeneration and of pathologic regeneration. Then there was an increase in the number of megakaryocytes and of the blood platelets, a disappearance of the increased hemolysis of the erythrocytes and an increase in the cholesterol content of the blood. During the first stage of the treatment there was a noticeable increase in the activity of the entire bone marrow system but later this activity subsided somewhat and reached a normal rate. Aside from the persistence of a few megakaryocytes there was a complete remission, following treatment with the extract of the gastric juice. The author observed also a reappearance of papillae on the lingual mucous membrane, but the gastric secretion was not influenced. Because of the same therapeutic results obtained with liver and with this extract of the gastric juice, the author is convinced of the identity of the antianemic principle in the two cases. He assumes that the active principle is produced in the stomach and that the liver stores it but also releases it as it is required by the organism. The importance of this method lies in the fact that a single injection of an adequate dose is capable of producing a complete remission and maintaining it for perhaps several months.

Castle's Principle in Pernicious Anemia—Braun duplicated Castle's method of treatment in two cases of pernicious anemia and studied its mode of action on the bone marrow. In the first patient he let 150 cc of gastric juice from a hog act on 250 Gm of raw beef for one hour at 37 C. Then the juice was extracted (from 80 to 100 cc) and given to the patient by mouth. This procedure was repeated daily for thirty-two days. The author describes the results. The second case was treated similarly except that gastric juice from healthy human subjects was employed. The treatment was continued for forty-three days. The results were similar in the two cases and tallied with those obtained with stomach extract. The author concludes that the hormone which is active in pernicious anemia is produced by the gastric and duodenal mucous membrane of normal persons. Then it is colloid chemically combined with the administered protein and, following that, it is absorbed by the intestinal mucous membrane. In the liver, in the dried hog stomach, in the liver extract and in Castle's antianemic factor the hormone is bound to a protein fraction. This combination modifies the biologic and physicochemical properties of the therapeutic factors.

Munchener medizinische Wochenschrift, Munich

82 1-42 (Jan 3) 1935 Partial Index

Surgical Thrombosis and Embolism. E. Rehn—p. 1

Clinical Aspects of Hypophyseal Disorders. W. H. Veil—p. 5

*Diagnostic Mistakes in Gynecology. W. Kolde—p. 10

What May Cause Chronic Hoarseness? M. Nadoleczny—p. 13

Lactic Acid and Choline Action of Sauerkraut. R. Roemer—p. 18

Fatal Nicotine Poisoning Caused by Parasitocides. B. Kratz—p. 19

Diagnostic Mistakes in Gynecology—Kolde lays down rules to be observed in gynecologic examinations. He stresses that bladder and rectum should be empty and advises that the bladder be evacuated by means of the catheter to obtain urine for examination. Since rectal examination is absolutely necessary for a complete gynecologic examination, the rectum should be empty. The author stresses that bleeding should not be an excuse for postponement of a gynecologic examination. It is important to determine the etiology of leukorrhea. A watery, profuse leukorrhea, together with rare but severe menstruation, may indicate tuberculosis of the uterus, but a definite diagnosis can be made only on the basis of exploratory curettage, an intervention that requires great caution, since it may bring on an exacerbation of the process. A condition in which an erroneous diagnosis is likely is senile colpitis, in which eczema-like exfoliations and withering take place, changes that may be mistaken for cancer. Erroneous diagnoses are most frequent in case of erosions of the uterine cervix but if exploratory excision is resorted to they can generally be avoided.

Ulcerations in the vagina may be caused by pressure from pessaries and other devices or may be the result of injuries resulting from measures to induce abortion. In case of the simultaneous appearance of several vaginal ulcerations, the physician must consider whether they are a manifestation of ulcera molia, of acute ulcer or of syphilis. The diagnosis of prolapse or other positional anomalies of the genitalia must be made with great caution, as they may be simulated by other disorders, for instance, vaginal prolapse by a cyst of the vaginal wall and anteversion of the uterus by a myoma nodule of the fundus. After discussing the diagnosis of normal and pathologic frequency, the author stresses once more the factors that are important in exploratory curettage. He shows that it is advisable to make the intervention under anesthesia and emphasizes that the microscopic examination of the curettage material should never be neglected. Polyps removed from the genitalia should likewise be carefully examined. In case of backache, which is a frequent symptom of gynecologic disorders, not only should the pelvic organs be examined but the patient should be submitted to a thorough general examination. In chronic irritation of the appendix, the uterine adnexa are often involved and the appendectomy must consider the gynecologic rather than the purely surgical implications.

82 43 82 (Jan 10) 1935 Partial Index

- Exercise in Restorative Surgery K Gebhardt —p 43
- Two New Methods of Artificial Respiration C J Mijneff —p 44
- *Three Years' Experiences with Acetylene Insufflation of Subarachnoidal Space in Suppurating Meningitis Orbital Puncture O Zeller —p 47
- *Practical Experiences with Zeller's Method of Treatment of Meningitis A Jauerneck —p 51
- Clinical Aspects of Cardiac Asthma G Budelmann —p 52
- *Rapid Determination of Sedimentation Speed Holzapfel —p 66

Acetylene Insufflation of Subarachnoidal Space in Meningitis.—In 1928 when Zeller first reported his method for the treatment of meningitis he stressed two points (1) the thorough removal of the infectious cerebrospinal fluid and (2) the rapid refilling of the spaces with fresh, nontoxic cerebrospinal fluid. To counteract the danger produced by the sudden reduction in pressure he decided to fill the subarachnoidal space and the ventricles with gas and he chose purified acetylene which, because of its high solubility (thirty-three times as great as oxygen), eliminates the danger of gas embolism. He did not hesitate to remove all the cerebrospinal fluid. To effect a more rapid renewal of the cerebrospinal fluid, he resorted to Bier's cervical stasis repeated three times daily. In cases in which the cerebrospinal fluid contained thick pus the author resorted to the intravenous infusion of a 0.2 per cent solution of sodium chloride. By lumbar puncture a considerable amount of spinal fluid is withdrawn and, when the pressure has been somewhat relieved, gas is introduced under a pressure of 40 cm of water. The escape of numerous gas bubbles from the trocar indicates that all the fluid has been removed. He tried to utilize the bactericidal power of ether vapors by having the acetylene gas pass through a bottle partly filled with ether. Provided the temperature of the ether does not exceed 22 C excessive dosage does not have to be feared. The author thinks that in cases in which access to the cerebral subarachnoidal space is not possible by the usual method the orbital puncture, the ventricular puncture or puncture of the corpus callosum may eventually be resorted to. However, the suboccipital puncture is less dangerous in cases of partial or total spinal blockage. He reviews the results obtained in various forms of meningitis and thinks that his method will cure some cases that would otherwise be hopeless.

Treatment of Meningitis by Zeller's Method.—Jauerneck describes his experiences with Zeller's acetylene insufflation in thirty-six cases of meningitis of which fifteen went on to recovery. He stresses the necessity of early treatment. Several hours delay may destroy all prospects of recovery. He is convinced that the dangers of the method are slight. With the exception of mild symptoms of collapse he never observed deleterious effects. He admits that Zeller's method is only one aspect of meningitis therapy. However, he thinks that it might save some patients who otherwise would be incurable.

Rapid Determination of Sedimentation Speed.—Holzapfel employs a centrifuge and the well known Linzenmeier tubes, which, however, should have millimeter graduations. The tubes, containing 0.2 cc of a 5 per cent solution of sodium citrate and 0.8 cc of blood, are centrifuged for a minute at 3,500 or 3,600 revolutions. Then the clearly defined column of serum is measured. The author determined in numerous experiments that values of from 16 to 20 mm. are not yet accelerated, while values of over 20 are accelerated and those of less than 16 are retarded. The lowest value that he determined with this method was 8 mm and the highest 36 mm. The author shows a table in which the values, according to Linzenmeier, are compared with those obtained in the centrifuge. He concludes that the centrifuge method is advantageous in polyclinics and similar institutes where immediate decisions are necessary.

Wiener klinische Wochenschrift, Vienna

48 132 (Jan 4) 1935

- Present Day Aspects of Eugenics Wagner Jauregg —p 1
- Relation of Race Hygiene to Hygiene and Medicine H Reichel —p 2
- Several Cyto-Architectonic and Morphologic Peculiarities in Brain of Sculptor L. Horn and O. Potzl —p 5
- Scientific Detection of Paternity J Weninger —p 10
- Genealogical Structure Analysis and Eugenics G Engerth —p 13
- *Impairment of Offspring After Postencephalitic Parkinsonism H Hoff and W Wieser —p 16
- Population Policy and Physician in Reconstruction of Austria H Orel —p 18
- Constitution in Skin Diseases R Brandt —p 22
- Nature and Significance of Mutations R Pollard —p 24

Effect of Postencephalitic Parkinsonism on Offspring.—Hoff and Wieser observed several children with cerebral disturbances whose fathers had postencephalitic parkinsonism. Procreation had taken place after the fathers had acquired epidemic encephalitis. They give the histories of three children, of whom all had paretic disorders of the extremities two were idiotic and one manifested choreal restlessness and a tendency to sexual delinquency. Since it is known that in the chronic stage of epidemic encephalitis the region of the third ventricle and of the hypothalamus is damaged, the authors studied the effect of an artificially induced impairment of this region on the offspring of mice. Experiments on male animals revealed that severe damage of the thalamic-hypothalamic region completely destroyed the procreative capacity, although the genitalia showed no changes. After a less severe impairment the offspring could not be carried to term or were not viable, while in case of slight damage the offspring, although viable, nevertheless showed permanent or temporary disturbances. This impairment of the offspring was produced only by damage to the thalamic-hypothalamic region, for injuries produced in other parts of the brain, although they were followed by severe neurologic disturbances in the animals so treated, did not result in an impairment of their offspring, which were begotten after the animals had had some time to recuperate. In spite of the fact that women with postencephalitic parkinsonism were not known to have defective offspring, the authors made experiments on female animals. They gained the impression that the impairment of the thalamic-hypothalamic region of female animals also has a deleterious effect on the offspring. They believe that, since a sterile impairment of the brain of animals produced in the offspring effects similar to those following encephalitis in man, the secondary changes in the hypothalamic region and not the infection (encephalitis) as such cause the impairment of the offspring after encephalitis.

48 33 64 (Jan 11) 1935 Partial Index

- Thrombosis and Embolism H Eppinger —p 33
- Effects of Sterilization Operations in Animal Experiments and in Men F Spath —p 36
- *Internal Drainage of Large Pancreatic Cyst by Means of Pancreatic Gastrostomy G Vecchi —p 45
- *Gonorrhea as Example of Bacterial Allergic Processes C Engel and M R Vighiani —p 48
- Sources and Modes of Infection in Typhoid V Gegenbauer —p 51
- Treatment of Diphtheria in Patients with Asthma P Freud —p 54

Internal Drainage of Pancreatic Cysts.—Vecchi differentiates between pseudocysts and true cysts of the pancreas and discusses the treatment. In true cysts complete extirpation of

the cystic wall is advisable. In pseudocysts this treatment is not feasible because of the extent of the cystic sac, its close connections with other abdominal organs and the absence of a true cystic wall that might be easily detached. The best treatment of the pseudocysts is the suturing of the cystic wall into the peritoneum and subsequent opening of the cyst (marsupialization). This method produces favorable results in many cases, but occasionally there develops a fistula, which may persist for a long time. Various measures have been employed to remove these fistulas, but some of the surgical ones are not without danger, while in others, although they are more effective, the technic is rather difficult. He mentions implantation into the stomach, the intestine or the gallbladder. It seemed desirable in some cases of pseudocysts to dispense with marsupialization and produce at once a connection of the cyst with a hollow organ and thus effect internal drainage. He describes a case in which, following evacuation of the cystic fluid he made a direct connection between the cyst and the anterior wall of the stomach, near the large curvature. The anastomosis was secured by two Gersuny wicks. Sixteen days later, these drainage wicks were removed from the anastomosis. At a roentgenoscopy several weeks later, it was impossible to detect a connection between stomach and pancreatic cyst. Examination several months later revealed that the patient was entirely free from complaints and that she had gained weight. The author concludes that internal drainage deserves consideration in the treatment of pseudocysts of the pancreas; however, it is necessary to give attention to the danger of reflux of gastric, intestinal or biliary contents. He emphasizes that the complications likely to be caused by reflux from the respective organ are essentially different from those found in cases of acute necrosis of the pancreas. In the choice of the selection of the organ to be used for anastomosis the location of the cyst and the technical possibilities must guide the surgeon.

Gonorrhea as an Allergic Process—Engel and Vigliani report studies in which they show that, by means of a gonococcus toxin, a specific gonorrheal allergy can be demonstrated. They show that the intradermally demonstrable allergy is a true bacterial allergy, for the passive transmission experiment of Prausnitz and Küstner succeeded. The two stage intradermal reaction results in manifestations of local immunity in the skin as an indicator of an excess of antibodies. This excess appears independent of the maturation period that is observed in serum disease and in the nine-day exanthem, however, it is dependent on the reduction of the gonococci in the foci of the disease. This observation represents an essential modification of the two-stage tuberculin reaction. In view of the factors mentioned, gonorrhea may be considered a disease that permits the observation of bacterial allergic processes and with this the determination of biologic standards also applicable to tuberculosis, for (1) a specific antigen is present, (2) the direct microscopic demonstration of micro-organisms is nearly always possible, and (3) the bacteria are removed entirely from the body when cure is established.

Zeitschrift für klinische Medizin, Berlin

127: 499-608 (Dec. 19) 1934

- Rest Nitrogen and Xanthoprotein Reaction in Blood Obtained During Death Agony and from Cadavers F. Wührmann—p. 499
Blood Stream Resistance in Arterioles, Capillaries and Venules of Human Skin E. Kobrak—p. 514
*Anatomopathologic and Experimental Investigations on Renal Changes in Bence Jones Proteinuria E. Randerath—p. 527
Influence of Epinephrine on Circulating Quantity of Plasma and Blood in Chronic Enlargement of Spleen W. Grunke—p. 542
Aspects of Hyperproteinemia Helene Bürkel—p. 552
Relations Between Uremic Reaction and Increase in Rest Nitrogen of Nephrogenic and Nonnephrogenic Origin, as Well as Between Uremic Reaction and Xanthoprotein Reaction According to Becher F. Chrometzka and H. Stark—p. 561
Circulation of Capillaries in Organic Hemiplegia G. Marinescu H. A. Bruch and N. Vasilescu—p. 578
Studies on Behavior of Serum Protein Bodies by Means of Weltmann's Reaction J. Kretz and Olga Kudlac—p. 590

Renal Changes in Bence-Jones Proteinuria—Randerath aims at determining whether the renal changes that exist in case of elimination of Bence-Jones protein bodies are to be differentiated from the nephroses (Bohnenkamp Ehrlich) and

whether, as Ehrlich suggested, the Bence-Jones kidney represents a particular (the fourth) type within the group designated as Bright's disease. He reaches the conclusion that the giant cell formations in the tube casts, on which Ehrlich had put especial emphasis, are neither characteristic for a certain type of nephrosis nor justify the differentiation of a fourth type of Bright's disease. On the contrary, his studies demonstrated that the formations considered by Ehrlich as the basis of hydronephrosis are really the results of prolonged and severe elimination of protein and thus represent late manifestations in the course of chronic nephroses, and that they may appear also in the course of diffuse glomerular nephritides, particularly in those with nephrotic aspects. For this reason the author adheres to the classification that groups the Bence-Jones kidney with the nephroses, with the reservation that, just as in other nephroses he doubts that a primary "degenerative" process takes place in the renal parenchyma in Bence-Jones nephrosis. He rather assumes, at least for the onset of the renal changes characteristic for the Bence-Jones proteinuria, a process that is to be classified with the storage nephroses.

Hyperproteinemia—Bürkel demonstrates that in diffuse disturbances of the bone marrow, such as pernicious anemia, leukemia and more localized disease of the bone marrow (carcinoma metastases), the maximum and minimum values of the protein content of the blood serum generally do not deviate greatly from the normal values and that the averages remain within normal limits. Of all the disorders of the bone marrow, only myeloma presents the symptom of hyperproteinemia, and not even all cases of myeloma manifest this symptom. However, it must not be overlooked that, histologically considered, myeloma is not a uniform condition, for it may consist of various types of cells, of myelocytic, myeloblastic and lymphocytic elements and of structures resembling plasma cells. Moreover, there are myelomas that consist of cells resembling erythroblasts. The myeloma described by the author consisted of giant cells of the bone marrow (megakaryocytes) and thus it may be grouped genetically as belonging to the myeloid system. Moreover, megakaryocytes were detected in liver and spleen which is a further indication that in this case there existed a disturbance of the myeloid system. The author assumes that hyperproteinemia is perhaps a specific symptom of those myelomas that originate in the so-called myeloid cells and also of other disturbances that originate in the myeloid portion of the bone marrow.

Zeitschrift für Tuberkulose, Leipzig

72: 180 (Jan.) 1935

- Carbohydrate Assimilation in Various Forms of Tuberculosis of Childhood Particularly in Tuberculous Pulmonary Infiltrates E. Mahr—p. 1
*Asbestosis and Pulmonary Tuberculosis L. Martz—p. 11
*Relations Between Erythema Exudativum Multiforme and Tuberculosis? H. Mayrhofer—p. 15
Further Experiments on Increasing Virulence of B. C. G. Artificially F. Gerlach J. Brosch and M. Kaplan—p. 21
Modification of Acid Fastness of Tubercle Bacillus by Saponin Marie Maxim—p. 27
*Intrapleural Calcium Therapy in Pneumothorax Exudates H. Kriech—p. 31

Asbestosis and Pulmonary Tuberculosis—According to Martz, asbestosis develops as a rule from five to fifteen years after the beginning of the inhalation of asbestos dust. Its first symptoms are shortness of breath and coughing with expectoration. Later there are added pallor, cyanosis, palpitation of the heart, loss of appetite and of weight and piercing pains during breathing. In advanced cases, dyspnea and cyanosis predominate and death is usually caused by cardiac insufficiency. In the beginning stages clinical examination reveals hardly any pulmonary changes, but later a diminution in the resonance is perceptible over the lower parts of the lung and dry and crackling sounds are heard over the basal portions. In the roentgenogram, three stages may be distinguished. During the first stage there is a greater density in the hilus shadows, the movement of the diaphragm is reduced and the lungs show more reticular and honeycombed outlines. The second stage is characterized by the appearance of numerous fine focal shadows, primarily in the lower portions of the lung. During the third stage the diaphragm is immobile, the outlines of heart and

diaphragm are no longer sharply differentiable and the lower and partly also the middle fields are clouded by numerous fine focal shadows, or the shadow may be homogeneous. Following a description of the necrotic aspects of the lungs of patients with asbestosis, and of the development of the asbestos bodies, also called "curious bodies," the author discusses the concurrence of asbestosis with pulmonary tuberculosis. He reports the history of a woman, aged 30, who from the age of 17 to 22 worked in an asbestos factory. During this time she had no complaints, but six years later she resumed work in the asbestos factory for ten months and the disorder appeared suddenly. He assumes that the renewed inhalation of asbestos dust may have activated a tuberculosis and that this in turn contributed to a more rapid manifestation of the asbestosis. He concludes that the prognosis is unfavorable in case of a concurrence of asbestosis and tuberculosis. In the case reported treatment for thirteen weeks in a sanatorium was without beneficial effects.

Erythema Exudativum Multiforme and Tuberculosis—Mayrhofer reports observations that indicate a relationship between the two disorders. He calls attention to a case in which the recurrent attacks of erythema exudativum multiforme did not cease until tuberculin treatment was instituted. In another case there was erythema nodosum, erythema exudativum multiforme and a rudimentary polyserositis. Because of the similarity of disturbances of the serous membranes that accompany erythema nodosum, erythema exudativum multiforme and so-called articular rheumatism to the true tuberculous serositis and because of the detection of tubercle bacilli in the blood during acute polyarthritis (Löwenstein, Busson and Popper), it appears that the rheumatic genesis of polyarthritis as well as of erythema exudativum multiforme and erythema nodosum, may be doubted. The author believes that a relationship to tuberculosis is highly probable, at least in a certain group of cases of erythema exudativum multiforme.

Intrapleural Calcium Therapy in Pneumothorax Exudates—Kriech says that the intramuscular injection of calcium helps to prevent exudate complications but that its results are not so satisfactory once the exudate formation has set in. He resorted to the direct intrapleural application of calcium. At the exploratory puncture, when the necessary quantity has been withdrawn for purposes of examination, he mixes in the syringe from 5 to 10 cc of a 10 per cent solution of calcium gluconate with the exudate and injects it. In many instances this measure arrests the exudation. Neither the fever nor the exudate increases further, and pulse and temperature quite often become reduced. However, after one or two days there frequently is a renewed increase. Then the puncture is repeated, some fluid is withdrawn and from 10 to 20 cc of calcium gluconate is introduced. After that there generally is an improvement and within from ten to twenty days complete resorption of the exudate takes place. During this time the patients are usually bandaged twice daily, but no other treatment is employed. A refilling of the pneumothorax is as a rule unnecessary, since the air is absorbed rather slowly during this time, and within three weeks the complication has generally passed, provided the exudate is sterile. The author stresses as an especial advantage of this form of calcium therapy that the subsequent development of adhesions is slight and that it prevents plastic pleurisy.

Zentralblatt für Gynäkologie, Leipzig

59: 65-128 (Jan. 12) 1935. Partial Index.

Newer Results of Research on Hormones of Gonads and Hypophysis. A. Butenandt—p. 71.

*Experimental Investigations on Influence of Female Sex Hormones on Carbohydrate Metabolism. S. Lehwirth—p. 78.

Influence of Hormone of Anterior Lobe of Hypophysis on Ovaries Impaired by Rays. F. Heimann—p. 83.

Reactivity of Muscles of Uterus to Solutions of Pituitary and to Epinephrine Under Influence of Hormone Preparations. P. I. Fomina—p. 91.

Influence of Female Sex Hormones on Carbohydrate Metabolism—Lehwirth studied the influence exerted by various female sex hormones on the carbohydrate metabolism of sexually mature female rabbits. The experiments were made with the gonadotropic hormone of the anterior hypophysis, with the fat-soluble follicular hormone with the corpus luteum

hormone and with the combination of the follicular hormone and the corpus luteum hormone. Prolonged treatment with the gonadotropic hormone of the anterior hypophysis resulted in a slight reduction of the sugar content of the blood. In the acute experiment (ten hours) the sugar content did not decrease after the first tolerance test with the hypophyseal hormone, but it did decrease after a longer preliminary treatment with the hormone. Already the first tolerance test with the fat-soluble follicular hormone or with the corpus luteum hormone resulted in a reduction of the blood sugar in the ten hour experiment. This reduction did not increase after prolonged administration of these hormones. Preliminary treatment with estrogenic preparations abolished the blood sugar reducing effect of the corpus luteum hormone. Studies on the modification of the carbohydrate tolerance, following preliminary treatment with the estrogenic substances mentioned, revealed that all these hormones weakened the glycemic reaction produced by the oral dextrose tolerance test.

Acta Chirurgia Scandinavica, Stockholm

75: 469-575 (Dec. 15) 1934.

Blood Changes in Clinical Thrombophlebitis and Their Clinical Significance. P. Windfeld—p. 469.

*Diagnosis by Arthrography of Lesions of Meniscus. R. A. Lagergren—p. 485.

Extensive Resection of Lower Jaw for Cancer. A. V. Åkerblom—p. 513.

Question of Spontaneous Rupture of Spleen. M. Dahle—p. 519.

Postoperative Follow Up Studies of Meniscal Injuries with Especial Regard to Prognosis. S. Anderson—p. 534.

Spontaneous Rupture of Spleen. G. Lundell—p. 547.

Endometriosis of Urinary Bladder. F. Settergren—p. 571.

Diagnosis by Arthrography of Lesions of Meniscus—Lagergren reports his investigations with roentgenography of the knee joint, utilizing 20 cc of 17.5 per cent diodrast. With this opaque substance and by a simple technic he was able to demonstrate meniscal injuries in clinically uncertain cases. It was also possible to give a detailed description of the type and extent of the damage proved on arthrotomy. To get a good result it is important to take the roentgenograms of the knee in an oblique direction, as thereby a relatively free projection of the different parts of the menisci can be obtained. The effect of the opaque substance on the joint was studied. The author examined the cytologic conditions of the synovial fluid before and after the injection of the opaque substance and also tested the albumin and iodine contents of the synovia. In a number of cases in which operation was performed twenty-four hours after arthrography, a portion of the capsule was excised for microscopic examination. He emphasizes the difficulties encountered in the proper evaluation of the condition of the lateral meniscus.

Ugeskrift for Læger, Copenhagen

96: 1395-1424 (Dec. 20) 1934.

*Silicosis in Porcelain Workers Seen from Roentgenologic and Some Clinical Points of View. P. F. Möller—p. 1395.

Preliminary Experiments with Addition of Diet Rich in Vitamins for Patients with Lupus Vulgaris. S. Lomholt—p. 1403.

Silicosis in Porcelain Workers—Möller says that roentgen examination of 828 porcelain workers revealed silicosis in 361 or 45.2 per cent, 213 of these being in the second stage or beyond. The silicosis was a slowly but steadily progressive form of comparatively benign peribronchial-perivascular-nodose type with tendency to early interstitial changes. Of the workers employed for a period of from twenty-six to thirty years, 58 per cent had silicosis of those employed for fifty years 100 per cent had silicosis. Although the men and women were with few exceptions capable of work at the time of examination it was found that the morbidity among the workers having silicosis was high, the tendency to disturbances of the respiratory tract was greater than in those without silicosis, and half of the deaths were caused by respiratory disorders. The investigations further showed that persons with silicosis are also exposed to other dangers, namely, spontaneous pneumothorax and cardiac degeneration, even at an early stage of the disorder. Complication with tuberculosis was comparatively rare and grave cases of tuberculosis were not seen. Complication with emphysema was extraordinarily frequent.

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HEMOGLOBIN REGENERATION AS INFLUENCED BY DIET AND OTHER FACTORS

NOBEL PRIZE LECTURE

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ROCHESTER, N Y

Experiments usually have a past history or a genealogical sequence, and it may be appropriate at this time to review the genealogy of the liver diet experiments in anemia due to loss of blood in dogs. With Dr Sperry in 1908 we¹ took up a study of the liver injury produced by chloroform anesthesia, giving particular attention to the regeneration of the liver cells to repair this injury. Icterus invariably is present in dogs with liver injury of this character and this condition was studied further. With Dr King we² studied obstructive jaundice and found that the bile pigments were absorbed from the liver into the blood capillaries direct rather than by way of the lymphatics. With Dr Hooper in 1912 we³ began a systematic study of bile pigment production in the body as influenced by the Eck fistula and finally⁴ were able to show that hemoglobin could be rapidly changed into bile pigment within the circulation of the head and thorax the liver being completely excluded, also that hemoglobin could be rapidly changed to bile pigment within the pleural or peritoneal cavities.

After leaving Baltimore in 1914 to work at the University of California, Dr Hooper and I⁵ took up a careful study of bile pigment metabolism by means of bile fistulas in dogs and investigated the effect of diet on the output of bile pigment. As these studies were continued and extended to include bile fistulas combined with splenectomy and the Eck fistula,⁶ it became apparent that we could not understand completely the story of bile pigment metabolism without more knowledge about the construction of blood hemoglobin in the body. Blood hemoglobin is a most important precursor of bile pigment, and it was necessary to understand what factors influenced the building of new hemoglobin in the dogs.

For this reason we produced simple anemia in dogs by means of the withdrawal of blood and in short experiments followed the curve of hemoglobin regeneration back to normal. These experiments with Dr Hooper⁹ were begun in 1917, and it was found at once that diet had a significant influence on this type of blood regeneration. Because of our interest in liver function and injury,¹⁰ we soon began testing liver as one of the diet factors and could readily demonstrate that it had a powerful effect on hemoglobin regeneration.¹¹ These short anemia experiments were relatively crude and gave at best qualitative values for the various diet factors.

After transfer of the anemia colony of dogs from San Francisco to Rochester, N Y, in 1923, Dr Frieda Robschert-Robbins and I¹² began to use a different type of anemia. Dogs were bled by aspiration from the jugular vein and gradually reduced from a normal hemoglobin level of 140-150 per cent to about one-third normal, or 40-50 per cent, and this anemia level was maintained a constant for indefinite periods by suitable removal of new-formed hemoglobin. The potency of the diet factor was then accurately measured as grams of hemoglobin removed to preserve the constant anemia level. The stimulus presumably was maximal and uniform, and the reaction of a given dog to a diet factor was shown to be uniform when repeated time after time.

Much effort and time were spent in devising a basal ration that is adequate for health and maintenance during these long anemia periods, lasting throughout the entire life of the dog (from five to eight years). At the same time, salmon bread (table 1)¹² permits of minimal new hemoglobin regeneration and therefore gives a low base line hemoglobin output from which to measure the increased output due to liver, kidney, gizzard or other favorable diet factors.

From table 2 it is obvious that liver¹³ again stands out as the most potent diet factor. Kidney¹⁴ is a close second. Gizzard, spleen and pancreas also rate high as factors that favor abundant new hemoglobin production under these standard anemia conditions. Gradually various diet factors were standardized, and this information was placed at the disposal of physicians who were concerned with the therapeutic treatment of human anemias. Iron¹⁵ was found to be the most potent inorganic element.

Pernicious anemia examined from the point of view of the pathologist¹⁶ was described in 1921 as a disease

Nobel Prize Lecture given at the Caroline Institute Stockholm Dec 12, 1934

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This paper is designed to summarize the authors' contributions but does not pretend to give a review in this field nor describe the work of others

- 1 Whipple G H and Sperry J A Bull Johns Hopkins Hosp 20 2/8 1909
- 2 Whipple G H and King J H J Exper Med 13 115 1911
- 3 Whipple G H and Hooper C W ibid 17 593 1913
- 4 Whipple G H and Hooper C W ibid 17 612 1913
- 5 Hooper C W and Whipple G H J Exper Med 23 137 (Jan) 1916
- 6 Hooper C W and Whipple G H Am J Physiol 40 332 (April) 1916
- 7 Whipple G H and Hooper C W Am J Physiol 42 256 (Jan.) 1917
- 8 Hooper C W and Whipple G H Am J Physiol 43 275 (May) 1917

- 9 Hooper and Whipple Am J Physiol 45 573 1918
- 10 Davis N C and Whipple G H Influence of Fasting and Various Diets on Liver Injury Effected by Chloroform Anesthesia Arch Int Med 23 612 (May) 1919
- 11 Whipple G H Hooper C W and Robschert F S Am J Physiol 53 151 and 236 (Sept) 1920
- 12 Whipple and Robschert-Robbins ibid 72 395 (May) 1925
- 13 Robschert-Robbins and Whipple ibid 72 408 (May) 1925
- 14 Robschert-Robbins and Whipple ibid 79 271 (Jan) 1927
- 15 Whipple and Robschert-Robbins ibid 72 419 (May) 1925
- 16 Whipple G H Pigment Metabolism and Regeneration of Hemoglobin in the Body Arch Int Med 29 711 (June) 1922

in which all pigment factors were present in the body in large excess but with a scarcity of stroma building material or an abnormality of stroma building cells. This fits quite closely with the modern conception of this interesting disease as developed from the important observations of Castle.¹⁷ When the true factor is isolated I shall be surprised if it does not have to do with the stroma, but it may be related to the globin fabrication.

TABLE 1—Bread (S) = Salmon Bread

Ingredients	Grams	Protein Gm	Fat Gm	Carbohydrate Gm
Wheat flour	12 000	1 240	125	8 480
Potato starch	6 000			5 400
Bran	2 000	300	86	1 080
Sugar	3 000			3 000
Cod liver oil	1 000		1 000	
Canned tomatoes	2 000	24	4	60
Canned salmon	2 300	54	302	
Yeast compressed	45	55	2	95
Salt mixture*	150			
Water	7 500			
Total		2 164	1 410	18 170

Protein 10.0 per cent

Fat 6.5 per cent

Carbohydrate 83.4 per cent

Calorie value 4.8 per gram as fed

* McCollum and Simmonds salt mixture with ferric citrate omitted

Hemoglobin utilization in anemia was studied in considerable detail. It was found that the anemic dog can conserve for new hemoglobin production about 100 per cent of injected hemoglobin¹⁸ whether given intravenously or intraperitoneally. Muscle hemoglobin was included in this study and there is a probability that some of the injected muscle hemoglobin is also used in this emergency to form new blood hemoglobin.¹⁸ Certain digests of blood hemoglobin when given intravenously will be utilized to about 40 per cent to build new hemoglobin in the anemic dog.¹⁸ Foreign hemoglobins (goose and sheep) are also readily utilized¹⁹ when given intravenously to the anemic animal and nearly 100 per cent conservation was observed. Hemoglobin fed by mouth is poorly digested and we observe

tion in this type of experimental anemia and represents only 3 per cent of the whole liver weight.

Anemic dogs produce more new hemoglobin during a fast than during periods of the basal diet, and this phenomenon has received much study with the hope that information relating to the internal metabolism of hemoglobin may be acquired. When a standard anemic dog is fed only sugar plus iron, there will be a large output of new hemoglobin (100 Gm or more as a result of a two weeks fast). Obviously this new hemoglobin must be derived from the body protein, and the mechanism of this reaction has been investigated by Drs. Daft, Robschert-Robbins and Whipple.²² Nitrogen partition of the urinary nitrogen shows that during such periods there is a conspicuous decrease in the urea ammonia fraction that points to a conservation of nitrogenous intermediates which otherwise would appear as urinary nitrogen but under these circumstances are used to build new hemoglobin. The importance of this body reaction is obvious and it is being studied in considerable detail (table 3).

Human liver material obtained at autopsy has been studied recently²³ and its potency compared with stand

TABLE 3—Hemoglobin Construction and Decrease in Urinary Nitrogen Due to Anemia and Iron Feeding

Days on Experiment	Iron Intake Gm	Total Nitrogen Mg per Week	Urea N + NH ₄ N Mg per Week	Urea N + NH ₄ N per Cent	Creatinine N Mg per Week	Creatinine N Mg per Week	Creatinine N + Creatinine N per Cent	Uric Acid N Mg per Week	Undetermined N Mg per Week
Nonanemic Dog 29 326									
7	0	19 250	15 020	83.0	1 190	150	7.0	70	1,860
7	2.8	13 630	10 710	78.6	1 020	0	7.5	50	1,850
7	2.8	17 140	8 640	81.0	8.0	0	7.6	40	1,300
2	0	13 120	10 750	81.9	920	0	7.0	50	1 410
Anemic Dog 29 320									
7	0	25 350	21 320	83.5	1 150	460	6.3	150	2,450
7	2.8	13,830	10 450	75.5	970	50	7.3	120	1,250
5	2.8	11 420	8 180	71.6	770	360	9.0	70	960
2	0	11 550	8 230	71.2	770	360	9.5	70	910

Total hemoglobin production 112 Gm equivalent to 19 Gm of nitrogen in anemic period

TABLE 2—Hemoglobin Potency of Diet Factors Average Values

Diet Factor Daily Intake	Total Net Hemoglobin Output per 2 Wks Gm	Bread Base Line Average Output per 1 Wk Gm	Hemoglobin Output per 2 Wks Gm		Number of Experiments
			Maximal	Minimal	
Pig liver 300 Gm	93	6	124	69	77
Liver extract 55 Gm (equivalent to 300 Gm)	56	4	72	37	22
Pig kidney 300 Gm	69	3	92	49	9
Beef heart 300 Gm	49	5	57	33	7
Apricots dried 100 Gm	42	4	92	13	21
Iron (Fe) 40 Gm	51	0	91	25	47
Iron 400 Gm	94	7	127	67	6
Salt mixture-Fe 6 Gm	9	7	29	0	16
Salmon bread 400 Gm		7	10	2	110

only about 10 to 15 per cent recovery as new formed hemoglobin in anemia.

Liver fractions and extracts have been studied²⁰ and the active principles for this type of anemia separated from the active principle of pernicious anemia²¹ as contained in the normal liver. The crude secondary anemia fraction²⁰ contains about 65 to 75 per cent of the potency of whole liver for new hemoglobin produc-

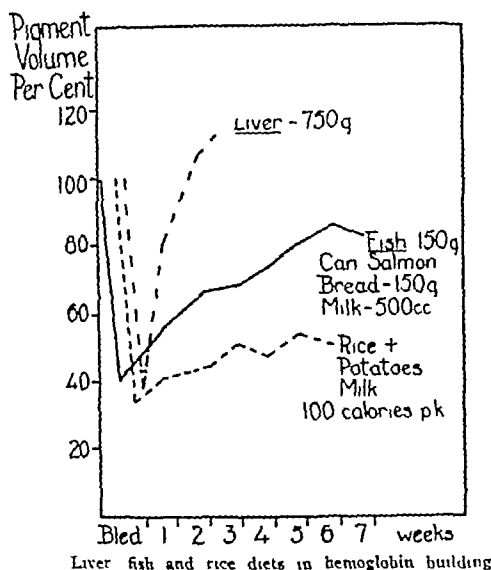
and animal liver material. If pig liver is rated as 100 per cent (our normal base line), any given type of human liver may be compared with this control by means of our standardized anemic dogs. In this way it was found that the human liver from young healthy adults gives average values of 160 per cent. Elderly persons with arteriosclerosis and degenerative changes will show values for liver tissue of 117 per cent as compared with the animal control of 100 per cent. Acute infections of course show swollen livers, and this increase in size may account for the "dilution" of the active principle, but the average value for this liver tissue is 117 per cent. Chronic infections give liver values that are practically normal (150 per cent). Cancer invasion of the liver reduces the values of the whole liver in proportion to the replacement by cancer tissue, which by itself appears to be inert. Liver cirrhosis is compatible with normal human values for the liver tissue, 164 per cent of the control animal liver, but when hepatic insufficiency supervenes these values drop markedly (48 per cent), or about one-third the human normal. Secondary anemia and leukemia show values somewhat below the human normal (125 per cent).

22 Daft, F. S., Robschert-Robbins, F. S., and Whipple, G. H. *J. Biol. Chem.* 103: 495 (Dec.) 1933.
23 Whipple, G. H., and Robschert-Robbins, F. S. *J. Exper. Med.* 57: 637 (April) 1933.

17 Castle, W. B., Am. J. M. Sc. 178: 748 (Dec.) 1929.
18 Whipple, G. H., and Robschert-Robbins, F. S., Am. J. Physiol. 83: 60 (Dec.) 1927.
19 Taylor, G. B., Manwell, E. J., Robschert-Robbins, F. S., and Whipple, G. H., Am. J. Physiol. 92: 408 (March) 1930.
20 Whipple, G. H., Robschert-Robbins, F. S., and Walden, G. B., Am. J. M. Sc. 179: 628 (May) 1930.
21 Cohn, E. J., Minot, G. R., Alles, G. A., and Salter, W. T., *J. Biol. Chem.* 77: 325 (May) 1928.

indicating a moderate depletion of these reserve factors within the liver, presumably due to blood loss

Pernicious and aplastic anemias show a definite heaping up of these potent factors within the liver tissue, which values run above 200 per cent. In aplastic anemia there is no formation of red cells, therefore the hemoglobin building material piles up in reserve. In pernicious anemia there is a lack of something so that the



marrow cannot produce the needed red cells, therefore the hemoglobin building material heaps up in the liver storehouse (tables 4 and 5)

Dogs with abnormal conditions are being included within the anemia colony and observations are accumulating to show in what measure splenectomy, the Eck fistula and the bile fistula may introduce factors having a bearing on the production of new hemoglobin under these standardized conditions. Acute and chronic infec-

TABLE 4—Hemoglobin Production Factors in Abnormal Human Liver—Pernicious Anemia

Number	Cause of Death	Iron Content of Human Liver		Liver Intake per Day		Hemoglobin Output per 7 Days Feeding		
		Fresh Tissue Mg per 100 Cc	Daily Intake Mg	Human	Control	From Human	From Control	Ratio of Human to Control
A 371	No therapy	162.0	208	129	200	63	35	420
A 1800	No therapy	26.7	92	2.6	200	97	74	107
A 1945	Slight therapy	47.3	190	200	300	112	50	203
A 2479	Nephritis	26.6	70	190	100	50	30	104
A 1472	Slight therapy	17.5	27	158	200	52	50	200
A 425	Slight therapy	34.8	62	160	300	40	34	205
A 1122	Emboli	24.6	33	130	300	20	30	152
A 1173	No therapy			160	300	37	46	148
Average		51.3	81	152				218

tion, liver injury and chronic nephritis are also being observed in the anemia colony. The list of abnormal states is a long one and includes disease conditions developing spontaneously as well as acute conditions of purely experimental nature. New hemoglobin regeneration can be influenced by many of these disease conditions, but it would be premature at this time to attempt evaluation of these effects. It is an interesting field full of difficulties but also of promise for the future.

Amino acids deserve particular attention in this type of investigation and it should be possible to give certain amino acids intravenously and thereby influence hemo-

globin production in anemia. We are proceeding with a systematic investigation of amino acids as diet factors in our standard anemic dogs. It would be premature to make any statement about amino acids at this time, but certain amino acids do exert a definite influence on hemoglobin regeneration when added in moderate amounts to the basal ration. Phenylalanine, tyrosine and proline may be mentioned, but we have as yet no adequate data to establish any definite claim. The literature already contains too many claims for the potency of one or another amino acid in anemia, but the experimental data are wholly inadequate.

TABLE 5—Hemoglobin Production Factors in Human Liver

Diagnosis	Cases	Average Iron Content of Human Liver Mg per 100 Cc	Average Ratio of Human to Control per Cent
Normal	9	12	162
Normal ?	11	12	117
Acute infections	11		117
Chronic infections	16	13	145
Chronic passive congestion liver	6		84
Amyloid—fat liver	10		111
Cancer liver	8	15	75
Cirrhosis	20	9	164
Hepatitis—insufficiency	10	10	48
Pernicious anemia	8	51	218
Aplastic anemia	4	70	201
Secondary anemia	10	7	135
Leukemia	14	13	129

It is obvious to any student of anemia that a beginning has been made but our knowledge of pigment metabolism and hemoglobin regeneration is inadequate in every respect. This is a stimulating outlook for the numerous investigators in this field, and much progress in the near future may be confidently expected.

NUTRITION AND INFECTION

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The idea that a normal state of nutrition confers resistance to infection has long been held. Following the discovery of the accessory food elements, since 1900 an enormous amount of study has been devoted both to the defining of the various nutritional deficiencies and to a search for those food factors which might promote resistance. In this work, experiments with animals have been indispensable and have led to the solution of some of the clinical problems. It has been found that (1) outspoken deficiencies may lower resistance to infection, (2) increased feeding of such food elements as vitamin A to the normal animal may not increase resistance, (3) the results obtained with one species do not necessarily apply to another species, (4) very few studies have been made in animals receiving a diet only partially deficient, yet partial deficiency in man is far more frequent than total deficiency, (5) multiple deficiencies in man are frequent and may be important, and (6) very little attention has been paid to the production in animals of a chronic condition of reduced resistance, comparable to the condition that many clinicians believe exists in certain children.

Students of disease in childhood have described certain persisting constitutional conditions peculiar to groups of infants who are especially liable to respira-

From the Department of Pediatrics of the University of Rochester School of Medicine and Dentistry.
Read before the Section on Miscellaneous Topics, Session on Nutrition at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1914.

tory infections Czerny¹ described an exudative diathesis characterized by irregularity in gain of weight, enlargement of the lymph nodes, frequent catarrhal inflammations of the nose throat and bronchi, eosinophilia, eczema and asthma. He supposed that a diet rich in carbohydrate might favor the development of the diathesis and that one rich in fat might hinder its development. At that time the concept of allergy was not known. Stoeltzner² and Senff³ have called atten-

TABLE 1—Decrease in Severity of Infection Among Infants After the Introduction of More Adequate Diets (After Nassau⁶)

	1919-1920	1920-1921	1921-1922	1922-1923	1923-1924	1924-1925
Number of Infants	1,751	3,039	2,333	2,207	2,038	1,325
Average gain						
Second 6 months Gm	1,440	1,315	1,160	1,865	2,085	2,770
Year Gm	3,285	3,675	3,245	4,225	5,190	5,735
Index of Infection						
First quarter of year	1.0	1.2	1.3	1.1	1.1	0.7
Second quarter of year	2.1	2.0	2.1	2.2	1.4	1.3
Third quarter of year	2.3	2.4	2.1	2.6	2.0	1.9
Fourth quarter of year	2.6	2.6	3.0	2.6	2.0	1.7
Mortality						
Per cent admission	15.1	12.9	11.3	13.8	9.3	7.6
Per 10,000 days care	33.5	39.8	30.7	24.9	17.6	9.6
Grip per hundred infants			18.3	15.3	189	120
Bronchitis per hundred infants			66	84	51	4
Bronchopneumonia per hundred infants			30	45	9	9

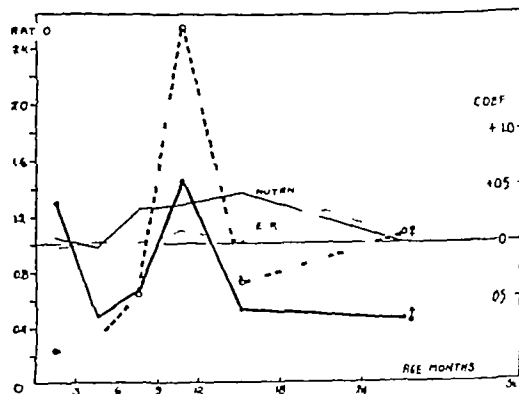
tion to the rapid gain and loss in weight characteristic of many infants who are liable to severe infections, they term the constitutional peculiarity of these infants "hydrolability" and include among the causative factors prematurity, a preceding toxicosis, and faulty diets. It is asserted that diets rich in fat may correct hydrolability. Abels⁴ considered that scurvy might lead to a faulty reaction to infection and coined for this the term "dysergy."

While these ideas were developing in Germany, diets were in use that were inadequate in many particulars. Hoeckle⁵ emphasized the deficiency of their caloric content. Nassau⁶ (table 1) showed that in infants under his care in Berlin the mortality very greatly decreased after 1922, when feedings were introduced that were higher in caloric content, in fresh fruit juice and in vegetables. No change had occurred in the type of infant admitted, in the technic of isolation or in the hygienic routine. Table 1 also shows that mild infections were no less frequent than before and that infants under 6 months of age not frequently were severely infected.

That the sex of the infant may play a role is illustrated by data collected at the Strong Memorial Hospital, as shown in the accompanying chart. Below the age of 3 months boys were much more liable than girls to severe infections, and girls were more liable after 6 months. In the chart it is clearly shown that the ratio

of severe to mild infections reaches a striking maximum both for girls and for boys between the ages of 9 and 12 months. This observation is well known. The explanation is quite unknown. It is perhaps due to the loss of protection acquired from the mother and to the fact that the infant has not yet developed its own protective mechanism. I have attempted by a rather crude statistical method to ascertain whether or not this lowered resistance is due to an increased exposure to infection. For this purpose I have assumed that the source of virulent infection would be older children in the family, and I have attempted to correlate by the coefficient of contingency of Yule the presence of severe infection with the presence or absence of older children in the family. No such correlation was found. Also, the previous intake of abundant vitamin A in the form of cod liver oil is not well correlated with this maximum peak of occurrence of severe infection between 9 and 12 months, although, as will be shown later, it may be correlated with the tendency to severe infection throughout the period from 6 months to 24 months. It may therefore be concluded that a number of constitutional factors must be taken into account in any study of liability to severe infection, such as age, sex, and allergy, and undoubtedly that constitutional states exist, which in the past have been called "diatheses," "hydrolability" or "dysergy," all characterized by liability to severe infection. It is also probably true that the diathesis is a state that develops gradually and is in part the result of dietary deficiencies of considerable previous duration, and that it is a state which tends to persist.

I shall now review briefly the more significant observations in the literature bearing on the loss of resistance to infection due to deficiency of the food elements.



Effect of sex and age on severity of infection during infancy: boys, solid line; girls, heavy solid line; effect of bad nutrition and of exposure to older children indicated by the coefficient of contingency of Yule, heavy dotted line. Six hundred and eighty children under 3 years of age.

THE EFFECT OF LONG CONTINUED USE OF DIETS LOW IN CALORIC CONTENT

Gordon and Tai⁷ observed that the majority of their tuberculous adult patients had for several years been accustomed to consuming diets containing as low as 1,400 calories a day, and in a few cases as low as 800 calories. The diet of tuberculous children had not been so low in calories but had been of inferior quality. My own observations do not support the view that a

1 Czerny, A. Die Abhängigkeit der natürlichen Immunität von der Ernährung. *Med. Klin.* 9: 895, 1913.

2 Stoeltzner, W. Zur Analyse der Gewichtskurve von Säuglingen. *Arch. f. Kinderh.* 77: 1 (Dec.) 1925. Eisuppe als Säuglingsnahrung. *Deutsche med. Wchschr.* 56: 4 (Jan. 3) 1930.

3 Senff, A. Die Bedeutung der konstitutionellen Hydrolabilität für den Verlauf und die Prognose der akuten Infektionskrankheiten dystrophischer Säuglinge. *Ztschr. f. Kinderh.* 52: 727, 1932.

4 Abels, H. Die Dysergie als pathogenetischer Faktor beim Skorbut. *Ergebn. d. inn. Med. u. Kinderh.* 28: 733, 1924.

5 Hoeckle, E. Erfahrungen mit kalorienreich Säuglingsernährung. *Arch. f. Kinderh.* 74: 30 (March) 1924.

6 Nassau, Erich. Ueber Entstehung und Verhütung dystrophischer Zustände im zweiten Lebenshalbjahre. *Jahrb. f. Kinderh.* 109: 300 (Aug.) 1925.

7 Gordon, B. and Tai, E. S. Some Considerations of the Nutritional Problem in Pulmonary Disease. *Am. Rev. Tuberc.* 24: 673 (Dec.) 1931.

low caloric intake of itself predisposes infants to infection (table 2). The mean weight of 131 infants with otitis media and of fifty-nine infants with pneumonia lay considerably below the mean weight of healthy infants. This might suggest that undernutrition of itself predisposes to such infections. It seems more likely, however, that the loss of weight is a consequence of the infection. The mean weight of sixty-one infants admitted to the hospital for regulation of feeding but free of infection, was 81 per cent below the normal, and the difference between this weight and that of children with pneumonia and with otitis media was not of statistical significance.

EFFECT OF THE VITAMINS

Vitamin B—Pigeons suffering from polyneuritis lose their natural complete resistance to anthrax. This is probably due to a lowering of the body temperature or to starvation (Findlay,⁸ Corda⁹). Spontaneous or induced infection with *Bacillus Welchii* may occur in

TABLE 2—Undernutrition in Respiratory Infections (of Infants from Birth to Three Years)

Diagnosis	Number of Cases	Departure from Mean Normal Weight	Difference Between Weight of Infected Infants and Weight of Noninfected Infants
No infection	78	-8.1 ± 1.8%	—
Otitis media	131	-11.0 ± 1.0%	2.9 ± 2.1%
Pneumonia	59	-13.0 ± 1.3%	4.9 ± 1.9%

dogs partially deficient in vitamin B (Rose¹⁰). Women whose diets are deficient in vitamin B are liable to give birth to premature infants (Maurer and Tsai¹¹, Wills and Talpade¹²). No statements have been found dealing with liability to infection in beriberi or pellagra nor has any one recorded an attempt to prevent or treat infection in children with vitamin B.

Vitamin C—There is a large body of convincing evidence that guinea-pigs on diets partially or totally devoid of vitamin C are abnormally susceptible to infection with the streptococcus (Jackson and Moody¹³), the pneumococcus, *Staphylococcus aureus* (Findlay,⁸ Wamoscher¹⁴) and the tubercle bacillus (Bieling,¹⁵ McConkey and Smith¹⁶). Rinehart, Connor and Mettler¹⁷ have called attention to the resemblance between the lesions due to hemolytic streptococci in infected scorbutic guinea-pigs and rheumatic fever in man. However, Keith and Clayton¹⁸ in Rochester, Minn.,

have shown that the blood, urine and tonsils in rheumatic children contain normal quantities of vitamin C. Human infants with scurvy, according to Abels,⁴ are especially liable to severe infection. Meyer¹⁹ advocated the use of from 2 to 3 ounces (60 to 90 cc) of orange juice daily in the treatment of infants with infection. Orange juice, of course, contains many other active constituents than vitamin C, among them carotene, calcium, phosphate and potential alkali, it also appears to exercise an anti-infective influence in the rat, which needs no vitamin C (Hagedorn²⁰). Bloch²¹ believes that scorbutic infants are not unusually liable to infection or diarrhea. Adults with intestinal tuberculosis are said to be much improved by orange juice or tomato juice (McConkey²²). The synthesis of vitamin C within the past year will make available the pure material for use and will definitely settle some of the differences of opinion that exist.

Vitamin D—In much of the experimental work, the controls have been inadequate. Robertson²³ has reported on an extensive study which shows that the rachitic rat is unusually susceptible to paratyphoid bacilli fed by mouth, sunlight afforded better protection than did ultraviolet radiation from the quartz lamp or than did cod liver oil. Since these agents should have cured the rickets, it is difficult to agree that loss of resistance is due entirely to rickets. Rachitic rats, infected by intraperitoneal inoculation by Bradford and Boynton²⁴ were not more susceptible than normal controls. Ultraviolet irradiation does not confer protection on rats (Hardy and Chapman²⁵) or on mice in artificial epidemics of paratyphoid infection (Hill, Greenwood and Topley²⁶). The resistance of infants to colds and pneumonia is not increased by viosterol, or by irradiation with the carbon arc or mercury vapor quartz lamp (Barenberg, Friedman and Green²⁷, Barenberg and Lewis²⁸), and the tendency to repeated colds in adults cannot be prevented by ultraviolet irradiation (Doull, Hardy, Clark and Herman²⁹), nor do these agents cause healing of bone tuberculosis (Kramer, Grayzel and Shear³⁰) or of pulmonary tuberculosis (Kaminsky and Davidson³¹, Gordon and Tai,³² Scheurlen and Orlowitsch³²). Toxic doses of viosterol

19 Meyer L F. Ueber Immunität und Ernährung im Kindesalter. *Altn Wehnschr* 4:1481 (July 30) 1925.

20 Hagedorn K. Experimentelle Tuberkulose bei normal ernährten Ratten. *Beitr z. Klin d. Tuberk.* 70:389 (1928). Verlauf der Tuberkulose unter Vitaminmangel. *ibid* 72:1 (1929).

21 Bloch C E. Decline in Immunity as a Symptom Due to Deficiency in Vitamin A and in Vitamin C. *Acta paediat* 7:61 (supp 2) 1928.

22 McConkey Mack. The Treatment of Intestinal Tuberculosis with Cod Liver Oil and Tomato Juice. *Am Rev Tuberc* 21:627 (May) 1930.

23 Robertson E C. A Study of the Effect of Various Agents Chiefly Sunlight, upon the Susceptibility of Rachitic Rats to Infection. *Am J Hyg* 9:75 (Jan) 1929.

24 Boynton L C and Bradford W L. Effects of Vitamins A and D upon Resistance to Infection. *J Nutrition* 4:323 (Sept) 1931.

25 Hardy M and Chapman J. Ultraviolet Radiation and Resistance to Infection. Intranasal Infection with the Pneumococcus and with *B. Lepisepitum* in the Rabbit. *Am J Hyg* 13:255 (Jan) 1931.

26 Hill L, Greenwood M and Topley, W W C. The Effect of Ultraviolet Irradiation upon the Resistance of Mice Exposed to Pasteurella Infection. *Brit J Exper Path* 11:182 (June) 1930.

27 Barenberg L H, Friedman, Irving and Green David. The Effect of Ultraviolet Irradiation on the Health of a Group of Infants. *J A M A* 87:1114 (Oct. 2) 1926.

28 Barenberg L H and Lewis J M. The Effect of Carbon Arc Irradiation on the Health of a Group of Infants. *J A M A* 90:504 (Feb) 18 1928.

29 Doull J A, Hardy M, Clark J H and Herman N B. The Effect of Irradiation with Ultraviolet Light on the Frequency of Attacks of Upper Respiratory Infection. *Am J Hyg* 13:461 (March) 1931.

30 Kramer Benjamin, Grayzel H G and Shear M J. Vitamin D in Tuberculosis. *Proc Soc Exper Biol & Med* 27:144 (Nov.) 1929.

31 Kaminsky J and Davidson D L. The Effect of Viosterol on Calcification in Pulmonary Tuberculosis. *Am Rev Tuberc* 24:483 (Oct.) 1931.

32 Scheurlen F and Orlowitsch Walk A. Zur Vitaminbehandlung der Lungentuberkulose. *München med Wehnschr* 77:976 (June 6) 1930.

8 Findlay G M. Relation of Deprivation of Vitamin B to Body Temperature and Bacterial Infection. *J Path. & Bact* 26:485 (Oct) 1923.

9 Corda L. Ueber die Bedeutung der Vitamin B bei natürlicher Immunität der Tauben gegen Milzbrand. *Ztschr f Hyg u Infektionskr* 100:129 1923.

10 Rose W B. Relationship of Vitamin B to Infection and Immunity with Special Reference to *B. Welchii*. *Proc. Soc. Exper Biol & Med* 25:657 (May) 1928.

11 Maurer Siegfried and Tsai L S. Effect of Vitamin B Complex Depletion on Infant Mortality. *Illinois M J* 61:30 (Jan) 1932.

12 Wills Lucy and Talpade S N. Studies in Pernicious Anemia of Pregnancy in Bombay Indian. *J M Research* 18:283 (July) 1930.

13 Wills Lucy and Mehta M M. *ibid*. 18:663 (Oct.) 1930.

14 Jackson L and Moody, A M. Bacteriologic Studies on Experimental Scurvy in Guinea Pigs. *J Infect Dis* 19:511 (Sept) 1916.

15 Wamoscher, L. Ueber Pneumokokkeninfektionen bei verminderter individueller Resistenz. *Ztschr f Hyg* 107:240 1927.

16 Bieling R. Tuberkulose und Ernährung. *Ztschr f Hyg u Infektionskr* 101:442 1924.

17 McConkey Mack and Smith D T. The Relationship of Vitamin C Deficiency to Intestinal Tuberculosis in the Guinea Pig. *J Exper Med* 38:503 (Oct.) 1933.

18 Rinehart, J F, Connor, C L and Mettler S R. Further Observations on Pathological Similarities Between Experimental Scurvy Combined with Infection and Rheumatic Fever. *J Exper Med* 59:97 (Jan) 1934.

18 Keith and Clayton. Personal communication to the author.

may promote calcification of tubercles due to bovine infection in the guinea-pig but not those due to human tubercle bacilli (Spies³³). In a series of infants from 6 to 36 months old studied in the Strong Memorial Hospital, the presence of active rickets was found not to be correlated with the presence of respiratory infections (table 3). In fact rickets was only half as prevalent in children with mild infections as in those without infections. This is probably due to the fact that a certain number of infants are admitted to the hospital for the treatment of uncomplicated rickets. Children with a severe respiratory infection are found to have

TABLE 3—Correlation of Respiratory Infections with Rickets in Children from Six to Thirty-Six Months of Age*

Respiratory Infections	Rickets		
	Absent	Present	Present in
None	31	15	33%
Mild	103	33	17
Severe	92	73	26
Per cent severe	30	50	$K = +0.25$

* The coefficient of Yule K is low indicating a slight correlation between the presence of rickets and severe infection

rickets more frequently than those with mild infections but not so frequently as those without infections. Evidently rickets may create a handicap for an infant with a respiratory infection. This seemed to be especially true in a small series of cases of pertussis. I have been impressed with the frequent occurrence of tetany in severe cases of pertussis (table 4). In a number of infants suffering from infections not of the respiratory tract (most of them having dysentery, pyuria or pyoderma), rickets played no obvious role either as a predisposing factor or in aggravating the infection (table 5).

Vitamin A—McCullum³⁴ first called attention to the extensive spontaneous infections in rats with xerophthalmia, others have confirmed this work and shown that such infections do not depend on an associated

TABLE 4—Correlation of Severity of Pertussis with Presence of Rickets in Children from Six to Thirty-Six Months Old*

Pertussis	Rickets		
	Absent	Present	Present in
Mild uncomplicated	28	2	0.7%
Severe complications	17	8	32
Per cent severe	38	80	$K = +0.74$

* The coefficient of Yule K is large indicating a high degree of correlation

rickets and may be prevented either by purified vitamin A or by carotene (provitamin A) (Drummond,³⁵ Daniels and her associates,³⁶ Green and Mellanby³⁷). Rats deprived of vitamin A are also unusually susceptible to oral infection with certain strains of paratyphoid

33 Spies T D. The Calcification of Tubercles by Means of Irradiated Ergosterol. *Am J Path* 6:337 (May) 1930

34 McCullum E V. The Supplementary Dietary Relationship Among Our Natural Foodstuffs. *J A M A* 68:1379 (May 12) 1917

35 Drummond J C. Researches on the Fat Soluble Accessory Substance I. Observations upon Its Nature and Properties. *Biochem J* 13:81 1919

36 Daniels Amy L, Armstrong Margaret E and Hutton Mary K. Nasal Sinusitis Produced by Diets Deficient in Fat Soluble A Vitamin. *J A M A* 81:828 (Sept 8) 1923

37 Green H N and Mellanby Edward. Vitamin A as an Anti-Infective Agent. *Brit M J* 2:691 (Oct. 20) 1928. Carotene and Vitamin A. The Anti-Infective Action of Carotene. *Brit J Exper Path* 11:81 (April) 1930

bacilli (Orskov and Moltke,³⁸ Orskov and Lassen,³⁹ Lassen⁴⁰) and to intraperitoneal injections of an organism of the mucosus type that is harmless to normal rats (Bradford and Boynton²⁴). In a study of artificial epidemics, Webster and Pritchett⁴¹ found that a diet apparently adequate for growth and reproduction and not causing xerophthalmia was inferior to one richer in vitamin A in preventing infection, this work suggests that a partial deficiency may have existed.

Considerable difference of opinion exists in regard to the relationship of vitamin A deficiency in man and resistance to infection. Although the normal diet should provide ample amounts of this vitamin, the diet actually consumed in times of want may bring about a relative deficiency. Jeans⁴² has shown that 20 per cent of children in certain urban districts of Iowa may have a form of night blindness curable by cod liver oil and therefore undoubtedly due to lack of vitamin A. Spence⁴³ does not believe that xerophthalmia is associated with loss of resistance to infection. The administration of cod liver oil or carotene did not lessen the incidence or severity of infection in the infants observed by Barenberg and Lewis⁴⁴ or by Hess, Lewis and Barenberg⁴⁵. However, very few of the infants observed by these authors had been seen by them until after the age of 6 months, and the earlier diet was not

TABLE 5—Correlation of Presence of Nonrespiratory Infections with Rickets in Children from Six to Thirty-Six Months Old*

Infections	Rickets		
	Absent	Present	Present in
None	31	15	33%
Mild	57	13	19
Severe	20	5	20
Per cent severe	28	23	$K = +0.04$

* The coefficient of Yule K is nearly zero indicating the absence of correlation

stated. Sutcliffe, Place and Segool⁴⁶ administered cod liver oil to a large group of children with scarlet fever without lowering the incidence of otitis media. I⁴⁷ was unable to prevent the complications of scarlet fever by administering carotene, although it was absorbed. In this work and in that of Hess and his colleagues, it seemed likely that the patients were already receiving adequate amounts of vitamin A. It may therefore be concluded that amounts of vitamin A above the usual optimal amounts do not increase resistance to infection.

38 Orskov J and Moltke O. Studien über den Infektionsmechanismus bei verschiedenen Paratyphus Infektionen an weissen Mäusen. *Ztschr f Immunitätsforsch u exper Therap* 59:356 1928

39 Orskov J and Lassen H C A. Die Bedeutung der Grösse der primären Infektionsdosis bei einigen natürlichen Infektionen. *Ztschr f Immunitätsforsch u exper Therap* 67:137 1930

40 Lassen H C A. Experimental Studies on the Course of Paratyphoid Infections in Avitaminotic Rats with Special Reference to Vitamin A. Copenhagen. Levin & Munksgaard 1931

41 Webster, L T and Pritchett I W. Microbic Virulence and Host Susceptibility in Paratyphoid Enteritis Infection of White Mice. The Effect of Diet on Host Resistance. *J Exper Med* 40:1397 (Sept) 1924

42 Jeans P C and Zentmire Zelma. A Clinical Method for Determining Moderate Degree of Vitamin A Deficiency. *J A M A* 102:893 (March 24) 1934

43 Spence J C. Tr. Second International Pediatric Congress, Copenhagen 1930 p 541

44 Barenberg L H and Lewis J M. Relationship of Vitamin A to Respiratory Infections in Infants. *J A M A* 98:199 (Jan. 16) 1932

45 Hess A F, Lewis J M and Barenberg L H. Does Our Dietary Require Vitamin A Supplement? *ibid* 101:657 (Aug. 26) 1933

46 Sutcliffe W D, Place E H and Segool S H. Cod Liver Oil Concentrate (Concentrated Vitamins A and D). Ineffectiveness of Large Doses in the Prophylaxis of Otitis Media Complicating Scarlet Fever. *J A M A* 100:725 (March 11) 1933

47 Clausen S W. Limits of the Anti-Infective Value of Provitamin A (Carotene). *J A M A* 101:1384 (Oct 28) 1933

A number of authors have reported that a deficiency of vitamin A may lower resistance to infection. Bloch⁴⁸ found that infants with xerophthalmia were unusually susceptible to severe infection and to diarrhea and for a period of eight years after recovery from the condition had an unexpectedly high death rate. Green, Pindar, Davis and Mellanby⁴⁹ reported that the frequency of postpartum fever could be reduced by the administration of a concentrate containing vitamins A and D. This work has not been confirmed. Ellison⁵⁰ administered a concentrate of vitamin A in 600 alternate cases of measles, the mortality in the treated cases was 3.7 per cent, in controls it was 8.7 per cent, and in 4,978 cases of measles that were observed in London at the same time it was 8.1 per cent. It is possible that a relative deficiency of vitamin A was present in these children.

It is my opinion that the use of adequate diets before the onset of an infection is of more importance than the administration of vitamin A during an infection. I⁵¹ have found that children with scarlet fever which pursues a favorable course have at the onset a higher level of plasma carotinoids than those in whom severe complications develop (table 6). I have also found⁴⁷ that children who have a low level of plasma carotinoids are more liable to repeated respiratory infections. But a small group of children with abnormally high plasma carotinoids was also susceptible. Infants⁵² who had

TABLE 6—Carotene in Scarlet Fever. All Cases Mild at Onset. Determinations Within Three Days of Onset

Complications	None	Mild	Severe
Number	45	23	9
Units of carotene	70.5	58	40

received cod liver oil from at least the third month of life showed no superior resistance to infection until after the sixth month, but thereafter they appeared to be very much less subject to severe infection. Vegetables containing carotene, if begun at the sixth month, also appeared to influence favorably the course of an infection up until the end of the second year (table 7). The type of feeding during the first year of life had no demonstrable effect after the second year.

The previous diet in another group of 317 infants between birth and 36 months of age was studied with special reference to the intake of extra vitamin A. The diet was considered "good" in this respect when cod liver oil had been administered at least from the age of 3 months and vegetables from the age of 6 months. If, however, rickets had developed in spite of cod liver oil, it was inferred not only that the quantity of vitamin D had been insufficient but also that the quantity of vitamin A had not been sufficient. The infections were classified as mild and severe. The data as arranged in table 8 indicate that previous bad nutrition is more frequent in children whose infections are severe and that severe infections are twice as frequent in children whose previous diet has lacked additional vitamin A.

- 48 Bloch C E. Effects of Deficiency in Vitamins in Infancy. *Am J Dis Child* 42: 263 (Aug.) 1931.
49 Green H N, Pindar D, Davis G and Mellanby Edward. Diet as a Prophylactic Agent Against Puerperal Sepsis with Especial Reference to Vitamin A as an Anti-Infective Agent. *Brit M J* 2: 595-598 (Oct. 3) 1931.
50 Ellison J B. Intensive Vitamin Therapy in Measles. *Brit M J* 2: 708 (Oct. 15) 1932.
51 Clausen S W. Carotenemia and Resistance to Infection. *Am J Dis Child* 42: 698 (Sept.) 1931.
52 Clausen S W. *Bull New York Acad Med* 10: 471 (Aug.) 1934.

MECHANISM OF THE LOSS OF RESISTANCE TO INFECTION IN DIETARY DEFICIENCY

It is generally agreed that the ability to produce circulating antibodies is normal in dietary deficiencies (Muller,⁵³ Werkman,⁵⁴ Simola and Brunius,⁵⁵ Greene⁵⁶) but that the general resistance to toxins and poisons may be diminished (Werkman⁵⁷). In deficiency of vitamin A, the leukocytes are normal in animals (Turner and Loew⁵⁸) and in man (Hennessey⁵⁹). The protective reaction of the tissues may, however, be inadequate in dietary deficiency. In scor-

TABLE 7—Correlation of Infections with Previous Feeding

Diet		0-6 Months Infections per Cent					6-24 Months Infections per Cent				
Cod Liver Oil	Vegetables	Number	None	Moderate	Severe	Severe/Total	Number	None	Moderate	Severe	Severe/Total
0	0	35	40	37	23	0.38	50	14	40	16	0.54
+	0	27	56	20	15	0.34	21	9.5	86	4.6	0.05
0	+						77	25	60	15	0.21
+	+						56	41.1	55.4	2.5	0.06
		2-6 Years					6-14 Years				
0	+	267	32.5	50.1	12.4	0.18	712	55.0	39.6	4.45	0.10
+	+	124	60.5	34.7	4.8	0.12	123	62.6	32.5	4.58	0.13

butic guinea-pigs the bone marrow does not show signs of reaction during an artificial infection (Findlay⁶⁰). The metaplasia of specialized epithelium in deficiency of vitamin A is a sufficient explanation of spontaneous infections, for they do not occur before the metaplasia has taken place (Arons and van der Rijst,⁶⁰ Harris, Innes and Griffith⁶¹). The more severe course of infections due to oral or intraperitoneal inoculation is probably to be explained by the inability of the tissue phagocytes of the liver, spleen and bone marrow to hold and destroy bacteria. More study should be

TABLE 8—Previous Bad Diet and Presence of Severe Infection*

	Previous Diet		
	Number		Per Cent Bad
	Bad	Good	
Present	127	19	87
Absent	113	58	60
Per cent severe	58	25	K = +0.55

* Influence of previous diet on severity of infection during infancy.

directed to the protective activity of the tissues in dietary deficiency.

- 53 Muller T. Zur Theorie der natürlichen antibakteriellen Immunität. *Zentrbl f Bakt* 34: 456-550, 700, 1903. Ueber den Einfluss künstlicher Stoffwechselalterationen auf die Produktion der Antikörper. *Arch f Hyg* 51: 365, 1904.
54 Werkman C H. Immunological Significance of Vitamins. *J Infect Dis* 32: 247 (April) 1923.
55 Simola P E and Brunius E. Vitamins and Immunity. Complement Content and Immune Hemolysin Formation in A and C Avitaminosis. *Biochem Ztschr* 258: 228, 1933.
56 Greene M R. Effects of Vitamins A and D on Antibody Production and Resistance to Infection. *Am J Hyg* 17: 60 (Jan.) 1933.
57 Werkman C H, Baldwin F M and Nelson V E. Immunological Significance of Vitamin V. Resistance of the Avitaminotic Albino Rat to Diphtheria Toxin. *J Infect Dis* 35: 549 (Dec.) 1924.
58 Turner, R. G. and Loew E R. Effect of Withdrawal of Vitamin A on Leukocyte and Differential Count in the Albino Rat. *Proc Soc Exper Biol & Med* 28: 506 (Feb.) 1931.
59 Hennessey R S F. A Study of the Leukocyte Output of Man Under Varying Conditions of Vitamin A Intake. *Tr Roy Soc Trop Med & Hyg* 26: 55 (June) 1932.
60 Arons P and van der Rijst M P J. The Cause of Infections Following Lack of Vitamin A. *Nederl tijdschr v geneesk* 76: 5445 (Nov. 26) 1932.
61 Harris L J, Innes J R M and Griffith A S. On the Pathogenesis of Avitaminosis A. *Lancet* 2: 614 (Sept. 17) 1932.

SUMMARY

Loss of resistance to infection has been established by animal experiments in cases of deficiency of vitamins A and C, and with some degree of certainty in cases of deficiency of vitamin B. Clinical observations also indicate that loss of resistance to infection occurs in man with outspoken deficiency of vitamin A and probably of vitamin C. There is some indication but not yet certainty that animals with rickets are more susceptible to certain infections. Rachitic infants are no less resistant than nonrachitic infants to infections outside the respiratory tract, it is not yet certain that their resistance to respiratory infections in general is decreased by rickets, with the exception of pertussis, in which disease resistance is very much decreased.

There exists no evidence in experiments with animals or in clinical observation that the addition of any of the vitamins to the diet will increase the resistance to infection of the host when the host has already been consuming a normal diet. There is also no evidence that a good diet will decrease the number of infections during the first six months of life. There is some evidence that an adequate diet in the early months of life may decrease the severity of infections during the latter part of the first year and during the second year. There is little reason to believe that the administration of vitamins after the onset of an acute infection will exercise any benefit on resistance. Chronic infections have so far not been adequately observed with the exception of tuberculosis.

Beyond doubt a constitutional state exists in infants, characterized by the susceptibility to infection and a loss of resistance. This state tends to persist. Many factors besides diet contribute to this state: age, sex, heredity, allergy, prematurity and earlier severe illness. I believe that an early adequate diet, particularly one rich in vitamin A, tends to prevent the development of this condition.

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ABSTRACT OF DISCUSSION

DR. JESSE R. GERSTLEY, Chicago. I want to raise a point that has been perplexing me during these last years. Has the quantity or the proportions of the diet any effect on the child's resistance to infection? Dr. Clausen has devoted himself largely to a study of the vitamins. For many years pediatricians have felt strongly that mixtures low in fat and high in sugar lead to two types of disturbance in the infant. First, the actual resistance to infection is diminished, second the nutritional reaction as expressed by the loss of weight is much more severe. In recent experimental work I have used mixtures of whole cow's milk with 12 per cent carbohydrate. It has seemed to me that babies receiving this feeding showed a diminished resistance to the usual ward infections and also lost more weight during such infection than did the babies on breast feeding. I am wondering whether this is the experience of other observers and if so whether they believe that the unfavorable results are due to the high carbohydrate per se or to the factor of simple overfeeding. It seems to me that the study of the elements of the diet and the effects of overfeeding on reaction to infection have not been made the object of sufficient study. May I ask Dr. Clausen whether he believes that the factors in the diet relating to resistance to infection are limited to the vitamins.

DR. S. W. CLAUSEN, Rochester, N. Y. I am sorry that no data exist in the literature in which a real study has been made of the subject Dr. Gerstley asks about. I think one of the earliest observations bearing on the subject of fat and resistance to infection is that of Vail in England who studied the dietaries of tuberculous patients and who found that fat tended to prevent tuberculosis. When one considers that fat

is the most expensive form of food, it is probable that those who are getting a high fat diet were living in better circumstances. Objections of this kind can be raised against many of the published clinical studies. In Budapest, about 1904 or 1905, the observation was made that babies who had been fed on sweetened condensed milk, which was low in fat and protein resisted infections very badly. As soon as they entered the hospital they would immediately lose a great deal of weight, and many of them developed pneumonia. No control studies were made.

EFFECT OF AUTOLYSIS ON POTENCY OF LIVER IN TREATMENT OF PERNICIOUS ANEMIA

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In 1928 one of us investigated the question of whether the hematopoietic activity of mammalian liver and kidney demonstrated in the treatment of pernicious anemia by Minot and Murphy¹ and by McCann² was due to processes occurring in these organs after the death of the animal. For technical reasons the experiments were carried out with the pulp of lambs' kidneys in which postmortem autolysis was prevented within two minutes after the death of the animals, by boiling the material for five minutes in acidified water at pH 5. The daily administration to each of two patients with pernicious anemia of about 200 Gm of such kidney pulp during periods of ten days indicated an unimpaired potency in comparison with that of identical amounts of material prepared in a similar fashion from lambs' kidneys purchased in the market. Because the results of the observations were entirely negative, they were not published.

In 1932 Herron and McElroy³ reported the results of observations "suggesting that autolysis markedly increases the potency of liver in the treatment of pernicious anemia." The following year the same investigators⁴ published their results obtained in the treatment of thirteen cases of pernicious anemia with autolyzed liver. An analysis of the data on which their conclusions are based does not, however, entirely support their statement that "the oral dosage requirement of autolyzed liver approaches the intramuscular requirement of other liver preparations." To justify this statement the enhancement of potency would have to be at least thirty fold,⁵ and maximal reticulocyte responses and increases in erythrocytes should have occurred from the daily oral administration of the autolysate from 10 Gm of liver.⁵

Based on the well recognized features of the reticulocyte response to the administration of a single massive dose of liver extract, their case 13⁴ must at once be discarded, because the data presented indicate that the

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1 Minot G. R. and Murphy W. P. Observations on Patients with Pernicious Anemia Partaking of a Special Diet. *Tr. A. Am. Physicians* 41: 72, 1926.

2 McCann W. S. Effect of Kidney on Blood Regeneration in Pernicious Anemia. *Proc. Soc. Exper. Biol. & Med.* 25: 255 (Jan.) 1928.

3 Herron W. F. and McElroy W. S. Autolyzed Liver Therapy in Pernicious Anemia. *Science* 76: 127 (Aug. 5) 1932.

4 Herron W. F. and McElroy W. S. The Use of Autolyzed Liver in the Treatment of Pernicious Anemia. A Preliminary Report. *J. A. M. A.* 100: 1084 (April 8) 1933.

5 Strauss M. B., Taylor F. H. L., and Castle W. B. Intramuscular Use of Liver Extract. *J. A. M. A.* 97: 313 (Aug. 1) 1931.

reticulocyte peak of 38 per cent occurred on the day following the first dose of autolyzed liver. Such a reaction is unknown as a response to therapy given the previous day. In response to the administration within four days of material derived from 810 Gm of autolyzed liver, case 2 yielded a maximal reticulocyte response, as did case 7 after the administration within two days of material derived from 400 Gm of autolyzed liver. Cases 1, 3, 4, 5 and 6 showed distinctly submaximal numbers of reticulocytes at the peak of their rise in response to the administration within three days of material derived from 600, 750, 450, 400 and 600 Gm of autolyzed liver respectively.

Examination of the data of Herron and McEllroy for increases in erythrocytes during the initial period of thirty days of therapy demonstrates that the results are by no means maximal for patients initially with 3 million or less red blood cells per cubic millimeter. In comparable patients, according to Minot and Murphy,⁶ the expected increase in erythrocytes after thirty days of the feeding of about 200 Gm of liver daily is on the average about 1.9 million per cubic millimeter. The greatest increase in erythrocytes in the first thirty days of treatment of the six patients (1, 2, 3, 4, 5 and 9) with initial red blood cell counts of 3 million per cubic millimeter or less occurred in case 3 and amounted to about 1.7 million per cubic millimeter, but this patient was given a transfusion with 500 cc of blood and given two parenteral injections of liver extract No. 343 (N N R) in addition to the daily ingestion of the autolyzed liver. The average increase in erythrocytes in five of the patients (1, 2, 3, 4 and 9) was only 0.92 million per cubic millimeter at the end of thirty days. After twenty-five days of treatment, patient 5 had fewer erythrocytes than at the start. However, three patients with initial red blood cell counts of over 3 million per cubic millimeter (10, 11 and 12) gained an average of over a million cells per cubic millimeter in thirty days.

It is certainly worth knowing, both from a scientific and from a practical point of view, whether autolysis actually increases the potency of liver. Since there is now available a commercial autolyzed liver product made according to Herron and McEllroy's directions, a sufficient amount of this material⁷ was purchased in the open market for a series of controlled clinical tests. The package literature states that each gram of the autolyzed liver product is derived from approximately 7 Gm of fresh liver and represents the antianemic potency of from 20 to 30 Gm of fresh liver. The method of testing involved making a comparison of the reticulocyte response produced by the daily administration of a uniform submaximal dose of the material to be assayed with the reticulocyte response obtained from a known source of active material similarly administered during an immediately succeeding period. If a second reticulocyte peak occurs under these conditions, it indicates that the potency of the known substance administered in the second period is greater than that of the unknown substance first administered.⁸

Three patients were given daily 10 Gm of the commercial autolyzed liver preparation derived from 70 Gm of liver and stated to have the antianemic potency of from 200 to 300 Gm of raw liver. As may be seen from the accompanying table, the red blood cells and

hemoglobin remained essentially unchanged in all three patients after ten days of such treatment. The reticulocytes rose to 62 per cent in case 1, a distinctly submaximal value at an initial red blood cell level of 1.95 million per cubic millimeter. During the next ten days, patient 1 received daily a commercial preparation of fraction G of Cohn, Minot, Alles and Salter,⁹ having the antianemic potency of 200 Gm of fresh liver.¹⁰ This material is actually derived from 300 Gm of liver, but approximately one third of the potency is lost in the process of manufacture.¹¹ By the sixth day the patient's reticulocytes had risen to 19.8 per cent. This observation clearly demonstrates that the autolysate from 70 Gm of liver did not have the potency of liver extract equivalent in effectiveness to 200 Gm of fresh liver. In the table data are given for only the actual period of administration of the substances named.

Comparison of Commercial and Experimental Autolysates of Liver With Other Sources of Material Active in Pernicious Anemia

FIRST PERIOD									
Daily Administration of Substances as Indicated Below									
Commercial Autolysate Derived from 70 Gm of Liver*								Experimental Autolysate Derived from 70 Gm of Liver†	
Case 1		Case 2		Case 3		Case 4			
Days	Red Blood Cells Millions	Reticulocytes per Cent	Red Blood Cells Millions	Reticulocytes per Cent	Red Blood Cells Millions	Reticulocytes per Cent	Red Blood Cells Millions	Reticulocytes per Cent	
0	1.95	2.5	1.46	0.8	1.26	1.0	0.85	1.2	
2	2.65	2.6	1.58	0.6	1.38	0.8		0.4	
4	2.07	2.2	1.13	0.4	1.23	1.5	0.57	2.2	
6	1.73	3.8	1.49	0.8	1.20	3.6	1.11	3.2	
8	1.82	5.0	1.39	0.6	1.23	7.0	1.65	7.0	
10	1.19	6.2	1.33	1.6	1.47	5.8	1.51	6.8	
SECOND PERIOD									
Daily Administration of Substances as Indicated Below									
Liver Extract No. 343 Derived from 300 Gm of Liver		Minced Raw Liver 200 Gm		Minced Raw Liver 70 Gm					
		Case 1		Case 2		Case 3		Case 4	
		Red Blood Cells Millions	Reticulocytes per Cent	Red Blood Cells Millions	Reticulocytes per Cent	Red Blood Cells Millions	Reticulocytes per Cent	Red Blood Cells Millions	Reticulocytes per Cent
2		1.01	5.8	1.24	2.2	1.63	6.7	1.15	4.0
4		2.31	13.2	1.51	6.2	1.65	8.0	1.06	2.4
6		2.44	19.8	1.45	20.2	1.62	8.8	1.05	3.0
8		2.55	10.4	1.76	25.6	1.69	12.8	1.36	5.9
10			5.2	1.02	17.0	1.85	9.2	1.07	7.0
12				2.53	12.4	2.45	7.2	1.29	13.6
14								1.34	17.0

* Ten Gm of powder stated to be equivalent to from 200 to 300 Gm of liver.

† Total liquid, 257 cc derived from autolysis of 70 Gm of liver.

Patient 2 likewise received 10 Gm of "autolyzed liver concentrate" for ten days. No significant change in reticulocytes, red blood cells or hemoglobin occurred. During the next ten days this patient received daily 200 Gm of minced raw liver. The reticulocytes commenced to rise on the third day, reaching a peak of 25.6 per cent on the eighth day. This observation corroborates that made on the first patient and fails to substantiate the claim that autolysis, as employed in the commercial process, increases the potency of the liver three or four fold.

Patient 3 received daily the same quantity of the autolyzed liver preparation as the first two patients.

⁶ Minot, G. R. and Murphy, W. P. Treatment of Pernicious Anemia by a Special Diet. *J. A. M. A.* 87: 470 (Aug. 14) 1926.
⁷ Autolyzed Liver Concentrate-Squibb N N R.
⁸ Minot, G. R. The Interpretation of Reticulocyte Responses in Pernicious Anemia. *Tr. A. Am. Physicians* 49: 1934.

⁹ Cohn, E. J., Minot, G. R., Alles, G. A., and Salter, W. T. The Nature of the Material in Liver Effective in Pernicious Anemia. *J. Biol. Chem.* 77: 325 (May) 1928.
¹⁰ Liver Extract Lilly N N R.
¹¹ Minot, G. R. and Castle, W. B. The Adequate Treatment of Anemia. *Ann. Int. Med.* 5: 159 (Aug.) 1931.

The reticulocytes reached a peak of 7 per cent on the eighth day. During the next twelve days this patient received 70 Gm of minced raw liver daily, which is the same amount of liver as that from which the "autolyzed liver concentrate" previously administered was stated to have been derived. On the eighth day of this treatment the reticulocytes reached a second peak of 12.8 per cent. This observation demonstrates no increase in potency of liver by the process of commercial autolysis. Actually a diminution in the amount of effective material had occurred, a fact that is in accord with many observations showing that any method of extraction of liver results in a loss of potent material.

The commercial product used in the foregoing tests was manufactured under a license to use U. S. patent application serial number 620301. With the claims for potency referred to, it is among the products accepted by the Council on Pharmacy and Chemistry of the American Medical Association. The commercial process may conceivably, however, have deviated from the one originally recorded by Herron and McEllroy. Accordingly, we made an autolyzed liver preparation in exact accordance with the directions given by these workers.⁴ This material, in amounts derived from 70 Gm of minced liver, was administered daily to patient 4 for ten days. A rise of reticulocytes to 7 per cent occurred on the eighth day. This patient was then given 70 Gm of minced raw liver daily. A second rise of reticulocytes, this time to a peak of 17 per cent occurred on the fourteenth day. This delayed response was probably caused by diarrhea produced by the raw liver when first administered. It demonstrates that an autolysate of liver made according to the directions of Herron and McEllroy, far from having an increased potency, contains less active material than the original amount of raw liver.

CONCLUSIONS

1. The hematopoietic activity in pernicious anemia of kidney, and presumably of liver, does not depend on postmortem autolysis.

2. Experimental and commercial autolysates of liver, made according to the directions of Herron and McEllroy, have less hematopoietic activity in the treatment of pernicious anemia than the amounts of liver from which they are derived.

The Most Severe Dancing Mania—In Erfurt in 1237 over one hundred children were taken with a dancing and raving disease, which again in many cases led to death and permanent tremors in the survivors. The most severe dancing mania began in 1374 in the wake of the Black Death at first at Ayl-la-Chapelle soon in the Netherlands at Liege, Utrecht, Tongres and Coogne. Men, women and children lost all control, joined hands, and danced in the streets for hours until complete exhaustion caused them to fall to the ground. They shrieked, saw visions, and called upon God. The movement spread widely, and undoubtedly the numbers of the truly afflicted were enhanced by multitudes of the easily excited in a manner not unlike that observed in modern camp meetings and evangelistic gatherings. Yet there must have been a physical disease in many of the cases because throughout the accounts there is frequent reference to abdominal swelling and pain, for which the dancers bound their bellies with bandages. Many suffered from nausea, vomiting and prolonged stupor. The condition was sufficiently widespread and important to warrant a long dissertation by Paracelsus who tried to classify the malady into three subdivisions by a system not of sufficient modern importance to warrant review.—Zinsser, Hans. *Rats, Lice and History*. Boston: Little Brown & Co. 1935.

SURGICAL COMPLICATIONS IN THE TREATMENT OF GONORRHEA

INDICATIONS AND METHODS

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In the preparation of this paper, an analysis was made of 1,000 consecutive cases treated for gonorrhea, the last 500 cases treated privately in my office and the last 500 cases treated in the free clinic at the Sinai Hospital being selected.

It was interesting to note that more complications of gonorrhea were observed among the private than among the free cases. This may be due to the fact that when a complication arises the patient is usually confined to bed and therefore the free case does not return to the clinic but is seen by another physician at home, or that the case was first seen by us in the complicated form. It was also observed that in the largest percentage of cases the complication occurred in the acute stage of gonorrhea.

I have not attempted in this study to bring forth the various methods of handling these complications but simply base my conclusions on the methods we have employed. These undoubtedly will differ in some instances with other investigators but as I am unbiased I am open to constructive criticism.

The complications that may occur during the course of treatment of gonorrhea differ, depending on whether the case is first seen as an acute or as a chronic one. There were almost three times as many acute cases of gonorrhea seen in the free clinic as were seen privately, yet the acute complications seen privately were many more than those seen in the clinic.

These 1,000 cases may be divided as in table 1.

The acute complications occurring while the patient was being treated for acute gonorrhea were observed in 209 cases out of 540 patients treated, or 38.5 per cent. The acute complications occurring in patients treated for chronic gonorrhea were found in thirty-two out of 460 cases, or 7 per cent.

Chronic complications seen in these 1,000 cases were observed in 358, or 35.8 per cent, of the cases. In many instances more than one complication was seen in the same patient and in most cases a chronic complication followed the subsidence of the acute one.

The complications that may occur during the course of treatment of gonorrhea are listed in table 2.

While some of the complications occur much more frequently than others, it has been observed that it is necessary to treat most of these complications surgically at some time or other, depending on the individual case. It is true that in most cases the complications were handled at first conservatively, and that surgery was employed after conservatism had failed. It is also quite true that many times surgery was necessary even after conservative treatment had been tried. In many cases in the series it was found that when the complication was treated early by surgical methods it was the most conservative form of treatment, especially in the acute complications. In other instances surgery was employed because of complicated sociological or economic conditions and in some instances was employed to avoid embarrassment.

From the Department of Genito-Urinary Surgery, Sinai Hospital. Read before the Section on Urology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

It has been found that early surgery in the acute complications of gonorrhea resulted in quicker convalescence and was the most economical causing the patient to be totally disabled for the least number of days.

In this analysis it was found that surgery was employed in both the acute and the chronic cases but, as mentioned before, in considerably more cases in the acute stages than in the chronic stages. Opportunity was taken of performing surgery on every type of complication that might be amenable to surgery, both for the purposes of investigation and for the necessary relief in most cases. In some of the cases in which it was performed for investigative purposes it was noticed that no more beneficial results were obtained than if surgery had not been employed, such as prostatotomy in cases of chronic prostatitis.

Since most of the complications requiring surgery are acute cases or acute cases superimposed on a chronic case the indications are quite similar. The various conditions mentioned have symptoms in common when in the acute stage, such as pain, swelling, chills and fever, and urinary disturbances, such as frequency, painful urination, urgency, and sometimes urinary retention and urinary fistula. In a study of the blood it was found that there is some degree of leukocytosis present. Frequently a toxemia presented itself, especially when there was an overwhelming infection.

TABLE 1—Classification of One Thousand Cases

	Private Cases	Free Cases
Acute gonorrhea	145	885
Chronic gonorrhea	355	105

In this series of 1,000 cases treated, eighty-six, or 8.6 per cent, of the cases came to surgery, and operations were performed for the conditions shown in table 3. In this series no operation was done for perineal or urethrocutaneous fistula, sterility or pyonephrosis, but I have had the opportunity of performing, on previous occasions, operations for all these complicated conditions excepting for gonorrheal pyonephrosis.

Considering the conditions separately as to when surgery was indicated and the type of surgical procedure that was employed, it will be necessary, in order to understand the procedures, to consider each one separately.

EPIDIDYMITIS

Most of the cases of acute gonorrheal epididymitis, if permitted, will subside with the ordinary treatment of rest, support of the scrotum, and the application of ice. During the course of treatment the patient is usually uncomfortable and in most cases suffers a moderate or extreme amount of pain. It may be considered radical but I feel that, when the pain is increasing in severity and the infection is gradually involving more of the epididymis, open surgery is indicated, first to relieve the pain, which is relieved almost immediately, and secondly to preserve the patency of the epididymis and vas deferens if possible.

The production of pain is caused not by the presence of pus but by the presence of congestion and edema in the epididymis, during this pathologic process plus the presence of free fluid between the layers of the tunica vaginalis. It is rare that free pus is found in the epididymis in acute gonorrheal epididymitis. The usual procedure is to do an epididymotomy, by making numerous punctures in the epididymis throughout its

course, together with opening the tunica vaginalis and permitting the free fluid to escape. I also evert the sac by doing a Bottle operation on the tunica vaginalis. In operating on these patients, a careful examination is made of the epididymis. If it was observed that the pathologic process was very marked with a possibility that the lumen might be obliterated, or free pus found, or that it was a case of a recurrent acute epididymitis, an epididymectomy was performed.

Criticism undoubtedly will be made because of the latter procedure, but I have found that, when I did an epididymotomy in cases in which free pus was present, a recurrent epididymitis resulted. If the patient was

TABLE 2—Complications of Gonorrhea

1 Epididymitis	10 Inguinial adenitis (suppurating)
2 Prostatitis	11 Urinary extravasation
3 Seminal vesiculitis	12 Perineal fistula
4 Perilurethral abscess	13 Urethrocutaneous fistula
5 Phimosi and paraphimosis	14 Para urethral duct infection
6 Prostatic abscess	15 Sterility
7 Cowperitis	16 Pyelitis and pyonephrosis
8 Urethral stricture	17 Trigonitis and cystitis
9 Veru montanitis	18 Septicemia

an unmarried or young married man, epididymotomy was always performed, but if the patient was one who had two or more children, an epididymectomy was performed, always with an explanation to the patient beforehand that the procedure might be advisable or necessary. Bilateral epididymectomy was never performed except when it was a bilateral recurrent condition in a married man with children.

In this study there were 175 cases, or 17.5 per cent, of epididymitis occurring during the course of treatment for gonorrhea, both acute and chronic. In 540 cases treated for acute gonorrhea, acute epididymitis developed in 143, or 26.4 per cent. In 460 cases treated for chronic gonorrhea, acute epididymitis developed in thirty-two, or 6.9 per cent.

Of the 175 patients with acute epididymitis, forty-four, or 25.1 per cent, came to operation. The others

TABLE 3—Complications Leading to Operation

Condition	Number of Cases
1 Epididymitis	44
2 Acute prostatitis	2
3 Chronic prostatitis	2
4 Prostatic abscess	4
5 Inguinal adenitis	1
6 Perilurethral abscess	9
7 Seminal vesiculitis	10
8 Arthritis associated with seminal vesiculitis	2
9 Phimosi and paraphimosis	5
10 Urethral stricture	3
11 Cowperitis	3
12 Urinary extravasation	1

either refused an operation, or the condition had subsided sufficiently in a few days to make it appear that an operation was not necessary. In the forty-four patients operated on, twelve, or 27.2 per cent, had an epididymotomy, and thirty-two, or 72.8 per cent, had an epididymectomy. Two patients had a bilateral epididymotomy and three patients had a bilateral epididymectomy.

Three of the twelve patients who had an epididymotomy performed developed a recurrence at some future date, resulting in subsequent epididymectomy.

In the thirty-two cases in which epididymectomy was performed, three presented free pus in the epididymis and twenty-eight, or 87.5 per cent, showed definite occlusion of the lumen when studied microscopically. In the thirty-two cases in which a unilateral

epididymectomy was performed, a subsequent epididymitis developed on the opposite side in four cases, none of which came to operation. In twelve cases in this group the patient became the father of a child on some subsequent date.

In the chronic stage of epididymitis, no operative procedure was employed excepting when the patient complained of a chronic pain or when I felt that it was a focus of infection. This was carried out in three cases.

ACUTE PROSTATITIS

During the course of treatment of acute gonorrheal urethritis, a sudden cessation of the urethral discharge is observed at times, followed by a burning, painful and frequent urination, associated with marked tenesmus. The patient suffers a discomfort in the rectum and on examination there is a sensation of warmth elicited over the prostate. The prostate is painful to pressure and is enlarged in several areas. In most instances these signs and symptoms are accompanied by chills and fever, with a general weakness and frequently nausea. The usual form of treatment is hot sitz baths, rest, forced fluids, opium and belladonna suppositories, and sometimes some instillations of 5 per cent mild silver protein into the posterior urethra are beneficial. Most of these cases subside under the usual form of treatment. I have taken two of the prolonged cases in which there was a great deal of pain and which failed to subside over a reasonable length of time and performed a prostatotomy through a perineal exposure by making numerous punctures in the prostate and draining these areas with rubber tissue drains for about one week. It is rare in these cases that free pus is found, but the reduction of the congestion and edema gives remarkable results. I feel that punctures in these cases will prevent a prostatic abscess in many instances. The two cases that were seen subsided promptly.

CHRONIC PROSTATITIS

When the condition became chronic, it did not lend itself to surgery. In the past two years two cases of chronic prostatitis became the subjects of surgical procedure. There are no definite indications for surgery of the prostate in the chronic gonorrheal stage. I have subjected two patients to prostatotomy, the same as when performed in the acute stage. As there were no definite indications for surgery excepting the chronicity of the condition, demonstrated by numerous pus cells with clumps in the prostatic secretion, this method was employed without any satisfactory results.

PROSTATIC ABSCESS

One of the most common complications resulting from gonorrhea requiring surgical intervention is a prostatic abscess. This occurs during the course of treatment for acute gonorrheal urethritis and as a rule occurs between the second and fourth weeks of treatment. There is probably no complication of gonorrhea excepting epididymitis that produces more discomfort and pain than a prostatic abscess. The early symptoms of these cases are chills and fever, painful, urgent and frequent urination, and often acute urinary retention. A rectal examination reveals a large, soft, boggy and painful prostate, which fluctuates.

The early cases were treated palliatively by rest, hot rectal douches, sitz baths, opium and belladonna suppositories and, when necessary, the introduction of catheters into the bladder. In the last five years, the method of handling this situation is to recommend early operation. I prefer whenever possible to per-

form a perineal section and after the rectovesical fascia has been stripped posteriorly to incise the prostate in several areas and drain these areas. Care is taken not to open the urethra or extend the incision into the bladder. I prefer not to place catheters in the bladder. If the patient has had an acute retention before the operation, I have found that in less than twenty-four hours after the operation he is again able to void and with considerably less discomfort. Only four cases of prostatic abscess came to operation. Large quantities of pus were discharged at the time of operation, giving the patient almost instant relief.

INGUINAL ADENITIS

The enlargement of the inguinal glands is usually not associated with gonorrhea. In the analysis of the cases I found that in one case during the course of treatment of acute gonorrhea the inguinal glands became enlarged and suppurated. There were no other lesions present on the penis to account for the unilateral infection. The presence of pain in this region and the fluctuation in the broken down glands are indications for incision. Opening and draining this area is sufficient to permit of healing.

PERIURETHRAL ABSCESS

The closure of one of the glands of Littre producing a swelling and lump in the penis is known as a periurethral abscess. This usually occurs early in the course of the disease, causing the patient quite a good deal of discomfort. In its early stage the patient usually complains of a lump on the penis which is painful and in many instances causes painful urination with obstruction to the flow of urine. There were nine such cases that came to operation.

Again palliative measures were often tried with a disappearance of the acute symptoms, but in most instances there is a chronic discharge present from the infection. Frequently the abscess ruptures in the urethra or at times ruptures externally, sometimes leaving a urinary fistula. If the condition, when seen demonstrates a definite abscess early incision and drainage externally will give quick relief. Care should be taken to avoid opening the urethra from the outside, otherwise a urinary fistula results. Should the abscess open into the urethra of its own accord, a small nodule forms, which is the result of fibrosis. This frequently causes a urethral discharge and is treated by massaging the gland over a sound.

ACUTE AND CHRONIC SEMINAL VESICULITIS

In the acute stage the symptoms are similar to prostatitis and practically always are associated with it. The same form of palliative treatment was employed in the acute stage as for acute prostatitis. Surgery has been employed in the acute stage in only two cases by incision and drainage of the seminal vesicles through a perineal exposure.

In the chronic stage, the condition was likewise associated with chronic prostatitis. Cases have come to surgery because of persistent urethral discharges, urinary discomforts, and the presence of pus in the urine. There were a few cases in which the patients had vague symptoms of joint pains. In three cases seminal vesiculotomy and in two seminal vesiculectomy were performed. In five cases the seminal vesicles were injected through the vas deferens.

The results obtained from the drainage of the seminal vesicles in the acute stage gave relief of the rectal discomfort of the pain and of the urinary discomforts.

The drainage of the seminal vesicles or the removal of them in the chronic stage showed no evidence of any special improvement. The injections of the vasa deferentia through the scrotum did not give the results that one might expect. All these cases had to be treated subsequently even though operation had been done. In those cases in which joint symptoms were present the operation gave relief for a short time.

ARTHRITIS ASSOCIATED WITH SEMINAL VESICULITIS

The presence of pain in a single joint during the course of treatment of gonorrhea is usually indicative of a gonorrheal arthritis. Other joints may eventually become involved but it appears that one joint at a time becomes affected. This joint usually becomes swollen and hot to the touch, motion is restricted and painful and the patient usually has a fever. The condition gets into the joint through the blood stream from the posterior urethra. Two cases of arthritis associated with seminal vesiculitis came to operation.

No case of acute gonorrheal arthritis came to operation, but two cases of supposedly chronic gonorrheal arthritis came to operation because of chronic pains in a joint. The seminal vesicles were indurated and contained many pus cells. The seminal vesicles were opened and drained through a perineal exposure relieving these two patients of their pain. Subsequent treatments in the way of massages of the seminal vesicles were continued.

PHIMOSIS AND PARAPHIMOSIS

In the presence of a discharge from the urethra, which very frequently becomes secondarily infected the undersurface of the prepuce becomes edematous and injected. As the process continues one finds marked swelling of the prepuce, so that it becomes impossible to retract the prepuce. In many cases the infection is kept up by the smegma, which normally is present around the corona. This condition is known as phimosis.

When the prepuce becomes edematous and swollen preventing the prepuce from being drawn over the glans penis, because of infection, the condition is known as paraphimosis.

As little surgery as is possible should be performed in these instances in the presence of infection. In many instances one is compelled to expose the glans penis, first to reduce the pain secondly to treat the gonorrheal infection, and thirdly because of the constriction of the prepuce around the glans. When these symptoms and signs are present and the prepuce cannot be drawn over the glans penis a dorsal slit should be performed. In the case of phimosis, when it is found impossible to treat the gonorrhea properly a dorsal slit should be performed, and the circumcision completed after the gonorrhea is treated.

URETHRAL STRICTURE

The presence of a long standing urethral discharge with infection in the glands of Littre frequently results in fibrosis and scar tissue with the result that a stricture of the urethra is formed. In this series of cases, most of the strictures were encountered at the bulbomembranous urethra. In some instances they have occurred in the membranous urethra. The early method of treatment was incising the stricture when it was found to be of a filiform type and would not dilate easily, or if there was a great deal of bleeding following a dilation. Incision of the stricture was never supposed to keep the stricture dilated, so that in

the past twelve years I have not resorted to incising the strictured area but to keep dilating it with filiforms and followers.

Whenever I was unable to pass a filiform by the stricture after numerous attempts or unable to keep the strictured area well dilated, I advised a retrograde operation. Three patients in this series submitted to such an operation with excellent results. In this operation a suprapubic cystotomy and a perineal exposure were made. Separate sounds were passed from the external meatus down the urethra and also one into the vesical orifice from the bladder. Both would become obstructed at the point of the stricture and would usually be palpated in the perineum. An incision was made over the tip end of each sound, the old urethra discarded at this point and a tube passed over the end of each sound. One end of the tube is passed up the urethra and out into the external meatus and the other through the internal vesical orifice and into the bladder. In this manner the tube is continuous throughout. There is no tissue sutured over the tube but left bare. This area is drained. In from eight to ten days epithelization of this bare area has occurred over the tube and a new urethra has been formed. Dilation is then continued for a short while. I have never employed the methods of exposing the strictured area in the perineum after a dye has been given and the strictured area located. I likewise have never employed the method of resection of a portion of the urethra for stricture.

COWPERITIS

The occlusion of Cowper's ducts during the course of treatment for gonorrhea causes a swelling in the perineum, which fluctuates as a rule. This in turn causes urinary difficulties such as frequency, pain and burning on urination, with obstructive symptoms. As the condition progresses the swelling increases in size, and it is at this time that surgery is indicated. An incision into the abscess and drainage is the procedure. It usually subsides in a few days. Three cases came to operation.

URINARY EXTRAVASATION

While urinary extravasation never is directly the result of gonorrhea, it nevertheless is encountered at times following the treatment of the stricture of the urethra, or even without the treatment of the stricture. These patients are very ill when seen usually show evidence of extreme toxemia, and have chills and fever, leukocytosis, edema and areas of redness and fluctuation of the penis, scrotum, perineum, suprapubic regions and perirectal areas. This depends entirely on whether the extravasation is anterior or posterior to the triangular ligament. A history of gonorrhea is usually obtained together with the history that a stricture was present at one time or another.

Peculiarly enough, they frequently give a history of voiding fairly well. In spite of this, there is rupture of the urethra with extravasation of urine. The history may possibly be given that the stricture had been dilated. There should be no delay. When one is given a history of this kind with edema of one or all the areas mentioned and the presence of ecchymosis in these areas, open surgery should be resorted to. It should be radical, rapid and immediate. All areas involved should be incised and drained freely, all the abscess cavities being connected if possible. At the same time the urinary stream should be diverted by performing a suprapubic cystotomy.

The bladder is kept drained well until all the infection has subsided and a fair sized catheter can be passed into the urethra. In this series there was one such patient, who has made a complete recovery.

COMMENT AND CONCLUSIONS

In discussing the indications for surgery in the complicated gonorrheal case, one is impressed with the similarity of symptoms with the exception of the locality. In practically all conditions there is pain in a local area, rise in temperature sometimes preceded by a chill swelling of the particular area involved, and in all, excepting possibly epididymitis the presence of some urinary disturbance such as frequency, burning on urination, tenesmus, hematuria, and sometimes urinary retention. At times gastro-intestinal symptoms are present.

From an analysis of 1 000 cases treated for gonorrhea, it has been observed that complications were very prevalent. This entire series of 1,000 cases was not seen in the acute stages of gonorrhea. In many instances the case was first seen in a chronic stage or was seen first when this complication presented itself.

With a history of gonorrhea and the presence of one or all of the foregoing symptoms I feel that a competent urologist is justified in advocating surgical intervention. The length of time one should permit the patient to continue on with his symptoms hoping that nature will take its course is a personal issue. In my opinion, as soon as a complication is diagnosed and the patient is in distress the sooner surgery is performed the quicker the patient will be relieved.

Unfortunately, the largest percentage of cases treated for gonorrhea do not fall into the hands of surgical urologists therefore when a complication arises the proper percentage of patients are not in a position to receive surgical intervention. As to the type of surgical intervention, it appears that in most cases it is a question of an abscess and therefore requires incision and drainage.

During the course of treatment for gonorrhea 710 complications developed in 418 or 41.8 per cent, of the patients of this series. Two hundred and forty-seven of the complications were very acute. Of the latter number 175 were cases of epididymitis. Eighty-six or 21.2 per cent, of the 418 patients developing complications or 8.6 per cent of all the patients treated, were operated on for a complication.

A further analysis of the complicated cases revealed a total disability of an average of eight days longer in the unoperated case together with considerably more pain over a longer period of time.

I am in hope that in the future the percentage of operations on complications of gonorrhea will be much higher. It is my belief that the appearance of a complication following the treatment of gonorrhea is best handled by open surgery in the largest percentage of cases. If surgery is employed early, there will be less suffering on the part of the patient, quicker convalescence and a considerable decrease in the number of subsequent chronic complications. I also feel that if surgery is applied early the morbidity will be decreased and the functional results better.

A major surgical procedure will be transformed into a simple minor procedure. Certainly many cases of one-sided sterility or, worse, the cases of bilateral sterility will be avoided if an early epididymotomy is performed rather than have the patient go through a great deal of suffering for several days and then subse-

quently be compelled to have an epididymotomy or epididymectomy, or, if surgery is not employed at all, to have the condition subside with the possibility of sterility or recurrence.

The same is true for periurethral and prostatic abscesses. If surgery should be employed early in acute prostatitis, I believe that many prostatic abscesses could be avoided.

Many chronic cases of urethral discharge are the results of procrastination until a periurethral or prostatic abscess ruptures into the urethra. An abscess of this kind in its early stages can be opened extra-urethrally so that the purulent discharge from the abscess will not come in contact with the mucous membrane of the urethra. Many cases of stricture of the urethra are directly the result of fibrosis that has taken place following the healing process of a ruptured sub-mucosal abscess into the urethra.

Epididymitis is the complication that is by far most encountered. In these cases there were considerably more epididymectomies performed than epididymotomies. The reasons for this were several: first, in most cases the complication had been present from five to ten days before the patient was seen or before the patient consented to an operation, second, there was free pus in the epididymis, third, the vas deferens was found to be obstructed, and, fourth, it occurred in patients who had two or more children and who were not particular whether they were sterile or not. If there is any chance or desire to retain the patency of the vas deferens or the epididymis, an epididymotomy must be performed early and is by far the operation of choice. It is advisable to inject the vas deferens to determine its patency before epididymectomy is performed.

Prostatic and periurethral abscesses should be incised and drained extra-urethrally as soon as the diagnosis is made. Cases of acute prostatitis should have a prostatotomy done early the same as one would do an epididymotomy early for epididymitis. Furthermore any abscess as a complication of gonorrhea should be opened and drained early to avoid chronic complications.

Surgical intervention in chronic undilatable urethral strictures has given good results. The results obtained in the chronic complications such as chronic prostatitis, seminal vesiculitis and others by treating them surgically have not been very satisfactory. All cases of urinary extravasation should receive immediate attention and always have suprapubic drainage.

Several of the complications not occurring frequently have been operated on but not in this series. In the cases of para-urethral duct infections, it is very essential to determine whether the infection in the urethra is being kept up by the infection in these ducts. If organisms or a discharge are observed coming from these ducts, treatment should be rendered. The injections or applications directly into the ducts have not given satisfactory results. I have obtained the best results by opening the ducts and uniting them with the urethra and then treating the infection as one.

Perineal fistulas the results of urethral strictures and abscesses present pictures of chronic purulent discharges and in many instances with urinary discharges. Dilations of the urethra and curetting the sinus tracts frequently give relief. Again, the best results have been obtained by excising the fistulous tracts, dilating the urethra and diverting the urinary stream by performing a suprapubic cystostomy. A new urethral tract

was necessary in one case before healing took place. This was performed by doing a retrograde operation for urethral stricture, making a suprapubic and perineal exposure and discarding the strictured area of the urethra.

Urethrocutaneous fistulas either the results of a peri-urethral abscess rupturing through the urethra and to the outside or the direct result of an incision from the outside into an abscess, the incision having been carried into the urethra, produce the same symptoms as the preceding conditions, making it necessary under these circumstances to carry out some surgical procedure. Excising the tract from the outside down to the urethra and suturing the freshened edges of the urethra over a catheter have given a complete closure in two cases. In one case it was necessary to perform this operation, plus diverting the urinary stream by doing a suprapubic cystostomy.

Sterility the direct result of an epididymitis from gonorrhea has occurred on numerous occasions. Seven cases have come to operation in which an epididymovasostomy was performed. In only one case was I able to obtain spermatozoa coming through the anastomosis. In this case the patient subsequently became the father of a child.

A plea is here made for more and earlier surgery for the complications of gonorrhea.

601 Medical Arts Building

CHRONIC PROSTATITIS AND PROSTATIC CALCULUS

TREATMENT BY INCISION WITH THE ELECTROCAUTERY

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AND

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ROCHESTER, MINN.

In the last decade the technic of intra-urethral operations for obstruction of the vesical neck has been greatly improved, as evidenced by the contributions of many authors. Numerous instruments have been devised, which not only have simplified this form of surgery but have led to greater knowledge of the pathologic anatomy of the posterior urethra and vesical neck. As a result, various procedures for the correction of disease not strictly obstructive in nature naturally have developed.

In 1931 we were finding various prostatic and posterior urethral lesions which seemed suitable for correction by minor procedures such as electrocoagulation, or incision with the electrocautery. One of us¹ has reported some of these cases. Removal of prostatic calculi by transurethral methods has been recorded by Michel, and incision of large, subacute abscesses of the prostate gland by Multhaupt and Curtis.² Heitz-Boyer³ stated that as early as 1920 he was opening,

by various intra-urethral methods, prostatic and urethral diverticula which he often found in cases of chronic prostatitis of many years' duration. His excellent article was accompanied by a series of urethrograms which gave evidence of relatively large pockets draining into the urethra by narrow ducts. More recently, Davis⁵ has reported a series of cases in which he had noted marked clinical improvement following drainage of such pockets. It is our purpose in this paper further to record our observations at the Mayo Clinic of the past three years, in which time sixty-seven patients have been subjected to operation. All of these patients had single or multiple chronic abscesses and seven had prostatic calculi in association with the infected pockets.

All of these patients had suffered with chronic prostatitis for a prolonged period and had been treated by a variety of methods, including massage, instillation and injection of various antiseptic substances into the prostate gland, urethral and rectal diathermy, subcutaneous and intramuscular administration of vaccine or foreign protein, and, in one case, by suprapubic transvesical drainage. Many of the patients were temporarily improved by such treatment but relief was only transient, after which they often subjected themselves to various other treatments, usually of a different type from that first employed.

The average duration of symptoms before admission was six and two-tenths years and a few patients had been troubled for as long as thirty years. Two patients had multiple perineal sinuses and one a urethroperineal fistula following incision of the prostate gland many years before his admission to the clinic.

The usual symptoms noted by patients with chronic prostatitis were noted by the patients concerned, in addition, it seemed striking that 32 per cent of them complained of definite perineal pain, aching, throbbing or perirectal discomfort. Dysuria of varying degree was a complaint of 41 per cent of the patients. A few gave definite histories of recurrent, acute prostatic abscess, with relief after spontaneous intra-urethral rupture and drainage of purulent material. Of the patients, 15 per cent complained of a chronic urethral discharge, usually in the form of a morning drop, while 6 per cent had suffered with recurrent epididymitis. Metastatic symptoms, such as lumbar pain, sciatic neuritis, and pain in the sacro-iliac or other joints, sometimes with subacute synovitis, were noted by 24 per cent of the patients, and chills and fever not attributable to pyelonephritis or epididymitis had been experienced by 12 per cent. Examination of the expressed secretion revealed prostatitis, grade 4, in fifty-five of the sixty-seven cases and in seven of the remaining twelve the infection was graded 3, in no instance was the prostatitis graded less than 2.

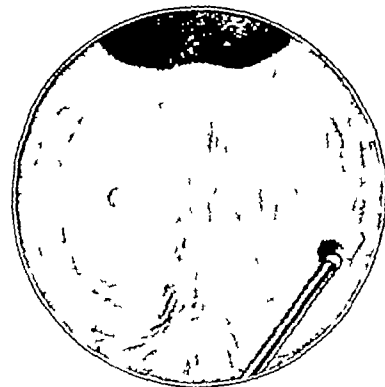


Fig. 1—Exploration of a dilated prostatic duct with a blunt electrode.

From the Section on Urology, the Mayo Clinic.
Read before the Section on Urology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.
1. Thompson, G. J. The Treatment of Chronic Abscess of the Prostatic Ducts. *Proc. Staff Meet. Mayo Clin.* 8: 219-220 (April 20), 1933.

2. Michel, I. L. Transurethral Removal of Prostatic Stones with Simultaneous Revision of Prostate. *J. Urol.* 30: 253-257 (Aug.), 1933.
3. Multhaupt, A. W. and Curtis, W. R. Suggesting a New Procedure for the Intra-Urethral Drainage of Prostatic Abscess. *Urol. & Cutan. Rev.* 37: 565 (Aug.), 1933.

4. Heitz-Boyer, M. Les formations diverticulaires de la prostate (groses diverticules cavernuleuses prostatiques): intérêt diagnostique et thérapeutique de ces lésions, leur traitement chirurgical par l'évidement à haute fréquence. *J. d'Urol.* 36: 49-73 (July), 1933.

5. Davis, D. M. Chronic Prostatitis: Its Relation to Anatomical Changes in the Prostate, Prostatic Urethra and Vesical Orifice. *J. Urol.* 30: 579-592 (Nov.), 1933.

URETHROSCOPIC EXAMINATION

Very careful urethroscopic study is absolutely essential. An instrument with a lens that will magnify the structure is desirable and preferably one that has an angle of incidence of from 45 to 90 degrees. We have not used the variable-incidence lens described by Heitz-Boyer, although no doubt it is the ideal type. As a general rule, one or more dilated prostatic ducts will be found somewhere in the floor of the prostatic

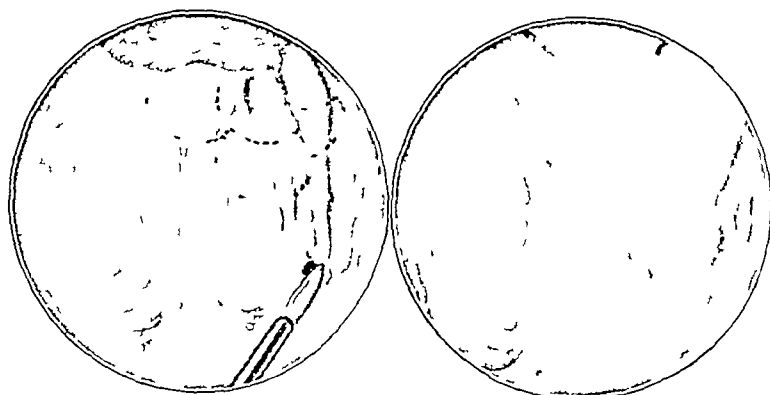


Fig 2—Left incision through the posterior vesical lip with a Collings knife; the areas outlined by dotted lines indicate tissue to be excised with a Braasch Bumpus punch of small caliber. Right appearance of prostatic urethra at completion of operation.

urethra, adjacent to the verumontanum. Ordinary manipulation of the urethroscope usually will cause purulent material to exude from these ducts if purulent material is present, although in an occasional case it is necessary to make direct pressure on the prostate gland with a finger in the rectum or to apply counter pressure on the perineum before pus can be expressed from a deep pocket. The examiner must not be misled by noting thin prostatic fluid which at times will flow from even a normal prostate gland. However there is little likelihood of confusing this fluid with pus, which as it exudes from the duct often resembles paste in consistency.

OPERATION

We believe that nitrous oxide either alone or combined with ether provides the best anesthesia. The McCarthy panendoscope has been used almost exclusively in those cases in which electrocoagulation only has been required (twenty-one cases) and the same instrument in combination with the Braasch-Bumpus punch of small caliber when excision of tissue is necessary. The latter instrument is used for excision in preference to a cutting loop, because the electric current is thus kept at a minimum and ultimate healing is therefore hastened. The depth of the cavity can be ascertained with a rigid electrode as is shown in figure 1, following which a straight Collings knife is used to incise down to the bottom of the pocket and to make an incision through the posterior vesical lip, if this is necessary (fig 2, left). This procedure alone was employed in sixteen cases. The straight Collings knife will be found superior to a knife of the curved type, because one can visualize it more easily and hence can avoid a perforation which might result in a major complication from a minor procedure. Calculi (figs 3, 4 and 5) present in the pockets or embedded in the deep structure of the prostate gland are easily removed by flicking them out into the stream of irrigating fluid and washing them into the bladder, from which they can be aspirated easily by suction if they do not drain out through the cystoscope in the usual manner.

The principle involved is promotion of free drainage through the site of infection, as was described in the first article on this subject. Free drainage is insured by the flow, through the surgically smoothed prostatic urethra, of urine, which flushes the cavity at each voiding. To secure free drainage it was found necessary to excise bits of tissue, as is shown by the dotted lines in figure 2 (left) in thirty cases, the ultimate channel having the appearance of figure 2 (right).

Bleeding points should be stopped by electrocoagulation, but it is best to employ this measure in a minimal degree and, if venous oozing persists, one preferably should rely on drainage by urethral catheter and frequent lavage, to prevent formation of blood clots. There is practically never any postoperative febrile reaction, and drainage by catheter, of more than twenty-four hours' duration for the control of bleeding, seldom has been required.

Postoperative management should consist principally of observation, avoiding prostatic massage for a number of days or, preferably, weeks. The urine may be hazy for a short time and if so it is well to include oral medication in addition to an increased intake of fluid.

IMMEDIATE RESULTS

Following the operative procedures that have been described almost without exception the immediate results were good. The patients who had had definite local symptoms stated that they had experienced marked improvement. In three cases there was some delayed bleeding, in two of these cases bleeding stopped spontaneously, but in the other case hospitalization again, and fulguration of the bleeding point, were required. There were no other postoperative complications.

In a few cases improvement was delayed, and the beneficial effect was not noted until several weeks had elapsed.

REEXAMINATION

We have felt that it is unwise to massage the prostate gland within one month after operation. All patients have been urged to undergo reexamination, either at the Mayo Clinic or at home. Many of them in the absence of symptoms have refused to submit themselves to examination again, but of those cases in which the patients have submitted to such study, in 80 per cent either evidence has been obtained of marked reduction in the amount of infection in the expressed secretion or there has been no evidence of prostatitis. Those patients who returned for reexamination have been subjected to urethroscopy. In no instance has there been evidence of stricture, the site of the excision or fulguration has been well healed, and mucosa has grown down into it in every case.

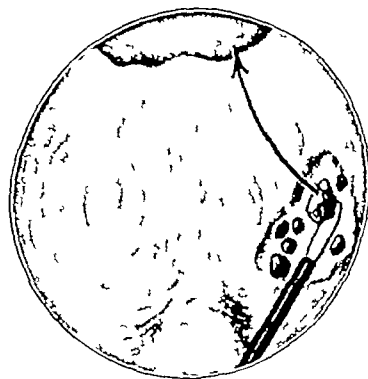


Fig 3—Removal of calculi with the Collings knife.

Whether or not symptoms will recur or increase at a later date cannot be stated but fully 90 per cent of patients have been satisfied with their treatment

CONCLUSIONS

1 Chronic prostatitis often persists because of infected pockets or diverticula that drain only through a small prostatic duct

2 Treatment by ordinary methods such as massage, irrigation injection of antiseptic substances, or diathermy results only in temporary relief of symptoms

3 Surgical treatment of these regions by the transurethral route will insure adequate drainage and subsequent improvement in a large percentage of cases

4 The prostatic cavities must be

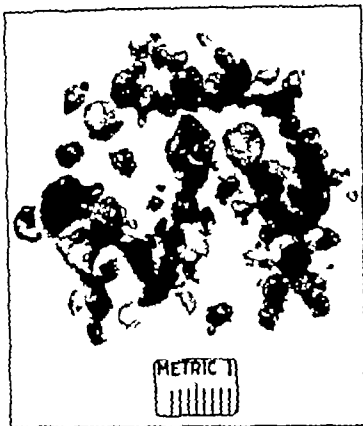


Fig 4—Prostatic calculi removed in the course of operation. See figure 5

widely excavated in the form of a saucer and if necessary, tissue must be excised to provide free flushing at the time of urination, otherwise infection will persist

5 Calculi embedded in the prostatic tissue which occur either primarily or secondarily to prostatic infection, can be removed by transurethral operation

ABSTRACT OF DISCUSSION

ON PAPERS OF DR. GOLDSTEIN AND DRS THOMPSON AND COOK

DR WILLIAM N TAYLOR Columbus Ohio Drs Thompson and Cook emphasized a type of therapy applicable in many chronically infected prostates. I do not feel that this type of treatment for chronic prostatitis is new but rather that the old punch operations whether performed intra urethrally or suprapubically had veritently in some cases did the same thing as they are advocating with present refined procedures. I have divided prostatitis into two groups (1) chronic prostatitis without morbid structural changes in the posterior urethra or vesical neck (2) those in which there are visible pathologic changes in the way of dilated ducts sinuses crypts and contractures of the neck or stones. The first group should be treated along conservative lines. The second group with the contracted neck is suitable for any type of instrumental treatment so long as it promotes drainage of the bladder and opens widely the infected areas in the prostate. Ten cases of persistent prostatitis, with structural changes, in which I have resorted to instrumental treatment is all that I can add to this discussion. Six of them were treated with the Collings incisor in which the ducts and sinuses were widely exposed at the time the vesical neck was resected. Three have been subjected to similar treatment with the McCarthy resectoscope. I feel that the results have justified the procedures. All these patients have improved symptomatically though they still have cloudy urines, perineal distress and periods of frequency. Three cases in which stones were present in the prostate have shown the greatest improvement. I would emphasize that following resection for this type of prostatitis it is necessary to continue with the older methods of massage and irrigation to obtain a

complete recovery. I am aware of the fact that endoscopic examination of the posterior urethra may not disclose pathologic changes in the infected prostate and I would hesitate to subject such a gland to intra-urethral surgery unless it could be definitely proved that a lesion was present that would respond to drainage. If I advocate instrumental treatment of the chronically infected prostate without structural changes, I feel that much needless and ill advised intervention will result.

DR J SIDNEY RITTER New York It seems no longer excusable to fail to identify definitely by precise instrumental means the prostate seminal vesicle or both as the underlying offending factor and to direct treatment accordingly. Moreover it is now a feasible technical procedure by catheterizing the ejaculatory ducts to locate this focus of infection in the majority of cases. In a smaller percentage of cases in which it is impossible at once to catheterize the ejaculatory ducts, the usual cause for such failure is the edematous congested condition of the verumontanum which may cause partial occlusion or distortion of the duct lumen. However in most of these cases preliminary treatment directed toward the local condition enables one at a later date to accomplish the same result. This whole field of research is tremendously important and well worthy of the investigative efforts of the best minds in the profession.

DR ELMER HESS Erie, Pa Acute gonorrhea and many cases of chronic gonorrhea are seldom referred to the urologist until the occurrence of complications. With Dr Goldstein's experience that the majority of cases of epididymitis clear up with ice support and rest in bed I am in accord. I also believe in epididymotomy when the infection has progressed to the stage of free pus but I condemn epididymectomy on the indications that he gives namely when the lumen of the vas is obliterated when free pus is found and in cases of recurrent epididymitis. Epididymectomy may be useful in certain types of recurrent epididymitis with much fibrosis to relieve the pain. Concerning prostatotomy for acute prostatitis without actual abscess formation again I am obliged to dissent and I am also opposed to any local instillation treatment. The surgical risk with all its dangers added to a condition that is purely medical would make me hesitate a long time before attempting it. I agree with either the perineal approach or the urethral approach in prostatic abscess preferring the urethral one. Suppurative inguinal glands must be opened and drained. I always open a periurethral abscess externally and have had little difficulty in having the process heal. I have never operated on the



Fig 5—Preoperative and postoperative roentgenograms of a patient who had prostatic calculi

seminal vesicles for anything but a tuberculous involvement and have never had a satisfactory result from it. In acute vesiculitis the Belfield male pus tube operation is as contraindicated as it is in acute pus tubes in the female. There are times in gonococcal arthritis when it may be good surgery to do vesiculectomy but I have never done the operation for this indication. Phimosis and paraphimosis call for immediate surgical interven-

tion as the author has pointed out. I should like to add another surgical procedure that has not been mentioned: meatotomy in acute urethritis when drainage is poor because of a small meatus. I would like to ask how Dr Goldstein treats gonorrheal pyleitis. I am in accord with the treatment of cowperitis, urethral stricture and urinary extravasation. The author pleads for more and earlier surgery for the complications of gonorrhea. May I plead for the nontransference of an ordinarily self-limited medical disease to a surgical one?

DR CYRIL K. CHURCH, New York. I cannot agree with Dr Goldstein that increasing pain is an indication for epididymotomy to relieve the edema which I agree with him is the real cause of the pain. The proper treatment for this condition is diathermy, it being necessary of course to have a clamp that fits the testicles accurately and tightly enough. Then by conveying a current through the organ by having electrodes attached on opposite sides one can raise the temperature of the organ to the patient's tolerance. This will convey great heat to the part and consequently promote the circulation through it. Then if one wishes to deplete the tissues of the organ of their excess or edematous fluid all that it is necessary to do is to detach one electrode from the clamp holding the testicle or epididymis and to fix it to a plate on which the patient is lying and so put the current through in that direction, the circulation will be promoted through the spermatic cord and so alleviate the edema and consequently the pain. Epididymectomy should be resorted to only for a recurrent condition. The explanation why prostatectomy does not cure chronic prostatitis is that in most prostatectomies the whole gland is really not removed but only that part of it which causes obstruction to the outflow of the urine. It is that part of the gland which is not removed which continues to harbor infection. Granting that a vesiculectomy should be done at all the technique should be sufficiently good so that the operator can guarantee to the patient that his vas deferens will not be touched or destroyed and he will not be rendered sterile. This operation is highly technical especially in the matter of removing the vesicle without destroying the communication between the vas deferens and the urethra. It would take an extremely skilful operator to be able to give this guaranty to the patient. However, I think that it is possible if one is sufficiently familiar with the field.

DR ALBERT E. GOLDSTEIN, Baltimore. If there is one thing that these meetings do they give an opportunity to hear an honest difference of opinion. Several urologists have stated that we are no better off today than we were thirty or forty years ago that we are still treating gonorrhea in the same way, and still are having the complications that we always had, and still are going through the same routine. The reason we are having so many complications today the reason we are treating the results of complications of gonorrhea by the various methods brought out today is that we have permitted in the early stages in acute prostatitis and prostatic abscess and epididymitis the gonococcus or its effects to get into the mucous membrane of the urethra of the epididymis of the vas and to remain there and act as a focus of infection. In view of the fact that no one else has had anything better to offer, I feel that we might give some of these things a trial by not permitting the gonococcus or its effects to get into the urethra in its early stage. If we went about these things extra-urethrally, I am sure we would get better results. Regarding Dr Hess's statement about not permitting epididymectomy, of course there is a difference of opinion. It seems to me that we both obtain the same results. As to Dr Church's discussion regarding epididymitis we find the lumen obliterated with debris in some cases and in some cases blocked by fibrous tissue. Regarding prostatectomy for prostatitis, I am afraid that he misunderstood the statement. I advised prostaticotomy not prostatectomy.

DR. CHURCH. I stand corrected.

The Measure of Efficiency of Any Protein.—The nutritional efficiency of any particular protein is measured by its yield of amino acids especially of those amino acids which are not synthesized by the organism and which therefore must be included in the food.—Newburgh L. H., and Mackinnon Frances. *The Practice of Dietetics*. New York: Macmillan Company, 1934.

COXA MAGNA

A CONDITION OF THE HIP RELATED TO COXA PLANA

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AND

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Coxa magna is a condition of the hip related to coxa plana. To indicate this relationship it is necessary to outline the etiology of coxa plana, which is more fully discussed in a recent article on coxa plana.¹

The common type of coxa plana is a nutritional disturbance of the upper femoral epiphysis due to a certain degree of interference with its circulation by sclerotic changes about the femoral neck. The sclerosis is the result of a preceding inflammation at the joint. When there is a circulatory disturbance of this kind not sufficiently severe to produce coxa plana, there may be enlargement of the femoral head and neck without other noteworthy changes. These cases present the clinical features of coxa plana but are characterized roentgenographically by enlargement of the femoral head and neck instead of by flattening and irregular ossification of the head. This condition is designated coxa magna.

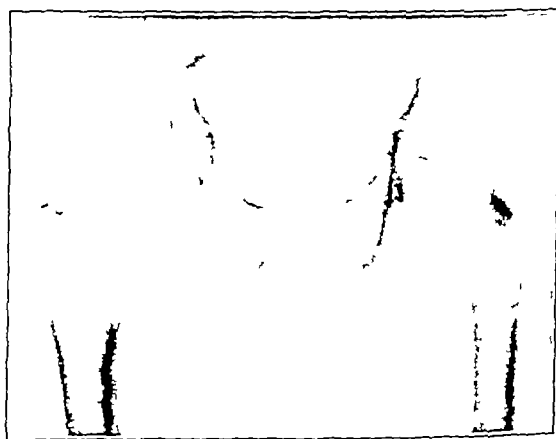


Fig. 1—Typical coxa magna. The femoral head and neck are bony changes suggestive of coxa plana were not present at any time.

We are presenting thirteen cases of simple coxa magna and twelve cases illustrating the relation of coxa magna to other conditions.

CLINICAL FEATURES

Of the thirteen children with simple coxa magna, six were boys and seven girls. The right hip was affected in six instances, the left in seven. No bilateral cases were recognized. None of the children were abnormal in stature and none were definitely overweight. Every child gave definite or suggestive evidence of a possible source of infection. The tonsils were diseased in five and had been incompletely removed in two and removed in five others. At or shortly before the onset of hip symptoms, two patients had bronchitis, one chickenpox, one croup, one cardiac disease and

Read before the Section on Orthopaedic Surgery at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.
1. Ferguson, A. B. and Howorth, M. B. *J. Bone & Joint Surg.* 16: 781 (Oct.) 1934.

purulent pimples on the legs, one jaundice with fever, and one in unexplained leukocytosis (19,600)

The onset of hip symptoms was gradual in five instances in which there was no history of injury and in one patient who had had occasional falls on the hip. The onset was sudden in four cases without trauma and in three children who had had an injury to the hip, two of the injuries being trivial. Hence trauma



Fig. 2—Congestion and sclerosis of soft tissues about the femoral neck in coxa magna

did not appear to be the cause of the condition but it might have aggravated or directed attention to the symptoms

The first symptoms noted were pain in all cases, with a limp also in four. The pain was referred to the knee in two instances, to the thigh in one, and to the hip in ten, with radiation to the thigh or knee in three of these. The age at the onset of symptoms varied from 2 to 14 years, the mean being 10 for both the boys and the girls. The patients were first seen from three days to one year after the onset of symptoms, except in one case, which was seen after two years. Six children had had symptoms for one year.

The physical signs in these cases resembled those of coxa plana. Limitation of motion varied from little to extreme, each motion being subject to limitation. Eight patients had flexion deformity. Acute signs, such as tenderness, spasm and pain on motion, were present in all but one of the cases. Atrophy of the thigh was present in ten instances shortening in six varying from one-eighth to one-half inch, and in one case the affected leg was seven-eighths inch longer than the normal leg.

ROENTGEN FEATURES

At the first roentgenographic examination in each case there was broadening of the femoral head and neck, varying from one-sixteenth to five-sixteenths inch

(fig 1). The cartilaginous joint space was wide in four instances, normal in seven, and thin in two. The capsule of the joint appeared distended in six hips and not distended in seven. The broadening of the head and neck tended to increase for a varying time, while the other changes tended to revert to normal.

PATHOLOGY

An exploration was done in seven of the thirteen hips. The outstanding feature in each hip was thickening of the tissues about the femoral neck, the synovial membrane and the capsule. These soft tissues were congested in most of the hips (fig 2), usually with some pannus formation, while in the others the tissues were sclerotic. Small areas of mononuclear infiltration were often present (fig 3) and the vessels were usually thick walled. The bone and cartilage were essentially normal, although in some instances the cartilage was slightly pitted and the bone quite vascular. These changes were the same as we have found in early coxa plana and in the preslipping stage of slipping epiphysis. They definitely presented the picture of changes in the soft tissues about the femoral neck disturbing the circulation of the femoral head, with no primary lesion of the bone or cartilage.

Cultures of tissues from the hip yielded no growth in the four instances in which they were taken, and there was nothing in the postoperative course to suggest that an area of active infection had been entered. The Wassermann test was negative in the nine cases in which it was done. The tuberculin test was positive in five of nine patients. There was leukocytosis in two of the seven cases in which the blood was examined.

DIAGNOSIS

The diagnosis of coxa magna is made when a hip presents clinical features of a mild, acute or subacute arthritis similar to those of coxa plana or the preslipping



Fig. 3—Mononuclear infiltration and sclerosis in the soft tissues about the femoral neck in coxa magna

ping stage of slipping epiphysis but roentgenographically presents enlargement of the femoral head and neck without the changes characteristic of the other conditions mentioned. The condition most difficult to differentiate is early tuberculosis with slight overdevelopment of the femoral head. In this condition, local decalcification is apt to be a prominent feature. In questionable cases the patient should be allowed to rest in bed without immobilization. In these circumstances

the symptoms and physical signs will improve rapidly in coxa magna, and slowly or not at all in tuberculosis. If the diagnosis remains doubtful, exploration of the hip is to be recommended.

COURSE AND TREATMENT

The symptoms and physical signs in coxa magna ended to improve with rest or to run a long course

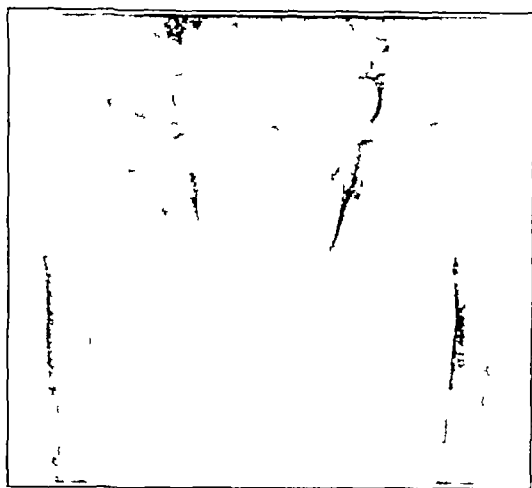


Fig. 4 (case 14)—Beginning coxa magna nine months after drainage of the hip for acute suppurative arthritis. The hip is clinically normal.

with eventual improvement if untreated. Persistent limitation of motion usually occurred after immobilization by traction, brace or plaster spica or after traumatism by a forcible stretching or other manipulation. Exploration had no unfavorable influence on the course.

In the thirteen cases under consideration, four had no treatment and then results are unknown. One hip was treated by rest in bed for one month, during which time a purulent tonsillitis which was present at the onset of hip symptoms, was also treated. At the end of this time there was excellent motion at the hip with-



Fig. 5 (case 14)—Coxa magna with marked elongation of the femoral neck five years after drainage of the hip for acute suppurative arthritis. The hip is symptomless.

out symptoms. Of the hips that were explored, three were improved when the patients were allowed to be up and, at the end of one year, were symptomless except for occasional pain, and in two years were symptomless with excellent motion. Another child was kept in bed one month and had a tonsillectomy during that time. She was improved but symptoms recurred one month

later, whereupon a brace was applied for four weeks without improvement. The hip was then explored. There was excellent motion with no symptoms when she was allowed up five weeks after the operation. She has continued symptomless. Two patients wore a plaster spica for five months. They had considerable limitation of motion persisting two years thereafter, although they had no pain. One of these hips was explored one year after the application of the spica, the stiffness persisted and there was occasional pain during the next six years. In another case the hip was explored and traction was applied for two weeks, after which the patient was allowed up, improved. Symptoms became worse in three months and marked limitation of motion continued. The hip was stretched one year later. Thereafter motion was very limited and an arthroplasty was done one month later, but no motion was gained and pain was still present two years later. The thirteenth patient wore a brace for two years with no improvement. The hip was then explored and one month later the hip was fused, on suspicion that the condition was tuberculous, although this was not proved.



Fig. 6 (case 17)—Marked coxa magna. The articular cartilage is thin and the surface of the head is irregular in density. These changes suggest continued or intermittent infection in the joint during the development of coxa magna. This patient had intermittent attacks of otitis media throughout the duration of hip symptoms.

From the foregoing it is evident that, in general, the more vigorous the treatment the poorer the result. These cases suggest that the proper treatment for coxa magna is rest in bed without immobilization, treatment of focal infections, and exploration of the hip when it is necessary to distinguish tuberculosis.

DEVELOPMENT OF COXA MAGNA

In each of the thirteen cases here reported as simple coxa magna the cause of coxa magna appeared to be a disturbance of circulation of the femoral head produced by sclerotic changes in the soft tissues about the femoral neck following subacute arthritis, probably infectious. The disturbance of circulation of the femoral head producing coxa magna can be developed from causes other than subacute arthritis. The following cases illustrate various origins and effects of such disturbance of circulation.

CASE 14—A boy aged 3 years, had acute suppurative arthritis at the hip which was drained on the seventeenth day. The result was a normal hip, except that the soft tissues were sufficiently scarred to result in disturbance of circulation of the femoral head. In nine months the femoral head was three sixteenths inch broader than the normal and the neck was elongated (fig. 4). This deformity has continued during the five

years to the present time, although there was no pain and no limitation of motion (fig 5)

CASE 15—A girl in her infancy had an acute inflammation at the hip with marked effusion resulting in dislocation. When the effusion had subsided, the dislocation had become reduced. No operation was performed. Three years later the femoral head was one fourth inch broader than the normal. In this instance a definite acute arthritis resulted in sufficient sclerotic changes about the femoral neck to interfere with the circulation of the femoral head.

CASE 16—A boy, aged 15 years, had a polyarthritis which was diagnosed as rheumatoid arthritis. The hips, knees and elbows were involved. At the age of 17 the polyarthritis had subsided but the right femoral head was five-sixteenths inch broader than the left which appeared to be of normal width. At 23 the condition was the same, with limitation of motion at the right hip but no symptoms.

When an infectious arthritis continues chronically development is usually impaired. Occasionally, however, a coxa magna suggests that low grade infection is still active after enlargement is well developed, as in case 17.

CASE 17—Seven years after the onset of pain and limitation of motion at the left hip the femoral head in a girl, aged 14 years, was three eighths inch broader than the normal, but continued activity of low grade infection was suggested by thin-



Fig 7 (case 23)—Marked elongation of each femoral neck in bilateral slipping epiphysis without definite displacement.

ning of the joint space, local decalcification and marked irregularity of density of the surface of the femoral head (fig 6). The patient had chronic otitis media with intermittent discharge from the ear during the period of the hip disease. She wore a long leg brace most of this time.

Thickening or sclerosis of soft tissues about the femoral neck may result from the inflammatory reaction produced by an adjacent lesion.

CASE 18—A patient had a tuberculous abscess of the ilium near the hip at the age of 9 years. At operation the abscess was curetted and filled with bone chips. Through a separate incision the joint was opened. The soft tissues at the joint were thickened and sclerosed but no evidence of infection was found, nor has clinical evidence of infection of the joint appeared in the three years since the operation. The femoral head was five sixteenths inch broader than normal before operation and also three years later.

CASE 19—A boy, aged 6 years, had an acute abscess in the left gluteal region. This was drained. No communication with bone or joint was found. The lesion healed with slight limitation of motion at the hip, which has continued for ten years. At the time of operation the left femoral head was three sixteenths inch broader than the right and two years later it was nine sixteenths inch broader.

In the reduction of congenital dislocation of the hip, tension of the soft tissues about the femoral neck may result in disturbance of circulation of the head. The

usual sequel to this is coxa plana but occasionally there is merely an enlargement of the femoral head and neck—a coxa magna.

CASE 20—A patient had bilateral congenital dislocation of the hips. Both were reduced at the age of 2 years. The right hip did not stay in. It was again reduced and, within the year, an osteotomy of the femur was done to correct anteversion. Reduction was permanent but at the age of 6 the



Fig 8—Bilateral coxa magna following coxa plana. In the hip on the left the deformity indicates that the condition was complicated by avulsion at the ligamentum teres with reunion of the displaced fragment. Bilateral coxa magna is seldom recognizable because the deformity in the less affected hip may not appear definite in the absence of a normal for comparison.

right femoral head was unusually broad three-sixteenths inch broader than the left and continued so until the child was 8. The result of the reduction was excellent.

In coxa plana the circulatory disturbance that produces coxa magna is present and broadening of the head is often a prominent feature especially in advanced cases.

CASE 21—Coxa plana began to develop in a boy, aged 7 years. At the age of 8 a plaster spica was applied for three months followed by a brace for two years. At the age of 12 the coxa plana had reached the residual stage and the femoral head was one-half inch broader than the normal.

Broadening of the femoral head may likewise be a feature of slipping epiphysis, as in the following instance.

CASE 22—In a girl pain in the hip began at the age of 10 years. Roentgen examination demonstrated the presence of the preslipping stage of slipping epiphysis. After two months in bed the hip was clinically normal, but there was slight broadening of the femoral head. Six months later slight displacement of the head occurred and a plaster spica was applied for three months. At the age of 12 the femoral head was one-half inch broader than the normal.



Fig 9 (case 25)—Marked coxa magna with massive arthritic osteophytic production at the age of 17. Hip symptoms began at the age of 2. The hip was explored at 10.

When the preslipping stage of slipping epiphysis subsides with little or no displacement occurring, over-

development may take the form of elongation of the neck

CASE 23—The patient had a limp during the adolescent rapid growth period, and the hips became prominent. When seen at the age of 20 each femoral neck appeared about 1 inch longer and somewhat broader than normal (fig 7)

In coxa plana, the bone adjacent to the ligamentum teres may remain well nourished by vessels in that ligament. In such a case the healthy bone near the ligament may appear in the roentgenogram to have separated from the remainder of the head. When the fragment later reunites with the broadened head, the result is a very broad head with a bulbous projection medially at the site of the ligamentum teres. Case 24 is an example of this.

CASE 24—A boy, aged 7 years, had a limp and pain in both hips. This was untreated and did not continue many weeks. When seen at the age of 28, each femoral head was fully 1 inch broader than normal and the right head had a deformity indicative of previous avulsion at the teres ligament.

Degenerative arthritis may be a sequel of coxa magna, as in all conditions related to coxa plana. Case 25 (fig 9) illustrates the presence of marked osteophytic formation in marked coxa magna at the age of 17 years.

CONCLUSION

Coxa magna is a condition characterized by enlargement of the femoral head and neck due to local disturbance of circulation in a child clinically presenting the symptoms and signs of coxa plana without the abnormalities of bone or cartilage characteristic of coxa plana or slipping epiphysis.

The importance of coxa magna is twofold. First, if the condition is not recognized, unnecessary or harmful treatment may be used. Second, it is an essential feature in completing a conception of the conditions related to coxa plana.

The treatment of coxa magna should be rest in bed without immobilization and removal of foci of infection.

Coxa magna may arise in a variety of ways, which are illustrated here by selected cases.

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ABSTRACT OF DISCUSSION

DR OSCAR L. MILLER, Charlotte, N. C. In 1930 I read a paper before this section on acute transient epiphysitis of the hip joint. I had followed a series of cases of this disease for several years. I described transient epiphysitis in that paper as a disease of childhood, the cases reported showing an average age of $7\frac{1}{2}$ years. The children affected were usually active and vigorous and no prodromal period of indisposition or declining health was observed. Local symptoms about the hip varied from negligible complaint to marked muscle spasm, deformity and temporary prostration. Moderate elevation of temperature and leukocytosis were the rule. Early remission of symptoms followed tonsillectomy in about 80 per cent of the cases. Some cases appeared to be associated with the acute exanthems. Roentgenograms in transient epiphysitis of the hip may appear negative for a while in the invasion period, but eventually some disturbance of bone texture should be observed along the proximal or distal border of the epiphysal line and evidence of exudate into the joint with distention of the capsule. My conception of the pathology of transient epiphysitis is that small showers of infected emboli lodge as infarcts near the epiphysal line within the hip joint and the extent of disease resulting depends on the virulence of the organism infecting and the resistance of the subject. I believe that the majority of hip lesions in childhood have their origin in the more or less

terminal vessels about the femoral epiphysis and that the soft parts are secondarily involved from infected exudate. The treatment in all the cases of transient epiphysitis of the hip joint was rest in bed for a period, traction on the leg when muscle spasm was present, and clearing up any known foci of infection. All of the patients made complete recovery. That is my conception of one type of hip disturbance that might result in coxa magna. Just whether this overgrowth occurs from an increase or a decrease in the blood supply, I do not know. I had thought it occurred from an increased blood supply. I wish to petition that, before accepting coxa magna as a special entity, the authors acknowledge, as a definite disease its parent or forerunner, acute transient epiphysitis of the hip.

DR M. BECKETT HOWORTH, New York. In two articles accepted for publication in the October issue of *Bone and Joint Surgery* Dr. Ferguson and I have reported eighty cases of coxa plana and in one of the articles we have described five different types of ischemia into which we think these conditions can be grouped. The cases we here report which we have been able to follow through are cases that belong in the first class of ischemia—simple, uncomplicated. When coxa plana or anything else is present we do not call the condition coxa magna. The cases which Dr. Miller showed we would classify as due to group 2 ischemia associated with a definite lesion of the femoral neck, and they would not come in the former classification.

COMPARISON OF THE URINARY TRACT IN PREGNANCY AND PELVIC TUMORS

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AND

JOHN S. LEWIS, JR., MD

YOUNGSTOWN, OHIO

The advent of intravenous kidney dyes has opened up additional fields of investigation. Prior to the period of the dyes, the investigation of the urinary tract in pregnancy was disturbing and possibly harmful to the patient. In consequence, comparatively few complete studies of the normal urinary tract in pregnancy were done. In the last few years, several such studies have been made.¹ These studies have disclosed certain facts which have been valuable in clinical investigation of pathologic conditions existing in pregnancy, such as pyelitis.

The study by intravenous dyes of the urinary tract in pregnancy meets ideal conditions. It is known that intravenous urography succeeds best when a certain degree of obstruction between the kidney and the bladder coexists with a fair to good excretory function of the kidneys. Such a combination of clinical circumstances is found in pregnancy. These studies have revealed a high degree of dilatation of the upper urinary tract. This dilatation is more marked on the right side.²

In several such series reported,³ the right side was dilated in from 90 to 100 per cent. The left side

Read before the Section on Radiology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1 (a) Kretschmer, H. L., and Heaney, N. S. Dilatation of the Ureter and Kidney Pelvis During Pregnancy. *J. A. M. A.* 85: 406 (Aug. 8) 1925. (b) Kretschmer, H. L., Heaney, N. S., and Ockuly, E. A. Dilatation of the Kidney Pelvis and Ureter During Pregnancy and the Puerperium. *A. Pyelographic Study in Normal Women*. *ibid.* 101: 2025 (Dec. 23) 1933. (c) Lee, H. P., and Mengert, W. F. Effect of Pregnancy on the Urinary Tract. *ibid.* 102: 102 (Jan. 13) 1934. (d) Seng, M. I. Dilatation of the Ureters and Renal Pelvis in Pregnancy. *Urological Study of the Normal Antepartum and Postpartum Woman*. *J. Urol.* 21: 475 (April) 1929. (e) Hofbauer, J. I. Structure and Function of the Ureter During Pregnancy. *ibid.* 20: 413 (Oct.) 1928. (f) Baird, Dugald. The Upper Urinary Tract in Pregnancy. *Lancet* 2: 983 (Nov. 5) 1932.

2 Craigie, E. B. *Am. J. Obst.* 77: 422 1918.

3 Kretschmer, Heaney, and Ockuly.^{1b} Lee and Mengert.^{1c}

showed varying figures but never approached the high figure of the right side

In our own series the right sided dilatation was 92 per cent (table 1) The left side showed dilatation in 52 per cent These figures compare favorably with the statistics given in other series

It was early apparent that the position of the fetus had no effect on the dilatation The occurrence of dilatation was found in breech presentations, in right and left occipital presentations, and in twin pregnancy with both twins lying transversely In one case the fetus changed from an occiput to a breech presentation Examination was done in both positions Right sided dilatation was found in both positions

TABLE 1—Percentage of Dilatation

	Pregnancies	Tumors
Both sides	52	63
Right side	40	37
Left side	0	0
Neither side	8	0

In our series no real dilatation occurred until the uterus rose into the abdomen The dilatation was more pronounced after the fourth month until close to term, when it appeared to subside slightly in some cases At the third month, however, the upper tract on the right side showed better filling with the excreted dye than is usually seen in normal, nonpregnant patients

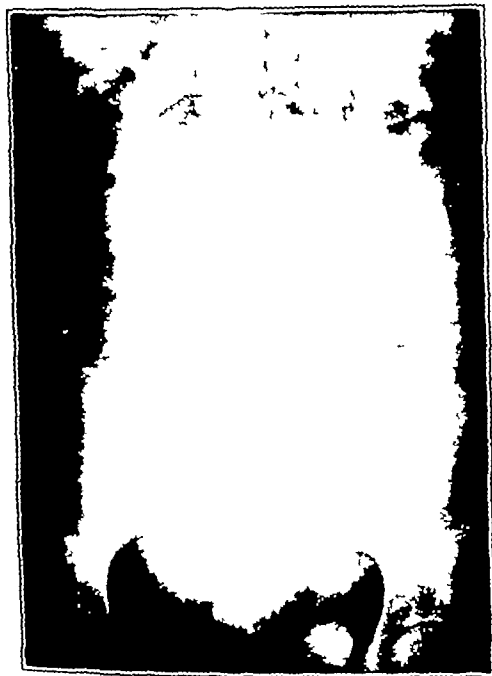


Fig 1—Pregnancy showing good filling of upper urinary tracts No real dilatation

The stasis thus demonstrated helps to explain the reason for the frequency of pyelitis or urinary infection in pregnancy

Several explanations have been advanced for the dilatation, and especially for the right sided preponderance Chief among the causes listed in the current literature are (1) mechanical factor,⁴ (2) hormonal

factor,¹⁰ (3) increase in bile salts¹⁶ attended with hypertrophy of the lower ureters, and (4) congestion of the lower ureters associated with increased blood supply to the pelvic organs It is our belief that the mechanical factor is of prime importance This factor was called to our attention by a postmortem examination of a case a few days post partum In studying the relations of the organs after the intestine was dis-

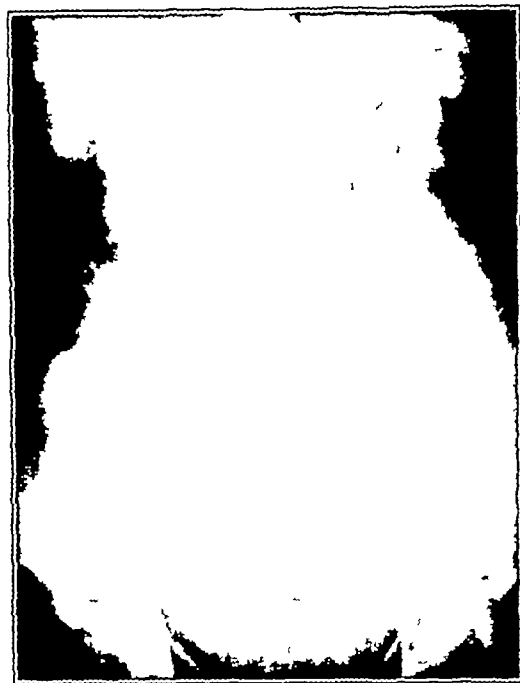


Fig 2—Ovarian cyst the size of a seven months pregnancy Upper urinary tracts well filled

placed, it was readily apparent how firmly the post-partum uterus fit against the right pelvic brim On the left side the sigmoid⁵ formed a soft cushion between the uterus and the pelvic brim The left ureter passed behind the sigmoid over the pelvic brim The sigmoid formed a soft, yielding and changing cushion between the uterus and the left ureter

Following this lead a few patients were given intravenous dye At the time when the urinary dilatation was well visualized, a weak suspension of barium sulphate was given by rectum to outline the lower colon Roentgenograms taken in the oblique positions showed clearly the relation of the sigmoid to the lower left ureter We feel that the torsion of the uterus to the right—a fact found in any standard textbook of obstetrics—is due to the sigmoid We have failed to find this fact given any emphasis, usually it is not even mentioned It seems a logical explanation of the cause of the rather marked right-sided preponderance of urinary dilatation This is especially true if the mechanical theory is to hold any weight

Clinically there are two other conditions that simulate pregnancy in their effect on the urinary tract These conditions are dissimilar in origin and cannot have the same hormonal or metabolic effect on the patient as that found in pregnancy The two conditions that cause this effect on the upper urinary tract are (1) the fibroma of the uterus of large size and rather uniform outline

⁴ Opitz Ztschr f Geburtsh u Gynak 4: 209 1905

⁵ Carson W J Ureteral Dilatation of Pregnancy Autopsy Findings J Urol 16 167 (Sept) 1926

and (2) the large ovarian cyst. It is of course difficult to find a large series of such cases to study. By cooperation of the surgical staffs we have investigated all such cases that we could obtain. The results of this investigation have more strongly confirmed our belief in the mechanical cause of the urinary stasis in pregnancy.



Fig. 3—Pregnancy near term. Marked right sided dilatation.

Our series of fibromas and ovarian cysts number twenty-three. Of this number, seven cases are not included because of their small size. In these cases the tumor was less than the size of a three months pregnancy. In these seven cases of small tumors the upper urinary tracts were well visualized but showed no real dilatation. This condition was similar to that found in pregnancies of comparable size.

TABLE 2—Distribution of Dilatation in Eight Fibromas and Eight Cysts

	0	+	++	+++	++++
Right pelvis	6	0	32	44	12
Left pelvis	38	38	24	0	0
Right calices	6	19	31	31	13
Left calices	38	56	0	0	0
Right ureter	0	10	31	44	6
Left ureter	63	10	10	0	0

The other sixteen cases were of a size comparable to that of the pregnant uterus in which we found real dilatation. These sixteen cases (table 1) all showed dilatation of the right upper urinary tract at some point. Eight of these cases were fibromas and eight were ovarian cysts. All fibromas that had small localized fibromas pressing directly on the ureter were not included. All cases have been proved by operation.

Fifteen cases showed dilatation of the right pelvis (table 2). Ten cases showed dilatation of the left pelvis. Fifteen cases showed dilatation of the right calices. Ten cases showed dilatation of the left calices. Sixteen cases showed dilatation of the right upper ureter. Six cases showed dilatation of the left upper ureter.

In all cases in which the left side was dilated, the right side showed greater dilatation. Three of the ovarian cysts originated from the left ovary.

Some of these cases show the same lateral deviation (table 3) of the lumbar ureter that is seen frequently in pregnancy. Six cases of the twenty-three showed

TABLE 3—Deviation of Ureter

	Lateral Displacement of Lumbar Ureter in Tumors per Cent	Elongation with Looping of Ureter per Cent
Neither side	54	71
Left side	8	0
Both sides	29	4
Right side	13	25

TABLE 4—Visualization of the Pelvic Ureters

	Pregnancies per Cent	Tumors per Cent
Neither side	46	53
Left side	34	17
Both sides	12	30
Right side	8	0

lateral deviation of both ureters. Three cases showed this on the right side only and two cases on the left side only.

One case showed elongation with a bilateral looping of the ureter, and six cases showed a similar condition on the right side.

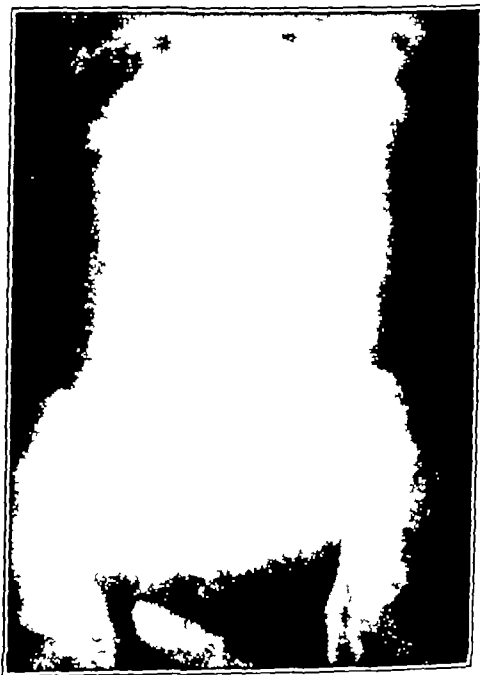


Fig. 4—Large left ovarian cyst. Marked dilatation of the right upper urinary tract.

As in pregnancies, the visualization of the pelvic ureter was not constant. The cases in which it was seen (table 4), while not statistically exactly alike, were comparable in appearance in the pregnancies and the tumors.

Grading of the degree of involvement (table 5) in both conditions was comparable. The greatest percentage was found in the +++ grading on the right side.

Contrary to other data in the literature, we found that dilatation in the tumor series could become as extreme as in pregnancy.

One case is particularly illustrative (fig 4). In a girl aged 15 years, the abdomen was distended with an ovarian cyst extending to the umbilical process. At operation the cyst was found to originate in the left

ovary and very slowly into the ureter. In any case of pregnancy or tumor in which there is any real stasis, the same phenomenon is seen. In the series of cases that is presented this observation was infrequent on the left side and was fairly frequent on the right side. The unilateral evidence of stasis points to some other causation than that of hormones which should act bilaterally.

One other clinical fact points strongly to the mechanical obstructive theory. Pregnant women seriously ill with infection of the upper tract who have been treated by one of us (J. S. L. Jr.) without instrumental intervention have responded to the prolonged knee-chest position. This position removes the mechanical obstructive factor by allowing the weight of the pregnant uterus to come against the anterior abdominal wall. The pressure against the pelvic brim is relieved.

SUMMARY

The common factor in dilatation of the upper urinary tract in such diverse conditions as pregnancy and large pelvic tumors of pelvic origin is a mechanical one. Hormonal and metabolic factors can hardly be the same. The condition is more marked on the right side. In addition, postural drainage gives relief in clinical cases of infection of the upper tract.

CONCLUSIONS

1. There is a high degree of dilatation of the upper urinary tract in pregnancy, in large ovarian cysts and in fibromas of the uterus.

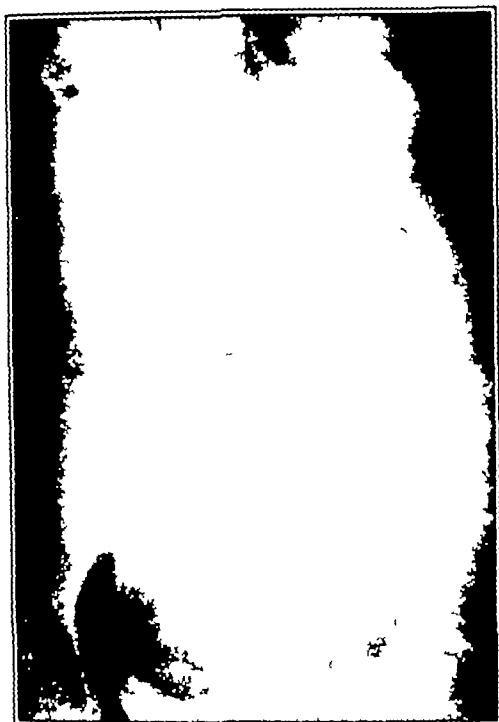


Fig 5—Pregnancy near term. Both upper urinary tracts dilated; right side more marked.

ovary, yet the intravenous urinary examination disclosed a marked right-sided dilatation. Several other cases were of nulliparous women. No possibility of a previous pregnancy causing the dilatation was admissible. In a few cases of tumors investigated postopera-

TABLE 5—Percentage of Involvement

Tumors	0	+	++	+++	++++
Right	0	12	32	44	12
Left	20	60	24	0	0
Pregnancies					
Right	8	6	22	30	32
Left	26	26	26	8	2

tively, the dilatation of the urinary tract disappeared following the removal of the tumor. This coincides with the return to the apparent normal condition of the postpartum urinary tract.

There is roentgenologic evidence that appears to support the mechanical obstructive theory. In some cases of stone obstruction of the ureter, or other mechanical obstruction, the following phenomena are frequently observed when intravenous dye is administered. On the normal side the pelvis, calices and ureter are visualized almost immediately. On the obstructed side a faint filling of the calices first appears. As the excretion of dye continues, the calices become more dense. Then the dye diffuses into the pelvis and



Fig 6—Large fibroma of uterus. Both upper tracts dilated; right more than left.

2. The dilatation of the right tract is greater and more common.

3. The cause is largely mechanical pressure.

4. The sigmoid plays an important part in protecting the left ureter and probably is the cause of the torsion of the uterus, with resultant increased pressure on the right ureter.

Youngstown Hospital

ANTIRACHITIC COW'S MILK

COMPARATIVE STUDY OF ANTIRACHITIC VALUE OF
IRRADIATED COW'S MILK AND OF MILK
PRODUCED BY COWS FED IRRADIATED YEAST

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The following report presents the results of a study made at the Babies and Childrens Hospital of Cleveland to determine the comparative antirachitic efficacy for human infants of two milks produced and assayed at the Ohio Agricultural Experiment Station Wooster,

and kept under the same environmental conditions and that the milks have the same rat unit potency. The desired potency was set at approximately 55 Steenbock rat units per quart.

PRODUCTION

Six disease-free Holstein cows were selected from the Ohio Agricultural Experiment Station herd. These were divided into two groups of three each in such a manner that the groups were as nearly alike as possible with respect to milk production, fat percentage and stage of lactation. All the cows received the same basal ration, consisting of excellent quality alfalfa hay and a grain mixture made up of yellow corn meal, ground oats, wheat bran, and linseed oil meal. The cows were kept under winter feeding conditions throughout the study, a small amount of exercise being obtained each suitable day by turning the cows out into a vegetation free lot.

One group of cows received in addition to the basal ration an amount of irradiated yeast shown by preliminary trial to be necessary if the cows were to pro-

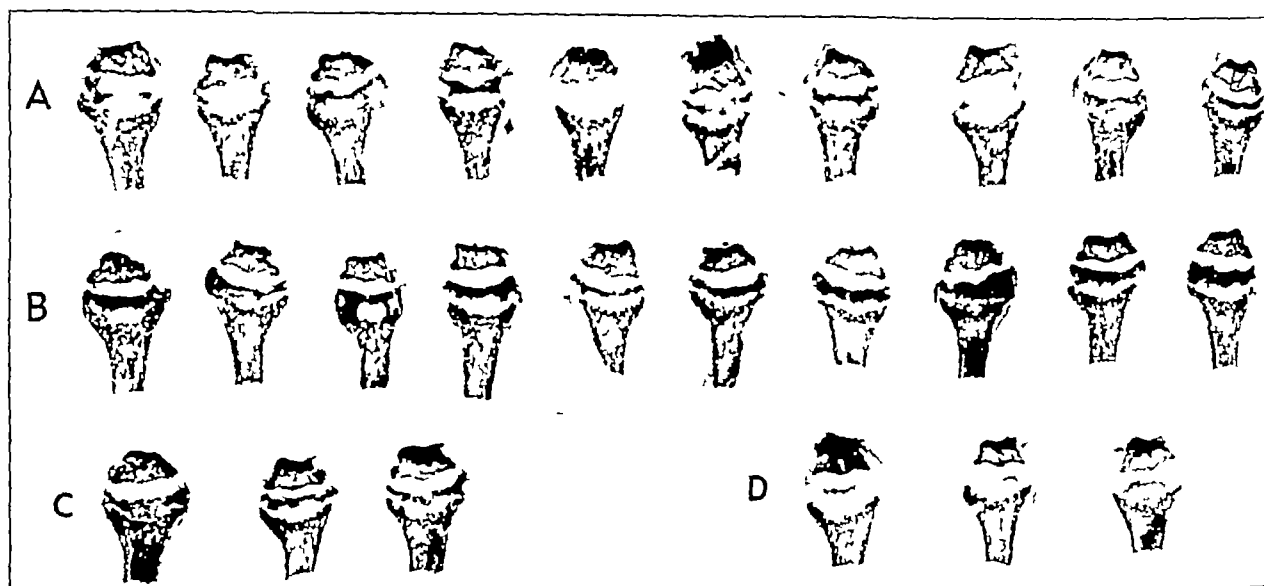


Fig. 1—Line tests of rats fed as follows: A 50 mg of Y milk fat (composite sample representing period from April 16 to June 2 1934); B 50 mg of L milk fat (corresponding sample); C 1 Steenbock unit of reference cod liver oil; D no vitamin D supplement. (See table 6.)

Ohio. The one milk, labeled L milk, was made antirachitic by irradiation; the other, labeled Y milk, by feeding the cows irradiated yeast.

PART I PRODUCTION AND ASSAY¹

By W E KRAUSS, PH.D., AND R. M. BETHKE, PH.D.

One premise on which a satisfactory comparison of different vitamin D milks must be based is a supply of such milks carefully controlled with respect to production and potency. Realizing this, arrangements were made to produce and to control at the Ohio Agricultural Experiment Station two types of vitamin D milk and to furnish these milks to the Babies and Childrens Hospital of Cleveland. One of these milks was produced by feeding cows irradiated yeast, the other by subjecting milk to the rays of a carbon arc lamp. It was intended that the two milks originate from cows fed alike, except for the yeast supplement,

TABLE 1—Comparative Vitamin D Potencies of Y Milk and of L Milk (Curative Method)

Date 1934	Y MILK		L MILK	
	Plus Value	Per Cent Fat	Plus Value*	Per Cent Fat
Feb. 5 to 14	1.62	3.50	1.62	3.40
Feb. 19 to 25	1.33	3.43	1.00	3.55
Feb. 25 to March 9	1.33	3.75	1.20	3.40
March 8 to 17	1.33	3.70	1.10	3.50
March 16 to 25	1.00	3.88	1.60	3.30
March 26 to April 4	1.10	3.40	1.17	3.43
March 30 to April 8	1.00	3.30	1.06	3.20
April 9 to 18	1.00	3.10	1.00	3.25
April 16 to 25	1.14	3.30	1.30	3.45
April 20 to 29	1.10	3.65	1.00	3.45
April 30 to May 9	1.00	3.55	1.23	3.38
May 7 to 16	1.06	3.58	1.58	3.53
May 14 to 23	1.21	3.58	1.55	3.40
May 21 to 30	1.23	3.50		
Averages	1.21	3.47	1.26	3.43

* The arithmetical mean of the individual arbitrary assigned values indicates the degree of bending. At the level of milk fed a score of 1.0 indicates an approximate potency of 55 Steenbock rat units per quart.

duce milk containing approximately 55 Steenbock rat units per quart. The yeast requirement was based on milk production, and the amount needed was incorporated with the grain when mixed at eight-day

A preliminary report was presented in part at the Symposium on Vitamin D Milk Joint Annual Conference of the American Association of Medical Milk Commissions Inc. and the Certified Milk Producers Association of America Inc. Cleveland June 12 1934.

¹ From the Ohio Agricultural Experiment Station Wooster, Ohio.

intervals This yeast-grain mixture was then fed at the rate of 1 pound to every 3½ pounds of milk produced

TABLE 2—*Vitamin D Potency of Y Milk (Curative Method)**

	Plus Value	Per Cent Fat
May 31 to June 8	1.3	3.00
June 11 to 23	0.9	3.00
June 18 to 27	0.8	3.00
June 25 to July 4	0.7	3.00
July 3 to 19	0.8	1.00
July 10 to 19	1.1	3.00
July 23 to Aug 1	1.1	4.00
July 30 to Aug 8	0.9	4.20
Aug 7 to 16	0.8	4.00
Aug 27 to Sept 5	1.1	4.70
Sept. 4 to 13	1.3	4.00
Averages	1.0	3.92

* May 31 to Sept 13 1934

The apparatus used in the irradiation process consisted of a carbon arc lamp² the light from which was reflected onto a thin film of milk flowing over a small surface cooler at the rate of 960 cc per minute. The lamp, equipped with Industrial C carbons at 20 inches from the milk film, was operated at 60 amperes. The milk that was irradiated came from the group of cows not receiving the yeast supplement.

The milks prepared as described were cooled, bottled, iced and shipped to the Babies and Childrens Hospital

The following key letters were used in marking each bottle, and these letters have been retained in referring to the milks throughout this paper. Y, milk from cows fed irradiated yeast, L, irradiated milk, S, skimmed milk.

TABLE 4—*Comparative Vitamin D Potencies of Butter Fat from Y Milk and from L Milk (Prophylactic Method)**

Supplement Fed Daily	No of Rats	Gain in Weight Gm	Average Daily Food Intake (Basal) Gm	Calcification (Plus Value)	Bone Ash per Cent
40 mg Y milk fat	8	34.5	7.4	2.4	36.90 ± 0.43
40 mg L milk fat	8	33.8	8.4	3.3	42.22 ± 0.55
60 mg Y milk fat	8	37.2	8.0	2.6	40.47 ± 0.28
60 mg L milk fat	8	34.1	7.9	3.6	44.11 ± 0.36
3 drops cod liver oil	8	33.4	7.5	4.0	45.67 ± 0.34
None	8	30.8	7.5		26.90 ± 0.53

* Composite sample representing period from April 16 to June 2, 1934
† See footnote to table 3

CONTROL

In order adequately to control the potency of the milk being shipped it was felt desirable to attempt to have samples of this milk under continuous assay. A small amount of Y milk and of L milk was taken out of each

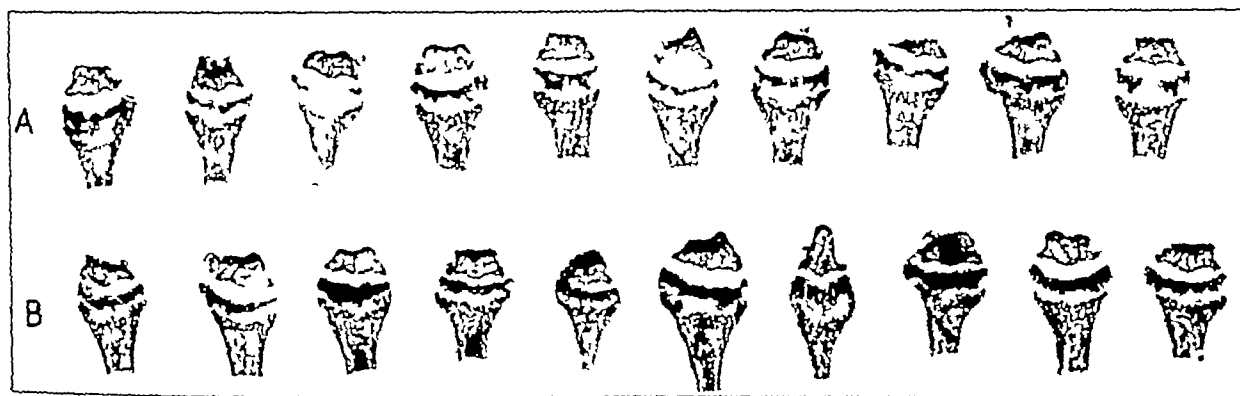


Fig 2—Line tests of rats fed as follows. A 75 mg of Y milk fat (same sample as in fig 1) B 75 mg of L milk fat (corresponding sample) (See table 6). The line tests of the rats fed 50 mg and 75 mg of Y or L milk fat from the composite samples representing the period January 30 to April 14 1934 showed that the same relationship existed between the fats from the two sources as shown in figures 1 and 2 (See table 5).

of Cleveland four times a week in the quantity specified. In addition there was included in each shipment a specified amount of skimmed milk obtained by sepa-

TABLE 3—*Comparative Vitamin D Potencies of Butter Fat from Y Milk and from L Milk (Prophylactic Method)**

Supplement Fed Daily	No of Rats	Gain in Weight Gm	Average Daily Food Intake (Basal) Gm	Calcification (Plus Value)	Bone Ash per Cent
40 mg Y milk fat	8	42.4	8.4	2.88	39.11 ± 0.38
40 mg L milk fat	8	42.1	8.8	2.88	43.22 ± 0.43
60 mg Y milk fat	8	40.0	8.4	2.50	42.41 ± 0.59
60 mg L milk fat	8	40.6	8.3	3.31	46.71 ± 0.41
3 drops cod liver oil	8	37.0	8.3	4.00	48.21 ± 0.22
None	8	40.9	8.5		28.41 ± 0.73

* Composite sample representing period from Jan 30 to April 14 1934
† Degree of protection (width of epiphyseal diaphyseal cartilage)

No protection severe rickets

1.0 + Slight protection

2.0 + Moderate protection

3.0 + Marked protection

4.0 + Complete protection

The values given are averages of the sum of the individual readings

rating untreated milk taken from the cows producing the supply to be irradiated

² Manufactured by the National Carbon Company Cleveland. This was the same type of unit as used in commercial irradiations

TABLE 5—*Comparative Vitamin D Potencies of Butter Fat from Y Milk and from L Milk (Curative Method)**

Supplement Fed Daily	No of Rats	Average Line Test (Plus Value)
50 mg Y milk fat	8	0.3
50 mg L milk fat	8	1.0
75 mg Y milk fat	8	0.9
75 mg L milk fat	8	1.6
None	2	0.0

* Composite sample representing period from Jan 30 to April 14 1934

TABLE 6—*Comparative Vitamin D Potencies of Butter Fat from Y Milk and from L Milk (Prophylactic Method)**

Supplement Fed Daily	No of Rats	Average Line Test (Plus Value)
50 mg Y milk fat	10	0.6
50 mg L milk fat	10	1.6
75 mg Y milk fat	10	1.1
75 mg L milk fat	10	1.7
Positive control†	3	1.0
None	3	0.0

* Composite sample representing period from April 16 to June 2, 1934
† One Greenback rat unit of reference cod liver oil

daily batch and fed to rachitic rats at the rate of 2.1 cc daily for eight days. After two additional days on the basal rickets-producing diet (No 2965), the animals

were killed and their radii and ulnas examined for calcification according to the usual line-test procedure. From eight to ten rats were used on each milk for each

TABLE 7—Comparative Vitamin D Potencies of Dried Whole Y Milk and of Dried Whole L Milk (Curative Method)

Supplement Fed Daily	No. of Rats	Average Line Test (Plus Value)
200 mg dried Y milk	10	0.6
200 mg dried L milk	9	1.4
300 mg dried Y milk	10	1.7
300 mg dried L milk	10	2.2
Positive controls*	4	0.9
None	4	0.0

* One Steinhock rat unit of reference cod liver oil

assay. Owing to the fact that 'rickets resistance' was encountered during the early period of assaying the data from less than eight animals were used in arriving at a potency evaluation in a few cases. The results of these assays are given in table 1.

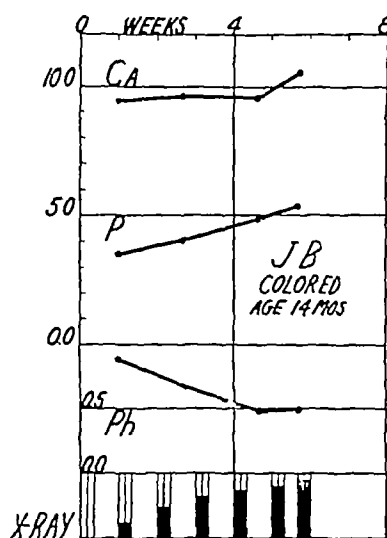


Fig. 3—Blood serum calcium, inorganic phosphate and phosphatase curves and degree of healing as revealed by roentgenogram in a case of so-called spontaneous healing rickets (J. B. see also figs. 4, 5, 6 and 7). This case is given as an example of the kind that is eliminated by the preliminary treatment-free observation period used by the authors and one that if not excluded would have led to erroneous results. In this chart and subsequent charts the columns consisting of four lines represent mild rickets of three lines moderate rickets and of two lines marked rickets. The black areas in the columns indicate the presence and extent of healing. The vertical dotted line indicates the end of the four-week observation period and the beginning of treatment.

TABLE 8—Comparative Vitamin D Potencies of Dried Whole Y Milk and of Dried Whole L Milk (Prophylactic Method)

Supplement Fed Daily	No. of Rats	Gain in Weight Gm	Average Daily Food Intake (Basal) Gm	Calcification* (Plus Value)	Bone Ash per Cent
100 mg dried Y milk	8	49.3	8.5	2.0	40.08 ± 0.31
100 mg dried L milk	8	51.3	8.7	2.5	42.84 ± 0.32
240 mg dried Y milk	8	52.8	8.8	2.7	42.50 ± 0.32
240 mg dried L milk	8	55.3	9.2	3.1	45.18 ± 0.24
3 drops cod liver oil	7	55.1	8.0	4.0	44.67 ± 0.24
None	8	37.8	7.8		25.41 ± 0.33

* See footnote to table 3

comparable in vitamin D content from period to period and that there was no measurable difference between the average potencies over the entire period. Owing to the fact that in the first several assays considerable difficulty was experienced in developing the proper

degree of rickets, it seemed to us that further checks on the relative potencies needed to be made, particularly since the milks were fed at only one level. If the assays made after April 1 are considered by themselves the results may be interpreted as indicating a larger content of vitamin D in the L milk. The last eight assays reported in table 1 and all those reported in table 2 were not complicated by "rickets resistance."

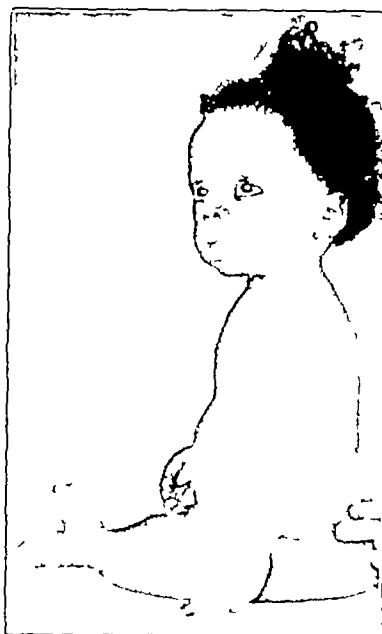


Fig. 4—Lateral photographic view showing chest deformity in patient J. B. 14 months of age.

These line-test readings were checked several months later by reading the opposite bones, which had been preserved in 4 per cent solution of formaldehyde U. S. P. The average values of these second readings were almost identical with the first. After May 30, 1934, when the last feeding of L milk to infants was made, the average potency of the Y milk during the remainder of the period when this milk was fed was exactly at the desired point (table 2).

As a further check on potency it was felt desirable to compare composite samples of fat obtained from small samples of milk taken from each kind of milk when shipped. It was assumed that vitamin D was practically entirely associated with the fat and that a prophylactic trial on composite samples of fat representing the entire period during which both milks were fed would yield more definite data in terms of bone ash values than could be obtained when arbitrary line-test values were used as criteria. Conse-



Fig. 5—Anteroposterior photographic view of wrists showing pathologic enlargement.

quently two composite samples of the fat from each kind of milk were made: the first representing the period from Jan. 30 to April 14, 1934, and the second the period from April 16 to June 2, 1934.

Weanling rats were fed in addition to the standard rickets-producing diet (No. 2965), 40 mg or 60 mg daily of Y or L butter fat for four weeks. At the end of that time the animals were killed, their radii and

ulnas examined for calcification and the amount of ash in the moisture-free fat-free femurs determined. The results obtained are shown in tables 3 and 4.

In both trials significantly greater bone ash values were obtained with 40 mg and 60 mg, respectively of L fat than with 40 mg and 60 mg respectively of Y fat, and in each case the bone ash values obtained on 40 mg of L fat or 60 mg of Y fat were not significantly different. If the standard prophylactic procedure as followed here is to be considered a measure of vitamin D potency these results indicate that fat from the L milk fed to the infants contained more vitamin D than did that from the Y milk and that the relationship between their potencies was in the ratio of 3:2. The differences obtained could not have been due to a greater concentration of vitamin D in the fat of the L milk because the two milks had the same fat content (table 1).

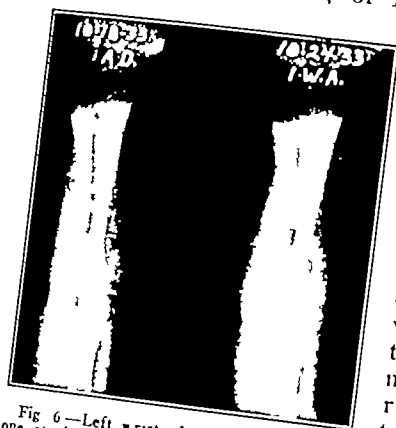


Fig 6—Left wrist of patient J B. The one at the left was taken on the day of admission. Moderate rickets is present with signs of healing. The one at the right was taken one week after admission and shows further healing. Blood serum calcium was 9.4 inorganic phosphate 3.5 phosphatase 0.89.

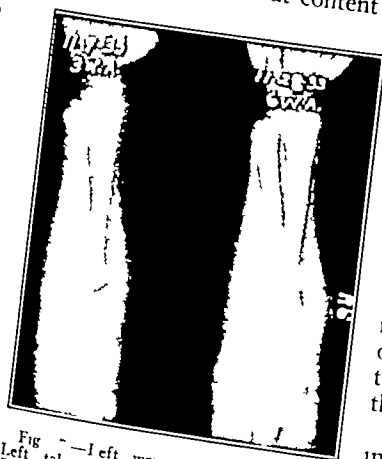


Fig 7—Left wrist of patient J B. Left taken three weeks after admission. Right six weeks after admission. Blood serum calcium 10.4 inorganic phosphate 5.3 phosphatase 0.5. Both roentgenograms show a marked increase in healing although no specific therapy had been administered since admission. The healing therefore was due to the influence of the antirachitic factor somehow administered before admission to the hospital (so-called spontaneous healing).

and the dried L milk thus obtained were then assayed curatively and prophylactically with rats. The results of the curative trial are given in table 7 and those of the prophylactic trial in table 8. As in the case of the rats receiving 160 and 240 mg of dried L milk are significantly greater than those of the rats receiving 160

and 240 mg of dried Y milk, the ratio again being 3:2. A similar ratio was found to exist in the curative assay (table 7).

It would seem to be evident, therefore, that the curative assays made on the liquid milks as fed (table 1) did not give a true evaluation of the actual or relative vitamin D potencies of the two milks. This may be attributed to a failure of our animals to develop the proper degree of rickets during the earlier assays (up to April 1) and to the fact that the milks were fed at only one level.

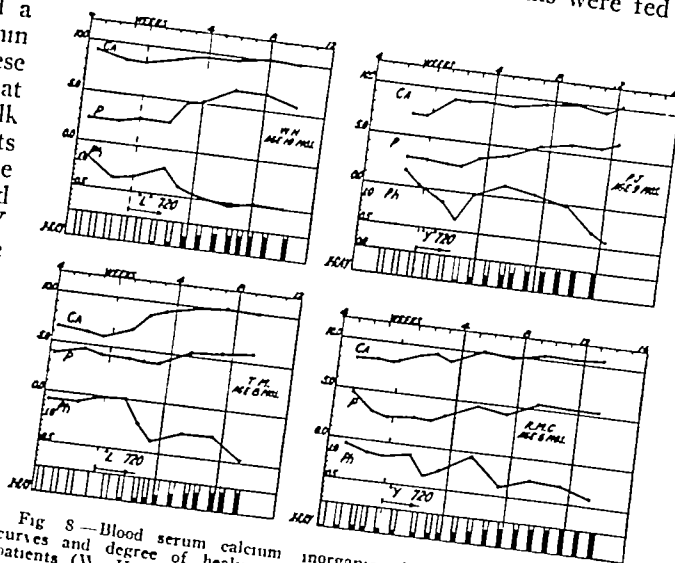


Fig 8—Blood serum calcium curves and degree of healing as revealed by roentgenogram for two patients (W, H and T, V) receiving 720 cc of L milk and for two patients (P, J and R, M, C) receiving 720 cc of Y milk. All four patients had marked rickets.

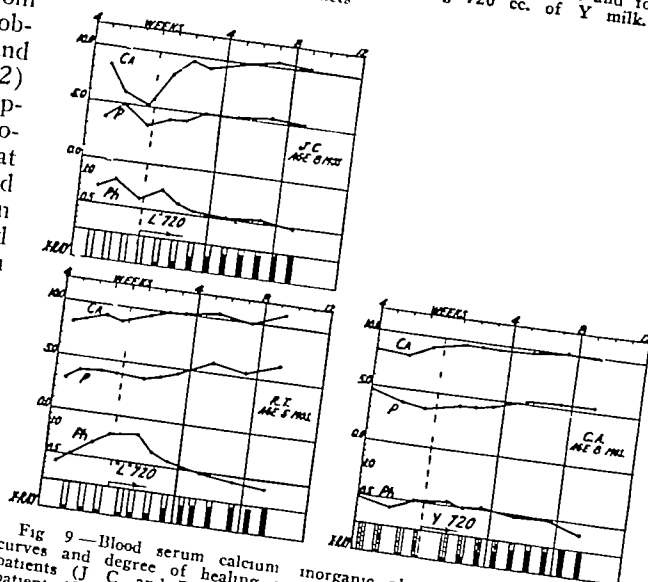


Fig 9—Blood serum calcium curves and degree of healing as revealed by roentgenogram for two patients (J, C and R, T) receiving 720 cc of Y milk and for one patient (C, A) receiving 720 cc of L milk. Of these three patients J, C had mild rickets and the other two moderate rickets.

CONCLUSION

Considering primarily the curative and prophylactic assays of the composite butter fats and of the dried milks, it must be concluded that of the milks used in this study the irradiated milk contained per unit of measure, more vitamin D than did the yeast milk. More specifically, the irradiated milk contained approximately 80 and the yeast milk approximately 55 Steenbock rat units per quart.

3 In this paper two means are considered to be significantly different when their actual difference is three or more times the square root of the sum of the squares of their probable errors. This means that the odds are 22 or more to 1 that the difference is not due to chance.

PART II CLINICAL EVALUATION⁴

BY HENRY J GERSTENBERGER M.D., ARTHUR J HORESH M.D., AND A L VAN HORN, M.D.

The question whether a chosen dose of a supposedly antirachitic agent can or cannot completely heal a given case of human rickets and at what speed can be

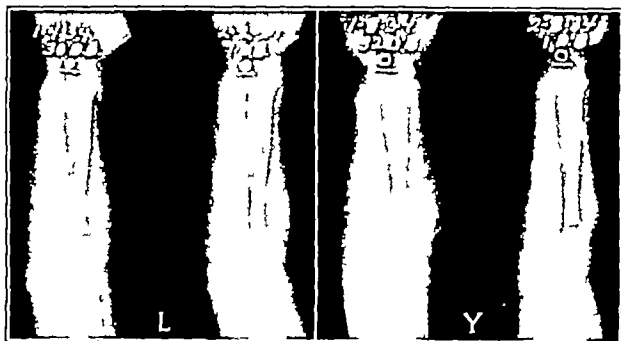


Fig 10—Left wrists for comparison of two patients with marked rickets (T M and P J) who received 720 cc of L milk and 720 cc of Y milk respectively (Continued in figs 11 12 and 13) The figures and letters appearing in the photographs of the roentgenograms give the date the number of days (D) either before (B) or after (A) treatment and the approximate degree of healing in per cent (0 indicates no healing 25 indicates 25 per cent healing and so on) L patient T M Left thirty days before L milk therapy no healing blood serum calcium 66 inorganic phosphate 38 phosphatase 134 Right one day before L milk therapy no healing blood serum calcium 6 inorganic phosphate 42 phosphatase 146 Y patient P J Left thirty two days before Y milk therapy no healing no blood chemistry done at this time as the parents temporarily refused to permit the patient to remain at the hospital Right one day before Y milk therapy no healing blood serum calcium 72 inorganic phosphate 28 phosphatase 133 One week previously identical figures for calcium and inorganic phosphate were obtained and determinations made at ten and seventeen days after the beginning of treatment also showed practically identical figures for the inorganic phosphate

unequivocally answered by adopting a plan that was developed by Hartman and one of us⁵ in 1925 after unsuccessfully attempting to determine the relative antirachitic value of cod liver oil quartz lamp and carbon

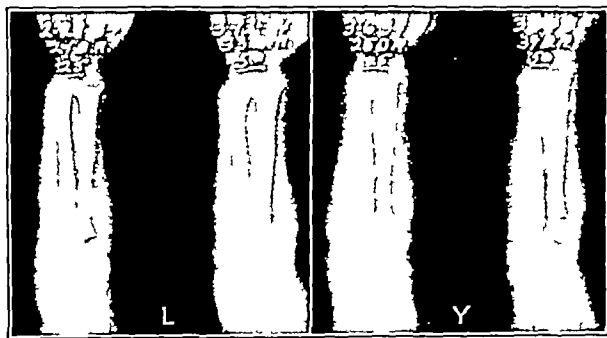


Fig 11—Roentgenograms for comparison continued from figure 10 L patient T M Left twenty four days after L milk therapy 25 per cent healing blood serum calcium 92 inorganic phosphate 38 phosphatase 072 Right thirty three days after L milk therapy 50 per cent healing blood serum calcium 98 inorganic phosphate 53 phosphatase 094 Y patient P J Left twenty five days after Y milk therapy 25 per cent healing blood serum calcium 92 inorganic phosphate 33 phosphatase 126 Right thirty nine days after Y milk therapy 50 per cent healing blood serum calcium 91 inorganic phosphate 41 phosphatase 152

arc therapy, and that led us to recognize the significance of interrupted and of inadequate therapy in the etiology of infantile rachitic spasmophilia⁶ (secondary low calcium rickets)

⁴ From the Babies and Childrens Hospital Cleveland and the Department of Pediatrics School of Medicine Western Reserve University

⁵ Gerstenberger H J Hartman J I and Smith D N The Antirachitic Value of Human Milk, California & West Med 27 40 (July) 1927

⁶ Gerstenberger H J Rickets J A M A 89 261 (July 23) 1927 Hartman J I Rachitic Spasmophilia Tr Central States Pediat Soc 2 37 1927 Gerstenberger H J, Hartman J I Russell G R and Wilder T S The Etiology of Infantile Spasmophilia J A M A 94: 523 (Feb 22) 1930

The plan just referred to requires that a treatment free period of from three to five weeks precede the administration of the antirachitic agent to be tested in order to be certain that a healing of the rickets has not already begun and, if signs of healing are evident in the roentgenograms, that the healing process responsible for the changes has come to a standstill Unless one or the other of these conditions is found to be present in the patients studied, no dependence, from the standpoint of scientific accuracy, can be placed on the results of the assay made Furthermore, it is advisable in order to obtain a dependable quantitative answer once the administration of the antirachitic factor has been started in a suitable case, that treatment be con

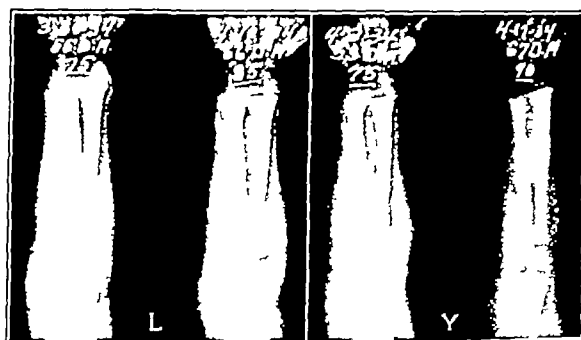


Fig 12—Roentgenograms for comparison continued from figure 11 L patient T M Left fifty five days after L milk therapy 75 per cent healing blood serum calcium 102 inorganic phosphate 56 phosphatase 096 Right sixty six days after L milk therapy 85 per cent healing blood serum calcium 101 inorganic phosphate 59 phosphatase 055 Y patient P J Left fifty three days after Y milk therapy 75 per cent healing blood serum calcium 96 inorganic phosphate 53 phosphatase 141 Right sixty seven days after Y milk therapy 90 per cent healing blood serum calcium 98 inorganic phosphate 59 phosphatase 125

tinued for a period of time sufficiently long to give the antirachitic factor full opportunity to bring about a complete healing of the rickets Such a period of therapy should be at least twelve weeks long and if necessary, even twenty to twenty-four If complete healing, as definitely shown by the conditions found in the blood and in the roentgenograms, has been brought

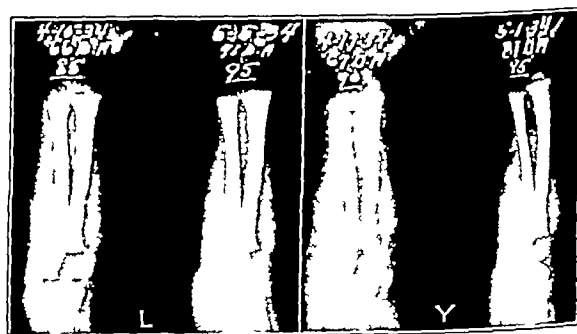


Fig 13—Roentgenograms for comparison continued from figures 10 11 and 12 L patient T M Left sixty six days after L milk therapy, condition same as shown at right (L) figure 12 Right ninety-one days after L milk therapy 95 per cent healing no blood taken (twenty five days after discharge) Y patient P J Left, sixty seven days after Y milk therapy condition same as shown at right (Y) figure 12 Right eighty-one days after Y milk therapy 95 per cent healing blood serum calcium 94 inorganic phosphate 58 phosphatase 078

about before twelve weeks has elapsed, it will be unnecessary, of course, to continue the observation for twelve weeks However, when working with minimal rather than with maximal doses of the antirachitic factor it usually will be found necessary to continue the period of therapy, for purposes of observation of the progress made for at least twelve weeks

The neglect on the part of most authors to observe these essential requirements has been responsible for much confusion and for unnecessary, faulty conclusions regarding the relative value of various antirachitic agents⁷ and also regarding the size of the potent dose. The statements made in the literature with regard to the relative efficacy of cod liver oil and the size of the dose necessary for the cure and prevention of rickets particularly provide an excellent example in point.⁸

The absence of healing or the stationary state of a healing process can be established most dependably by a simultaneous⁹ and sufficiently long study of the calcium, inorganic phosphate and phosphatase levels of the blood serum on the one hand and of the roentgenograms of the bones on the other. The former should be made at intervals of two weeks and the latter at intervals of one week. Furthermore, during such a period of observation it is essential that the antirachitic factor from any other source be prevented from exerting its influence. In checking the potency of a given antirachitic agent, the biweekly periods of blood taking for chemical study may be extended to periods of from three to four weeks' duration as soon as it is evident from the data furnished by the preceding blood chemistry studies and by the weekly roentgenograms that a state of good and progressive healing is present. Occasionally, but only very rarely, crucial situations develop which require repetition of the blood chemistry study after an interval of one week.

In view of the experiences had by us while observing the precautions just outlined, it has been and still is our opinion that the studies based on observations made on infants in outpatient departments or in their homes, where absolute control and study of the blood chemistry are out of the question, are bound to be inaccurate and therefore useless from the standpoint of obtaining a scientifically correct quantitative answer to the question or questions existing in the problem under discussion.

A good illustration of the extent and seriousness of the risk taken by investigators who do not observe the precautions specified is presented by the record of one of the members of the group of twenty-eight infants admitted to the hospital as potential material for use in this study (figs 3 to 7). This is simply one of many examples that we have observed in the past and is identical with the two cases encountered by Kramer and Gittleman¹⁰ in their last study.

While testing the antirachitic potency of various antirachitic agents in the manner described we have at our clinic never seen a rachitic human bone heal, as observed in weekly roentgenograms, unless in the blood serum the level either of the calcium or of the inorganic phosphate or the levels of both began to ascend toward normal, also we have never seen a state of complete

healing established unless normal levels of these substances in the blood serum had been reached previously.

Occasionally, but very rarely, one sees patients whose calcium level will not rise above 9.8 and others whose inorganic phosphate level will remain at 4.8, even though the bone has completely healed and even though the administration of the antirachitic agent has been increased beyond the quantity commonly found to be ample for the establishment of a complete cure in other rachitic patients. A change from one type of antirachitic factor to another, as, for instance, from cod liver oil to sunlight, also fails to bring about a change in these cases. Under these circumstances we have accepted the figures mentioned as representing normal levels for the particular patient and, as a matter of fact, the figures 9.8 for calcium and 4.8 for inorganic phosphate are generally accepted as being within the normal zone, although in our own experience the blood serum calcium level has been 10 or above and the inorganic phosphate 5 or above in rachitic infants whose bones have been brought back to normal by the various forms of therapy employed by us.

We therefore attach great significance to regular and frequent determinations of the calcium, inorganic phos-

TABLE 9—Ages of Infants and Degree of Rickets Present at Time When Feeding of Antirachitic Milks Was Begun

Milk and Amount	Patients	Age Months	Degree of Rickets as Shown by Roentgenogram
720 cc L milk	W H	10	Marked
	T M	8	Marked
	J C	8	Mild
	R T	6	Moderate
720 cc 1 milk	P J	9	Marked
	R M C	8	Marked
	C A	0	Moderate
480 cc L milk	J W	5	Mild
	K A	7	Moderate
480 cc 1 milk	D B	8	Moderate
	L B	9	Moderate
	F S	14	Moderate
	S H	12	Moderate

phate and ideally also of the phosphatase levels in the blood serum and consider them to be the most dependable and really the only totally objective criteria available for the giving of a scientifically correct answer to the question whether or not the metabolic disorder called rickets has ceased to be active and whether or not the bone sooner or later will be completely healed.

As prominent an investigator as Alfred Hess,¹¹ however, has maintained that the presence of a mild form of rickets does not exclude the finding of normal calcium and inorganic phosphate levels in the serum of infants to whom the antirachitic factor was administered in the hope of preventing the appearance of rickets. For this and other reasons, even though on the basis of our own extensive experience we cannot accept this conclusion, we consider it to be wiser, in order to answer clearly the question before us, to use, at least for the present, the curative rather than the preventive method in determining whether or not a given substance at a given dose is adequately antirachitic. We therefore chose for this study to apply the curative method of assay, as has been our custom.

A group of more than seventy supposedly rachitic infants was examined, from which twenty-eight were selected to be hospitalized in order to determine the degree of rickets present and the presence or absence of healing. Of these twenty-eight infants, fifteen were

7. Reyher P. Vergleichende Beobachtung über den Heilungsverlauf der Rachitis. Arch f. Kinderh. 75:161 (Feb.) 1924-1925.
8. Gerstenberger Hartman Russell and Wilder. Hess A F and Unger L. J. Prophylactic Therapy for Rickets in a Negro Family. J. A. M. A. 89:1583 (Nov. 10) 1917. Wilson May C. The Prevention of Rickets the Influence of the Routine Administration of Cod Liver Oil in the Prevention of Rickets in Infants. Am. J. Dis. Child. 31:603 (May) 1926. Eliot Martha M. The Control of Rickets. J. A. M. A. 85:656 (Aug. 29) 1925. Average Optimum Dosage of Cod Liver Oil Report of Council on Pharmacy and Chemistry. J. A. M. A. 88:316 (Jan. 23) 1932. Gerstenberger H. J. Data Concerning the Dose of the Antirachitic Factor in the Prevention and Cure of Rickets. Tr. Central States Pediat. Soc. 2:35 1927. Gerstenberger H. J. and Nourse, J. D. The Prevention of Rickets in Premature Infants. J. A. M. A. 87:1108 (Oct. 2) 1926.
9. By simultaneous study is meant the taking of the blood sample within twenty-four hours of the time when the weekly roentgenogram is taken the latter as a routine procedure should be taken regularly on the same day of the week.
10. Kramer Benjamin and Gittleman I. F. Vitamin D Milk in the Treatment of Infantile Rickets. New England J. Med. 209:906 (Nov. 2) 1933.
11. Hess A F. Lewis J M and Rivkin Helen. The Status of the Therapeutics of Irradiated Ergosterol. J. A. M. A. 93:661 (Aug. 31) 1929.

found to be suitable for the purposes of the study, that is, during the preliminary period of observation varying from a minimum of two weeks to a maximum of four weeks they presented active rickets in a state of nonhealing or of stationary healing. However, only the data collected on thirteen¹² of the fifteen infants chosen for study could be used as one of the fifteen infants suffered in an irregular fashion from anorexia,

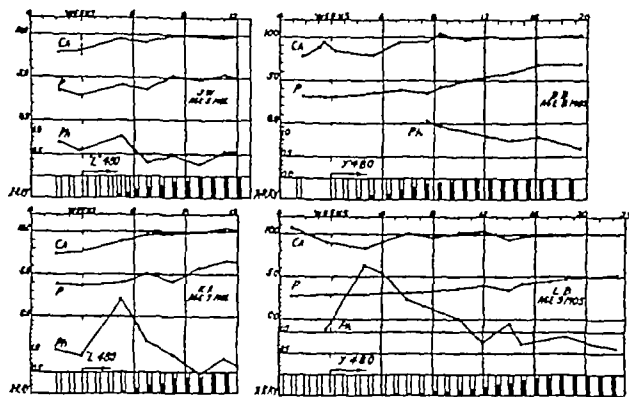


Fig 14—Blood serum calcium inorganic phosphate and phosphatase curves and degree of healing as revealed by roentgenograms for the two patients (J W and K A) receiving 480 cc of L milk for comparison with the condition of two of the patients receiving 480 cc of Y milk (D B and L B). One patient (J W) had mild rickets the other three had moderate rickets. It will be seen that only one roentgenogram of patient D B was taken during the period before treatment this was done because of the presence of pertussis. No healing however occurred during this period as is evidenced by the roentgenograms taken twenty and twenty-eight days later namely at the time of the beginning of treatment and one week later.

vomiting, dyspepsia and fever and a second infant was taken from the hospital to accompany its parents to another city before the investigation had proceeded far enough for the data on this infant to be of value.

The ages of the infants in the various groups and the degree of rickets present, at the time when the feeding of the antirachitic milks was begun are given in table 9. All of the infants were Negroes except C A.

The first two groups of these infants were simultaneously ready for study. Four of these infants were given 720 cc of L milk daily and the other four 720 cc of Y milk daily, as the results of the preliminary curative assays of the liquid milks (as explained in part I) had shown each of them to contain approximately 55 Steenbock rat units per quart. To these milks was added, in the customary manner, lactic acid in the proportion of 5 cc per liter. In addition, each infant received, to meet his caloric and nutritional requirements skimmed milk, 30 cc of orange juice, and carbohydrate in the form of Borchardt's malt sugar in an amount to equal from 6 to 9 per cent of the total quantity of milk ingested daily. Water was offered ad libitum, usually in the form of a 5 per cent solution of corn syrup. The skimmed milk came from the Ohio Agricultural Experiment Station at Wooster (see part I of this paper). The infant subsequently omitted because of anorexia, vomiting, dyspepsia and fever belonged to the 720 cc Y milk group.

As the study of the charts¹³ (figs 8 and 9) and the roentgenograms (figs 10 11, 12 and 13) of these

infants showed both milks at the daily dose of 720 cc to be definitely potent, it was decided also to feed a smaller dose of these milks, namely, 480 cc. a day, and to supplement this reduced quantity of whole milk by an increase in the amount of skimmed milk. Six infants in all were observed while they were fed the smaller amount of the milks being tested. The first two infants available for this group were given the L milk because it was thought probable, from the experience obtained with the 720 cc dose of this milk, that a daily amount of 480 cc would give a positive result, and because a negative result would make unnecessary the testing of the 480 cc dose of the Y milk. A positive result was obtained, and therefore the remaining infants were fed daily 480 cc of the Y milk. More infants were fed the smaller dose of Y milk than of L milk because the healing response of the first two infants fed 480 cc of Y milk was markedly less rapid than that observed in the two infants fed 480 cc of L milk, and because the rickets happened to be somewhat more severe in the former, both infants having a moderate rickets, whereas one of the two infants fed 480 cc of L milk had mild and the other moderate rickets (figs 14 and 15 and table 9). The third and fourth infants fed 480 cc of Y milk also had moderate rickets.

All of the infants studied except three were kept in our wards under identical environmental conditions and protected carefully against the influence of the antirachitic factor in any form other than the milks being tested. The three infants just referred to were cared for in another institution. One of them (D B, fig 14 and table 9) remained there throughout the period of observation, the other two (L B and S H, figs 14 and 15) spent the first part of the period of study there and the last part in our wards, where the larger group was observed. The last two infants while in the other institution were accidentally placed on a covered porch by a nurse on two successive days for a total of six

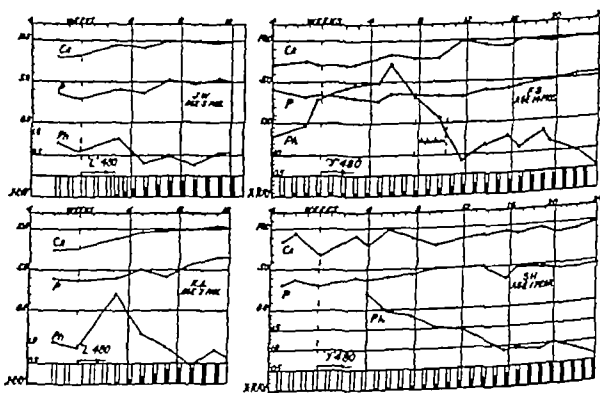


Fig 15—Blood serum calcium inorganic phosphate and phosphatase curves and degree of healing as revealed by roentgenograms for the two patients (J W and K A) receiving 480 cc of L milk for comparison with the condition of two of the patients receiving 480 cc of Y milk (F S and S H). All except J W had moderate rickets (see also figure 14).

hours. The infants, both Negroes, were completely dressed and were not exposed to direct sunlight or sky light.

This accident occurred during the early part of the period of treatment of these infants at a time when the healing was progressing very slowly. Further prolonged observation did not disclose any discernible influence on the healing process from this accidental

¹² While it is fully appreciated that the total number of rachitic infants studied is small and smaller than we had hoped for, we are convinced that data from even a small number of cases adequately controlled is of much more value than the data from a much larger number of ambulatory and inadequately controlled cases.

¹³ Because of the need for hospital beds, six of the 720 cc dose patients were discharged before complete healing of the bones had been registered in the roentgenograms. However, in all these cases the blood serum calcium and inorganic phosphate levels had been normal for some time. This fact justified the assumption that complete healing would have been established in the roentgenograms had the infants been observed a few weeks longer.

exposure to the daylight of the covered porch and therefore it can be accepted as having been of no significance. In one of these infants (S H) it required 155 days (table 10 and fig 15) and in the other (L B) 144 days (table 10 and fig 14) to bring the blood serum calcium and inorganic phosphate values to normal levels.

TABLE 10—Comparative Time Required to Obtain Normal Values for Blood Serum Calcium and Inorganic Phosphate in Rachitic Infants Fed L and Y Milks in Amounts of 720 Cc and 480 Cc Daily *

Milk and Amount	Patients	Time Required Days
720 cc. L milk (rat unit value 60)	W H T M J C R T	51 38 37 39 Average 42.3
720 cc. Y milk (rat unit value 41)	P J R M C C A	61 66 52 Average 61.7
480 cc. L milk (rat unit value 40)	J W K A	40 49 Average 49
480 cc. Y milk (rat unit value 27.5)	D B L B F S S H	74 144 100 155 Average 119.3

* Values of 9.8 for calcium and 4.8 for inorganic phosphate considered normal.

While, as stated before, it was accepted by Krauss and Bethke on the basis of their preliminary curative assays that both milks contained an average of 55 Steenbock rat units per quart, their later and final assays required them to conclude, in conformity with the results of their original prophylactic assays of the composite fats, as stated in part I, that there was a decided difference in the antirachitic factor content of the two milks, the L milk, namely, containing an average of 80 rat units per quart and the milk produced by

TABLE 11—Comparison of Antirachitic Efficacy of L Milk in 480 Cc and 720 Cc Doses with That of Y Milk in 720 Cc Doses When Fed to Rachitic Infants

	L Milk 480 Cc	Y Milk 720 Cc	L Milk 720 Cc	Y Milk 720 Cc	L Milk 720 Cc	Y Milk 720 Cc
Number of cases	2	3	4	3	4	3
Rat unit value	40	41	60	41	4	4
Rat unit ratio	1.0	1.0	1.5	1.0	1.0	1.0
Normal blood						
Average number of days	40.0	61.7	42.3	61.7	63.0	61.7
Healing ratio	1.0	1.25	1.0	1.0	1.03	1.0
95% bone healing						
Average number of weeks	11.0	10.5	10.5	10.5	10.7	10.5
Healing ratio	1.04	1.0	1.0	1.0	1.0	1.0
0.9 blood phosphatase						
Average number of days	41.5	59.0	34.0	59.0	51.0	59.0
Healing ratio	1.0	1.42	1.0	1.7	1.0	1.10

Corrected on basis of 40 rat units per day

cows fed irradiated yeast (Y milk) an average of 55. As a result the L milk group actually received 60 rat units for each 720 cc and the Y milk group 41, making a practical ratio in the antirachitic factor content of the two milks of 1.5:1 (table 11).

This observation explained the difference established by us between the length of time required by the L milk on the one hand and the Y milk on the other to bring the calcium level to 9.8 and the inorganic phosphate level to 4.8 in the blood serum of our rachitic patients. We had found (table 10), namely, that the L milk according to this method of checking required an average of 42.3 days and the Y milk an average of 61.7, a practical ratio of 1.5:1, which is the identical converse of the ratio between the amount of antirachitic factor present in the two milks as expressed in the form of rat units (table 11). It is evident that the two

ratios virtually cancel each other and place the two milks on an equal plane as far as their antirachitic efficacy is concerned per rat unit content of the antirachitic factor. This interpretation would make the antirachitic efficacy ratio between these two milks 1:1 which corresponds to the results obtained when a theoretical correction is made, on the basis of an intake of 40 rat units per day, for the number of days required to bring the blood serum calcium and inorganic phosphate to normal levels (table 11).

These deductions receive practical confirmation by the actual conditions found in the infants fed a daily amount of 480 cc of the L milk, a dose of the antirachitic factor which is virtually identical in the number of rat units with that received by the group fed 720 cc

TABLE 12—Comparative Time Required to Obtain in the Roentgenogram a 95 Per Cent Degree of Healing in Rachitic Infants Fed L and Y Milks in Amounts of 720 Cc and 480 Cc Daily

Milk and Amount	Patients	Time Required, Weeks
720 cc. L milk (rat unit value 60)	W H T M J C R T	12 12 9 9 Average 10.5
720 cc. Y milk (rat unit value 41)	P J R M C C A	10.5 12 9 Average 10.5
480 cc. L milk (rat unit value 40)	J W K A	11 11 Average 11
480 cc. Y milk (rat unit value 27.5)	D B L B F S S H	16 22 24 23 Average 21.2

of Y milk, namely, 41 (table 11). While, as shown in this table, the healing ratio for the 480 cc L group and the 720 cc Y group is somewhat in favor of the former the ratio being 1.125 and the time required 49 and 61.7 days, respectively, to bring the blood serum calcium to 9.8 and the inorganic phosphate to 4.8, it must be appreciated that two of the infants receiving the 720 cc of Y milk were suffering from marked rickets and the third infant from moderate rickets, whereas one of the two infants fed the 480 cc of L milk had a moderate and the other a mild rickets (figs 14 and 15). Therefore, and in view of the fact that the members of the two groups receiving the daily dose of 720 cc of either L milk or Y milk were better balanced, in that both groups contained two patients each with marked rickets and one patient each with moderate rickets (figs 8 and 9), we must conclude that

TABLE 13—Average Comparative Time Required to Obtain Blood Serum Phosphatase Level of 0.9 in Rachitic Infants Fed L and Y Milks in Amounts of 720 Cc and 480 Cc Daily

Milk and Amount	Average Number of Days
720 cc. L milk	34
720 cc. Y milk	59
480 cc. L milk	41.5
480 cc. Y milk	136.5

the efficacy ratio between the two milks of 1:1 is closer to the real efficacy ratio than is 1.125. The fourth member of the Y group had to be discarded, as stated before.

The same reasoning and interpretation can be used in the consideration of the data obtained by the determinations of the blood serum phosphatase levels (table 11).

How nearly equal is the therapeutic efficacy of the antirachitic factor in a daily dose of from 41 to 40 rat units when given in the form of 720 cc of Y milk on

the one hand and in the form of 480 cc of L milk on the other is clearly shown by the very close parallelism of the calcium, inorganic phosphate and phosphatase blood serum curves of the rachitic infants so treated, as presented graphically in figures 16, 17 and 18

The data established on the basis of an evaluation of the degree of healing produced in the bones of the infants fed the 720 cc daily doses of the milks, as registered by the roentgenograms, speak in favor of a

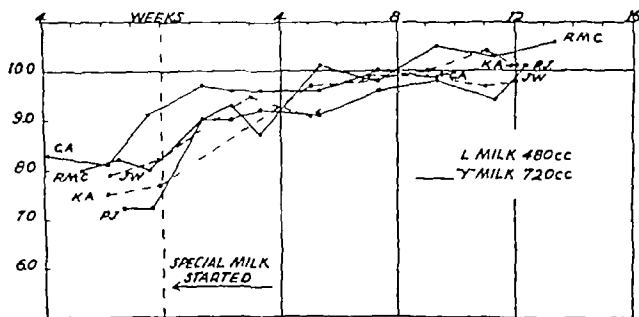


Fig. 16—Blood serum calcium curves in patients receiving 480 cc of L milk and 720 cc of Y milk

superiority of the Y milk over the L milk (tables 11 and 12). However because of the subjective nature of this method of evaluation¹⁴ and also because of the contradictory evidence presented by the data found through the study of the phosphatase levels in the blood serum (tables 11 and 13) which probably indicate more accurately the point at which the bone has actually been completely healed we are of the opinion that the observations as registered in the tables regarding the degree of bone healing are less dependable and therefore are of secondary importance and should not be used to offset the answers obtained by the purely objective method of observing the course of the return of the blood serum calcium, inorganic phosphate and phosphatase to normal levels.

A comparison of the data obtained in the group fed 480 cc of L milk (40 Steenbock rat units) on the one hand and the group fed 480 cc of Y milk (27.5 Steen-

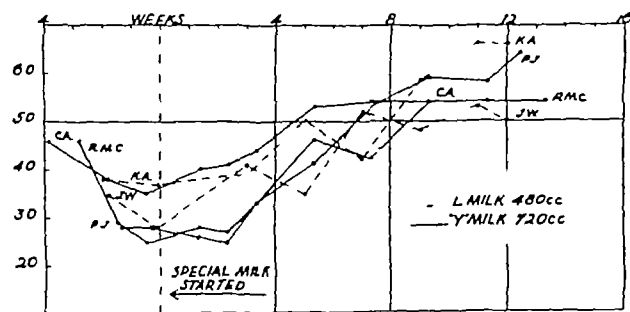


Fig. 17—Blood serum inorganic phosphate curves in patients receiving 480 cc of L milk and 720 cc of Y milk

bock rat units) on the other (figs 14 and 15 and tables 10, 12 and 13) shows the latter to be markedly inferior in antirachitic potency. It required an average of 118.3 days to bring the blood serum calcium and inorganic phosphate to normal levels in the group of rachitic

infants fed Y milk and receiving 27.5 rat units daily, and only forty-nine days in the group fed L milk and receiving 40 rat units daily. It is our opinion that this marked difference in the antirachitic potency between 480 cc of L milk and 480 cc of Y milk is due to the fact that the number of rat units administered daily to the infants receiving the Y milk, namely, 27.5, probably represented for these infants close to the lowest amount of the antirachitic factor that would bring about complete healing even after a prolonged administration and is, in other words, we feel, a so-called borderline dose whereas the 40 rat units received by the infants taking the 480 cc of L milk represented a dose decidedly above this level. For these reasons it is our opinion that a comparison between the results obtained with these two groups of rachitic infants is not justifiable.

COMMENT

It will be recalled that recently first Hess and Lewis¹⁵ and later Kramer and Gittleman¹⁰ studied the relative antirachitic efficacy of the two types of antirachitic milks evaluated by us. The latter authors used the same method of approach as was employed by us except that they did not continue to observe the infants for as long a time as we did after instituting therapy. Hess and Lewis also used the curative method of assay but

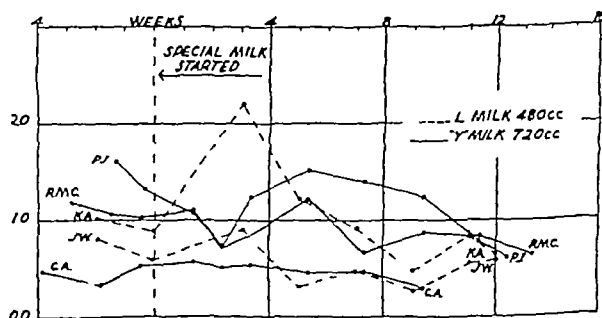


Fig. 18—Blood serum phosphatase curves in patients receiving 480 cc of L milk and 720 cc of Y milk

their method of study differed in many important respects from our own and from that of Kramer and Gittleman in that (1) the clinical material was ambulatory, (2) no preliminary treatment-free period was observed, (3) no blood chemistry studies were made and (4) the only criterion for judging the efficacy of the antirachitic milks was the degree of healing found present four weeks after the beginning of treatment. Hess and Lewis¹⁵ also studied the antirachitic potency of viosterol and of cod liver oil. The data for the latter material, however, do not appear in the table embodying the results obtained with the other antirachitic agents. The method of study used by Hess and Lewis is bound to bring forth data and conclusions that are liable to be uncertain if not distinctly erroneous, and this probably is the principal reason why our conclusions coincide with those reached by Kramer and Gittleman rather than with those presented by Hess and Lewis.

Although we did not include in our studies a simultaneous evaluation of the antirachitic efficacy of cod liver oil, we must, on the basis of published¹⁶ and unpub-

¹⁵ Hess A F and Lewis J M. An Appraisal of Antirachitics in Terms of Rat and Clinical Units. *J A M A* 101:181 (July 15) 1933.

¹⁶ Gerstenberger, Hartman and Smith.⁵ Gerstenberger.⁶ Average Optimum Dosage of Cod Liver Oil.⁷ Gerstenberger.⁸ Gerstenberger and Nourse.⁹ Gerstenberger H J and others. Studies in the Adaptation of an Artificial Food to Human Milk. II. A Report of Three Years Clinical Experience with the Feeding of S M A (Synthetic Milk Adapted). *Am J Dis Child* 17:1 (Jan) 1919.

¹⁴ The method consists in judging the degree of progress on a percentage basis by very carefully comparing the entire series of weekly roentgenograms in both directions, namely from the first roentgenogram taken after admission to the last one taken before discharge and vice versa. To take an individual roentgenogram by itself and to rate the signs of healing present as being indicative of active healing and of a definite percentage of active healing is of course not justified and is manifestly entirely different from the plan that we have followed.

lished data of our own also disagree with Hess and Lewis in their conclusions regarding the size of the dose necessary to insure the prevention of rickets and regarding the efficacy ratio between cod liver oil and irradiated milk. According to Hess's figures this ratio is 6:1 whereas ours would justify a ratio no greater than 2:1 and probably would establish it at or very close to 1:1. We have seen rickets prevented

Kramer and Gittleman¹⁰ in their last contribution, namely, that vitamin D milk is our most effective antirachitic agent. We are of the opinion that more work must be done before this conclusion can be accepted as being correct.

CONCLUSIONS

1 Thirteen rachitic infants, after a preliminary treatment-free observation period during which the activity of the rachitic process was established, were divided into groups that were fed 720 cc or 480 cc daily doses of cow's milk made antirachitic either by irradiation or by feeding irradiated yeast to cows. The infants were housed in hospital wards or rooms. Roentgenograms were taken weekly and determinations of the calcium, inorganic phosphate and phosphatase levels in the blood serum were made usually every two weeks and only occasionally at intervals of one or three weeks.

2 On the basis of the data collected in this study, it is concluded that there is for rachitic infants no practical difference in antirachitic efficacy between cow's milk made antirachitic on the one hand by irradiation and on the other by feeding cows irradiated yeast, when the same amount of the antirachitic factor is administered as represented by an identical number of Steenbock rat units per day. If, however, there is actually a

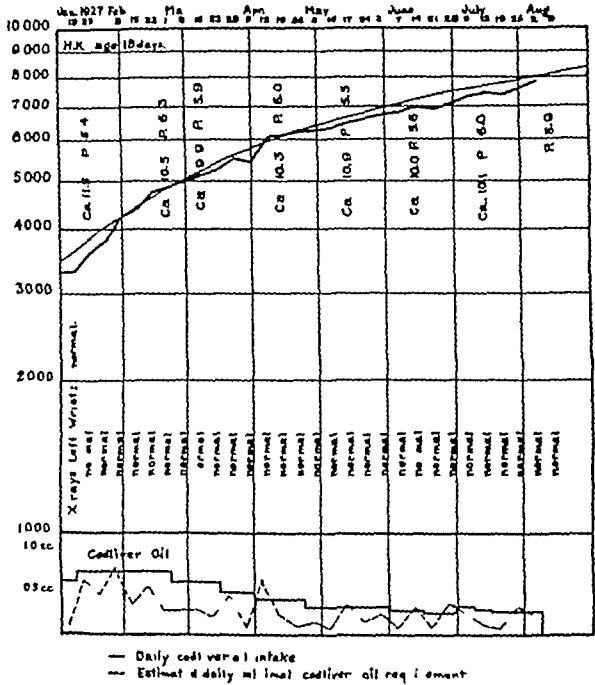


Fig 19—Illustration of the effectiveness of a daily dose of less than 1 cc of cod liver oil in the prevention of rickets when administered in the form of straight cod liver oil over a period of twenty-nine weeks in a full-term normally growing infant as established by normal roentgenograms and by normal blood serum calcium and inorganic phosphate curves

in rapidly growing infants receiving daily not more than 1 cc of cod liver oil. Two examples are presented in figures 19 and 20, taken from a report made by one of us in 1927.¹⁷ Yet Hess and Lewis advise a daily intake of 8 cc to assure adequate protection. The cod liver oil used by us probably contained 30 units per gram or 27.5 per cubic centimeter, a figure that is identical with the 27.5 present in the 480 cc dose of Y milk, which was ample to bring the calcium and inorganic phosphate levels to normal after an average of 118 days. In other words, it seems clear that there must be another reason for the disparity existing between the experience of other authors and of ourselves and associates than a difference in the antirachitic value of the agent administered.

We are inclined to believe that the real reason is the difference in the methods used in checking the appearance and disappearance of the rickets in human infants. We expect to present our own data on the matter of cod liver oil dosage in the near future.

In our records we also find that we obtained healing of severe human rickets at a greater speed than that established by us in this study for the 720 cc daily dose of L milk when we were feeding rachitic infants 25 Gm of cod liver oil in the form of 720 cc of Protein S M A.¹⁸ We therefore feel that we cannot in view of these and our other experiences at the present time subscribe to the statement made by

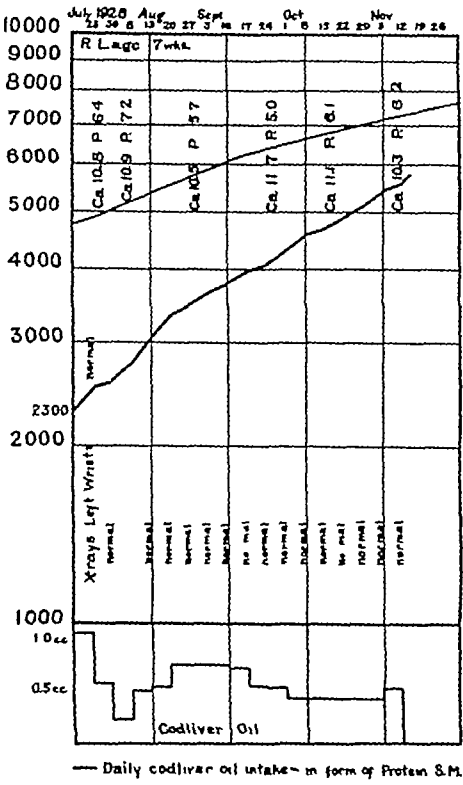


Fig 20—Illustration of the effectiveness of a daily dose of less than 1 cc of cod liver oil in the prevention of rickets when administered in the form of Protein S M A over a period of eighteen weeks in a rapidly growing premature infant as established by normal roentgenograms and by normal blood serum calcium and inorganic phosphate curves

slight superiority in the antirachitic effectiveness of one milk over the other, it exists in our opinion, in favor of the irradiated milk.

3 The antirachitic factor in both milks in an amount assayed to equal 40 Steenbock rat units per day was able to produce satisfactory healing in the blood in from 49 to 617 days and in the bone in from 105 to 11 weeks.

¹⁷ Gerstenberger.
¹⁸ Gerstenberger H J. Unpublished data.

4 The antirachitic factor in the yeast milk in an amount assayed to equal 27.5 Steenbock rat units per day also was able to bring about satisfactory healing in the blood and in the bone. However, the period of time required to bring about this result in the blood was on an average 118 days (from 74 to 155 days) and in the bones on an average 21.2 weeks (from 16 to 24 weeks).

It is believed, therefore, that for the rachitic infants tested in this study the dose of 27.5 Steenbock rat units per day was very close to the actual minimum amount required for the ultimate healing of the active rickets.

5 Published and unpublished data of ourselves and our associates concerning the antirachitic effectiveness of cod liver oil warrant the use of caution in formulating for rachitic infants conclusions regarding the efficacy ratio of cod liver oil on the one hand and of the antirachitic milks on the other. Further data must be presented before the antirachitic effectiveness of cod liver oil for the human infant can be accepted to be decidedly inferior to that of cow's milk made antirachitic by irradiation or by feeding irradiated yeast to cows.

Clinical Notes, Suggestions and New Instruments

ULCERATIVE VULVITIS AND STOMATITIS OF ENDOCRINE ORIGIN

A. J. ZISERMAN, M.D., PHILADELPHIA

The coexistence of nonvenereal ulcerative lesions of the mouth and genitalia was originally reported by Neumann.¹ A comprehensive review of this rare condition was recently presented by Wien and Perlstein² who collected a total of twenty-nine cases from the literature and reported in addition a personal case, which was the first to be recorded in this country.

There has been considerable variation of opinion regarding the etiology of this condition. One of the theories attributes the ulcerative lesions to an angioneurosis caused by ovarian dysfunction.³ Although the usual coexisting menstrual disorder gives plausibility to this belief there has been no attempt at a therapeutic test to verify this theory.

This case is reported because the therapeutic result obtained points to a possible endocrine etiology of the disorder and also because of the rarity of the condition.

M. M., a woman aged 23 seen in July 1932 complained of periodically recurring ulcers of the mouth and occasionally the vulva. The time of appearance and duration of these lesions was definitely associated with the onset and termination of her menstrual periods. The latter were irregular, coming at intervals of from four to six weeks, and were scanty in quantity. Otherwise the previous medical history was irrelevant.

The ulcers were small, varying in size from 2 to 5 mm in their longest dimension and covered with grayish pellicles which left a raw bleeding base when removed. They were usually situated on the mucosa of the lower lip, buccal surfaces, the pharyngeal wall and the sides of the tongue. Some of the ulcers were confluent. No scars were noted on the buccal mucosa, and the cervical glands were definitely enlarged. The lesions of the mouth usually caused an aching pain, which became stablike in character on eating or drinking. The vulvar lesions when present had an appearance identical with those in the mouth.

Smears taken from the ulcerated areas showed numerous leukocytes, a few gram positive diplococci, and a few fusiform bacilli. On culture, viridans streptococcus, viridans flava and an actinomycotic form were isolated.

The lesions first appeared in 1922 and were diagnosed at that time as "stomach ulcers." They were then limited in extent and occurred at intervals of from three to four months. During the last five years the ulcers recurred regularly with each period and became more extensive in their distribution, involving the vulva more frequently. The lesions always appeared three days before the expected menstrual flow, lasting throughout the period and disappearing at about the third day after the cessation of the flow.

Despite negative Wassermann reactions of both the blood and the spinal fluid a clinical diagnosis of syphilis was made, for which the patient was treated over a period of three years without any appreciable change in the condition. An intervening pregnancy during 1931 prevented the usual recurrence of the oral and vulvar ulcers, but premature termination of the pregnancy at five months was followed by reappearance of the lesions with the return of her periods.

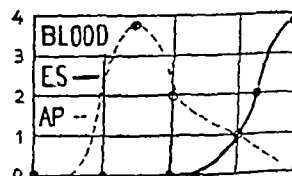
The striking association of the appearance and disappearance of the lesions with the premenstruum and the postmenstruum was highly suggestive of an endocrine dysfunction as an etiologic factor. The accompanying chart shows the probable concentrations of estrogenic substance and anterior pituitary at the various stages of the menstrual cycle.⁴

Since the ulcers appear at the premenstrual period when estrogenic substance is at its greatest concentration and disappear at the postmenstruum when the minimum amount of follicular hormone is present, it follows that a deficiency of this hormone is probably not the etiologic factor. On the other hand, it may be noted that the lesions are present during the stage when the pituitary normally lessens its function and that their absence is coincident with the interval when anterior pituitary reaches its maximum concentration. The possibility of a failure of luteinization primarily or secondarily to a pituitary deficiency was another possible association. Likewise, during pregnancy, when the anterior lobe attained its highest degree of activity there was a spontaneous disappearance of the ulcerations.

The delay in the periods and the associated genital hypoplasia were further suggestive of a pituitary deficiency. On this assumption, I believed that therapy should be directed either to combat the supposed deficiency or to stimulate the anterior pituitary lobe to increased function. The patient was therefore given subcutaneous injections of Berkefeld filtered ether extracted urine of patients from four to five months pregnant. Fifty rat units of anterior pituitary was administered every other day. Prior to the institution of organotherapy, there had been no period of spontaneous remission of the ulcerations except during pregnancy. Prompt improvement was noted during the first period following the institution of this treatment. Complete relief from ulcerations was obtained over a period of three months, including one month subsequent to the withdrawal of the treatment. As this mode of treatment was purely substitutive, roentgen stimulation of the anterior lobe was administered in the hope of correcting the primary cause of this disorder and obtaining a more lasting improvement. Following roentgen therapy the patient was free from ulcerations for a period of four months.

She reported a mild recurrence in the fourth month after roentgen treatment. Since then no lesions have appeared and the menses have become regular and normal in quantity and duration.

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Hormone cycle. E S solid line estrogenic substance. A P broken line anterior pituitary. Figures at left, mouse unit. From Frank, Goldberger and Spielman.⁴

From the Department of Gynecology, Mount Sinai Hospital.
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Special Article

GLANDULAR PHYSIOLOGY AND THERAPY

DIABETOGENIC THYROTROPIC ADRENALOTROPIC AND PARATHYROTROPIC FACTORS OF THE PITUITARY

J B COLLIP, MD

MONTREAL

NOTE.—This article and the articles in the previous issues of THE JOURNAL are part of a series published under the auspices of the Council on Pharmacy and Chemistry. Other articles will appear in succeeding issues of THE JOURNAL. When completed, this series will be published in book form.—Ed.

I DIABETOGENIC SUBSTANCE

Numerous observations made both in the clinic and in the laboratory are to be found in the literature of the last few years which indicate either directly or indirectly that the pituitary gland may influence definitely the metabolism of both carbohydrate and fat, for this reason there has been a growing conviction that the pituitary has some endocrine relationship with the pancreatic islets or their secretion.

Borchardt¹ noted the frequent occurrence of glycosuria in acromegaly, and this was confirmed by Goetsch, Cushing and Jacobson.² More recently Houssay³ and Eidelsberg⁴ have called attention to the frequent occurrence of diabetes in cases of acromegaly.

Glycosuria and hyperglycemia have been produced in normal animals by the use of anterior lobe extracts (Johns, O'Mulvenny, Potts and Laughton,⁵ H. M. Evans,⁶ Baumann and Marine,⁷ Houssay and his collaborators,⁸ Lucke,⁹ E. I. Evans¹⁰ and Barnes and Regan.¹¹)

From the Department of Biochemistry McGill University Faculty of Medicine.

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¹⁰ Evans E. I. Diabetogenic Principle of Anterior Pituitary. *Proc Soc Exper Biol & Med*, 30:1370-1371 (June) 1933.

¹¹ Barnes B. O., and Regan J. F. Relation of Anterior Pituitary to Carbohydrate Metabolism. *Endocrinology* 17 522-528 (Sept-Oct) 1933.

The great importance of the pituitary gland in relation to carbohydrate metabolism has been generally recognized since the publication by Houssay and his collaborators of their experiments on the effect of removal of the hypophysis on pancreatic diabetes of toads and dogs. This work, which is now a classic, demonstrated most conclusively that the cardinal symptoms of pancreatic diabetes—glycosuria, hyperglycemia and acidosis—were considerably ameliorated when the hypophysis was removed from the totally pancreatectomized animal. Houssay's work has received ample confirmation (Barnes and Regan,¹¹ Regan and Barnes,¹² Lucke^{9b} Kutz and his associates¹³).

The Houssay dog (completely pancreatectomized and hypophysectomized) is a most sensitive test object for the diabetogenic effect of pituitary extracts.

It was established by the Houssay school that the diabetogenic substance is an anterior lobe product, that it is not the thyrotropic hormone, since the effect can be obtained in thyroidectomized Houssay animals, and that it occurs regularly in active growth hormone extracts.

It should be emphasized that the hypophysectomized, pancreatectomized dog is not entirely free from the symptoms of pancreatic diabetes. Such an animal may however live for months without specific treatment, but the fatal issue is inevitable since it gradually becomes more and more undernourished and with the progressive loss in weight it becomes extremely cachectic and dies. Houssay¹⁴ reports that such animals survived six months while one animal in our laboratory lived for a period of nine months.

The blood sugar level of the untreated Houssay dog undergoes extremely wide fluctuations. The fasting level may be under 100 mg per hundred cubic centimeters, but following feeding values up to 300 mg per hundred cubic centimeters may be observed. Glycosuria may be seen for the few hours following feeding and the total sugar excretion may on this account be very little. Ketonuria is reduced to a minimum. The injection of even small amounts of anterior pituitary extract results in elevation of the blood sugar level, a greatly increased glycosuria, and a return of ketonuria.

The Houssay animal, like the hypophysectomized animal, is very sensitive to insulin. Treatment of the former with both anterior pituitary extract and insulin can be carried out with care and the animal is then comparable to the ordinary pancreatectomized dog maintained on insulin. The diabetogenic substance has therefore been looked on as having an anti-insulin action. Insulin hypoglycemia is decreased in normal animals by the diabetogenic substance, but the antagonistic effect between the two principles is more readily demonstrated in the hypophysectomized, pancreatectomized animal (Houssay,^{8d} Lucke⁹).

The literature on anterior pituitary physiology as far as it bears on diabetes falls into two divisions: one dealing with the relationship of the gland to carbohydrate metabolism, and the other to fat metabolism. The terms carbohydrate hormone and fat hormone have been used rather freely. This is unfortunate since in large

¹² Regan J. F. and Barnes B. O. Effect of Previous Hypophysectomy on Diabetes Resulting from Pancreatectomy. *Am J Physiol* 105 83 (July) 1933.

¹³ Kutz R. L., Selye Hans, Denstedt O., Bachman, C., Thomson D. L. and Collip J. B. The Effect of the Pituitary on Carbohydrate Metabolism. *Proc Am Physiol Soc New York* March 28-31 1934. *Am J Physiol* 109 66 (July) 1934.

¹⁴ Houssay B. A. Hypophyse et métabolisme. *Rev franç d'endocrinol* 9 423-444 (Dec.) 1931.

measure the anterior lobe function and the pancreatic islet function are more or less antagonistic one to the other. The term "fat metabolism hormone" may be justified ultimately, but for the present the term "ketogenic principle" is more suitable in my opinion. In the following pages I shall refer to the blood sugar raising principle as "anterior pituitary blood sugar raising hormone," and to the ketogenic substance as "anterior pituitary ketogenic hormone."

EFFECT OF HYPOPHYSECTOMY ON BLOOD SUGAR AND SUGAR EXCRETION

Some authors found subnormal blood sugar values in the hypophysectomized dog (Kobayashi,¹⁵ Re¹⁶ Koster and Geesink,¹⁷ D'Amour and Keller,¹⁸ Lucke and his co-workers¹⁹) and in the rabbit (Fujimoto,²⁰ Corkill, Marks and White²¹). However it seems to be well established today that the blood sugar of fed hypophysectomized animals is normal and that hypoglycemia ensues only after fasting. This has been shown by Zwarenstein and Bosman²² in amphibia by Orias²³ in fishes, and by Houssay and his collaborators²⁴ and Braier²⁵ in the dog. The effect of fasting on the blood sugar of the hypophysectomized animal is very marked and often leads to fatal hypoglycemia in the dog if dextrose is not administered in time (Braier,²⁶ Lucke and his associates²⁷). Similar observations have also been made on hypophysectomized monkeys in our laboratory. We have frequently observed severe hypoglycemic symptoms if such animals refuse to eat for some time. The blood sugar in one of these was only 27 mg per hundred cubic centimeters and the animal was quite cold and unconscious to such a degree that we could lay its femoral artery tree without evoking a reflex motion. The femoral artery showed no pulsation and the heart beat and respiration were barely perceptible. At this time we administered concentrated dextrose solution into the femoral vein the curative effect of which was so dramatic that the hitherto prostrate animal jumped up on the table during the injection and took food within a few hours.²⁸ We have also repeatedly seen similar recoveries in hypophysectomized

fasted dogs. This marked tendency of the hypophysectomized animal to develop hypoglycemia after fasting is not due to accompanying tuber injury, for tuber injury in itself does not produce this change, according to Houssay.^{24a} D'Amour and Keller,¹⁸ however, state in a more recent publication that chiasmal lesions also tend to lower the blood sugar in the dog.

The dextrose tolerance curve of hypophysectomized dogs is not different from that of normal control animals, according to Camus and Roussy²⁹ and to Houssay.^{24b} Lucke and his collaborators,¹⁹ however, in a more recent publication state that the rise in blood sugar after dextrose administration is higher after hypophysectomy in the dog. In the rabbit, Fujimoto²⁰ found an increased dextrose tolerance after complete hypophysectomy, and this has been confirmed on partially hypophysectomized rabbits by Sakamoto and Saito.³⁰

In the toad, increased tolerance has been found by Zwarenstein and Bosman.²²

The apparent discrepancy between these observations may possibly be explained by the presence of accompanying tuber injuries and by the difference in the nutritional condition of the animal.

EFFECT OF INSULIN ON BLOOD SUGAR AFTER HYPOPHYSECTOMY

Hypophysectomized dogs are extremely sensitive to insulin. Doses that would be tolerated without any difficulty by normal animals will often lead to fatal hypoglycemia in the absence of the pituitary (Houssay and Magenta,³¹ Kobayashi,¹⁵ Lucke and his collaborators¹⁹). The same is true of hypophysectomized toads (Houssay and Potick,³²) and rabbits (Fujimoto,²⁰ Corkill and his associates²¹).

Posterior lobe extracts, especially those containing the oxytocic factor, antagonize these effects of insulin according to Houssay and Magenta^{31a} and to Houssay and Potick.³²

EFFECT OF HYPOPHYSECTOMY ON THE RESPIRATORY QUOTIENT

According to Houssay and his co-workers,³³ the respiratory quotient is normal in hypophysectomized toads. In the dog, there is no change in the respiratory quotient, according to Gaebler.³⁴

EFFECT OF HYPOPHYSECTOMY ON RESPIRATORY QUOTIENT AFTER PANCREATECTOMY

It is of considerable interest that the respiratory quotient of hypophysectomized and pancreatectomized dogs rises after the administration of dextrose, as has been

15 Kobayashi K. On the Effect of Extracts of Some Endocrine Organs on Carbohydrate Metabolism of Normal and Hypophysectomized Dogs. Japan J. M. Sc. Tr. IV, Pharmacol. 5: 56 1931.

16 Re P. M. Aminoacidemia experimental e hiperglicemia por inyección de glucocila en los hipofisoprivos. Rev. Soc. argent. de biol. 7: 503 512 1931.

17 Geesink A. and Koster S. Experimental Researches on Function of Hypophysis in Dogs. Nederl. tijdschr. v. geneesk. 2: 6155-6180 (Dec. 15) 1928. Koster S. and Geesink A. Experimentelle Untersuchung der Hypophysenfunktion beim Hunde. Arch. f. d. ges. Physiol. 222: 293-327 1929.

18 D'Amour M. C. and Keller A. D. Blood Sugar Studies Following Hypophysectomy and Experimental Lesions of Hypothalamus. Proc. Soc. Exper. Biol. & Med. 30: 1175-1177 (June) 1933.

19 Lucke Hans Heydemann E. R. and Hechler R. Die Blut zuckerregulation bei isolierter Schädigung des Hypophysenvorderlappens. Ztschr. f. d. ges. exper. Med. 87: 103-111 1933.

20 Fujimoto Y. Ueber den Einfluss der Hypophysenverletzung auf den Blutzuckerspiegel. Folia pharmacol. japon. 15: 10-18 (Nov. 20) 1932.

21 Corkill A. B. Marks H. P. and White W. E. Relation of Pituitary Gland to Action of Insulin and Adrenalin. J. Physiol. 80: 193 205 (Dec. 5) 1933.

22 Zwarenstein H. and Bosman L. P. Influence of Hypophysectomy on Blood Sugar and Glucose Tolerance in *Xenopus laevis*. Quart. J. Exper. Physiol. 22: 45-48 (May) 1932.

23 Orias Oscar. Influence of Hypophysectomy on the Pancreatic Diabetes of Dogfish. Biol. Bull. 63: 477 (Dec.) 1932.

24 (a) Houssay B. A. Hypophyse et métabolisme. Rev. franc. d'endocrinol. 9: 423-444 (Dec.) 1931. (b) Houssay B. A. Hug E. and Malamud T. Hypophyse et métabolisme hydrocarboné. Compt. rend. Soc. de biol. 86: 1115-1116 1922.

25 Braier B. Metabolismo nitrogenado de los perros hipofisoprivos en el ayuno. Rev. Soc. argent. de biol. 7: 140-157 1931.

26 Braier B. Echanges azotés et glycémie des chiens hypofisoprivos à jeun. Compt. rend. Soc. de biol. 107: 1195-1198 (July 16) 1931.

27 Lucke Hans Heydemann E. R. and Berger O. Der Einfluss von operativen Eingriffen am Hypophysenvorderlappen auf die Stoffwechselgrade des pankreasdiabetischen Hundes. Ztschr. f. exper. Med. 82: 711 1934.

28 Unpublished data.

29 Camus J. and Roussy G. Hypophysectomie et glycosurie expérimentale. Compt. rend. Soc. de biol. 76: 344-347 1914.

30 Sakamoto, A. and Saito G. Experimentelle Untersuchungen der Hypophysenfunktion beim Kaninchenmittels einer neuen Hypophysenextirpationsmethode. Ztschr. f. d. ges. exper. Med. 80: 601-602 1932.

31 (a) Houssay B. A. and Magenta M. A. Action des substances rétrohypophysaires sur la sensibilité à l'insuline des chiens privés d'hypophyse. Compt. rend. Soc. de biol. 102: 429-431 (Nov. 4) 1929. (b) Sensitivity to Insulin of Dogs After Loss of Pituitary. Rev. Assoc. med. argent. 37: 389-406 1924. (c) Sensibilidad de los perros hipofisoprivos a la acción de la insulina. Rev. Soc. argent. de biol. 3: 217-226 (May) 1927. (d) Acción de las sustancias reprotoyitarias sobre la sensibilidad de los perros hipofisoprivos a la insulina. Ibid. 5: 99-106 1929. (e) Sensibilidad des chiens hypophysectomisés à l'égard de l'insuline. Compt. rend. Soc. de biol. 82: 822-824 (March 20) 1925.

32 Houssay B. A. and Potick, D. El antagonismo hipofisario insulina en los sapos. Rev. Soc. argent. de biol. 5: 66-76 1929. Antagonismo entre l'hypophyse et l'insuline chez le crapaud. Compt. rend. Soc. de biol. 101: 940-942 (July 17) 1929.

33 Houssay B. A. di Benedetto E. and Mazzocco P. Hypophyse et glycémie chez le crapaud. Compt. rend. Soc. de biol. 113: 465-467 1933.

34 Gaebler O. H. The Specific Dynamic Action of Meat in Hypophysectomized Dogs. J. Biol. Chem. 81: 41-47 (Jan.) 1929.

shown by Houssay and Biasotti,³⁵ this finding suggests that the inhibition of carbohydrate oxidation in pancreatectomized animals is not merely the result of a lack of insulin but is also due to the presence of the hypophyseal hormone

LIVER GLYCOGEN IN THE HOUSSAY DOG

We have found that Houssay dogs are able to store liver glycogen 1.8 per cent was found in one instance and 1.65 per cent in another

EFFECT OF HYPOPHYSECTOMY ON THE BLOOD SUGAR AFTER PANCREATECTOMY

The discovery of Houssay that pancreatic diabetes is relieved by hypophysectomy has been established on various species of toads by Houssay and his co-workers³⁰ and by Braier³ in fishes by Orias²³ in the snake by Houssay and Biasotti^{30c} and in the dog by Houssay and Biasotti³⁸ and by Lucke and his co-workers.⁴⁰

It is remarkable that lesions of the tuber cinereum region have the same inhibitory effect on the development of pancreatic diabetes in toads as hypophysectomy and that here again hypophyseal implants have a diabetogenic action, although the animal's own pituitary has not been removed (Houssay and Biasotti⁴⁰). The pancreatic diabetes of the dog (Houssay and Biasotti³⁸) and of the fish (Orias²³), however, is not relieved by such brain lesions

The increased insulin sensitivity of the hypophysectomized animal is very marked in dogs, even if the pancreas is also removed (Regan and Barnes⁴¹)

EFFECT OF EPINEPHRINE ON THE BLOOD SUGAR OF HYPOPHYSECTOMIZED ANIMALS

In the dog, Aschner⁴² found a decrease in epinephrine hyperglycemia after hypophysectomy, while Kobayashi,¹⁶ Re,⁴³ and Lucke with his collaborators¹⁰ found an increased hyperglycemia under the same conditions. These results may possibly be explained by the experiments of Braier,⁴⁴ who found that epinephrine hyperglycemia is increased in the fed and decreased in the fasted dog. In rabbits, Fujimoto²⁰ and Corkill, Marks and White²¹ report decreased epinephrine hyperglycemia after hypophysectomy

In the toad epinephrine hyperglycemia is decreased after hypophysectomy, but not after tuber lesions without hypophysectomy, hypophyseal implants restore the

reaction to epinephrine to normal (Houssay and Benedetto⁴⁵)

EFFECT OF OTHER HORMONES ON THE BLOOD SUGAR AFTER HYPOPHYSECTOMY

The hyperglycemia produced by thyroxine is not as marked in partially hypophysectomized dogs as it is in normal animals (Lucke and collaborators⁴⁶)

EFFECT OF TOXINS ON BLOOD SUGAR AFTER HYPOPHYSECTOMY

While Aschner⁴² found no change in phlorhizin glycosuria in hypophysectomized dogs, Houssay and Biasotti⁴⁷ observed that the sugar excretion in phlorhizin treated dogs is less pronounced after the hypophysis has been removed and that the blood sugar falls to much lower levels. They conclude that glycogenesis from endogenous proteins must be impaired under these conditions.⁴⁸ Similarly, in the hypophysectomized toad, di Benedetto⁴⁹ found phlorhizin glycosuria to be much less pronounced than in the normal animal. Pituitary implants increase the glycosuria under these conditions. A similar although less marked inhibition of the glycosuria may be produced in the toad by tuber injury (di Benedetto^{49a})

Morphine leads to unusually little hyperglycemia in hypophysectomized toads, unless pituitary implants are given (di Benedetto⁴⁸)

EFFECT OF HYPOPHYSECTOMY ON BLOOD SUGAR DURING AVITAMINOSIS

While normal dogs show marked hyperglycemia when kept on a vitamin B deficient diet, no rise in blood sugar is observed in B deficient hypophysectomized animals (Braier⁴⁰)

EFFECT OF HYPOPHYSECTOMY ON THE GLYCOGEN CONTENT OF THE LIVER

The glycogen content of the liver decreases after hypophysectomy in the toad, but this decrease may be inhibited by the administration of alkaline pituitary extracts (Houssay and his co-workers⁵¹). Epinephrine does not decrease the liver glycogen in the hypophysectomized toad (Houssay and Benedetto⁴⁵). Nakamura⁵² found that the liver glycogen is very low even in partially hypophysectomized rabbits, Corkill, Marks and White²¹ also noted low liver glycogen in some of their hypophysectomized rabbits. In the dog, the glycogen content of the liver after hypophysectomy is

35 Houssay B A, and Biasotti A. Pankreasdiabetes und Hypophyse beim Hund Arch f d ges Physiol 227 664 684 1931

36 (a) Houssay B A and Giusti L. Rev Soc argent de biol 6:207 1930 (b) Houssay B A and Biasotti A. Hypophysectomie et diabète pancréatique chez le crapaud Compt rend Soc de biol 104: 407-410 (May 30) 1930 (c) Hypophysectomie y diabetes pancreatica en el sapo Rev Soc argent de biol 6 324 1930 (d) Hypophysectomie et diabète pancréatique Arch internat de pharmacodyn et de therap 35: 250-260 1930 (e) Hypophyse et diabète pancréatique chez les batraciens et les reptiles Compt rend Soc de biol 113 469 471 1933

37 Braier B. Hypophyse and excretion azotée du crapaud Compt rend Soc de biol 114: 80-82 1933

38 (a) Houssay and Biasotti³⁸ (b) La diabetes pancreática de los perros hipofisoprivos Rev Soc argent de biol 6 251 296 1930 (c) Le diabète pancréatique des chiens hypophysectomisés Compt rend Soc de biol 105 121 123 (Oct 16) 1930 (d) Les troubles diabétiques chez les chiens privés d'hypophyse et de pancreas ibid 105 124-126 (Oct 16) 1930

39 Lucke Hans, Heydemann E R and Berger O. Kontrastulnare Hormone des Hypophysenvorderlappens und Pankreasdiabetes Ztschr f d ges exper Med 90 120 1933

40 Houssay and Biasotti (footnote 36 b c and d)

41 Regan and Barnes (footnotes 11 and 12)

42 Aschner B. Ueber die Funktion der Hypophyse Arch f d ges Physiol 140: 1146 1912

43 Re P M. Courbe d'aminocidémie et d'hyperglycémie des chiens hypophisoprivos Compt rend Soc de biol 109 323 324 (Feb 5) 1932

44 Braier B. Influence de la adrénaline sobre el metabolismo nitrogenado y la glucemia en la insuficiencia hipofisaria Rev Soc argent de biol 7: 283 301, 1931 Influence de l'adrénaline sur le métabolisme azoté et la glycémie des chiens hypophisoprivos Compt rend Soc de biol 108: 491-493 (Oct 30) 1931

45 Houssay B A and di Benedetto E. Papel de la hipófisis en las hiperglucemias adrenálicas y morfinica del sapo Rev Soc argent de biol 8 448-453 (Aug Sept) 1932 Role de l'hypophyse dans le hyperglycémies adrénalinique et morphinique du crapaud Compt rend Soc de biol 111 472-474 (Nov 4) 1932

46 Lucke Hans, Heydemann E R and Duensing F. Untersuchungen über den Wirkungsmechanismus des kontrastulnaren Hormons des Hypophysenvorderlappens Hypophysenvorderlappen, Schilddrüse und Kohlehydratstoffwechsel Ztschr f d ges exper Med 91 106 113 1933

47 (a) Houssay B A, and Biasotti A. Le diabète phlorizinique des chiens privés d'hypophyse Compt rend Soc de biol 105: 126 128 (Oct 16) 1930 La diabetes floridina de los perros hipofisoprivos Rev Soc argent de biol 6 326 339 1930 (b) Phlorhizin diabetes beim hypophysectomierten Hund Arch f d ges Physiol 227: 657 663 1931 (c) Houssay B A, Biasotti A, di Benedetto E, and Rietti G T. Acción del extracto anterohipofisario sobre la diabetes floridina Rev Soc argent de biol 8: 570 577 (Oct Nov) 1932

48 Biasotti A and Houssay B A. Phlorhizin Diabetes in Fasting or Fed Hypophysectomized Dogs J Physiol 77: 81 91 (Dec.) 1932

49 (a) di Benedetto E. Acción de la phlorizina sur les crapauds privés d'hypophyse Compt rend Soc de biol 107 1193 1195 (July 16) 1931 (b) Acción de la floridina sobre los sapos hipofisoprivos, Rev Soc argent de biol 7 196 202 1931

50 Braier B. Le rapport carbone azote dans l'avitaminose B des chiens hypophisoprivos Compt rend Soc de biol 108 507 508 (Oct 30) 1931

51 Houssay, di Benedetto and Mazzocco³² Houssay and di Benedetto⁴⁵

52 Nakamura K. Experimentelle Beiträge zur Kenntnis des Hypophysenfunktion Fukuoka Ikwadagaku Zasshi 24 18 (March) 1931

not markedly different from normal (Houssay,^{24b} Aschner⁵³)

EFFECT OF HYPOPHYSECTOMY ON THE GLYCOGEN CONTENT OF MUSCLE

In the toad, the glycogen content of the muscle is slightly subnormal after hypophysectomy, and the glycogen content of the entire animal is also decreased (Houssay and his collaborators³³), but this apparently is not a regular finding since these authors found no change in muscle glycogen in the toad in other experimental series.⁴⁴ In partially hypophysectomized rabbits the liver glycogen of which was subnormal the muscle glycogen showed no change (Nakamura⁵²). In the dog, no change in muscle glycogen has been observed (Houssay and his co-workers^{24b}).

CHEMISTRY

According to Houssay and his collaborators⁵⁴ hypophyseal tissue maintains its activity on carbohydrate metabolism when stored in acetone. The active principle is soluble in water and in 60 per cent alcohol, it is insoluble in absolute alcohol, ether, acetone, benzene and chloroform. It is destroyed by boiling and does not pass through ultrafilters. It is easily adsorbable.

In a more recent communication Houssay and his collaborators^{30c} state that they have also been successful in preparing potent extracts of the blood sugar raising principle from human urine. The procedure used was the following: Five hundred grams of kaolin is added to 500 cc of urine. The mixture is allowed to stand at room temperature for several hours. After that the kaolin is eluted with dilute alcohol. The fraction thus obtained is dissolved in water. Particularly large quantities may be obtained from the urine of diabetic patients. These extracts increase the glycosuria of the hypophysectomized and pancreatectomized dog.

The blood sugar raising principle is present in the pituitary of toads, frogs, fishes, birds and man (Houssay and Biasotti^{54a}). It has been shown by the Houssay school that this hormone is not identical with the pressor or oxytocic factors, and it is absent in the posterior lobe of the hypophysis. It is also well established that this hormone is not identical with the thyrotropic principle since, as will be seen later, it is active in thyroidectomized animals. Its chemical properties are, however, very similar to those of the growth hormone, and it is for this reason that Lucke⁵⁵ has not been able to separate it from the latter fraction. The publications of H. M. Evans, and his co-workers⁵⁶ and of Houssay and his collaborators^{8a} show also that growth hormone extracts are usually very rich in the blood sugar raising factor. According to Lucke,^{55a} the hormone cannot be identical with the ketogenic factor, since it is not ultrafiltrable as is the latter.

EFFECT OF HYPOPHYSECTOMY ON GLYCOSURIA

The original glycosuria, which is often observed during the first few days after the removal of the pituitary, reminds one of the sugar excretion produced

by experimental tuber lesions. It has often been observed by Houssay and his co-workers^{24b} and by others, but the fact that tuber injury in itself will produce transient glycosuria, even after the pituitary has been removed previously, shows that this phenomenon is due to the lesion of the nervous tissue (Camus and Roussy⁵⁷).

Houssay expresses the view^{24a} that even the "diabetic glycosurias," such as may be produced by hypothalamic lesions, are merely due to interference with the innervation or vascularization of the pituitary.

EFFECT OF THE PITUITARY BLOOD SUGAR RAISING PRINCIPLE ON BLOOD SUGAR AFTER INSULIN

Insulin hypoglycemia is decreased in normal dogs if the blood sugar raising factor is administered at the same time (Houssay^{8d} Lucke^{5a}). The inhibiting effect of this principle on insulin is still more marked if the two hormones are tested on pancreatectomized animals (Lucke^{5b}).

The insulin resistance of hypophysectomized and pancreatectomized dogs increases after the administration of the blood sugar raising hormone (di Benedetto⁵⁸), similar observations have been made by this author⁵⁹ on the hypophysectomized dog, the pancreas of which was not removed.

The glycosuria of pancreatectomized toads is greatly increased after administration of the blood sugar raising hormone (Houssay and Biasotti^{54a}). In both pancreatectomized and hypophysectomized toads, Campos and his co-workers⁶⁰ were able to produce glycosuria with anterior pituitary extracts.

EFFECT OF THE BLOOD SUGAR INCREASING FACTOR ON BLOOD SUGAR AND GLYCOSURIA AFTER ADMINISTRATION OF VARIOUS TOXINS

The blood sugar raising principle increases morphine hyperglycemia in the normal dog, according to Houssay and di Benedetto⁶¹.

Phlorhizin glycosuria is increased in hypophysectomized toads after the administration of pituitary implants (di Benedetto^{40a}) and the same is true in hypophysectomized dogs, according to Houssay and his co-workers^{47c} after administration of anterior pituitary extracts. Under these conditions ketonuria also appears. In normal fasting dogs, however, phlorhizin glycosuria is decreased after administration of the pituitary factor.

EFFECT OF ANTERIOR PITUITARY-LIKE GONADOTROPIC FACTOR ON BLOOD SUGAR

Various authors have reported that the hypophyseal like gonadotropic factor increases the blood sugar (Eidelsberg,⁶² Böhm⁶³) or decreases the sugar tolerance curve without having any direct effect on the blood

53 Aschner B. Physiologie der Hypophyse, in Hirsch Max. Handbuch der inneren Sekretion. Leipzig: Curt Kabitzsch. 2: 277-374. 1929.

54 (a) Houssay B. A. and Biasotti A. Sobre la substancia hipofisaria que refuerza la diabetes pancreatica. Rev. Soc. argent. de biol. 7: 312. 1931. (b) Sur la substance hypophysaire augmentant le diabete pancreatique. Compt. rend. Soc. de biol. 107: 733-735. (June 19) 1931.

55 (a) Lucke Hans. Das kontrainsulare Hormon des Hypophysenvorderlappens und seine Stellung zu anderen Hormonwirkungen dieses Organs. Arch. f. exper. Path. u. Pharmacol. 170: 166-175. 1933. (b) footnote 9b.

56 Evans Meyer Simpson and Reichert. (b) Evans H. M. Meyer K. and Simpson M. E. The Growth and Gonad Stimulating Hormones of the Anterior Hypophysis. Memoirs of the University of California. Berkeley, Calif. Univ. of Calif. Press. II. Sect. 1. 1933.

57 Camus J. and Roussy G. Hypophysectomie et glycosurie experimentales. Compt. rend. Soc. de biol. 76: 299-302. 1914.

58 di Benedetto E. Extracto antero-hipofisario y resistencia a la insulina. Rev. Soc. argent. de biol. 8: 578-581. (Oct. Nov.) 1932.

59 di Benedetto E. Extrait antero-hipofisaire et resistance a l'insuline. Compt. rend. Soc. de biol. 112: 499-501. (Feb. 10) 1933.

60 Campos C. A. Curutchet J. L. and Lanari A. Role du foie dans l'action diabetogene du lobe glandulaire de l'hypophyse de crapaud. Compt. rend. Soc. de biol. 113: 467-469. 1933.

61 Houssay B. A. and di Benedetto E. Extracto antero-hipofisario e hyperglucemias adrenalinica y morfina. Rev. Soc. argent. de biol. 9: 78-82. (May) 1933. Extrait antero-hipofisaire et hyperglycemies adrenalinique et morphinique. Compt. rend. Soc. de biol. 114: 82-83. 1933.

62 Eidelsberg J. Effect of Anteriorpituitary Hormones upon Blood Sugar. Proc. Soc. Exper. Biol. & Med. 29: 959-960. (May) 1932.

63 Böhm F. Ueber den Einfluss des Vorderlappenhormons auf den Blutzuckerspiegel. Ztschr. f. d. ges. exper. Med. 84: 689-694. 1932.

sugar (Snoeck⁶⁴) while Elek⁶⁵ has observed more or less irregular effects on the blood sugar after administration of this principle. Dingemans and Kober⁶⁶ however, showed that the blood sugar raising effect of pituitary-like gonadotropic preparations is not due to the gonadotropic substance itself but to some accompanying impurity. Houssay^{70c} saw no effect on the blood sugar after administration of this gonad-stimulating principle.

CLINICAL OBSERVATIONS CONCERNING THE EFFECT OF PITUITARY ON CARBOHYDRATE METABOLISM

Recently Lucke⁶⁷ studied the effect of pituitary on carbohydrate metabolism and found frequently high fasting blood sugars in acromegaly. The hypoglycemic phase after the administration of dextrose and epinephrine was decreased and there was decreased sensitivity to insulin. On the other hand in a hypopituitary dwarf the blood sugar was low, there was increased sugar tolerance and increased sensitivity to insulin. The anterior pituitary blood sugar raising principle increased the fasting blood sugar in this dwarf. The same author found that thyroxine hyperglycemia may be increased by the simultaneous administration of the pituitary factor.⁶⁸ Wilder⁶⁸ observed cases of hypopituitarism in human beings with severe hypoglycemic attacks that were fatal if sugar was not given. One should mention however cases reported by Kenyon⁶⁹ and Strecker⁷⁰ in which hyperglycemia was observed although clinical signs of hypopituitarism seemed to indicate a decrease in pituitary function.

A very interesting case relevant to this question has been reported by Hertz,⁷¹ who observed marked symptoms of Gierke's disease in a pituitary dwarf and called attention to the possible interrelationships between the pituitary and the so-called glycogen storage disease as described by Gierke. In this condition there is a marked increase in liver glycogen combined with acetonuria. If this condition should really be associated with pituitary malfunction, it would most likely be the result of an overproduction of the ketogenic rather than of the blood sugar raising principle.

THE THEORY OF ACTION OF THE BLOOD SUGAR INCREASING PRINCIPLE

Lucke⁷² believes that the blood sugar increasing principle acts on the nervous centers of carbohydrate metabolism and through these centers influences the

hormone production of the adrenals. He found that the blood sugar raising hormone had no effect on blood sugar after adrenal denervation. It was also ineffective, according to the same author, in adrenalectomized dogs.⁷³ Houssay and Biasotti,^{70c} however, obtained different results, since they found this principle active after the extirpation of the adrenals, the testes or the thyroid. Even complete evisceration did not influence its effect to any extent, as long as the liver was not removed. Therefore these authors conclude that only the liver is absolutely essential for the action of this hormone. Campos and his co-workers⁶⁰ observed, on the other hand that the decrease in blood sugar and muscle glycogen of hepatectomized toads is retarded by anterior lobe implants.

Although Barnes and Regan¹¹ thought, on the basis of preliminary experiments, that thyroidectomy might inhibit the effect of this hormone on the blood sugar, Houssay and his co-workers,⁷⁴ as already mentioned, found the sugar increasing principle to be active in thyroidectomized animals, and Lucke⁷⁵ has obtained similar results. It seems, therefore, that the action of this hormone is independent of the thyroid and thus fraction must be different from the so-called thyrotropic hormone. This view is substantiated by the experiments of Lucke and his co-workers.⁴⁰ Furthermore, Barnes, Regan and Nelson⁷⁶ have shown that estrogenic substance may decrease blood sugar in pancreatectomized animals, they interpreted this finding as an inhibition of pituitary function by the estrogenic principle.

As already mentioned, the blood sugar raising hormone is present in the urine, according to Houssay and Biasotti,^{70c} Houssay and his co-workers^{8b} have also demonstrated some activity occasionally in muscle and thyroid extracts. Traces are also present in the placenta.^{64b}

A remarkable feature about the action of the blood sugar increasing factor is that it raises the blood sugar only after a considerable period of latency (Houssay^{8d}). However, if the hormone is introduced directly into the spinal fluid its effect is instantaneous, according to Lucke,^{9b} this author interprets this observation as an additional proof of his view that it acts directly on the nervous centers.

THE KETOGENIC PRINCIPLE

Burn and Ling⁷⁷ showed that the acetone body excretion of rats kept on a butter diet is greatly increased after the administration of anterior pituitary preparations obtained by extraction with tenth normal sodium hydroxide. Later, Hoffmann and Anselmino⁸ reported experiments showing that pituitary extracts may lead to an increase in the ketone body content of the blood. They think that this effect is produced by a special hormone. Their results have been confirmed by

64 Snoeck J J. Recherches sur la glucosurie et la lactosurie graves. Arch. internat. de méd. exper. 7: 349-448 (Aug.) 1932

65 Elek, L. Hormonale Einflüsse auf die Blutzuckerregulation. Ztschr. f. d. ges. exper. Med. 85: 227-234 1932

66 Dingemans, E. and Kober, S. Does Anterior Hypophyseal Substance Prepared from Pregnancy Urine Raise the Blood Sugar Level? Endocrinology 17: 149-151 (March-April) 1933

67 Lucke Hans. Der Kohlehydratstoffwechsel bei Erkrankungen des Hypophysenvorderlappens. Ztschr. f. klin. Med. 122: 23-32 1932

68 Wilder J. Ein neues hypophysäres Krankheitsbild. Die hypophysäre Spontanhypoglykämie, Deutsche Ztschr. f. Nervenhe. 112: 192-250 1930

69 Kenyon J H. Hyperglycemia in Hypopituitarism with Glandular Treatment. Arch. Neurol. & Psychiat. 26: 656 (Sept.) 1930

70 Strecker E. A. Hypopituitary Disease with Hemiplegia, Hyperextension and an Atypical Sugar Tolerance Curve. M. Clin. North America 14: 835 (Jan.) 1931

71 Hertz, W. Zur Pathogenese der Glykogenspeicherkrankheit, Klin. Wchnschr. 12: 1144-1145 (July 22) 1933

72 Lucke Hans, Heydemann E R and Duensing⁶⁶ Lucke, Hans Heydemann E R and Hahndel H. Untersuchungen über den Wirkungsmechanismus des kontrainsularen Hormons des Hypophysenvorderlappens. III. Mitt. Hypophysenvorderlappens. Nebennierentinnervung und Kohlehydratstoffwechsel. Ztschr. f. d. ges. exper. Med. 91: 492-501 1933

73 Lucke Hans and Hahndel H. IV. Mitt. Der Einfluss des Hormons bei Einbringung wirksamer Extrakte in den Liquor cerebrospinalis. ibid. 91: 689-695 1933 V. Mitt. Der Einfluss von Symplicin und Narkose auf die durch Zufuhr des kontrainsularen Hormons ausgelöste Blutzuckerreaktion. ibid. 91: 696-703 1933 VI. Mitt. Die Möglichkeit eines biologischen Nachweises des kontrainsularen Hormons im Liquor cerebrospinalis. ibid. 91: 704-709 1933

73 Lucke Hans Heydemann E R and Hahndel, H. Untersuchungen über den Wirkungsmechanismus des kontrainsularen Hormons des Hypophysenvorderlappens. Hypophysenvorderlappens. Nebennierentinnervung und Kohlehydratstoffwechsel. ibid. 91: 483-491 1933

74 Houssay Biasotti, di Benedetto and Rietti^{70c} Houssay and Biasotti^{70c}

75 Lucke Hans Lucke Heydemann E R and Duensing⁶⁶

76 Barnes B O Regan J F and Nelson W O. Improvement in Experimental Diabetes Following Administration of Amniotin. J. A. M. A. 101: 926 (Sept. 10) 1933

77 (a) Burn J H and Ling H W. Effect of Insulin on Acetonuria. J. Physiol. 95: 191-203 (May 17) 1928 (b) Effect of Pituitary Extract and Adrenalin on Ketoneuria and Liver Glycogen. Quart. J. Pharmacol. 2: 116 (Jan. March) 1929 (c) Ketoneuria in Rats on a Fat Diet. (d) After Injection of Pituitary (Anterior Lobe) Extract. (b) During Pregnancy. J. Physiol. 69: xix 1930

78 Hoffmann F and Anselmino K J. Das Fettstoffwechselhormon des Hypophysenvorderlappens. Stoffwechselwirkungen und Regulationen des Hormons. Klin. Wchnschr. 10: 2383-2386 (Dec. 26) 1931

Magistris,⁷⁹ Funk and Zefrow,⁸⁰ Boenheim and Heimann⁸¹ and others. The name "fettstoffwechselhormon" (fat metabolism hormone) has been suggested by Hoffmann and Anselmino,⁷⁸ while Magistris calls this substance "orophysin."⁷⁹ In the American literature the name "ketogenic hormone" is generally used.

CHEMISTRY OF THE KETOGENIC FACTOR

As previously mentioned, the first attempts to isolate a ketogenic fraction from the pituitary were made by Burn and Ling,⁷⁶ who used alkaline extraction. Further data concerning purification were published by Magistris,⁸² who stated that the blood acetone raising fraction may be obtained by aqueous extraction of pituitaries that have been stored in acetone. The method he uses is the following: Acetone powder of pituitary glands is extracted with water for two days, then the watery suspension is centrifugated and the supernatant fluid is used after the addition of chlorbutanol, which is added as an antiseptic. According to Magistris, the active substance is ultrafiltrable and dialyzable. It is insoluble in absolute alcohol, ether and chloroform, and soluble in dilute alcohol and water. It is easily destroyed by heat, and solutions that have been kept at 60 C for from ten to fifteen minutes or boiled for from three to five minutes are inactive. It is not damaged by hundredth normal acid or alkali, it is adsorbable to silica gel but not to charcoal kaolin or talc. It may also be obtained from the euglobulin fraction of serum.

According to Funk⁸³ it is present in the urine of men and women and may be extracted from this source by shaking with benzoic acid and purification of the precipitate thus obtained.

STANDARDIZATION OF THE KETOGENIC PRINCIPLE

For the standardization of the ketogenic hormone the rabbit seems to be the best experimental animal, according to Magistris.⁸² This author considers one unit of this principle to be the amount that doubles the total acetone bodies in the blood of a male rabbit two hours after injection. The rabbits used for this test are kept on an oat diet, they should be approximately 2 Kg in weight and they are fasted for five hours before they are used for the test.

Of course other animals may also be used for the standardization of the ketogenic factor. Boenheim and Heimann,⁸¹ for instance use the rat; we use the rat in our laboratory and find it most satisfactory.

EFFECT OF THE KETOGENIC HORMONE ON THE KETONE BODY CONTENT OF THE BLOOD AND URINE

The ketone bodies in the blood, and particularly beta-oxybutyric acid, are greatly increased in the rat after the administration of ketogenic factor, according to Hoffmann and Anselmino,⁷⁸ and Magistris,⁸⁴ these observations have been confirmed by Boenheim and Heimann.⁸¹

and by Munoz⁸⁵ and Birx⁸⁶ and, as already mentioned this hormone also leads to increased excretion of acetone bodies in the rat, according to the pioneer experiments of Burn and Ling.⁷⁷ In the rabbit similar increases in ketonemia have been observed by Magistris.⁸⁷ In the dog, Houssay⁸⁸ obtained ketonuria with a pituitary extract which, however, was very rich in blood sugar raising hormone.

THEORY OF ACTION OF THE KETOGENIC HORMONE

The ketogenic factor is active in thyroidectomized rats and therefore cannot be identical with the anterior pituitary thyrotropic hormone, according to Funk.^{83a} It is also most likely that the hormone is not identical with the blood sugar raising factor, since the former decreases the lipid content of the blood, according to Magistris,^{82b} while the latter has the opposite effect. Chronic administration of the ketogenic hormone decreases the blood sugar in the rat, according to Magistris.⁷⁹ Furthermore, this principle increases the glycogen content of the liver, and this effect is particularly marked if it is given together with thyroid hormone (Magistris^{82b}). This author gave thyroid hormone to rats together with the ketogenic factor and found that under these conditions thyroid administration is unable to deplete the glycogen content of the liver. Chianca⁸⁹ showed that subcutaneous administration of an anterior pituitary extract leads to marked increase in the glycogen content of the liver in rabbits (up to 12.49 per cent), direct injection into the portal vein was still more effective.

These experiments concerning the effect of the hormone on liver glycogen give further support to the theory of its nonidentity with the thyrotropic substance. Additional evidence in this direction is the fact that unlike the other, the ketogenic factor depresses basal metabolism of the rat, according to Hoffmann and Anselmino,⁷⁸ a finding that has since been confirmed by Magistris.⁸²

The ketogenic principle increases the specific dynamic action of proteins in the rat, according to Hoffmann and Anselmino⁷⁸ and to Magistris.^{82c}

Raab⁹⁰ and Raab and Kerschbaum⁹¹ have reported numerous experiments on an anterior pituitary fraction which increases the blood lipoids and which, according to these authors, is not identical with the ketogenic fraction or any other known pituitary hormone. The name "lipotrin" has been suggested by Raab for this substance.

It is doubtful at the present time whether the ketogenic hormone has any marked influence on the deposition of fat tissue in the organism, but I should like to call attention in this connection to an observation of H. M. Evans and his collaborators,^{90b} who noted the development of marked adiposity in one of their dogs chronically treated with an anterior lobe extract.

(To be continued)

79 Magistris H. Das Stoffwechselhormon des Hypophysenvorderlappens. Wien klin Wchnschr. 46: 908-911 (July 21) 1933.

80 Funk C and Zefrow P P. The Hormone of Fat Metabolism of the Anterior Pituitary Gland. Verhandl. 14. Internat. Kongr. Physiol. 89, 1932.

81 Boenheim F and Heimann F. Das Fettstoffwechselregulierende Hormon des Hypophysenvorderlappens im Inkretan. Ztschr. f. d. ges. exper. Med. 83: 637-640, 1932.

82 (a) Magistris H. (b) La dependencia del efecto de la glándula tiroidea de la alimentación particularmente de las grasas. Rev. Soc. argent. de biol. 8: 297-304 (July) 1932. (c) Das Fettstoffwechselhormon des Hypophysenvorderlappens. Endokrinologie 11: 176-191, 1932.

83 (a) Funk Casimir. Further Experiments on the Fat Metabolism Hormone Obtained from the Normal Urine. J. Biol. Chem. 100: 411-413, 1933. (b) Funk and Zefrow.⁸⁰

84 Magistris (footnote 82 b and c).

85 Munoz J M. Action de l'extrait antéro-hypophysaire sur les lipides du sang. Compt. rend. Soc. de biol. 112: 502-504 (Feb. 10) 1933.

86 Birx H. Zur Frage der Zerebralbedingten Azetonurie. Wien med. Wchnschr. 45: 686-687 (May 27) 1932.

87 Magistris (footnotes 79 and 82 c).

88 Houssay Biasotti di Benedetto and Rietti. Houssay di Benedetto and Rietti.⁸⁷

89 Chianca L. Influenza degli estratti dell'ipofisi anteriore sulla funzione glicogenica del fegato. Folia med. 18: 161-175 (Feb. 15) 1932.

90 Raab W. Wirkung der blutfettsenkenden Hypophysensubstanz (Lipotrin) am Menschen. Ztschr. f. d. ges. exper. Med. 89: 588-615, 1933.

91 Raab W. and Kerschbaum E. Die blutfettsenkende Hypophysensubstanz Lipotrin (Tier experimentelle Untersuchungen). Ztschr. f. d. ges. exper. Med. 90: 729-749, 1933.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
HOWARD A. CARTER Secretary

SPARKLET POCKET CO. SNOW OUTFIT ACCEPTABLE

This outfit is manufactured by Sparklets Ltd, London England. According to the manufacturer, the apparatus is a device for the easy and quick production of a pencil of solid carbon dioxide, suitable for the treatment of certain lesions of the skin. The apparatus consists of several parts. There is a tubular metallic handle or holder (6¼ inches long, six-eighths inch in diameter), into which is placed a small tank or drum of liquid carbon dioxide. This drum is of heavy metal and appears to be of sufficient strength for its purpose, it has a narrow neck, the lumen of which is closed with softer metal that can be punctured with a special needle. A well constructed metal cap screws on and securely closes the holder and drum. The cap contains a needle, which punctures the drum when the cap is screwed home. It also contains a washer, both needle and washer can be easily removed and replaced when they wear out. An expansion chamber screws on to the cap. This consists of a metal cylinder 1½ inches in length and 1 inch in diameter. It is lined with a fine mesh metal screen. Between the screen and the wall of the expansion chamber is a layer of soft material, such as chamois. Four small holes in the wall of the chamber provide the necessary supply of air, ventilation, and variation in expansion, pressure, and so on. The distal end of the chamber consists of an ebonite cylinder (mold) about 1½ inches in length. The diameter of the lumen is six-eighths inch. The distal end is covered with an ebonite rammer, which fits the mold and is used to compress the solid carbon dioxide into a firm pencil or stick.

All parts of the apparatus are well constructed. The carrying case, however, is of pasteboard. It is about 7 inches in length 4 inches in width and 2 inches in depth. The device weighs about 1 pound. The drums are supplied in a set of six in a pasteboard carrying case, 4 by 2½ by 6½ inches. The drums can be refilled and resealed.

It is not an exaggeration to call the device a pocket outfit. The pencil of solid carbon dioxide can be obtained in a minute or two. It is manufactured in the following manner.

A drum is placed in the holder, with the neck of the drum at the distal end of the holder. The cap and expansion chamber are screwed firmly home while the holder is in a vertical position. The needle in the cap punctures the drum, and the carbon dioxide passes through the needle into the expansion chamber, where solid carbon dioxide is formed. The expansion chamber is removed, and the rammer is used to force all the solid carbon dioxide into the mold, where one makes it compact by placing the distal end of the mold on a table and forcing the rammer down with the palm of the hand. Finally, the cap is removed from the mold and the pencil of snow forced out with the rammer.

The pencil of "snow" is about 1½ inches in length and about one fourth inch in diameter. It is sufficiently firm for shaping with a knife (the manufacturer has recently designed a mold to produce the snow stick with a natural point, so that recourse to a knife would be necessary only when the natural point on the snow pencil had become worn down with use) and for the treatment of a number of cutaneous conditions. It is not as hard as commercial "dry ice," which at times is a disadvantage. This lack of firmness causes it to lose its shape rapidly when a comparatively long application or heavy pressure is required. The diameter of the pencil is satisfactory for many conditions. At times it is advantageous to have a pencil of greater diameter. Commercial dry ice has the following advantages. It is firmer and less expensive, and it can be cut into pencils of any size and shape. The disadvan-

tages of dry ice are that one must go to the nearest confectioner or other depot every time the method is to be used. In some, or possibly many, geographic locations, commercial dry ice is not obtainable. The pocket outfit, on the other hand, is always ready for use.

This unit was examined in a clinic acceptable to the Council and was found to give reliable and satisfactory service. The Sparklets Pocket CO Snow Outfit, therefore, is included in the Council's list of accepted devices.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH Secretary

ORTAL SODIUM (See THE JOURNAL, March 24, 1934, p 928)

The following dosage form has been accepted
Kapsels Oral Sodium with Amidopyrine Each kapsel (hermetically sealed capsule) contains oral sodium 1½ grains (0.1 Gm) and amidopyrine 1½ grains (0.1 Gm)

SILVOL (See New and Nonofficial Remedies, 1934 p 412)

The following dosage form has been accepted
Capsules Silvol 6 grains

ALYPIN (See New and Nonofficial Remedies, 1934, p 49)

The following dosage form has been accepted
Tablets Alypin ½ grain

TUTOCAIN (See New and Nonofficial Remedies, 1934 p 62)

The following dosage form has been accepted
Ampules 1% Isotonic Solution Tutocain with Supracain 1.20 000 3 cc

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS
PAUL NICHOLAS LEECH Secretary

AUTOLYZED LIVER PREPARATIONS

In this issue of THE JOURNAL appears an article by Drs Castle and Strauss¹ in which evidence is presented to show (1) that autolysis of liver does not enhance the potency of liver in bringing about a remission in pernicious anemia and (2) that Autolyzed Liver Concentrate-Squibb as advertised and labeled is not of the claimed potency.

The acceptance of this product by the Council was based on the work of Herron and McElroy.² The Council cannot take exception to the criticism of the report of these authors by Drs Castle and Strauss. Through the courtesy and with the permission of Drs Castle and Strauss their paper was submitted by the Council to E. R. Squibb & Sons for comment. In reply the firm submitted twenty protocols of cases treated with its product.

In accepting liver preparations for the treatment of pernicious anemia, the Council has used as criteria of potency the reticulocyte response in uncomplicated untreated cases during the first ten days of administration of the material, and the clinical improvement and restoration of the number of red blood cells and hemoglobin to normal or nearly normal limits within at least two months. In the labeling of products a statement of the antianemic potency in equivalent amounts of fresh liver has been required. The material submitted by the firm in support of the potency claims for its product consisted in

¹ Castle, W. B. and Strauss, M. B. Effect of Autolysis on Potency of Liver in Treatment of Pernicious Anemia this issue p 798

² Herron, W. F. and McElroy, W. S. The Use of Autolyzed Liver in the Treatment of Pernicious Anemia J. A. M. A. 100 1084 (April 8) 1913

reports of cases in which the maintenance efficiency of Autolyzed Liver Concentrate in doses of from one to six teaspoonfuls daily was compared with that of a parenterally administered extract and with those of other preparations for oral use. The evidence seems to demonstrate an efficiency of the Squibb product quite comparable to that of the other preparations employed. However, the data are not of a character that permits estimating the potency on a quantitative basis. Several reports are offered in which hemoglobin and red blood cell counts were made at irregular intervals during administration of the product in doses varying between one and eight teaspoonfuls daily, these indicate definite potency, but the data are not adequate to determine the comparative anti-anemic activity of the preparation. Three case reports are offered in which the reticulocyte counts hemoglobin estimation and red blood cell counts are given during the initial period of administration of the liver concentrate. In only one of the cases are these facts supplied for daily intervals. So far as can be determined the reticulocyte response was submaximal, although the data are not complete. In one patient with an initial red blood cell count of 0.64 million (daily reticulocyte counts are given in this case) 60 Gm of Autolyzed Liver Concentrate was administered daily during the first thirteen days of treatment. The highest reticulocyte count that occurred (on the eighth day) was 33 per cent. A preparation of satisfactory potency would be expected to give on the average a peak rise in reticulocyte count in the neighborhood of 50 per cent. The recommended dosage for the Squibb product is from four to six or more ("or more" gives wide latitude) level teaspoonfuls daily for the first ten days and from one to two level teaspoonfuls daily thereafter. A level teaspoonful of Autolyzed Liver Concentrate weighed in the laboratory of the Council's referee³ averaged about 3 Gm. The patient then received twenty level teaspoonfuls of the Concentrate which would represent the material derived according to the firm's claims (1 Gm is derived from 7 Gm of fresh liver) from 420 Gm of fresh liver, an amount comparable to that from which the Cohn fraction G might be expected to give as good or even a maximal reticulocyte response.

The Council has experienced considerable difficulty in the consideration of the liver preparations that stand accepted for New and Nonofficial Remedies particularly in the matter of labeling so as to indicate comparative potency. Some of the discrepancies in the statements of potency of various preparations have been pointed out in a recently published paper by Drs Dameshek and Castle.⁴

During the past year the Council's referee has been engaged in a revision of standards of assay and methods of labeling antianemic liver preparations. This revision is being considered by the Council. Consequently, in the near future, all firms with products now in New and Nonofficial Remedies will be requested to submit new protocols demonstrating potency according to new standards together with new labels and advertising literature to show that the preparations are properly described.

While this report deals mainly with Autolyzed Liver Concentrate-Squibb, it is not the purpose of the Council to single this out alone as it is quite likely that there may be other preparations the potencies of which are not clearly stated.

In view of the fact that all antianemic liver products in New and Nonofficial Remedies will shortly be reviewed by the

Council with reference to the new standards the Council has decided to postpone further action on Autolyzed Liver Concentrate pending the submission of new evidence by all the manufacturers which will indicate with much greater accuracy than is now possible the comparative potency of all the products. In consideration of the Council's decision, E. R. Squibb & Sons commendably agreed to withhold active promotion of Autolyzed Liver Concentrate.

PERTUSSIS VACCINE, IMMUNIZING (SAUER) (P. D. & CO.)

The Council has already published a report on pertussis vaccine prepared after the method of Dr. Louis W. Sauer and marketed by Eli Lilly & Co. (THE JOURNAL, March 3 1934 p. 692). In this report it was stated that the Council does not feel justified at this time in recognizing the use of Pertussis Vaccine of any sort for therapy or prophylaxis until more convincing evidence becomes available. The Council therefore postponed consideration of the Lilly product to await the development of further evidence. Recently Parke, Davis & Co. presented an identical preparation for consideration of the Council. In accordance with its previous decision, the Council voted to consider this preparation as having the same status as that manufactured by Eli Lilly & Co. and postponed consideration to await the evidence to determine its value.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG Secretary

VITAMIN D FORTIFIED PASTEURIZED MILK Distributors—

Ashley Dairy Company, Battle Creek Mich
Campbell's Dairy Products, Peterborough, Ont, Canada
Charlotte Dairies, Inc. Charlotte N. C. (Foremost)
Columbia Dairies, Columbia, S. C.
Crombie Guernsey Dairy Co., Joliet Ill.
Dairymen's League Cooperative Association, Inc., Auburn N. Y. (Dairylea)
Eisenhart's Dairy York Pa.
Ellwood Pure Milk Company Ellwood Pa.
Florida Dairies Company, Miami Florida
W. A. Gabel Dairy Company, Inc., Detroit
Garden State Dairies, Vineland, N. J.
General Ice Cream Corporation, Schenectady, N. Y. (Cream Crest)
Graff's Dairy, New Liskeard Ont. Canada
Greenville Sanitary Dairy, Greenville S. C.
Lansing Dairy Company, Lansing Mich.
Modern Dairy Co-Operative Sheboygan, Wis.
Modern Sanitary Dairy, Hazleton Pa. (Matuella's)
Penn-Dell Dairy Products Company, Stroudsburg, Pa.
Royal Crest Milk, Inc. Denver
Stearns Dairy Company Denver
Sterling Milk, Inc., Erie Pa.
Sunbury Milk Products Co. Sunbury Pa. (Engles)
Wehr Dairy, Inc., Hamilton Ohio

Description—Bottled pasteurized milk fortified with vitamin D (vitamin D concentrate prepared from cod liver oil) contains 400 U. S. P. X (Revised 1934) vitamin D units per quart.

Preparation—The milk complies with legal requirements and is pasteurized by the standard holding method. See THE JOURNAL, July 1 1933 page 34 for description of fortification with vitamin D.

3 The Pharmacopeia defines a teaspoonful as

1 teaspoonful—4 cc.—1 fluidrachm (approx. 60 grains by weight).

Teaspoons vary a great deal. Frequently coffee spoons are considered teaspoons. In the A. M. A. Chemical Laboratory three different individuals (A, B and C), using 1, 5 and 6 of a group of spoons obtained the following weights as representing a teaspoonful of Autolyzed Liver Concentrate (Lot No. 16675) purchased on the open market.

A. (a) 7.75 Gm. (previous weighings by another individual with the same spoon but on a different lot of powder averaged about 5 Gm.)

B. (a) 2.8 Gm. (b) 3.2 Gm. (c) 3.6 Gm. (d) 3.4 Gm.

(e) 2.9 Gm.

C. (a) 3.2 Gm. (b) 3.5 Gm. (c) 3.6 Gm. (d) 3.6 Gm.

(e) 3.5 Gm. (f) 2.6 Gm.

The Pharmacopeia defines a teaspoonful as 4 cc. Four cc. volume of Autolyzed Liver Concentrate Powder was found to weigh 1.8 Gm. It is understood that E. R. Squibb & Sons considers 3.6 Gm. as a teaspoonful. It seems that the referee's figure is less than the average weight but the benefit of this calculation redounds to E. R. Squibb & Sons.

⁴ Dameshek, William and Castle, W. B. Assay of Commercial Extracts of Liver for Parenteral Use. J. A. M. A. 103: 402 (Sept. 15) 1934.

Vitamins—The vitamin D concentrate used and the fortified milk are regularly tested biologically. Chemical investigation shows this milk to be a reliable antirachitic agent if the proper amount is used.

Claims of Distributors—A vitamin D fortified antirachitic pasteurized milk having otherwise the flavor and food values of usual pasteurized milk.

- (a) MASTER WHITE BREAD (SLICED)
(b) MASTER BREAD SLICED (TWINS)
(c) THIN MASTER BREAD SLICED

Manufacturer—Zinsmaster Baking Company, Minneapolis

Description—(a) and (b) Sliced white breads made by the sponge dough method (method described in THE JOURNAL, March 5, 1932, p 817), prepared from patent flour, water, sucrose, shortening, powdered skim milk, sodium chloride, yeast, and a bleaching agent consisting of corn and soya bean flours, and a yeast food containing calcium acid phosphate, ammonium sulphate, sodium chloride, potassium bromate, potassium iodate, and corn starch.

(c) Sliced white bread made by the sponge dough method (method described in THE JOURNAL, March 5, 1932, p 817), prepared from patent flour, water, sweetened condensed whole milk, sucrose, shortening, sodium chloride, yeast, a bleaching agent consisting of corn and soya bean flours, and a yeast food containing calcium acid phosphate, ammonium sulphate, sodium chloride, potassium bromate, potassium iodate, and corn starch.

DORSEL'S SEAL OF KENTUCKY HIGH GRADE FLOUR, BLEACHED, PHOSPHATE ADDED

Manufacturer—The Dorsel Company, Inc., Newport Ky.

Description—Patent flour blended from hard and soft winter wheat with added calcium acid phosphate, bleached.

Manufacture—Selected wheat is cleaned, scoured, tempered, and milled by essentially the same procedures as described in THE JOURNAL, June 18, 1932, page 2210. Chosen streams of bleached flour are blended, two thirds hard winter wheat flour being used to one third soft winter wheat flour, three-fifths ounce Novadelox (benzoyl peroxide and calcium phosphate) and three fifths pound calcium acid phosphate are added per barrel of flour.

Analysis (submitted by manufacturer) —	per cent
Moisture	13.0
Ash	0.7
Fat (ether extraction method)	1.6
Protein (N \times 6.25)	11.6
Crude fiber	0.4
Carbohydrates other than crude fiber (by difference)	72.7

Calories—3.5 per gram, 99 per ounce.

WARRANTY SIEVED CELERY

Manufacturer—The Nielsen Corporation, Ltd., Oakland, Calif.

Description—Sieved celery prepared by efficient methods for retention in high degree of the natural mineral and vitamin values. No added sugar or salt.

Manufacture—Matured celery is delivered to the plant and immediately washed. The hearts and inner stalks, free of leaves, are processed and canned by essentially the same procedure as described for Warranty Sieved Spinach (THE JOURNAL, Feb 2, 1935, p 399).

Analysis (submitted by manufacturer) —	per cent
Moisture	93.6
Total solids	6.4
Ash	1.0
Sodium chloride	0.3
Fat (ether extract)	0.1
Protein (N \times 6.25)	0.8
Reducing sugars as invert sugar	0.8
Crude fiber	0.8
Carbohydrates other than crude fiber (by difference)	3.7

Calories—0.2 per gram, 6 per ounce.

Vitamins—The method of preparation and processing insures the retention in high degree of the natural vitamin content.

Claims of Manufacturer—Specially intended for infants, children and convalescents, and for special smooth diets. Only warming is required for serving.

GIRAFFE VACUUM PACKED FLORIDA NATURAL GRAPEFRUIT JUICE

Manufacturer—Tropical Juice Corporation of Florida, Miami and Titusville, Fla.

Description—Canned grapefruit juice, no added sugar or flavoring, retains in high degree the natural vitamin content.

Manufacture—See description of manufacture for Giraffe Vacuum Packed Florida Natural Orange Juice (THE JOURNAL, Feb 9 1935 p 475).

Analysis (submitted by manufacturer) —	per cent
Moisture	89.5
Total solids	10.5
Ash	0.4
Fat (ether extract)	0.0
Protein (N \times 6.25)	0.4
Reducing sugar as invert sugar	4.3
Sucrose	3.5
Crude fiber	0.0
Carbohydrates (by difference)	8.5
Titrateable acidity as citric acid	1.2
Test for borax	negative

Calories—0.4 per gram, 11 per ounce.

Vitamins—Assay shows retention in high degree of vitamin C content.

Claims of Manufacturer—Retains practically all the nutritive values of grapefruit juice. For all dietary and table uses.

WARRANTY SIEVED APRICOTS

Manufacturer—The Nielsen Corporation, Ltd., Oakland, Calif.

Description—Sieved apricots prepared by efficient methods for retention in high degree of the natural mineral and vitamin values. No added sugar or salt.

Manufacture—Fully ripe apricots are pitted by hand, thoroughly washed, sorted, sieved, and subsequently processed and canned as described for Warranty Sieved Spinach (THE JOURNAL, Feb 2 1935, p 399). If not immediately sieved, the apricots are heated in an atmosphere of steam, canned hot, and used later as needed for sieving.

Analysis (submitted by manufacturer) —	per cent
Moisture	85.7
Total solids	14.3
Ash	0.5
Sodium chloride	0.01
Fat (ether extract)	0.1
Protein (N \times 6.25)	0.8
Reducing sugars as invert sugar	4.9
Sucrose	3.6
Crude fiber	0.8
Carbohydrates other than crude fiber (by difference)	11.5
Titrateable acidity as malic acid	0.6

Calories—0.5 per gram, 14 per ounce.

Vitamins—The method of preparation and processing insures the retention in high degree of the natural vitamin values.

Claims of Manufacturer—Specially intended for infants, children and convalescents, and for special smooth diets. Only warming is required for serving.

EVANGELINE EVAPORATED MILK UNSWEETENED, STERILIZED

Manufacturer—Evangeline Milk Co., Sawyer, Wis.

Description—Unsweetened, sterilized, evaporated milk.

Manufacture—The procedure of evaporation and canning, and the analysis are essentially the same as for the usual evaporated milk (THE JOURNAL, April 16, 1932 p 1376).

Claims of Manufacturer—See announcement on the advertising of the Evaporated Milk Association (THE JOURNAL, Dec 19, 1931, p 1890).

"WHAT'S IN A CAN OF FRUITS ? VEGE-TABLES ? FISH ? PROMOTIONAL ADVERTISING

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Advertising—The booklet discusses the varieties, grades, and nutritive values of various canned fruits, vegetables, and fish.

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SATURDAY MARCH 9 1935

THE SURGICAL TREATMENT OF GALLSTONE DISEASE

The causes of gallstone formation are believed to be infection of the gallbladder stasis of the bile in the gallbladder and certain metabolic alterations, notably those of cholesterol. The infection may be ascending, from the intestine into the extrahepatic bile tracts or hematogenous, by way of the liver which acts as a bacterial filter. Undue relaxation of the sphincter of Oddi, resulting from disturbed motor function of the extrahepatic bile tracts brought about by a vegetative nervous imbalance, may serve to facilitate the invasion of the tracts by the intestinal flora.

Infection of the gallbladder with the accompanying bile stasis impairs the digestion of fats. A far graver consequence, however, is the damage to the liver cells undoubtedly present in a greater or lesser degree in every case of gallbladder infection. This leads to a disturbance of one of the most important liver functions, namely, the regulation of the carbohydrate metabolism. The prevention and treatment of damage to liver cells becomes therefore the most important problem in the therapy of gallstone disease. The measures recommended have in mind the sparing of liver function as far as possible by a proper dietetic regimen and a storing up of glycogen. Administration of small doses of insulin covered by a proper amount of dextrose seems to be helpful in stimulating the glycogen storing faculty of a damaged liver.

Jaundice is an important problem for the surgeon, because of the tendency to the much feared cholemic bleeding. It should be noted that the term "cholemic" is a misnomer. The tendency to protracted bleeding in a jaundiced patient, it has been shown conclusively, is not due to the presence of bile components in the blood but to liver damage. Wildegans implanted the common duct of a dog into the vena cava and failed to find any tendency to increased bleeding. The blood calcium content of jaundiced patients is as a rule normal and the entire concept of retarded blood coagulability and lowered blood calcium is no longer tenable. More

recent researches point, in fact, to an increase in the antiprothrombin as the cause of tendency to bleeding. The failure to secrete and maintain the proper antiprothrombin blood content is the result of damaged liver function. Of the many measures for combating this dangerous complication, blood transfusion administered on the day before the operation and after the operation is most effective.

The focusing of the attention on the liver damage has resulted in a more prolonged and more thorough preoperative treatment, with a lowering of mortality. With regard to the choice of the operation, it may be said that the simpler the intervention the lower the mortality. A cholecystectomy without opening into the common duct gives a low mortality. The statistics of the Mayo clinic show a mortality of 19 per cent in 23,796 cholecystectomies. The same clinic, however, reports a mortality of 72 per cent in 3,246 cholecystectomies with drainage of the common bile duct. The mortality is highest from operations done in the course of an acute attack and lowest when carried out in the chronic stage. Internists as well as surgeons are now agreed as to the advisability of an early operation before the development of advanced pathologic conditions of the bile tracts, the liver, the pancreas and the vital organs. The recurrence of symptoms after the removal of the gallbladder has been much discussed. The dictum that recurrent colicky attacks are invariably due to an overlooked stone is no longer accepted generally. Formation of new stones in the liver in the absence of the gallbladder, while rare, has been known exceptionally to take place. Colicky attacks, however, can occur in the absence of stones. Moreover, the occurrence of true colicky attacks is rather infrequent.

The more common recurrent complaints are epigastric fulness, belching, transient diarrheas, occasional icterus with mild fever, loss of weight, nervousness and fatigue. Adhesions, chronic pancreatitis, persistent cholangitis and hepatitis have all been considered as possible causes. Surgeons with extensive experience in this field have been impressed with disproportion in the pathologic conditions found at reoperation and the existing symptoms. Subjective symptoms may be entirely wanting in the presence of extensive pathologic changes, and the reverse, severe symptoms, may be complained of in the presence of insignificant pathologic alterations. This gave rise to the dyskinetic theory (Bergmann) of disturbance of the extrahepatic bile tracts and the sphincter of Oddi, an upset in the functioning of the vegetative nervous system. It appeared indeed that the psychic constitution and the state of the vegetative nervous system played a more important part in the occurrence of recurrent complaints than the existence of gross pathologic lesions.

Internal medical treatment is quite successful in relieving the recurring complaints in a high proportion of the cases. The treatment consists of a proper dietetic regimen and the exhibition of drugs that disinfect

the bile tract, of cholagogue drugs and of duodenal drainage

As for the operation of choice, there appears to be now much more unanimity in favor of cholecystectomy than there was a decade ago. Although one still hears individual voices favoring cholecystotomy, the latter is being reserved more and more for the severe cases of cholangitis, for deep jaundice, for liver atrophy and for elderly patients in a much reduced general state.

With the indications for the exploration of the common bile duct rather clearly established, the question of whether or not to drain the duct is still open to debate. The views oscillate between Kehr's dictum made in 1913 that the duct be drained in every instance of its being opened, and Deaver's pithy query "Why drain a drain?" The disadvantages of a drain in the duct are the possibility of development of stenosis of the duct with its tragic consequences, and the loss of fluids and bile to the organism from draining the bile away from the intestine. It has been recognized but recently that a loss of from 500 to 1,500 cc of bile daily is a serious matter for a run-down patient. The advantages of drainage of the duct especially for the toxic cases, is the more rapid detoxification of the liver and the bile tracts and sparing the bowel the introduction of the infected bile. The tendency is to suture the duct and to place a drain down to the suture line rather than to drain the duct itself. The enthusiasm of certain European surgeons for anastomoses between the common bile duct and the duodenum (Finsterer) is not shared by American surgeons, because of the demonstrations of the ever present possibility of an ascending infection.

INTERMEDIARY METABOLISM OF FAT

The study of the processes of intermediary metabolism *in vivo* presents many experimental difficulties to the investigator. The body secretions and excretions available for analytic purposes, namely, blood, digestive juices, urine, spinal fluid, milk and feces give a fairly accurate reflection of the picture of the chemical situation within the body. Certain of the fluids, the urine, for example, present merely the terminal metabolic products for study. These materials aid in writing only the final chapters in the story of intermediary metabolism. The events leading to these conclusions are generally obtained by inference. Investigators have long sought experimental conditions *in vivo* which, by virtue of the presence of a limited number of variables, would aid in the elucidation of the chemical reactions occurring in metabolism. A partial attainment of this objective is made available through the natural spawning habits of the salmon. During its long migration to the spawning waters, this fish does not partake of food. At least the alimentary tract is never found to contain food detritus, and the digestive fluids are practically inactive. The migratory period represents therefore,

a time during which all the products formed in the organism must arise from endogenous sources, the extraneous variable of ingested food has been excluded. This fact makes the salmon peculiarly suitable for studies of the mobilization of body materials and their transformations. The discovery of nucleic acid in the spermatozoon heads of the Rhine salmon carried with it the proof that nucleic acid need not be formed from purine precursors of the diet. The great increase in the nucleoprotein-rich generative organs during the migration up the Rhine occurs concomitant with a decrease in muscle tissue. This must mean, therefore, that nucleic acid is formed directly or indirectly from muscle protein.¹

The spawning habits of the Atlantic salmon make this fish well adaptable for studies of the mobilization of depot fat. The journey from the sea up the rivers to the spawning grounds, with a cessation in feeding demands the expenditure of much energy, which has to be supplied mainly by reserve fat. Furthermore, considerable amounts of fat accumulate in the gonads, and this material must be transferred from fat depots or synthesized from nonlipid precursors. The fish after spawning contain as little as 0.3 per cent of fat in the muscles, contrasted with from 13 to 14 per cent present in a fish fresh from the sea. The recent study of Lovern² has been designed to investigate the chemical changes involved in this fat mobilization. By selecting salmon of different degrees of emaciation it has been possible to obtain samples of depot fat from fish in which the percentages of reserve fat form a rapidly decreasing series. A detailed analysis of the fatty acids of these specimens was made in order to determine whether fat mobilization is a selective process. For example, if certain acids such as the more unsaturated ones, or glycerides of these acids are mobilized more readily than the saturated components, the fats from the more emaciated fish should show an increasing accumulation of saturated constituents.

The data obtained show a rather surprising, almost nonselective, mobilization of the depot fat. The smaller amount of fat present in emaciated salmon had a fatty acid composition quite similar to that of samples obtained from fish in a better state of nutrition. The composition of the ovarian fat, however, was quite different from that of the depot fat in the same animal from which it was probably derived, being characterized by a higher degree of unsaturation. As this selective formation of ovarian fat could not be correlated with a chemical change in the remaining body fat it appears that fat is mobilized in the first instance almost nonselectively. A portion of this mobilized depot fat must then be selectively removed by some organ and passed on to the ova, the remainder being consumed as fuel. The specific transfer of highly unsaturated con-

1 Jones, Walter. *Nucleic Acids Their Chemical Composition and Physiological Conduct*, ed. 2. London: Longmans Green & Co. 1920.
2 Lovern, J. A. *Biochem. J.* 28: 1955 (No. 6) 1934.

stituents to the ovaries has a possible suggestive parallel in the selective acquisition by the phospholipids of certain animals of the most unsaturated of the available fatty acids³ Further studies of the other types of lipids deposited in the ova under these conditions should amplify knowledge of the physiologic role of the phospholipids and their constituent fatty acids at the same time adding a few touches to the incomplete picture of the intermediary metabolism of the lipids

Current Comment

PHYSICIANS AND THE OPTICAL RETAIL CODE

Demands are being made by the Optical Retail Trade Code Authority, in a letter addressed "To Oculists and Physicians Dispensing Ophthalmic Products," that the physician to whom it is addressed fill out a questionnaire relative to the nature and extent of the physician's optical business and pay assessments amounting to \$3 for each employee in his service. It is asserted that "physicians selling glasses or servicing prescriptions" come fully within the scope of the Optical Retail Trade Code Authority, a trade organization. The Optical Retail Trade Code Authority, by which these demands have been made, is organized under the National Industrial Recovery Act. The National Industrial Recovery Act does not purport in any way to regulate or control the practice of medicine. It specifically relates to "industry" and "trade" and to industrial and trade associations or groups. It relates only to transactions in or affecting interstate or foreign commerce. Under no provision of the act can a physician who confines his work to rendering professional medical services be subjected to any provision of the code or to any assessment under the code. A person who on his own account commercially buys and sells eyeglasses and spectacles and makes a commercial profit on the transaction is presumably within the purview of the Optical Retail Trade Code, even though he happens to be a physician. A physician, however, who buys and sells eyeglasses and spectacles only as the agent of patients for whom he prescribes them and without making any commercial profit on the transaction is not within the terms of that code. The fact that a physician charges for his professional services in prescribing and fitting glasses and spectacles does not alter the situation. The American Medical Association has protested against the attempt of the Optical Retail Trade Code Authority to bring physicians as such within the scope of the code that it administers. Pending the adjustment of those protests, physicians who are engaged in strictly professional work are advised to refrain from answering the questionnaire sent them by the Optical Retail Trade Code Authority and to refrain from paying the attempted assessment for the support of that code authority. The outcome of the protest will be promptly reported in THE JOURNAL.

NOBEL PRIZE LECTURES ON ANEMIA

When the Nobel Prize in Medicine was awarded to Drs Whipple and Minot jointly, it was universally considered a fitting tribute to years of painstaking and productive effort. The tone of their lectures,¹ given before the Caroline Institute at Stockholm, is one of sober review and incomplete accomplishment. Profound study of a subject often produces an acute sense of incompleteness that is absent from the point of view of the dilettante. This sense is amply demonstrated in the words of both distinguished investigators. Thus, Minot says, "the physician, however, must do more for his patient than prescribe a proper amount of liver, stomach, or the like, he should attend to all aspects of the case and not neglect attention to the individual's manifold problems of thought and action." And Whipple's closing paragraph in the current issue of THE JOURNAL furnishes similar evidence of what is probably the most notable characteristic of the close student of disease. Emulation of the accomplishments set forth in these and other papers is impossible for most but appreciation of remaining problems is a state of mind that can be widely understood.

AMEBAS ON THE HANDS

Accurate information concerning the presence and survival of *Endamoeba histolytica* on the hands of infected persons is significant for the control of amebic infestation. Spector¹ and her collaborators have now reported work designed to determine the presence of amebic cysts on the hands under natural conditions. When a carrier was detected in routine examination, a second examination was requested. At this examination the patient was asked to pass a fresh stool. Immediately after using the toilet paper and before washing the hands, the subject was instructed to rinse the hands thoroughly in sterile saline solution or distilled water in a sterile vessel. The finger nails were then thoroughly cleansed with a sterile tooth pick and cut with sterile scissors into the same container. These washings and parings were placed in large sterile centrifuge tubes and centrifugated at a medium speed for from five to ten minutes. The supernatant fluid was removed and the sediment examined with 1:1,000 aqueous eosin and an iodine solution (5 per cent aqueous potassium iodide saturated with iodine and diluted with equal parts of distilled water) for the ready detection of cysts and for the determination of their state as to viability. Endo plates were also made from the washings in fifty-four cases in order to determine the relative persistence of members of the coli-aerogenes group of bacteria. Of the seventy-four persons thus examined, the washings of five (6.8 per cent) were positive; two showed a few live cysts of the large variety, one showed a few dead cysts of the large variety, and two showed live cysts of the small variety. In the fifty-four that were cultured on Endo's medium, fifteen (27.7 per cent) were positive.

1 Minot G. R. The Development of Liver Therapy in Pernicious Anemia. *Lancet* 1: 361 (Feb. 16) 1935. Whipple G. H. Hemoglobin Regeneration as Influenced by Diet and Other Factors. *this issue* p. 791.
1 Spector Bertha Kaplan, Foster J. W. and Glover N. C. *Endamoeba histolytica* in Washings from the Hands and Finger Nails of Infected Persons. *Pub. Health Rep.* 50: 163 (Feb. 8) 1935.

for organisms of the coli-aerogenes group. It appears from these data that persons whose stools are known to contain living *Endamoeba histolytica* organisms do not frequently contaminate their hands with these organisms under ordinary conditions. It therefore seems that contamination of food by carriers of *Endamoeba histolytica* under the ordinary conditions of food handling occurs, if at all, infrequently.

Association News

MEDICAL BROADCASTS Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next three broadcasts will be delivered by Dr. W. W. Bauer. The titles will be as follows:

- March 14 Physical Defects.
- March 21 Rickets
- March 28 This Is No April Fool

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next three broadcasts will be as follows:

- March 12 Food and Drug Law Revisions Paul N. Leech, Ph.D.
- March 19 White Collar Hazards W. W. Bauer, M.D.
- March 26 Tonics and Sedatives Morris Fishbein, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Bill Passed—S. 15 has passed the senate and the house proposing to repeal the laws regulating the sale, possession or distribution of narcotic drugs and to enact what apparently is the uniform narcotic drug act.

Bill Introduced—H. 108, to amend the workmen's compensation act, proposes to make the following occupational diseases compensable: anthrax, caisson disease, miners' diseases, including cellulitis, bursitis, ancylostomiasis, tenosynovitis and nystagmus, glanders, compressed air illness, epitheliomatous cancer, cataract in glass workers, dermatitis, and poisoning from arsenic, lead, zinc, mercury, phosphorus, benzene and its homologues, wood alcohol, chrome, radium, formaldehyde and its preparations, dope, bisulphide, methyl chloride, carbon monoxide gas, contact with petroleum products, and from sulphuric, hydrochloric or hydrofluoric acids.

ARKANSAS

Bills Passed—The following bills have passed the senate: S. 332, to authorize the sexual sterilization of habitual criminals whom the bill defines as persons convicted to final judgment three times for felonies, and S. 344 proposing to authorize the sexual sterilization of insane, idiot, imbecile, feeble-minded or epileptic inmates of state institutions. H. 189 has passed the house and the senate, proposing to prohibit the sale of barbituric acid derivatives and/or compounds thereof except on the prescription of a licensed physician.

Bills Introduced—S. 305 proposes to regulate the practice of occupational therapy and to create a state board of examiners of occupational therapists, to be composed of three physicians nominated by the Arkansas State Medical Society, and two trained occupational therapists in governmental service. Occupational therapists are not to practice occupational therapy

except under the direction and prescription of a licensed physician. H. 188 proposes to provide compensation to workmen for injuries arising out of or in the course of their employment. The employer is to be required to furnish medical, surgical and other attendance or treatment, nursing and hospital services and medicines, crutches and apparatus, for such period as the nature of the injury or the process of recovery may require. Apparently the employer is to have the right to designate the physician and the hospital that are to treat or care for the injured employee. If the employer does not provide the services referred to after a request by the employee, the employee may obtain them himself at the employer's expense. H. 373 to amend the osteopathic practice act, proposes (1) to eliminate the provision in the present law which prohibits osteopaths from prescribing or using drugs or from performing major or operative surgery and to provide that an osteopath is authorized to practice osteopathy in all its branches as taught and practiced in legally incorporated schools of osteopathy, and (2) to authorize osteopaths to make and sign birth and death certificates and all other certificates pertaining to public health.

CALIFORNIA

Society News—Dr. Harry G. Huffman addressed the Orange County Medical Society in Santa Ana, January 8, on "Recent Changes in the Practice of Medicine." At a meeting of the Placer County Medical Society, January 8, Dr. Emile F. Holman, San Francisco, discussed "Treatment of Pyogenic and Tuberculous Pulmonary Suppuration—Clinical and Experimental Observations." Dr. Steele F. Stewart, Los Angeles, addressed the Ventura County Medical Society, January 8, on "Indications for Surgery of the Sympathetic Nervous System." Dr. Kellogg Speed, Chicago, addressed the Los Angeles Surgical Society, February 20, on "Treatment of Fractures of the Neck of the Femur." Dr. Mont R. Reid, Cincinnati, addressed the San Diego Academy of Medicine, March 7, on "Treatment of Peripheral Vascular Diseases."

Bills Introduced—Assembly Constitutional Amendment No. 46 proposes that the California constitution be amended so as to permit the legislature to amend the chiropractic initiative act in the following particulars: (1) to define chiropractic to be "the art and science of locating and adjusting by hand to restore to normal any abnormal anatomic relation for the purpose of removing interference with the transmission of nerve force and also include all natural, drugless, mechanical, hygienic and sanitary measures incident to the care of the body when administered previous to or subsequent to an adjustment." (2) to provide that "one form of license or certificate shall be issued by the board of chiropractic examiners, which shall be designated 'License or certificate to practice chiropractic and also natural, drugless, mechanical, hygienic and sanitary measures incident to the care of the body,' which 'license or certificate shall authorize the holder thereof to practice chiropractic but shall not authorize the practice of medicine, surgery, osteopathy, dentistry, or optometry," and (3) to require chiropractors to register annually on or before January 1 with the board of chiropractic examiners and to pay an annual registration fee of from \$5 to \$10. A. 2309 proposes to create a state board of regulation of hospital associations to license so-called hospital associations to engage in the business of issuing contracts for furnishing medical, hospital, nursing and dental care.

CONNECTICUT

Bills Introduced—S. 101 proposes to authorize the state department of health to investigate the cause and the prevention and treatment of cancer and to take such steps as may be necessary to reduce the mortality due to cancer. S. 455 proposes to forbid hospitals receiving appropriations from the general assembly to refuse to admit for treatment therein patients suffering from venereal diseases. S. 657, to amend the dental practice act, proposes that the provisions of the dental practice act prohibiting a corporation from owning or operating a dental office shall not apply to welfare dispensaries.

Grant for Dental Research—Continuance of a dental research project in Yale University School of Medicine has been made possible through a grant of \$17,500 by the Carnegie Corporation of New York. This program, instituted in July 1929 under a grant of the Rockefeller Foundation, is an intensive study of the teeth in relation to the body in general by physicians, radiologists, bacteriologists, pathologists and dentists (THE JOURNAL, June 29, 1929, p. 2176). The original study group included Dr. Milton C. Winteritz, Dr. Samuel C. Harvey, the late Dr. William A. LaField, Dr. Felix d'Herelle

George H. Smith, Ph.D., Dr. Raymond G. Hussey and William Downs Jr., D.D.S. According to Yale University, the interest of a group of New Haven dentists in the project as a whole has been demonstrated by the formation of the Dental Clinic Society, which provides more than 500 treatments monthly for indigent patients. The society has its own professional staff but is conducted in close cooperation with the dental study group and community social agencies.

DELAWARE

Bills Introduced—S 91 proposes to authorize a divorce if either spouse has been adjudged feeble-minded, epileptic and chronically or recurrently insane and has been confined to an institution for mental diseases for at least five years. H 223 proposes to prohibit physicians, surgeons or registered nurses from testifying concerning any communications entrusted to them in their professional capacity and necessary and proper to enable them to discharge their duties.

DISTRICT OF COLUMBIA

Medical Bills in Congress—S 1016 has passed the Senate proposing to empower the health officer of the District of Columbia to authorize the disinterment and reinterment of bodies in cases in which death has been caused by certain contagious diseases. S 31 has passed the Senate and House, providing for the issuance of a license to practice the healing art in the District of Columbia to Dr. Chester C. Groff. S 2013, introduced by Senator Copeland, New York, proposes to provide for the issuance of a license to practice the healing art in the District of Columbia to Dr. Pak Chue Chan.

Meningitis Quarantine—About 1700 transients were placed under quarantine by health authorities, February 6, because of an outbreak of spinal meningitis, newspapers reported. One death occurred on February 7. About two thirds of the number were released, February 14, but about 300 were still confined because cases had developed in the lodging houses in which they were quartered. All transient lodging houses were quarantined. About 450 men quartered in small hotels under contract were brought back into the lodges, but those living in private homes were not affected by the ban, it was said.

Dr. Wilmer Honored—A homecoming dinner was held in honor of Dr. William H. Wilmer, January 24, by the Augustus P. Gardner Post number 18 of the American Legion. Dr. Wilmer has returned to Washington, following his resignation as director of the Wilmer Institute of Ophthalmology of Johns Hopkins University School of Medicine, Baltimore. He had occupied this position since 1925 when the institute was established, as professor of ophthalmology in the medical school. He had served in a similar capacity at Georgetown University School of Medicine from 1906 to 1925. Members of the Medical Society of the District of Columbia were invited to attend this dinner, which was under the general direction of Dr. Robert U. Patterson, surgeon general of the U. S. Army. Dr. Wilmer is a charter member of post number 18.

FLORIDA

Society News—Dr. George N. MacDonell, Miami, was elected president of the Florida Public Health Association at its meeting in Jacksonville, Dec. 3-5, 1934. Vice presidents elected are Dr. Noble A. Upchurch and Johanna L. Sogaard, Jacksonville, and Stewart G. Thompson, Dr. P. H., Jacksonville, secretary. Dr. Francis Carter Wood, New York, addressed a dinner meeting in Tampa, January 19, on cancer, under the auspices of the Hillsborough County Medical Society. The Dade County Medical Association was addressed in Miami, February 1, by Drs. Don C. Eskew on "Fractures of the Spine," and Max Dobrin, "Gonococcus Aortitis with Aneurysm and Bicuspid Aortic Valve."

GEORGIA

Personal—A giant magnet was recently presented to the University Hospital, Augusta, by the Masonic Fraternity as a memorial to the late Dr. William C. Kellogg, for many years professor of ophthalmology and otolaryngology, University of Georgia Medical Department. Dr. John W. Oden, Gracewood, has been appointed superintendent of the state hospital at Milledgeville.

Bills Introduced—H 536 proposes to require any physician or surgeon treating a person suffering from gunshot or knife wounds to report such facts to the mayor of the city where such act occurs, or, if the act occurs without the limits of a municipality to the sheriff of the county. H 221 proposes to

authorize the sexual sterilization of inmates of state institutions, who, if released without being sterilized, would likely procreate children with a tendency to serious physical, mental or nervous disease or deficiency. H 275 proposes to create a board of physiotherapy examiners and to regulate the practice of physiotherapy. The practice of physiotherapy is defined as "the diagnosis and treatment of human ailments by the use of any natural force or agency, the basis of which is water, heat, sun light, electricity or electrically produced energies, mechanical appliances, ultraviolet light, infra-red light, manipulations, corrective exercises, dietetics, massage, external applications and mineral baths." The bill proposes to prohibit anybody but a licensee of the board from practicing physiotherapy as defined but exempts (a) persons authorized by the law to practice medicine and surgery and (b) persons who at the time of the enactment of the bill are members of the Georgia State Association of Physical Therapy or who have been engaged in the practice of physiotherapy at least one year prior to the enactment of the bill. An applicant for a license must be a high school graduate or have an equivalent education, must have studied physiotherapy for two years in a school of physiotherapy approved by the board, and must pass a satisfactory examination in history, anatomy, physiology, chemistry, pathology, diagnosis and treatment, bacteriology, massage, therapeutics, clinical physiotherapy and such added subjects as shall subsequently be taught by accredited schools of physiotherapy.

IDAHO

Bill Introduced—H 194 proposes to authorize the department of public welfare to enter into agreements with boards of county commissioners to assist in the necessary hospitalization costs of persons on unemployment relief.

ILLINOIS

Society News—Dr. Harry M. Hedge, Chicago, addressed the Lake County Medical Society at Waukegan, February 12, on "Infections of the Skin."—At a meeting of the Decatur Medical Society, February 19, Dr. Claud R. G. Forrester, Chicago, discussed "Reduction of Fractures Under Local Anesthesia with Ambulatory Treatment."—The DeWitt County Medical Society was addressed, February 25, by Dr. John A. Wolfer, Chicago, on "Problems in the Management of Gall bladder and Biliary Tract Disease."—Speakers before the Warren County Medical Society, February 27, were Drs. George Karl Fenn and Guy M. Cushing, Chicago, on "Angina Pectoris" and "Acute Perforating Gastric and Duodenal Ulcers," respectively. Dr. Charles J. Drueck, Chicago, addressed the Will-Grundy County Medical Society, January 30, on "Anorectal Disease, Its Relation to the General Health."—Dr. Philip H. Kreuscher, Chicago, discussed the subject of backache before the Kane County Medical Society in Aurora, February 13.

Chicago

Course in Tumor Pathology—Dr. Richard H. Jaffe will begin a course in tumor pathology at the Cook County Hospital, March 14. Lectures, which are designed for practicing physicians as well as pathologists, will be given every Thursday for ten weeks.

Society News—At a meeting of the Chicago Society of Allergy, February 18, speakers were Drs. Lloyd F. Catron on "Role of Allergy in Response to Acute Infections," and Elias Sellinger, "Effect of Human Lens Protein on Senile Cataract."—Members of the Kansas City Ophthalmological and Otolaryngological Society were guests of the Chicago Ophthalmological Society at its meeting, February 18, speakers included Drs. Elmer A. Vorisek on "Changes of the Refraction in Children with Convergent Strabismus," George P. Guibor, "Results Obtained by Refractive Correction Alone in Children with Squint," and Paul H. Reed, until recently of River Forest, Ill., and Leo L. Mayer, "Bilateral Temporal Pterygia."—The Chicago Pediatric Society was addressed, February 19, by Drs. Robert E. Cummings on "Massive Collapse of the Lung in Pneumonia," Mandel L. Spivek, "Obstruction of Bronchi Due to Tuberculous Lesions," and Louis W. Sauer, Evanston, Ill., "Enteritis: Its Control and Prevention by the Dick Diet Kitchen and Nursery Technic."—Dr. Walter Freeman, Washington, D. C., among others, addressed the Chicago Neurological Society, February 21, on "Ventriculography with Colloidal Thorium Dioxide as a Contrast Medium."—Drs. Lowell T. Coggeshall and Oswald H. Robertson were among the speakers before the Chicago Society of Internal Medicine, February 25, they presented "Study of Repeated Attacks of Experimental Pneumococcus Lobar Pneumonia in Dogs."

INDIANA

Bill Enacted—H 211 has become a law, authorizing counties, cities and towns to supply insulin free of charge to citizens who are in need of insulin for treatment of diabetes and who are financially unable to purchase the drug. S 139 has become a law, creating a board of beauty culture examiners and regulating the practice of beauty culture, manicuring and electrolysis. Licentiates are to be permitted to remove superfluous hair from the face, shoulders or arms of any person by the use of an electric needle.

Bills Passed—H 365 has passed the house, proposing to authorize the construction and maintenance of hospitals by cities of the fourth and fifth class. Such hospitals are to be open on reasonable terms to all persons and to all physicians who desire to place patients therein. S 185 has passed the senate, proposing to prohibit any private hospital from denying any member of the immediate family of any patient access to the patient's room at any time. No person employed by a private hospital is to change or refuse to administer the treatment prescribed by the patient's physician. The board of health, if this bill should be enacted, is to be authorized to investigate the management, facilities, accommodations and rules of any private hospital that are alleged to be discriminatory and any other practice which, in the judgment of the board, is not conducive to the comfort, convenience or necessary privacy of patients. After a hearing, the board may make such orders as it deems necessary to correct the conditions complained of. If such a hospital shall refuse to carry out the orders of the board, the secretary of state is to revoke the authority of the hospital to transact business.

Bills Introduced—H 387 proposes to accord hospitals and physicians, treating persons injured through the negligence of others, liens on all rights of action, claims, judgments, settlements or compromises accruing to the injured persons by reason of their injuries. The bill also proposes to repeal the law enacted on March 9, 1933, according hospitals liens under the circumstances stated. H 459, to amend the chiropody practice act, proposes that any person over 21 of good moral character, who desires to engage in the correction of defective feet without the use of surgical instruments, appliances or equipment of any kind and without the use of drugs, chemicals or medicines, shall on the payment of \$25 be entitled to a license without examination and without showing any educational qualifications whatever. H 487 proposes, as a condition precedent to the issuance of a license to wed, that both parties to a proposed marriage present certificates from licensed physicians that they are free from any transmissible disease. H 490 proposes on the commitment of a person to an institution for the insane that he or she be rendered sterile.

IOWA

Society News—Speakers before the Page County Medical Society in Shenandoah, Dec. 5, 1934 were Drs A Fred Watts, on 'Principles of Infant Feeding', Carl E. Sampson 'Diagnosis of Acute Mastoiditis,' and John C. Parsons, Creston 'Neutrophilic Lobe Counts'—Dr Abraham F Lash, Chicago, addressed the Scott County Medical Society, Dec. 4, 1934 on 'Puerperal Sepsis'—Dr Emil Novak, Baltimore will address the Linn County Medical Society, Cedar Rapids, March 13 on 'Functional Disorders of Menstruation.' He will address the Polk County Medical Society, Des Moines, March 14, on 'Endocrine Aspects of Sterility'—Dr Henry W F Woltman, Rochester, Minn., addressed the Des Moines Academy of Medicine and Polk County Medical Society, February 12, on 'Deficiency Diseases of the Nervous System'—Dr Donald J Wilson, Omaha, discussed the 'Diagnosis and Treatment of Oral Lesions' before the Black Hawk County Medical Society, January 15, in Waterloo.

Bills Introduced—H 174, to amend the osteopathic practice act, proposes (1) to remove the provision in the present law which specifically denies osteopathic physicians and osteopathic physicians and surgeons the right to prescribe or give internal curative medicines (2) to permit osteopathic physicians to practice obstetrics and minor surgery, and (3) to define osteopathic practice as "that method of rehabilitating restoring and maintaining body functions by and through manual stimulation or inhibition of nerve mechanism controlling such body functions, or by the correction of anatomical maladjustment and/or by other therapeutic agents, methods and modalities used supplementary thereto but such supplementary agents, methods or modalities shall be used only preliminary to, preparatory to and/or in conjunction with such manual treatment" and to declare that such osteopathic practice is not the practice of medicine within the meaning of the medical practice act.

H 237, to amend the chiropractic practice act, proposes (1) to define chiropractors as "persons who treat human ailments by the adjustment by hand of the articulations of the spine or by other incidental adjustments calculated to remove any cause and/or effect of any nerve interference, and who may use, in connection therewith, physical, mechanical, hygienic and sanitary measures" and (2) to provide that a license to practice chiropractic shall not authorize the holder thereof to practice operative surgery, osteopathy, nor to administer or prescribe any drug or medicine included in materia medica.

KANSAS

Bills Introduced—S 359 and H 464 propose to authorize the establishment of community hospitals in counties having a population of more than 43,000 and less than 55,000. The bills propose that, in the management of such hospitals, no discrimination shall be made against practitioners of any school of the healing art recognized by the laws of the state and that all legal practitioners shall have equal privileges in treating patients therein. The patients are to be granted the absolute right to employ at their own expense their own physicians and such physicians are to have exclusive charge of the care and treatment of their patients. H 502 authorizes two or more counties to establish jointly district hospitals and homes for the care and maintenance of the poor.

MASSACHUSETTS

Personal—Dr William P Murphy, Boston, was awarded the Order of the White Rose by the president of Finland with a rating of commander of the first rank, in December 1934. He was also made a member in December of the Kaiserliche Leopoldinische-Carolingische Deutsche Akademie der Naturforscher, which was established in 1652—Dr George W Gale observed his ninety-eighth birthday in Saugus, February 3. Dr Gale is a former chairman of the Saugus Board of Health and served for thirty years as school and town physician, the newspapers report.

New Deans for Harvard Schools—Dr Charles Sidney Burwell, Nashville, Tenn., has been appointed dean of the Harvard Medical School and Dr Cecil Kent Drinker, Boston, of the Harvard School of Public Health. Dr Burwell was also appointed research professor of clinical medicine. Forty-one years of age, Dr Burwell is professor of medicine at Vanderbilt University School of Medicine, Nashville. He is an alumnus of Harvard Medical School class of 1919. His appointment is effective in September. Dr Drinker, professor of physiology at Harvard Medical School, has been assistant dean of the school of public health. He graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1913, and is 47 years old.

MINNESOTA

Bills Introduced—S 711 and H 683, to amend the laws regulating the practice of massage, propose to reduce the annual registration fee required of such practitioners to \$3. S 704, to amend the workmen's compensation act, proposes to make poisoning by carbon monoxide fumes or its sequelae compensable. S 705 proposes to amend the law relating to the care, treatment and hospitalization of indigent residents of certain counties by permitting the county board of any county in which there is located a hospital designated as a class A hospital by the American College of Surgeons to contract with such hospital to care for and treat indigent residents of the county.

MONTANA

Bill Enacted—S 35 has become a law, supplementing the pharmacy practice act by authorizing the state board of pharmacy to adopt rules requiring registered pharmacists to keep a record of all poisons sold or disposed of, containing the signatures of the purchasers and such other information as the board may require.

Bill Passed—S 146 has passed the senate, proposing to limit the retail sale and distribution of contraceptive devices, prophylactic rubber goods, and articles for the prevention of venereal diseases to licensed physicians, osteopaths, other licensed practitioners of the healing art, and registered pharmacists.

Bills Introduced—H 307 proposes to authorize the commitment to the Montana home for the aged, at the expense of the state of indigent persons totally incapacitated physically and suffering from incurable physical maladies. H 440 authorizes school districts to establish special classes for the instruction of children suffering from disease deformity, physi-

cal or mental defect, or inaptitude H 507 proposes to authorize the establishment of a state hospital for the treatment and care of infantile paralysis victims

NEVADA

Bill Introduced—S 69, to amend the workmen's compensation act, proposes to make occupational diseases compensable

NEW HAMPSHIRE

Bill Passed—H 12 has passed the house, proposing to require a physician or a hospital treating a person suffering from gunshot wounds or other injuries of unusual type to ascertain from such patient the cause of his wounds and to report the facts as soon as possible to the police of the town or city in which such treatment is given

NEW MEXICO

Bills Enacted—The following bills have become laws H 16, authorizing all cities, towns and villages operating under special acts of the legislature to maintain hospitals, sanatoriums and other institutions for the care and maintenance of sick or indigent persons and H 106, prohibiting the possession or sale or other distribution of marijuana except on the prescription of a licensed physician

NEW YORK

Dinner to Dr Whipple—Dr George Hoyt Whipple, dean of the University of Rochester School of Medicine and Dentistry, co-winner of the Nobel Prize in Medicine for 1934 was the guest of honor at a dinner given by the Rochester Academy of Medicine, January 15, at the Oak Hill Country Club Dr Milton C Winternitz dean, Yale University School of Medicine, New Haven, Conn was the principal speaker and many informal tributes were offered to Dr Whipple

Bill Passed—S 20 has passed the senate proposing to amend the workmen's compensation act by (1) authorizing the industrial commissioner to establish a schedule of fees for medical care rendered injured employees, (2) authorizing the commissioner to establish a panel of physicians to render the medical care required by the act, the employee to have the right to select any physician on that panel to treat him, (3) providing that no claim for specialists, consultations, surgical operations or physiotherapeutic procedures costing more than \$25, nor roentgen examinations or special diagnostic laboratory tests costing more than \$10 shall be paid unless such services are rendered in an emergency or have been authorized by the employer or by the commissioner and (4) providing that a physician rendering service to a compensation claimant may recover for his services only under the provisions of the act

Bills Introduced—S 1167 and A 1486 propose to authorize the sexual sterilization of inmates of state homes or hospitals for mental diseases or of state colonies hospitals or institutions for the care of persons defective, deficient or diseased mentally S 1266 proposes to accord to hospitals, physicians and nurses, treating persons injured through the negligence of others, liens on all claims rights of action, judgments, compromises or settlements accruing to the injured persons by reason of their injuries A 1306, to amend the public welfare law, proposes that an indigent sick person may at the expense of the public welfare district in which he resides be treated by a physician of his own choice Physicians so selected by indigent sick persons are to be paid by the district \$1 for office calls, \$2 for house calls and \$25 for obstetric cases A 1339, to amend the education law, proposes to authorize the establishment of colleges of natural therapy The commissioner of education is to prescribe the rules and regulations for the establishment and regulation of such colleges, which are to be authorized to issue degrees to a matriculated student who has completed a four year course of study The bill states that "a doctor of natural therapy shall be deemed to be a person who has successfully taken a course of study prescribed by the regents of the university of the state of New York in a college recognized by it in 1 Hydrotherapy (mineral water) 2 Balneology (mineral bathing) 3 Cibology (preparation of foods for the sick) 4 Dietology (dietetics and metabolism) 5 Hirudology (application of leeches) 6 Hygiene (sanitation, sterilization, antiseptic and aseptic work) 7 Clysmology (lavage of stomach, bladder and colonic irrigation) 8 Laxatology (the relaxation of muscles, tendons joints) 9 Massage (kneading, exercise, under-water exercise) 10 Phlebotomy (application of cupping, plasters salves) 11 Potology (drinks teas in sickness) 12 Rotology (rotation of various parts of the body to relax and release) 13 Electrolysis (removal of hair by electricity) 14 Scalp treatment

(to prevent hair falling and baldness) 15 Physiotherapy (the application of diatermy [sic], ultra violet and other radiations under physicians orders)" The bill is not clear whether or not such a "doctor" would be permitted to practice without the examination and licensure required by the medical practice act

New York City

Hospital News—Dr Ulrich Friedemann, formerly professor at the University of Berlin, gave a lecture at Mount Sinai Hospital, January 14, on "Experimental Investigations on the Blood-Brain Barrier" —Beth David Hospital has acquired ownership of the building now occupied by the Manhattan General Hospital and plans to occupy it in the near future, according to an announcement from the hospital

NORTH DAKOTA

Bills Passed—S 75 has passed the senate, proposing to grant to hospitals supported in whole or in part by private charities and treating persons injured through the negligence of others, liens on all rights of action, claims judgments, compromises or settlements accruing to the injured persons because of their injuries H 311 has passed the house, proposing to amend the medical practice act by (1) making it a misdemeanor for a licentiate to fail to pay the required annual reregistration fee, (2) making a violation of any provision of the medical practice act punishable by a fine of from \$50 to \$500 and/or imprisonment in the county jail for one year or less and (3) providing that any person convicted for a second time of violating any provisions of the medical practice act shall be guilty of a felony and shall be punished by imprisonment in the state penitentiary for from one to ten years at hard labor

OHIO

Bills Introduced—H 163 and H 179 propose to repeal the laws regulating the possession or sale or distribution of narcotic drugs and to enact what apparently is the uniform narcotic drug act

OREGON

Bill Enacted—S 82 has become a law, enacting a new pharmacy practice act The new law seems to prohibit physicians from dispensing drugs, merely permitting them to administer drugs and medicines personally in order to supply the immediate needs of their patients

Bills Passed—The following bills have passed the house H 208, proposing to prohibit the distribution of amylal, luminal, veronal, barbital, acid diethylbarbituric or any preparation or compound containing any of the foregoing substances, except on the prescription of a licensed physician, dentist or veterinary surgeon, and H 377, proposing to amend the laws relating to the state board of health by requiring the secretary of the board to have a degree of doctor of medicine, to have been licensed to practice medicine in the state, and to have had at least five years' experience as a full time public health officer of two years' residence in a recognized school of public health

PENNSYLVANIA

State Tuberculosis Meeting—The annual meeting of the Pennsylvania Tuberculosis Society was held in Pittsburgh, February 19 20 At the medical session speakers were Drs Esmond R Long, Philadelphia, on "The Use of Tuberculin as a Diagnostic Agent with Special Reference to the Purified Protein Derivative", Walter L Rathbun, Cassadaga, N Y, "Measures for Tuberculosis Prevention and Control Among High School Students," and James Burns Amberson Jr, New York, "Is the Hazard of Tuberculosis a Serious One for Nurses?"

Bills Introduced—H 909 proposes to authorize the department of welfare to reimburse hospitals for treating indigent persons injured in automobile accidents H 951 proposes to prohibit physicians, dentists osteopaths chiropractors and "drugless therapists" from "advertising in any manner with respect to the skill of the operator, the quality of the materials or drugs or medicines used, or methods used or practiced." The bill however, is not to prohibit any such person from posting his name and profession on the exterior or interior of the building wherein he maintains his office H 978 to amend the beauty culture law proposes to permit such licentiate to obtain "a certificate of registration to use the electric needle only as a beauty treatment" H 1023 proposes to prohibit the sale or distribution of medicines, drugs or poisons by means of any vending machine or other mechanical device

Philadelphia

Interns' Night—The Philadelphia County Medical Society held its annual "Interns' Night" February 27 with papers presented by Drs William B Wartman, Lankenau Hospital on "Venous Blood Pressure in Some Common Diseases" Walter E. Daniel, Pennsylvania Hospital, "Hematuria" Norman R. Ingraham Jr., Philadelphia General Hospital, "X-Ray Positive, Seronegative Infantile Congenital Syphilis" Glenn A. H. Deibert, Jefferson Medical College Hospital "Value of Excretory Urography" and Amerigo G. Ricciuti, Jefferson Medical College Hospital, "Effect of Cholecystectomy on Hepatic Function"

Pittsburgh

Society News—Speakers at a meeting of the Allegheny County Medical Society, February 19, were Harold V. Smith on "Legal Aspects of Narcotic Administration in Pennsylvania", Drs James R. Watson, "Recent Concepts of Surgical Treatment of Duodenal Ulcer," and Alexander H. Colwell, "The Physician's Attitude Toward Health Insurance"

SOUTH CAROLINA

Bill Passed—H 21 has passed the house, proposing to create a board of chiropody, examiners and to regulate the practice of chiropody (podiatry) "Chiropody sometimes called podiatry," states the bill, "shall for the purposes of this act mean the diagnosis, surgical, medical and mechanical treatment of ailments of the human foot, except the correction of deformities requiring the use of the knife, amputation of the foot or toes, or the use of an anesthetic other than local"

TENNESSEE

State Health Department Reorganized—Following the enactment by the state legislature of a law authorizing reorganization of the state health department, Gov. Hill McAlister appointed Dr. Wilson Carter Williams a member of the department staff since 1926 state health officer to succeed Dr. Eugene L. Bishop, who resigned to become full time health officer of the Tennessee Valley Authority. Dr. Bishop has been health officer since 1924 and has been connected with the department since 1916. A native of Nashville and a graduate of Vanderbilt University School of Medicine, he has for several years been assistant professor of preventive medicine at the school and is now president of the American Public Health Association. Dr. Williams graduated from Vanderbilt in 1925. In 1926 he joined the health department as health officer of Williamson County and has since served as director of the field technical staff and director of county health work. In accordance with the new law the governor has also appointed a board of health of nine members. Six physicians are on the board: Drs John M. Lee, Nashville, chairman, John C. Ayres, Memphis, John R. Thompson Jr., Jackson, Ernest M. Fuqua, Pulaski, Claude P. Fox Sr., Greeneville, and William K. Vance Jr., Bristol. Other members are Oren A. Oliver, DDS, Nashville, Leslie F. Mitchell, Nashville, a pharmacist and Mrs. Ferdinand Powell Johnson City, representing jointly the Tennessee Council of Parents and Teachers and the Tennessee Federation of Women's Clubs.

TEXAS

Bill Introduced—S 312, to amend the medical practice act, proposes to permit Christian scientists and other persons whom the present act permits to apply the principles tenets or teachings of their church in ministering to the sick, to charge for their services.

Three County Health Unit—A three county health unit including El Paso, Hudspeth and Culbertson counties has been established under the supervision of Dr. Thomas J. McCamant, health officer of El Paso County. Dr. George M. Dunne will be assistant director of the unit at Sierra Blanca and Dr. Wiley Smith at Van Horn.

UTAH

Bill Passed—S 170 has passed the house proposing to accord to hospitals, treating persons injured through the negligence of others, liens on all rights of action claims, judgments, settlements or compromises accruing to the injured persons by reason of their injuries.

VERMONT

Bill Introduced—H 237 proposes to so amend the medical practice act as to exempt from its provisions persons licensed to practice naturopathy under the laws of this state. The present state law, however, contains no provision authorizing the licensing of naturopaths as such.

WASHINGTON

Bill Passed—S 137 has passed the senate, proposing to authorize two or more adjacent counties to establish sanatoriums for the care and treatment of persons suffering from tuberculosis.

Bills Introduced—H 449 proposes to require as a condition precedent to the issuance of a license to marry that both parties to a proposed marriage present a physician's certificate that they are free from contagious or infectious venereal diseases, mental illness or defects. H 492 proposes to authorize the state insurance commissioner to license persons, associations and corporations to engage in the business of issuing contracts for the furnishing of medical, hospital, nursing and dental care or for 'any other necessary services contingent on sickness accident or death'.

WEST VIRGINIA

Bills Introduced—H 323, to amend the workmen's compensation act, proposes to prohibit an employer from entering into a contract with any hospital to render medical, dental or hospital service or to give medical or surgical attention thereon to any workman for an injury compensable under the compensation act. The bill further proposes to prohibit an employer from requiring any workman to contribute directly or indirectly to any fund for the payment of medical, surgical dental or hospital services for any compensable injury. H 362 proposes to require every child entering any public or private school after Sept. 1, 1935, to file with the appropriate county superintendent of schools a certificate of health from a licensed physician stating that the child is free from all communicable and contagious diseases. No child found to be suffering from any communicable disease in an infectious stage is to be permitted to attend school. H 364 to amend the workmen's compensation act proposes (1) to require the compensation commissioner to pay such sums for medical surgical and hospital treatment as may be reasonably required to relieve an injured employee, the present law limiting such payments to \$800 and (2) to eliminate such portions of the present law as prohibit the commissioner from paying for medical and hospital services furnished an injured workman if the workman is entitled under a contract connected with his employment or by reason of a subscription list to receive medical, surgical and hospital treatment without further charge to him. H 331, to amend the workmen's compensation act, proposes to make silicosis compensable. The bill defines silicosis as an insidious fibrotic disease of the lung or lungs due to the prolonged inhalation and accumulation sustained in the course of and resulting from [the] employment of minute particles of dust containing silicon dioxide (SiO₂) over such a period of time and in such amounts as result in the substitution of fibrous tissue for normal lung tissues. The bill proposes to create a 'silicosis medical board' to consist of three licensed physicians, to which the compensation commissioner is to refer all claims for compensation on account of silicosis. The board is to investigate, examine and report its findings to the commissioner.

WISCONSIN

Officers of Board of Health—Dr. Mina B. Glazier, Bloomington, for eleven years a member of the state board of health, became president at the annual meeting, January 31. Dr. Joseph Dean Madison, was reelected vice president and Dr. Harry H. Ainsworth, Birchwood, named president-elect.

Bills Introduced—A 267 proposes to create a state medical grievance committee, to consist of the state health officer, the secretary of the state board of medical examiners, and the attorney general. This committee is to hear, investigate and act on practices of licensed physicians, osteopaths or chiropractors that are inimical to the public health. The committee is to have power to warn and to reprimand, and to institute criminal action or action to revoke the licenses of offenders. A 285 proposes to accord a right of action for prenatal injuries to the child injured and to any other person sustaining damages thereby.

HAWAII

Portraits Presented—Three portraits were recently presented to the library of the Honolulu County Medical Society of the following physicians: Gerit P. Judd, one of the first physicians to come to the islands in the days of the missionaries and the grandfather of Dr. James R. Judd, a member of the society; John S. McGrew, founder of the Hawaiian Medical Society and known in history as the "father of annexation," and Georges Philippe Trousseau, son of Dr. Armand Trousseau, author of many standard medical works. Dr. Bernard Myers of the Royal College of Physicians, London, addressed the society recently.

GENERAL

Diploma Stolen—Dr Charles E Boylan, Chicago, reports that his diploma from the University of Illinois College of Medicine, issued in 1931, has been stolen

Senate Committee Tables Birth Control Bill—By a vote of 9 to 6 the Senate Committee on Judiciary declined to report favorably Senate Bill 600 introduced by Senator Hastings, Delaware, proposing to relax the restrictions of the Criminal Code concerning the distribution of information on contraception. The corresponding committee of the House of Representatives tabled a similar bill introduced by Representative Pierce Oregon, H R 2000

Medical Bills in Congress—A subcommittee of the Senate Committee on Commerce began hearings, March 2, on Senate 5 a bill to prevent the manufacture, shipment and sale of adulterated or misbranded food drugs and cosmetics to regulate traffic therein and to prevent the false advertisement thereof *Changes in Status* H R 6623 the Interior Department appropriation bill has passed the House. Among other things, it authorizes an appropriation of \$3,534,620 for the conservation of health among Indians an appropriation of \$20,000 for a clinical survey of tuberculosis, trachoma and venereal and other diseases among the Indians and an appropriation of \$295,000 to provide for the medical and sanitary relief of the Eskimos, Aleuts Indians and other natives of Alaska

News of Epidemics—At a Trappist monastery at Gethsemane, Ky, twenty-seven cases of influenza with seven deaths, occurred among the eighty residents in February—Fifty students of Colgate University, Hamilton, N Y were reported to be ill with German measles February 26—Newspapers report the presence of epidemic meningitis among transients in various cities. At Knoxville Tenn five cases have occurred since the first of the year and outbreaks have also been noted in Cincinnati Little Rock Ark Memphis, Tenn and the District of Columbia—Deaths of ten new-born infants in the obstetric section of Holy Name Hospital, Teaneck N J, during January, have been traced to a streptococcal infection the New York Times reported February 16—Students at the Brooks School, North Andover Mass were quarantined February 1 because of an epidemic of mumps within the school—Newspapers reported an epidemic of scarlet fever in Hammond and Gary Ind during January. January 28 sixty cases were under quarantine and three deaths had been reported. Public gatherings were closed to children under 16

Society News—The Association of Record Librarians of North America will hold its seventh annual session in San Francisco October 28-November 1—The American Pharmaceutical Association will hold its eighty-third annual meeting in Portland Ore, August 5-10 with headquarters at the Hotel Multnomah—The Association for the Study of Allergy and the Society for the Study of Asthma and Allied Conditions will hold a joint meeting in Atlantic City June 10-11—The midwestern section of the American Congress of Physical Therapy will hold a one day session in Madison Wis March 12. The morning will be devoted to clinics at the Wisconsin General Hospital and the afternoon to addresses. Among speakers will be Drs John Stanley Coulter, Chicago, on Physical Therapy in Relation to Arthritis. Frank H Ewerhardt St Louis

Physical Therapy in Relation to Orthopedic Surgery, and Harry C Rolnick Chicago. Status of Electrosurgical Resection—The American Dietetic Association will hold its annual meeting in Cleveland, October 29-31—The tenth annual meeting of the American Association for Adult Education will be held in Milwaukee, May 20-22—The International Association for Dental Research will hold its thirteenth annual meeting in Chicago March 16-17. William J Gies Ph D of Columbia University New York is secretary of the association. Interested physicians are invited to attend—The annual informal dinner and general conference of diplomates of the American Board of Obstetrics and Gynecology attending the annual session of the American Medical Association at Atlantic City will be held at the Hotel Traymore, Wednesday evening, June 12, at 7 o'clock—Dr Carl R Crutchfield Nashville, was chosen president-elect of the Mid-South Postgraduate Assembly at the annual meeting in Memphis, February 12-15, and Dr Henry King Wade, Hot Springs Ark, was installed as president. Dr Arthur F Cooper Memphis was reelected secretary and vice presidents elected are Drs Julian G Price, Dyersburg Tenn, Billy S Guyton, Oxford Miss, and Rufus B Robins Camden Ark—The annual meeting of the Federation of American Societies for Experimental Biology will be held in Detroit April 10-13 with headquarters at the Hotel Statler and

scientific sessions at the Masonic Temple. Further information about the meeting may be obtained from the secretary, Henry A Mattill, Ph D, State University of Iowa, Iowa City

CANADA

Osler Memorial Day—The Hamilton (Ont) Academy of Medicine inaugurated an Osler Memorial Day, February 27, the anniversary of the publication of Sir William Osler's first paper, "Christmas and the Microscope." The morning of the day will be spent at Hamilton General and St. Joseph's hospitals in demonstrations in various branches of medicine, the afternoon at Mountain Sanatorium in demonstrations of the therapy of tuberculosis. At a luncheon Dr Thomas B Futcher Baltimore a former student of Osler's, will make an address and late in the afternoon there will be a pilgrimage to various spots associated with Osler's early life. At the luncheon a prize will be presented to the writer of the best essay entitled "The Life and Work of Osler" in a competition open to third and fourth year students of McMaster University

Society News—Forty-seven cases were presented by members of the staff of the Montreal General Hospital at the meeting of the Montreal Dermatological Society at the hospital, Dec 1, 1934—Dr John S McEachern, Calgary, Alta, president of the Canadian Medical Association, and Dr Thomas C Routley, Toronto, general secretary, are touring the provinces of Canada addressing medical societies on the advantages of closer organization—The Academy of Medicine of Toronto offered a special course of lectures on diseases of the respiratory tract January 7-11. Speakers were Drs Wilfred P Warner, Harold C Parsons Jabez H Elliott, Norman S Shenstone, Ernest A Broughton, Thomas A Davies, Ambert H Veitch, Wilbur J Cryderman George C Anglin and Robert M Jones. The society had a library and historical night, January 8, at which Dr Harry B Anderson presented an address on the life and times of Dr James Macaulay (1759-1822)—St Mary's Hospital, Montreal, erected at a cost of \$1,250,000, was recently dedicated. The new hospital is an eight story building with 200 beds

FOREIGN

Funds Sought for Harvey Memorial—The Harvey Memorial Committee is seeking a fund of £2000 to complete the reconstruction of Hempstead Church, Essex, where William Harvey is buried. An appeal in 1930 brought sufficient funds to rebuild about two thirds of the tower of the church, which collapsed in 1882. The Harveian Society of London in 1931 raised a fund for the reconditioning and rehanging of the church bells when the tower is completed. Donations are invited from the medical profession, they should be made payable to the Harvey Memorial Fund and sent to Dr G de Bec Turtle, Royal College of Physicians, Pall Mall East, London, S W 1

Prize for Essay on Venereal Disease—The council of the British Medical Society for the Study of Venereal Diseases announces a prize of £18 to be awarded for the best critical review dealing with any venereal disease considered from any angle. The essay selected for the prize will become the property of the council and in addition the council is understood to be at liberty to publish in the *British Journal of Venereal Diseases* any paper other than the one to which the prize is awarded. Contributions of about 6000 words should be typed on one side of the paper, with a quarter of a page as a margin and sent to the secretary of the society, 43 Queen Anne Street, London W 1 before July 31, 1935

Government Services

Examinations for Army Medical Corps

The War Department announces a competitive examination for the purpose of qualifying physicians for appointment as first lieutenants in the Army Medical Corps to fill existing and anticipated vacancies during the fiscal year 1936. Graduates of recognized medical colleges who will have completed internships in approved hospitals before July 1935 are eligible, provided they meet the physical standards and will not be more than 32 years old at the time it is possible to tender them a commission. Applicants will be authorized to appear before examining boards convened throughout the United States. Information and application blanks may be obtained from the Adjutant General War Department Washington D C. Applications must be filed by March 25

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb 9 1935

Psychology and Religion

The presidential address of Dr David Forsyth to the Section of Psychiatry of the Royal Society of Medicine on Psychology and Religion, published in the *Times* provoked a vehement reaction among religious persons. He maintained that the new spirit of toleration between science and religion, which led some to believe that there was no inherent conflict between the two, was not supported by modern psychology, which showed their incompatibility more than ever. Psychoanalytic research traced many religious ideas back to unexpected sources in childhood. The voice of conscience proved to be the voice of the father as heard years ago in childhood. Similarly, the attributes attached to God by adults were those which had been experienced in the father. The sense of sin and guilt which showed itself in children about the age of 7, always was a conflict between the child's inclinations and its parents' wishes especially with regard to bodily functions.

Belief in a soul and the hope of immortality was taken by Christianity from primitive religions. Belief in a soul was general among savages and arose from dreams in which the dead were seen. Sexual feeling entered into some aspects of religion, and religious conversion represented a disorder of sexuality, in adolescents the new tide of sexual feeling being checked in its usual course was deflected into religion. Certain curious aspects of the religious life could be explained in the light of the sadomasochistic impulse. The sadism of Christianity was evident in the cruelty in the past to the unorthodox. In Islam, sadism was stronger, Mahomet's gospel was spread by the sword. On the other hand, Christ's teaching, as in the Sermon on the Mount, was essentially masochistic and had always appealed more to women, with their inborn masochism, than to men, with their inborn sadism.

The most distinctive characteristic of religion was belief in the supernatural, which science had failed to discover. It was claimed that religion detected the supernatural world by mystical methods, which alone were suitable for things spiritual. If the sensory world known to science was real why, it might be asked, should not the spiritual world, known to religion be real also? The reply of psychology was that all processes of thinking were of two kinds—pleasure thinking and reality thinking. Pleasure thinking was well known under the name of "imagination" and showed itself in dreams and day dreams. It was employed in all creative artistic work, but psychology allocated it to the world of fantasy, where the writ of nature did not run. The mysterious business of gods and spirits was an example of childish projection on a colossal scale.

The conflict between religion and science represented the difference between psychic and objective truth. Of the two psychic truth was the more primitive and expressed the deepest needs of the individual. Objective truth was the more highly acquired and served in subduing the forces of nature in the interests of the individual. Neither could be disregarded, and the two must be directed to a common end. The need was to cease applying pleasure thinking to the illusory aims of religion and to use it in advancing science.

The immediate result of the publication of this address was a letter to the *Times* from six medical psychologists expressing surprise at its appearance in the daily press because presidential addresses are often intentionally provocative, are not subject to discussion, and therefore should not receive such uncritical publicity. The signatories added that it should not be assumed that the large audience which heard the president's able paper

was in agreement with his startling conclusions. In fact there were in this country few medical psychologists who would subscribe to them. The pediatrician G F Still was another critic. He said in the *Times* that it must be remembered that psychology rests more largely than any other department of medicine on theory and speculation. As to the cruelty to which Dr Forsyth referred the psychology of Christianity must be read not in the behavior of those who call themselves Christians but in the teachings of its founder. He also repudiated the statement that there is any masochism in the Sermon on the Mount. The joys there described are to be in the hereafter, which will make amends for righteous suffering here. Dr Matthews, dean of St Paul's, also dealt with the subject in an address. The essence of the attack of psychology on religion he wrote, was that religion was a projection of man's hopes and fears. This was not a new criticism, but in our time the idea that God was a projection had been elaborated by psychologists. In recent times there had been a remarkable development in every science, particularly physics and one of the results had been to give scientists a clearer view of their limitations. To the extent that psychology claimed to be a natural science, that limitation applied to it. Every argument that claimed religion to be an escape from reality was a question-begging argument. Those who used it had in mind a merely materialistic view and everything beyond that was taken for granted as unreal and illusory. He admitted that fantasy did play a part in some religious experience but that was an aberration of religion. He finally pleaded for cooperation between psychology and religion. Each could aid the other in the establishment of mental health.

Records of Longevity

For the twentieth year Mr C B Gabb has reviewed the longevity figures recorded in the *Times* during the past twelve months. On the front page of the *Times* during 1934 the deaths of 460 persons 90 years old and over have been recorded. Of these 127 were men and 333 women. Of the latter, 207 were married. The total number of nonagenarians who died in the last twenty years was 7,305, of whom the majority were married women giving the yearly average of 365. The centenarians who died in 1934 numbered eleven against twenty in 1933. Only one of the eleven was a man, and six of the women were married. The senior was a married woman aged 105. In Ireland the burial of Mrs Catherine Buckland, aged 123, in Ballycommon churchyard North Offaley, King's County, was recorded. Edward Cooper, born in Dublin, Sept 18, 1818 died in California. He had lived in the United States eighty years having migrated in the early gold rush. Franz Baldast, believed to be the oldest man in Austria, who recently carried off first prize at a village dancing competition, died at 110. Mrs Maria Greenwich, the oldest woman in western Canada, died at the age of 109 at Edmonton, Alta. A woman of the same age, Mrs Scariffe, died at Glengarry, Australia. William Freeman, aged 104 the last Crimean veteran in Australia, died at 104, and another Crimean veteran, James Crawford, died at the same age in New Zealand. Frau Maria Schoepperle, the oldest woman in Germany, died in Bader at the age of 106. Mrs Trainer died at Newry, Ireland at the same age.

Epidemic of Malaria in Ceylon

An epidemic of malaria of unusual severity has broken out in Ceylon. The area involved is 5,000 square miles in extent, with a population of 3,500,000. Within three weeks 500,000 persons were attacked. The medical department of the government has engaged 320 additional physicians, apothecaries and inspectors for malaria work. A sum of 5,000,000 rupees has been set apart for an antimalaria campaign directed by a special officer from abroad, preferably from the Ross Institute, and for a housing scheme. The registered deaths from malaria in the

Northwestern Province were as follows, compared with a normal monthly average of 700 January, 7,038 December, 3,463 November, 1,394 In the January total, 5,468 of the 7,038 victims were children under 14 But reports exceed these registered figures and no authentic figure is available for the total number of deaths from malaria between November and January, though it is held that it must have exceeded 30,000 A new drug, atabrin-musonat, has been used in the General Hospital, Colombo and is believed to have remarkable results in the absence of relapses

Malaria has long been endemic in Ceylon, and the present epidemic has caused no surprise to malariologists It is explained as follows Normally endemicity is low in the southwest of the island Owing to the southwest monsoon, the rainfall varies from 100 to 200 inches a year The flow of water in the rivers is therefore abundant and the flushing keeps them free from larval breeding In this area the endemicity is low But in the remaining part of the island about two thirds of the whole, the conditions are favorable for the breeding of the mosquito *Anopheles culicifacies* The endemicity is high, the spleen rate varying from 40 to 60 per cent and more The inhabitants of this area are relatively immune and therefore malaria does not become epidemic The cause of the present serious epidemic is that the prevailing rains failed to supply the usual amount of water and conditions arose which favored the breeding of *Anopheles culicifacies* in pools along the beds of the rivers and streams in the healthful part of the island The inhabitants of this area having little acquired immunity, readily succumbed to the increased density of malaria carrying mosquitoes The predominant infection is benign tertian (57 per cent), while quartan comes next (33 per cent) The malignant tertian is rare (10 per cent)

Telephone Amplifier for the Deaf

A problem for telephone engineers has been to produce at the receiving apparatus speech of the same volume as that which has left the transmitter, and British engineers have solved it An announcement is now made that the postoffice has made full provision for meeting the needs of deaf persons Its engineers have produced a variable amplifier to increase sound to the degree required It can be hired at a cost of \$250 for three months Another instrument which has been successfully experimented with is a loud speaker telephone, which is expected to be soon available to the public

PARIS

(From Our Regular Correspondent)

Feb 4, 1935

Students Protest Against Foreigners

During the last few days of January and until February 2 the strike of medical students in the chief university centers of France filled many columns in the daily papers It ended temporarily in Paris after a delegation had presented the students protests to the minister of public instruction, issuing an ultimatum that a truce would be declared until March before taking up the strike again

To understand the students claims, one must recall that in the medical schools and also in the other departments of the universities over 20 per cent of the 38,000 students are foreigners Many of these, after graduation, remain in France, where all the professions are overcrowded The students maintain that too many privileges are accorded foreigners, especially in the medical schools Many foreigners are admitted who, when matriculated aim only to have a so-called honorary diploma called *Diplome universitaire* bestowed on them This sort of diploma does not require a preliminary two years of study leading to the bachelor of arts degree The latter is indispensable for those who wish to receive a state diploma entitling

them to practice any profession, especially medicine, in France The claim is made that a change from the honorary to the legal diploma is made too easy for foreigners in the provincial universities According to the "Armbruster law" no one will be admitted, on credentials, to the fourth year of the medical school, as has been the case in the past, but will be compelled to spend seven years in medical studies, in addition to a bachelor of arts degree, before being eligible to a state license Further more, no foreigner will be permitted to practice medicine in France who has not been naturalized A certain number of exceptions, according to this law, can be made to this last requirement, in the case of foreigners from countries which do not demand naturalization of French citizens in order to have the right to practice The students maintain that the Armbruster law is a great protection against foreigners remaining in France as physicians but that it is not being enforced and that too many foreign undergraduates are allowed to occupy internships and replace practitioners temporarily One of the strikers' demands was a modification of this law, to the effect that any foreigner desiring to study medicine must have been naturalized for a period of ten years before entering a medical school In Paris, hundreds of students milled around the medical school, shouting 'Down with the foreigners' A few of the twenty-five or so American students were roughly shoved away from the school entrances and told that all classes had been suspended temporarily All lecture rooms and laboratories were ordered closed by the dean, Professor Roussy The strike lasted only a few days but will probably be called again unless drastic measures are taken by the authorities to prevent the crowding out of French students by foreigners

The Dangers of Arteriography

At the January 9 meeting of the National Surgical Society, some cases were reported which called attention to serious complications and even fatal issues that can occur as the direct result of the use of arteriography

Desplas and Reboul reported the case of a woman, aged 67, who had an ingrown toenail associated with evidence of an obliterating endarteritis The femoral arteries of both limbs were injected with a 'tenebryl' solution, the French substitute for the opaque solutions used in arteriography and containing 45 per cent of iodine Twenty-four hours later, reddish bullae and cyanotic areas appeared on the leg where the presence of an obliterating endarteritis had been previously noted These local lesions and the pains in the left extremity disappeared during the following days The patient, after marked dyspnea, died the night of the eighth day The necropsy revealed only atheromatous plaques in the principal arteries

In a second case, a man aged 56 was admitted to the hospital with a diagnosis of intermittent claudication of five years duration Ten cc of thorium dioxide sol was injected into the femoral artery but some of the solution escaped into the tissues around the upper end of the femoral artery at the point of injection This accident was followed by an extensive gangrenous infection of the cellular tissue, showing that thorium dioxide sol, for which many advantages have been claimed, acts as a caustic There were no further complications in the second case Senèque and Benoit reported a case of diabetic gangrene, involving one toe of the right foot, with a definite line of demarcation Twenty cc of "tenebryl" solution was injected into the femoral artery of the corresponding limb The gangrene began to extend rapidly from the toe to the dorsum of the foot necessitating immediate amputation at a higher level The patient became comatose and died forty eight hours later The tibial and peroneal arteries revealed marked calcification of their walls and the lumen was occluded by a well organized thrombus The latter changes could not be ascribed to the 'tenebryl' injection

Bazy and Reboul added the case of a man, aged 54, who complained of attacks of severe cramplike pain, preceded by a feeling of numbness and cold in both upper extremities. There was an ulceration and cyanosis at the tips of two fingers of the right hand. Twelve cc of tenebryl was injected into the lower end of the brachial artery of this arm. Immediately following the injection the entire upper extremity became very cyanotic and there was complete anesthesia. A few days later a mummification of the forearm occurred, which will necessitate an amputation. The injection had evidently been followed, as in Leveuf's case, by an arterial spasm and gangrene.

These accidents in arteriography are analogous to the lesions seen in those who have been exposed to short circuits in electrical work.

Mondor reported that out of ten arteriographies, without sequelae in any case, the method was of diagnostic value in only one. This was an aneurysm of the popliteal artery in which the arteriography revealed a series of small aneurysms above the larger sac.

Sorrel believed that if one employed thorium dioxide solution instead of tenebryl, with a correct technique there was no danger of an accident following an arteriography.

Huet reported a case of extensive gangrene of the arm following injection into the lumen of the brachial artery of a hypertonic (20 per cent) saline solution. He believed that the endothelium of arteries does not tolerate any solution that can be regarded as a foreign body.

The First "Skyscraper" Hospital in Europe

The new Beaujon Hospital has just opened its doors in Paris. An event that would attract little attention in the United States is hailed here as the beginning of a new era in hospital construction. The majority of continental hospitals are composed of a group of one to, at the most, three story buildings, scattered over a relatively large area. The new Beaujon Hospital is eleven stories in height and has a capacity of 1,100 beds with a large outpatient department. There are only fourteen beds in each ward, and four of such wards form a service under the charge of a single attending physician. The laboratories and rooms for research work are in immediate proximity to each service. The cost of construction has been \$4,500 per bed and it is hoped that the cost of maintenance may be materially decreased through centralization in one building.

BERLIN

(From Our Regular Correspondent)

Jan 7, 1935

Immunization of Large Groups Against Diphtheria

For years diphtheria has been increasing in Germany, and particularly in certain industrial sections. One of the principal foci was the Landkreis of Aix-la-Chapelle. Whereas in this area the morbidity in former years ranged between eighty and a hundred cases, it rose in 1931 to more than 500 cases in 1932 to almost 700 cases, and in 1935 to 1,165 cases. There was a corresponding increase of the mortality figures. Small communes in which previously only two or three persons a year, on an average, contracted diphtheria notified, last winter, from 300 to 400 cases. The customary method of combating the disease (closing of the schools, disinfection of dwellings, isolation of patients and bacillus carriers) proved of little avail. At this juncture the ministry commissioned Professor Gundel of the Preussisches Institut für Infektionskrankheiten "Robert Koch," Berlin to inaugurate an inquiry and protective inoculation on a large scale. A portable laboratory was established and the cooperation of the general public was enlisted. In the district of Aix-la-Chapelle, 45,000 children were inoculated in the rural sections, and 35,000 in the urban center. In Duisburg 82,000 children were inoculated during 223 periods appointed

for vaccination. This required the services of nine municipal physicians, fourteen *assistentärzte* and many voluntary private physicians. Each physician vaccinated from 140 to 150 children per hour. Seventeen hundred teachers helped with the filling out of questionnaires and filing cards, and in explaining matters to the parents. There were several hundred other helpers. The funds for the purchase of the large quantity of vaccine material were supplied by welfare organizations. The success of these measures was notable. In this district around Aix-la-Chapelle, diphtheria was virtually eradicated. Communes that formerly notified from sixty to seventy new cases every week register today from two to three cases at the most, and it is possible that these persons, for some reason, escaped being vaccinated. The lives of hundreds of children have been saved in recent months. At present, 7,000 children are being vaccinated in Göttingen.

It is not certain whether such comprehensive protective inoculations should be carried out in the whole Reich. Gundel does not favor such action, as not all parts of the Reich are threatened with diphtheria epidemics. Furthermore, it is impossible to comply with all the requests for vaccine material addressed to the central authorities, since all the material available for the next few months has already been allocated. It has been emphasized, too, that it is not advisable (in fact, that it is subversive of the action of such inoculations) to employ widespread inoculations if they are to be carried out in a restricted manner—that is if only a small percentage of the children menaced by the disease are inoculated. The minister of the interior has therefore ordered that no vaccinations of a restricted portion of the child population shall be undertaken. If the disease becomes so widespread as to make the inoculation of all children desirable, a report should be sent to him, in order that he may be in a position properly to distribute the available vaccine material and to provide for efficient application of the inoculations.

The Non-Aryan Physicians in Germany

Until recently the number of Jewish physicians, and particularly the number serving in the *Krankenkassen*, was not accurately known. Now the *Reichsarztregister* (register of federal physicians) has collected authentic material, which has been published by the statistical department of the *ärztliche Spitzenorganisation* (medical federation). According to these computations there were 6,488 Jewish physicians in Germany at the beginning of the new regime. As the total number of physicians was about 50,000, the Jews constituted 13 per cent of the total. Berlin alone had 3,000 Jewish physicians. During the year 1933 the number of non-Aryans diminished by 578 through emigration—not quite 10 per cent. Their number was thus reduced to 5,910. Of this number 3,641 have been admitted to panel practice. Excluded from such practice were 1,667 non-Aryan physicians (of this number 468 have removed to some foreign part). On the other hand, 1,199, in spite of loss of panel practice, have continued their activities in Germany. The remaining 1,070 physicians, who have not been admitted, are those who, according to the new regulations are refused admittance further by physicians of advanced age and by those who even formerly, for some reason or other had never been admitted to panel practice. Of this number, 110 have migrated to some foreign part.

Of those who have remained in Germany 3,503 are general practitioners and 2,407 are specialists, distributed in part as follows: 457 dermatologists, 405 internists, 274 gynecologists, 243 pediatricians, 221 otorhinolaryngologists, 198 ophthalmologists, 187 neurologists, 134 surgeons.

The number of dermatologists and venereologists is especially large. Berlin alone has 188. Also in certain other districts this specialty has a large representation. The same is true of

the internists. In Berlin alone there are 2,617 resident Jewish physicians, 1,711 general practitioners and 906 specialists.

Out of a total of 32,000 panel physicians in the spring of 1934, 3,641 (11.4 per cent) were non-Aryan. Constant changes in the various districts, however, caused marked fluctuations. The non-Aryan panel physicians have an especially large representation in the metropolitan cities.

Before the changes of 1933, the number of Jewish women physicians was 572. The number has now been reduced to 529, nearly 50 per cent of whom (276) reside in the district of Berlin.

According to the computations of the Aerzteverband, the non-Aryan physicians admitted to panel practice amount to 60 per cent, which corresponds to the percentage among the physicians as a whole. But the fact is often lost sight of that the Aryan physicians not admitted to panel practice have numerous other positions open to them (as health officers, for example), whereas all such positions are closed to physicians of Jewish extraction.

Mountain Sickness

Comprehensive experiments carried on in the Institut für Luftfahrtmedizin in Hamburg, concerning which Dr. Anthony recently reported before the Wissenschaftliche Gesellschaft für Luftfahrt, have shed considerable light on the cause of mountain sickness. Comparative tests were applied to thirty healthy persons. The examinees were placed in the pneumatic chamber of the institute, where they remained until the first demonstrable signs of mountain sickness appeared. In the same manner, experiments with the inspiration of air mixtures deficient in oxygen were carried on. It was found that solely oxygen deficiency is responsible for the appearance of mountain sickness. By the addition of carbon dioxide and oxygen to the air breathed, mountain sickness can be prevented.

ITALY

(From Our Regular Correspondent)

Jan 15, 1935

Lamblasis and Amebiasis

On the occasion of the Congresso di studi coloniali, in Naples, Generale Medico Dott. Rizzuti presented a communication on lamblasis associated with amebiasis. The frequent observation of *Lambliia intestinalis* in the feces of persons with enterocolitis in the absence of other specific protozoan or bacillary forms had awakened the suspicion that *Lambliia intestinalis* also exerts a pathogenic action, whereas this organism has been regarded as a harmless saprophyte. Lamblasis in 1931 was found in Sicily, in connection with an epidemic of dysenteriform enterocolitis discovered in troops stationed there. Likewise in Sardinia, in 1933, forty-three carriers of *Lambliia intestinalis* were found in a division of troops at Magdalena.

Lamblasis may be of pure or mixed types. The pathogenesis is not yet clear. It is probable, however, that it involves a traumatic action on the intestinal epithelium following which an anergy of the epithelium itself and the adjacent organs develops. There are no pathognomonic signs. The diagnosis is based chiefly on examination of the feces.

When *Lambliia intestinalis* becomes localized in the biliary tracts there are symptoms of cholecystitis and in such cases examination of the bile according to the Meltzer-Lyon technic will not reveal the true nature. Application of the therapeutic test is sometimes valuable. The administration of naphthalene, according to the Sorge method, usually causes the organisms to disappear from the bile.

The association of lamblasis with amebiasis was found in Tripoli and Cyrenaica and also in concentration camps for prisoners, during the war. In all the cases marked persistence of the disorder, resistance to treatment and frequency of recurrences were observed.

At present there is no true specific for intestinal lamblasis.

Tuberculosis of the Bones and Joints

Before the Unione internazionale contro la tubercolosi, Professor Putti discussed tuberculosis of the bones and joints and its treatment. He contended that the division into medical and surgical types has no theoretical foundation or practical utility. The clinical problem of tuberculosis is today dominated by a single conception—the relation to the constitution. Hence the patient with osteo-articular tuberculosis is treated as a patient in whom the skeletal localization is secondary to other localizations, usually pulmonary. The conception of antagonism between pulmonary and extrapulmonary tuberculosis has not yet been demonstrated. The two localizations do not exert any mutual influence on each other—at least not to an appreciable extent.

It is always necessary to consider a general and a local therapy. As there is no specific, the general treatment is based on the conception of strengthening the defense forces. Immunotherapy is still in an experimental stage. The speaker stated that he had secured good results with the antigen of Boquet and Negre. Gerson's diet acts well on the digestive apparatus. The idea of a specific solar action has been abandoned. Today heliotherapy and climatotherapy are regarded as stimulative therapy that acts not only through the radiant energy of the sun but also by virtue of a complex of surrounding physical elements. To prevent any possible habituation to the stimulus it is necessary to change from one climate to another, especially in treating children. Operative treatment properly so called is limited to certain general principles, for example, resection should not be resorted to in persons who have not completed their growth.

For juxta-articular or para-articular foci that are easily accessible, early intervention is indicated, as regards the hip immobilization pure and simple. Amputation and disarticulation are sometimes necessary. Ankylosis constitutes the ideal outcome of osteo-articular tuberculosis. Arthrodesis may lead rapidly to such results but cannot replace bed rest and immobilization with a plaster cast.

Supervision of Houses of Prostitution

With the new year and the need of providing for physicians charged with the supervision of houses of prostitution, the minister of the interior has called the attention of the prefects to the duties that devolve by law on this class of health officers. They must gratuitously pay the first visit to the women who are in houses of prostitution; they must pay biweekly visits and special visits whenever there is occasion for it. They inspect the hygienic conditions of such houses and report promptly to the provincial physician all cases of infectious and parasitic disease, in addition to venereal disease. The treatment of venereal disease (and particularly syphilis) that is not in the contagious stage and does not require the removal of the woman is gratuitous. If the treatment cannot be given in the houses, and if a woman is unable to avail herself of a specialist, the provincial physician may authorize the visiting physician to give her private treatment on the basis of the minimal tariff. Every three months the visiting physicians of a city will be assigned different houses, according to a definite rotation scheme.

Congress of Urology

The Congress of Urology was held recently in Rome, the chief topic being 'Study on Renal Functioning, with Especial Reference to Urinary Surgery.' Dr. Migliardi spoke on renal function tests. He commonly uses the phenolsulphonphthalein test, to which he does not ascribe, however, as much value as do some authors. He discussed the surgical prognosis in relation to the renal function tests. The criterion furnished by the tests commonly employed is only relative and it is not

possible to establish absolute limits of operability. With regard to the phenolsulphonphthalein test, the speaker observed that in some cases one can operate with reasonable assurance even though the eliminations are poor (20 per cent, or even 10 per cent or less). Renal function tests, however, together with other factors, constitute a notable aid in formulating a prognosis.

Medical Units in Somaliland

During his recent journey through Somaliland, the king of Italy inaugurated at Chisimaio a hospital equipped with the most modern services. There are today in Somaliland five hospitals. One is at Mogadiscio and is comparable to a large continental hospital, the other four are at Villaggio Duca degli Abruzzi, Alula and Dante and Chisimaio. In addition to these hospitals there are ten medical stations in villages. There are also eighteen infirmaries in the remote parts of the colony, and these infirmaries have control of twenty five medical stations. Owing to the nomadic character of the natives, their marked resistance to disease and their disinclination to enter a hospital it is to the infirmaries and to the medical stations that they resort by tens of thousands.

In addition, there is an agricultural colony for leprosy persons. A large number of militarized mobile units furnish sanitary protection at the borders and in the forests.

Regular courses are held for the training of native nurses and midwives.

JAPAN

(From Our Regular Correspondent)

Jan 5 1935

Physician Elected President of Tokyo University

Following the resignation of Kiheiji Onodera, president of the Tokyo Imperial University, the fifth presidential election took place, December 15, in the great hall of the institute. Prof. Dr. Mataro Nagayo, dean of the medical department of the university, was elected the next president by the majority of 98 out of 164 votes. He was born in 1878 and had been director of the Infectious Disease Research Laboratory from 1919 to 1933. He was also president of the Cancer Research Institute. Of his many achievements, the determination of the cause of tsutsugamushi disease is the most valuable. Chiefly because of his devotion for many years, the Infectious Disease Research Laboratory became one of the two biggest institutes of the kind. His present post of dean will be taken over by Prof. Dr. Hisomi Nagai, professor of physiology in the university.

University Hospital Destroyed by Fire

A fire broke out in the evening of January 1 in the main building of the hospital attached to Kumamoto Imperial University of Medicine. It spread to the x-ray and gynecologic sections and raged fiercely for more than two hours, completely destroying the main building. The hospital at that time accommodated about 400 patients, but fortunately no loss of life is reported, and all were taken to private hospitals in the city. The loss is estimated at 5,000,000 yen.

New Hospital for Municipal Employees

The municipal authorities of Tokyo have announced that they have planned to establish a large hospital for the municipal officials and their families, who are said to number about 90,000. Some of the public offices have had hospitals for their workers for several years under the system of health benefit insurance. The new hospital plan is based on the following statistical facts. In 1932 the average medical expense a month of each official's family was about 5 yen, the whole domestic expenses of each family being 91 yen and 47 sen on an average. Consequently 22,000 families have paid more than a million yen every month as their medical expenses. The estimated number

of outpatients is 730 and the inpatients 157 a day. The estimated income is about 272,000 yen a year. There are already in Tokyo seven hospitals established by different public bodies, and when this one is complete other public bodies are expected to build hospitals. The police, the school teachers, the street car workers, the government railway and the naval officers and men have their own hospitals.

Encephalitis Less Prevalent

Only 272 cases of encephalitis were reported in 1934, which is a remarkable decrease compared with the last few years. Following are figures showing the cases reported in the last eight years.

Year	No. of Cases	Deaths	Percentage
1927	988	697	70.55
1928	70	60	71.42
1929	2,043	1,183	58.30
1930	499	389	72.14
1931	129	97	75.10
1932	689	391	56.48
1933	791	510	64.48
1934	272	164	61.65

Koch Memorial Lecture

The twenty-first Koch Memorial Lecture was given, Dec. 11, 1934, in Tokyo, by Dr. S. Tsurumi, a member of the health section of the League of Nations, on medicine and international friendship. He spoke about the Franco-Japanese medical commission that was organized last June while he was in Paris. The commission will undertake to provide mutual facilities for work, also conveniences to those who travel on medical inspection tours, and the exchange of professors between universities. After Dr. Tsurumi's address, Dr. S. Yoshiue, professor at the military medical school, lectured on poison gas and air defense in future wars.

The Number of Physicians

According to the sanitary bureau of the home office, the number of medical men in 1934 in the country was 52,792, while in 1933 it was 50,069. The increase is 2,723 over 1933, but when compared with 1932 the increase is 4,692. Thus there will be a flood of physicians in the near future, if it is not controlled. There are 771 practitioners to each 10,000 of population on an average. In cities there are 13.24, and in villages there are 4.78. The number of dentists is 17,984, while in the previous year it was 17,164, the increase being 840. There are 56,590 midwives of whom there were 54,655 in the previous year. The number of pharmacists is 21,807, which shows an increase of 1,332, compared with 1933. The number of nurses is 96,020, while there were 89,686 in 1933. These figures are for the close of the year 1934.

The Japan Medical Association to be Expanded

The Japan Medical Association, the only medical body in this country, heretofore has excluded medical men in new territory such as Taiwan (Formosa), Chosen (Korea) and Karafuto (Sakhalin). A movement is being made now to expand the association to include all Japanese physicians in this country, no matter where they may live. When the plan is realized the number of members will be greatly increased. It is expected that the expansion will take place in the near future.

Abolishment of State Examination in Korea

An important change was made concerning the state examination for practitioners in Korea. This examination was a special one that authorized those who passed to practice medicine in Korea only. As it was rather easy to pass, many went to Korea to take the examination. The governor general of Korea has declared that this examination would be abolished in and after 1941, for the reason that there are now so many medical colleges, dental schools and pharmacy colleges, to say nothing of the Keijo Imperial University Medical Department.

Marriages

WILLIAM WORTHINGTON SAMUELL to Mrs Addie Keating Bradford, both of Dallas, Texas, January 22

WILBURN C YOUNG, Canal Point, Fla to Mrs Evelyn Logsdon of West Palm Beach, Dec. 31, 1934

THEODORE R DAVIES, Barbourville, Ky to Miss Elizabeth Ragsdale at Cleveland, Tenn., Dec 9 1934

BADIE T CLARK, Rocky Mount, N C, to Miss Margaret Page Smith of Atlanta, Ga, January 19

JOE IVEY TURBERVILLE, Century, Fla to Miss Ellen Virginia Burns of Frisco City, Ala, January 25

JOHN G ROBERTSON, Tofino, B C, to Miss Marguerite Heisler of Vancouver, Nov 29 1934

WARREN S BALDWIN to Mrs Ada Simpson Smollen both of Birmingham, Ala, February 2

EDWARD A THORNE, Scottsboro, Ala, to Miss Ruth O Hare of Birmingham, January 12

VERNON B WOOD to Miss Lucille Lintner, both of Ironton, Ohio, Dec 31, 1934

OTT CASEY, Clinton Ind, to Mrs Rosa Storm of Chicago, Dec 26 1934

Deaths

Morie Frederick Weymann ☉ Los Angeles, Washington University School of Medicine, St Louis, 1922 clinical professor of surgery (ophthalmology) at the University of Southern California School of Medicine, member of the American Academy of Ophthalmology and Oto-Laryngology, the American Ophthalmological Society and the Pacific Coast Ophthalmological Society on the staff of St Vincent's Hospital associate editor of the *American Journal of Ophthalmology* aged 35, died, January 13 of poison self administered.

Kate Wylie Baldwin ☉ Philadelphia Woman's Medical College of Pennsylvania, Philadelphia 1890 member of the American Academy of Ophthalmology and Oto-Laryngology formerly demonstrator, clinical instructor and instructor in surgery and adjunct professor of surgery at her alma mater for many years on the staffs of the Woman's and Children's hospitals, fellow of the American College of Surgeons died, January 18, at Lawrenceville

Henry Adsit, Buffalo Johns Hopkins University School of Medicine, Baltimore, 1906 fellow of the American College of Surgeons served during the World War at various times on the staffs of the State Institute for the Study of Malignant Disease, Children's Hospital and the Buffalo City Hospital aged 55 died suddenly, February 7, of acute dilatation of the heart while playing hand ball

Charles F W Wilhelm ☉ East St Louis Ill St Louis Medical College, 1880 past president and secretary of St Clair County Medical Society fellow of the American College of Surgeons, formerly health officer of East St Louis at various times chief of staff of the Christian Welfare Hospital and St Mary's Hospital, aged 76, died, January 28, of cerebral hemorrhage

Otho Boyd Will, Peoria Ill Rush Medical College, Chicago 1869 member of the House of Delegates of the American Medical Association in 1902 and in 1906 member and past president of the Illinois State Medical Society one of the founders and on the staff of the Proctor Hospital aged 88 died, January 28 of chronic nephritis and cerebral arteriosclerosis

Hiram Elmore Zerner, New Castle, Pa Western Pennsylvania Medical College, Pittsburgh, 1899 fellow of the American College of Surgeons past president of the Lawrence County Medical Society, aged 62, on the staffs of the New Castle Hospital and the Jameson Memorial Hospital, where he died, January 14, following a prostatic operation

Michael Earl Brennan ☉ East St Louis, Ill St Louis University School of Medicine, 1921 past president of St. Clair County Medical Society for sixteen years bacteriologist for the city health department aged 40 on the staff of St. Mary's Hospital where he died, January 31, of carcinoma of the larynx

William Curtis Wolverton ☉ Linton N D, State University of Iowa College of Medicine, Iowa City 1905 fellow

of the American College of Surgeons, formerly member of the school board, owner and medical superintendent of a hospital bearing his name, aged 55, died, January 11, of heart disease

Alexander Balfour Jeffrey ☉ Topeka Kan., Northwestern University Medical School, Chicago 1906, served during the World War, medical director of the National Reserve Life Insurance Company, aged 55, died, January 25, in Christ's Hospital, of pneumonia, following an operation for appendicitis

Alton LeRoy Smith, Woodward Iowa State University of Iowa College of Medicine, Iowa City, 1931, member of the Iowa State Medical Society on the staff of the Hospital for Epileptics and School for Feeble-minded aged 29, died January 21, in the University Hospital Iowa City, of meningitis

William K Turner, Seattle, Hospital College of Medicine, Louisville, Ky, 1895 member of the Washington State Medical Association, aged 64, on the visiting staff of the Swedish Hospital, where he died, January 12, of fracture of neck of the right femur, pituitary tumor and bronchopneumonia.

John M Kennedy, Knoxville, Tenn, University of Pennsylvania Department of Medicine, Philadelphia, 1870 member of the Tennessee State Medical Association, Confederate veteran, aged 88 on the staff of the Fort Sanders Hospital, where he died January 24, of intestinal obstruction.

Robert W Lehigh, Necedah, Wis, American College of Medicine and Surgery Chicago 1905, member of the State Medical Society of Wisconsin, aged 59, died, January 12 in the Mauston (Wis) Hospital of pneumonia, as the result of injuries received when struck by an ambulance.

Charles Augustus Knowles, Boston Tufts College Medical School, Boston, 1927, member of the Massachusetts Medical Society, on the visiting staffs of the Boston City Hospital, St Elizabeth's Hospital and the Cambridge (Mass) Hospital, aged 30 died, January 31, of pneumonia

Harry Edward Knight, Detroit, Chicago College of Medicine and Surgery, 1917 member of the Michigan State Medical Society, on the courtesy staff of the Providence Hospital and on the staff of Grace Hospital, aged 43 was killed, January 27, in an automobile accident

Charles Melvin Wallace, Winterset, Iowa Ensworth Medical College, St. Joseph 1908 member of the Iowa State Medical Society past president of the Madison County Medical Society on the staff of the Winterset Hospital, aged 64, died, January 10 of heart disease

Julius Tyndale Westerman ☉ Miami, Fla, New York University Medical College, 1896, Cornell University Medical College New York, 1899 served during the World War on the staff of the Miami City Hospital, aged 63, died, January 27, in Tampa, of thrombosis

Frank Anthony Laurer ☉ Syracuse, N Y, Syracuse University College of Medicine, 1921 served during the World War on the staffs of the Syracuse Memorial Hospital and St Joseph Hospital, aged 39, died, January 29, of broncho pneumonia and meningitis

David Ulysses Sherman, Springfield, Mo Beaumont Hospital Medical College, St Louis 1898, member of the Missouri State Medical Association aged 63 on the staff of St. John's Hospital where he died, January 22, of cerebral sclerosis following fracture of the leg

Joseph Martin Thompson, Tahlequah Okla, Missouri Medical College St Louis, 1889, member of the Oklahoma State Medical Association, aged 69 died, January 2 in the Veterans' Administration Facility, Muskogee, of pulmonary tuberculosis

James Edwin Simpson, Salem, Mass, Harvard University Medical School, Boston 1891, member of the Massachusetts Medical Society on the staff of the Salem Hospital, aged 65, died, January 19, of probable carcinoma of the cecum

Henry Mortimer Sanger, Providence, R I Hahnemann Medical College and Hospital of Philadelphia, 1892 member of the staff and past president of the Homeopathic Hospital aged 64 died suddenly, Dec 26, 1934 of coronary occlusion

Richard Douglas Dill, Arvada Colo St Louis College of Physicians and Surgeons 1909 member of the Colorado State Medical Society aged 50 died January 18 in St. Joseph's Hospital, Denver, of septicemia following hypodermic injection

Oscar Emery Morehouse, Upper Keswick, N B, Canada, McGill University Faculty of Medicine, Montreal, Que., 1889 for nine years district medical health officer aged 77, died January 1 in the Victoria Public Hospital Fredericton.

Casper Stock, New York, College of Physicians and Surgeons, Medical Department of Columbia College, New York 1894, member of the Medical Society of the State of New York, aged 63, died, January 15, in the Lenox Hill Hospital

Noble Van Zant, Mokence, Ill., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906, on the staff of St Mary's Hospital, Kankakee, aged 52, died, January 17, of coronary occlusion

William Boone McClure, Towanda, Kan. University of Nashville (Tenn) Medical Department, 1899, member of the Kansas Medical Society on the staff of the Allen Memorial Hospital, El Dorado, aged 60, died in January

John Daniel Smetzer Young Graceham Md College of Physicians and Surgeons, Baltimore, 1887 aged 72 died recently, in the Emergency Hospital, Washington, D C following an operation for removal of the prostate

Frank Arthur Will Des Moines, Iowa State University of Iowa College of Medicine, Iowa City, 1909 served with the British Army during the World War, aged 48 died January 21, of heart disease and hypertension

John Perrill Hetherington, Logansport, Ind Eclectic Medical Institute, Cincinnati, 1890, formerly member of the city council and county coroner, aged 65 died January 26, in Miami, Fla., as the result of x-ray burns

Jacob W B Wellcome Jr, Sleepy Eye Minn., St Louis College of Physicians and Surgeons, 1890 member of the Minnesota State Medical Association aged 67 died January 3, of cerebral hemorrhage and hypertension

James Lawson Walsh, Detroit College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1899, served during the World War aged 63 died January 24, of bronchopneumonia

Charles Samson, Holland, Mich., Rush Medical College Chicago, 1899, formerly mayor of La Mesa, Calif., and Oakland, Neb., aged 61, died, January 27 of cerebral hemorrhage and arteriosclerosis

Albert Samuel Zwick Chicago Cleveland College of Physicians and Surgeons Medical Department Ohio Wesleyan University, 1912, aged 45, died, January 27, in Miami Fla., of pulmonary edema

John E McClure Bishopville, S C Medical College of the State of South Carolina, Charleston 1883, aged 73 died Dec. 28 1934, in a hospital at Columbia of acute dilatation of the heart

Alfred George Beale, Carmel, Calif. LRCS Ireland and LRCP Ireland, 1885, and FRCS, Ireland 1901 aged 71, died, Dec. 1 1934, of carcinoma of the stomach and liver

Charles Meade Clodfelter, Lexington, N C College of Physicians and Surgeons, Baltimore, 1905 aged 56 died January 23, of endocarditis, chronic nephritis and influenza

Merrill James Hyde, Brandon, Iowa, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1876 aged 79, died, January 17, of arteriosclerotic heart disease

George Stephen Weger, Redlands, Calif., Baltimore Medical College, 1898, member of the California Medical Association, aged 60, died suddenly, January 16, of heart disease

Agnes McKee Wallace, Buell, Mo., Kansas Medical College, Medical Department of Washburn College, Topeka, 1893 aged 83, died, Dec. 28 1934 of arteriosclerosis

Bismarck Liesman, Kellogg Iowa, Rush Medical College, Chicago, 1890, member of the Iowa State Medical Society, aged 68, died, January 18, of angina pectoris

Lafayette Skaggs, Russell, Ky., Kentucky School of Medicine, Louisville, 1894, formerly county coroner, aged 73 died January 15, of myocarditis and hypertension

Eliaba Pinkham Hussey Buffalo Boston University School of Medicine, 1876, aged 88, died, February 12, of cerebral hemorrhage and arteriosclerosis

James Grant Russell, San Gabriel, Calif. Bellevue Hospital Medical College New York, 1889, aged 70, died Dec 24, 1934, of carcinoma of the prostate

Lucian Otto Williams Anderson Ind., Medical College of Indiana, Indianapolis 1895 aged 80 died January 17, of arteriosclerosis and hypertension

Henry A Blair, San Antonio, Texas, Kentucky School of Medicine, Louisville, 1892, aged 76 died Nov 23, 1934 of coronary embolism

Austin Theodore Woods, Loyal Oak, Ohio Cleveland Medical College 1879, aged 78 died January 15, of carcinoma of the bladder

Correspondence

INITIAL INFECTION WITH TUBERCULOSIS AND SUBSEQUENT LESIONS

To the Editor—In their paper on the effect of initial tuberculous infection on subsequent tuberculous lesions (*THE JOURNAL*, Nov 17, 1934 p 1530) Myers and Harrington state that the chances of positive and negative reactors to tuberculin of developing clinical disease in the next few years are five or ten to one in favor of the positive group" and based on these statements they draw their conclusions as to the importance of allergy

But the comparison which the authors make between the morbidity in these two groups must be said not to permit any conclusions as to the risk of contracting tuberculous disease, as the two groups cannot be compared. A direct comparison would be possible only if all the individuals in the negative group were exposed to tuberculous infection during the period of observation. Tuberculin negative individuals who are not exposed to infection cannot be expected to develop clinical tuberculosis. This is a fact that has been neglected by many investigators and latest by Myers and Harrington. The importance of a correct statistical treatment of these matters was first stated by R. Hoyer Dahl (*Tidsskr f d norsk Lægeforening* 1933, No 3), who showed that, if one shall calculate correctly the percentage incidence of clinical tuberculosis in a group of formerly negative reacting individuals, one must know, or be able to calculate, how many of the negative individuals have turned positive, that is, been infected, during the period of observation. Further corrections must be made if the comparison is to be of statistical value. If the period of observation is ten years, all the positive reacting individuals can be reckoned as having been observed during ten years but of the formerly negative individuals a certain number are infected every year, corresponding to a certain curve. If this curve is linear the negative individuals can be reckoned only as having been observed during five years.

In his well known investigations of the nurses of Ullevaal Hospital, Oslo, Dr J Heimbeck has compared the incidence of clinical tuberculosis in a group of negative and a group of positive reacting nurses. And here the groups can be directly compared, as Dr Heimbeck has shown that all the negative reacting nurses are infected during the period of observation (three years). He finds for the three years 48 per cent clinical tuberculosis in the group of positive reacting nurses, against 34.6 per cent in the negative group (including milder forms of tuberculous disease, as erythema nodosum).

For medical students who during their work in the hospital are exposed to a risk of infection that is considerably smaller than that of the nurses but greater than that of the total population, O Scheel has found an incidence of clinical tuberculosis of 1.47 per cent in the group of formerly positive reacting individuals and 4.31 per cent in the group of negative reacting. The real difference will here be still greater, as a part of the negative reacting students are not infected during the period of observation.

Finally I will mention an example showing the difference between the wrong and the correct method of comparison. In a material consisting of 4,800 children from 4 to 16 years of age tested with the Pirquet reaction in 1930, I found in the following two years fifty-nine cases of clinical tuberculosis (*Beitr z Klin d Tuberk* 83 402 [Sept 23] 1933). If these cases are calculated directly on the negative and positive group, in the same manner as that of Myers and Harrington, the yearly incidence of clinical tuberculosis will be 31 per thousand

in the positive group, against 7 per thousand in the negative group. But on calculating, from the incidence of reactions to the Pirquet test in 1930 in the different ages, how many of the negative reacting can be expected to be infected during this time, and then calculating the morbidity in the manner of Høyer Dahl, I find an incidence of clinical tuberculosis of 80 per thousand in the negative group, that is, more than ten times as high as in the positive group.

Another circumstance that speaks directly against the importance of strong allergy for the development of tuberculous disease is that, with the erythema nodosum patients, almost in every case one finds a very strong Pirquet reaction, most frequently vesicular, and still the chance for these patients of developing clinical tuberculosis seems to be rather small. Investigations (Ustvedt H J and Johannessen, A S *Acta med Scandinav* 80 263 [no 3] 1933) have shown a morbidity of 10.3 per cent the first year, and for the following years, up to the tenth, from 3 to 0 per cent, which is hardly higher than in the total population.

HANS JACOB USTVEDT, M.D.,
Ullevaal Hospital Oslo

LEGAL AND MEDICAL RELATIONSHIPS

To the Editor—In THE JOURNAL February 2, there are several news items of interest which should not pass without comment.

On page 424, under *Medicolegal*, a case is reported from the California courts wherein the manager of a drug store was fined and the judgment sustained in the appellate court, because he permitted a nonregistered helper to sell hydrogen peroxide. I presume any one could sell Crazy Water Crystals with impunity. This report is consistent with the 'high grade' medical practice act of California and from an intelligent standpoint is on a par with the 'monkey law' of Tennessee.

Under *Medical News* page 407, H 73 Missouri proposes to forbid the sale or other distribution of acetylsalicylic acid, carbolic acid or iodine except on the prescription of a licensed physician, dentist or veterinarian. This smacks of the time when whisky was obtained on doctors' prescriptions and will act only as a boomerang to the medical profession. When the people need such protection it is quite dangerous to be alive. Such laws and such administration are what make it impossible to procure respectable food and drug legislation.

H A MCGUIGAN, M.D., Chicago

IODINE AND IODINE ACNE

To the Editor—In a case report on the treatment of chronic vaginitis with phenylmercuric nitrate (THE JOURNAL, January 19, p 212) the patient described by Dr Frederick W Hitchings developed an indurated pustular acne of the face and neck after treatment was instituted for the vaginitis. Listed with the drugs used in the treatment of the vaginitis was 2 per cent tincture of iodine and 10 per cent tincture of iodine, which were applied to the vaginal mucosa and the cervical canal respectively.

Iodine may be absorbed in sufficient quantity through the vaginal mucosa to produce iodide acne. I observed one patient in whom iodide acne resulted from the use on three different occasions of douches of compound solution of iodine. On each occasion the iodide acne disappeared in three weeks following the withdrawal of the solution, only to reappear within one week on resumption of its use. It is a very probable explanation of the acneiform eruption that appeared during the treatment of Hitchings' patient.

This possibility was not mentioned in the case report. The specious conclusion was drawn that the acne was connected

with the vaginitis present. Both were attributed to a staphylococcus. It seems more reasonable to accept the acne in this case as an iodide acne than to accept the hypothesis that it was due primarily to the staphylococcus.

ARTHUR G SCHUCH, M.D., Dallas, Texas

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

TRAIN SICKNESS AND POSITION OF HEAD IN SLEEPING ON TRAINS

To the Editor—Most persons in riding on a train prefer to sit facing forward. But in sleeping in a berth the head is by choice placed toward the front of the train. In ambulances it is also routine for the head of the patient to be at the front of the conveyance. Is there a rational physiologic explanation for having the head in the direction of motion when horizontal either for sleep or when awake? This brings to mind the practice of Charles Dickens and other Victorian notables of carrying a compass and having the hotel bed placed with the head to the north. Having the head forward when sleeping on a moving conveyance however is so universal that I wonder if there is a reason other than the dead hand of custom for it.

DONALD A LAIRD PH D Hamilton N Y

ANSWER—Man is used to the type of visual change or sensation produced by approaching an object, since his eyes are directed forward. In consequence, many people are affected by dizziness, nausea and vomiting, with the eyes open in a fast moving conveyance such as a train. Usually these disturbances are not produced if the eyes are closed when riding backward or if the vision is fixed on the objects in the train itself. But there is no evidence, rational or experimental, indicating that a person sleeps better or more comfortably in a moving conveyance when the head is directed toward the direction of motion. And the same answer applies to the notion of sleeping better or more restfully with the head directed toward the north. The only possible influence on the body that could be affected by the position of the head in a moving conveyance would be the action of gravity on the blood flow or tension on the viscera but most of the traveling speeds are insufficient to have any appreciable effect in this regard. It is well known that in many European countries the arrangements of the beds are transverse to the motion rather than in the line of motion, as it is in the 'bedroom' cars on the more progressive railways of the country. It is true that modern technique in the studies of sleep have reached a degree of perfection that permits accurate quantitative information of the restfulness or depth of sleep under any or all conditions. These have not yet been applied to the person sleeping in a moving conveyance.

For the present therefore, it appears that placing the head in the direction of motion on a train, ambulance or even ships at sea is purely a habit or tradition, and the same applies to the view that sleep is more profound with the head pointing north. Of course in persons in the habit of retiring with the head in a fixed direction and convinced by tradition that this is the best way to obtain restful sleep, that belief will set up worry which interferes with the prompt going to sleep or the depth of sleep when the position of the body in space is changed.

BLOOD SUGAR

To the Editor—How long after blood is taken and oxalated may it be allowed to stand before analyzing for blood sugar? If blood is taken in the morning at Somerset Ky it does not leave town until late afternoon and could not be delivered to any laboratory in time for analysis before the following morning. Would examination of a specimen that had stood for this length of time give accurate or reliable results?

M C SPRADLIN M D Somerset Ky

ANSWER—Blood sugar determinations should be made immediately after the blood sample has been taken, as the dextrose rapidly disappears by glycolysis. Efficient refrigeration retards this glycolysis but does not prevent it. When the analysis cannot be made immediately the proteins of the blood should be precipitated and the filtrate, to which is added a few drops of toluene, placed in the refrigerator. This filtrate will give accurate readings for twenty-four hours after precipitation.

The blood filtrate is produced as follows: To 2 cc. of blood obtained in a test tube containing a small amount of powdered

potassium oxalate (2 mg per cubic centimeter of blood) to prevent clotting, 14 cc of distilled water is added and the mixture is allowed to stand until laked. Then 2 cc of 10 per cent sodium tungstate is added and after mixing, one adds 2 cc of two thirds normal sulphuric acid slowly while shaking. The flask is corked and shaken vigorously. Filtering is done through a small filter paper. The clear filtrate is then used for the colorimetric sugar determination. Two cubic centimeters of filtrate corresponds to 0.2 cc of blood.

A blood specimen standing four hours at room temperature shows a marked reduction of the blood sugar value, and in twenty four hours the blood sugar may be reduced to one half or less. One drop of a saturated solution of potassium fluoride added to 5 cc of blood in place of oxalate will prevent coagulation and also prevent the change in sugar content. This last procedure would be best for blood to be sent to a laboratory.

TREATMENT OF SYPHILIS

To the Editor—A man aged 40 first seen by me in May 1933 had bronchopneumonia complicated by kidney disease. The urine at that time contained four plus albumin and many white and red blood cells. The patient was edematous. The nonprotein nitrogen was 80. He recovered from the pneumonia and the urine gradually improved. One month later the patient called my attention to a lesion on the penis which he said was getting larger and he gave me a positive history of syphilis which had been treated. The Wassermann and Kahn reactions were both four plus. From his preceding physician I obtained the following report as to his treatment: he stated that he did not have sexual exposure during the past six months. Prior to July 1929 he had had forty six injections of neoarsphenamine totaling 342 Gm. and 54 grains (3.5 Gm.) of mercuric salicylate; the number of doses was not stated. On this date the Wassermann reaction was negative. From July 1929 to July 1930 he had seven injections of neoarsphenamine totaling 463 Gm. and seven injections of bismuth tartrate each 2 cc. Repeated Wassermann reactions were negative. No further treatment was given until June 1933. From the latter date he has received continuous treatment to date except for three months when he was away from my locality. I started treatment with mercury rubs and iodides for two weeks and then started neoarsphenamine giving him eight doses and then from ten to twelve doses of sodium bismuth thioglycollate or iodobismutol as follows: neoarsphenamine twenty two injections 12.9 Gm. sodium bismuth thioglycollate thirty injections 2 cc each; mercury rubs fifty four. Iodides have been given with the heavy metals. The urine has been normal during this time and the spinal fluid is normal. There are no symptoms of vascular involvement. Blood Wassermann reactions have been negative since the first series but Kahn reactions have been reported one plus two plus, and the last one three plus. Should the man have further treatment? Please omit name.

M D California

ANSWER.—This query deals with a patient whose syphilitic infection is apparently entirely latent and who has had in all seventy seven injections of an arsphenamine product together with an appropriate associated amount of heavy metal, but whose Kahn test remains persistently positive. His infection was complicated by an apparently severe acute hemorrhagic nephritis from which he appears to have made a satisfactory recovery, although information regarding kidney function tests is not supplied.

Under these circumstances it seems undesirable for the patient to receive further treatment. On the basis of the study of the Cooperative Clinical Group the chance of subsequent progression or relapse is only about 1 in 20. This should be guarded against by yearly periodic general physical examinations with particular reference to the nervous system and the cardiovascular apparatus, and with quantitatively titered blood Wassermann tests done at intervals of every six months. Treatment need not be resumed unless there are clinical evidences of progress or unless a high titer Wassermann relapse appears.

TRAUMATISM AND METRORRHAGIA

To the Editor—I should appreciate it if you would be so kind as to give me the etiology of the bleeding in the following case as I am unable to find anywhere any relation between traumatism and metrorrhagia. The patient is 30 years of age and married. Her family and past history are negative. On the first of June she had a fall down a flight of stairs and shortly afterward complained of considerable pain in the abdomen and started to bleed from the vagina although her regular period was a week previous to that. Dilatation and curettage were done but the results were normal. She continues to have some bleeding. The uterus is of a normal size and a normal consistency. Please omit name.

M D Bound Brook N J

ANSWER.—It is difficult to offer a satisfactory explanation in this case because it is rare for trauma to be followed by bleeding from the vagina except when the injury involves the vagina. In the realm of probabilities rupture of a corpus luteum or corpus luteum cyst of one of the ovaries must be

considered, because rupture of these portions of the ovary is often followed by uterine bleeding. In spite of the fact that the patient had a presumably normal menstrual period it is possible that the patient had an ectopic pregnancy which was ruptured by the fall. In such a case the endometrium would most likely show some decidual reaction. The severe pain in the abdomen could have been associated with either rupture of a corpus luteum cyst or ectopic gestation. Direct injury to the uterus is rarely ever followed by bleeding from this organ.

NEUROLOGIC SYMPTOMS AFTER TRAUMA

To the Editor—A colleague of mine aged 49 5 feet 6 inches (168 cm) in height weighing 155 pounds (70 Kg) received a head injury last December. He was unconscious for about fifteen minutes. I saw him about two hours later with a hematoma about the size of a hen's egg over the occiput. He was then dazed and complained of severe head ache. I administered a sedative and advised prolonged rest. After two days he went to his office to resume practice though still complaining of headache and vertigo. Despite advice to the contrary he tried to carry on in a limited way but he had to desist after five months. Frequent physical examinations and laboratory tests have so far failed to disclose any other cause for this disability. His major trouble at this date is loss of visual acuity and contracted visual fields (concentric) with no objective changes observable in the fundus of either eye. Neurologic tests are negative. Blood pressure readings have varied in the past three months from 140/95 to 175/120. His hypertension now seems to be stabilized at 165/110. He has lost about 10 pounds (4.5 Kg) although having no gastro-intestinal disturbances and his appetite remains normal. His habits have always been good. Roentgenograms of the skull blood chemistry blood counts basal metabolism urinalyses and an electrocardiogram have not disclosed any information and the patient is much depressed. I should like to know whether it is possible for symptoms such as the marked asthenia vertigo and headaches to appear so late and to last so long and what your opinion is as to the ultimate outcome. Encephalography has been offered to the patient for the relief of the post traumatic headache but he is much more concerned about his visual disturbance and has not yet acceded to it. Kindly omit name. M D California

ANSWER.—Three groups of facts must be available to form the basis for an opinion in a case of this kind and only two of them are given in the statement of the case. It is stated that the patient reacted to a head injury and that the reaction consisted in certain phenomena. In addition, it should be told with what the patient reacted in other words, more should be known about his person than is stated here, namely his age weight profession and good habits. It should be particularly stated whether or not he is of a sensitive or neurotic make up as a person of this kind is likely to show quite an array of functional symptoms even after a slight injury. One would also like to know whether any claim for damages is involved as even the most high minded and well meaning professional men may be subconsciously influenced if a claim exists. Though not looking for personal gain, they feel that it is their duty to their family and to the cause of justice that they be properly compensated. In view of the severity of the injury a certain amount of genuine concussion probably was sustained, and this may account largely for the headache and vertigo. The concentric narrowing of visual fields the depression and asthenia are most likely due to a traumatic neurosis.

MULTIPLE STILLBIRTHS

To the Editor—A woman now 27½ years of age married at the age of 23 gave birth at 25½ years to an eight months stillborn male fetus weighing 3 pounds (1360 Gm) having gained only 8 pounds (130-138) during her pregnancy. Her antepartum period was marked by severe headaches and persistent vomiting during the first seven months. A very easy spontaneous delivery was preceded by only twenty minutes of severe labor pains. Her physician explained that the cord had snapped before delivery. At 27 she gave birth to a nine months stillborn male fetus weighing 4½ pounds (2040 Gm) having gained only 12 pounds (130-142) during her pregnancy. This antepartum period was entirely without incident. The delivery was abnormal with five days of intermittent pains and about six hours of severe pains finally terminating in a forceps delivery. The same physician explained that the placenta had separated twelve hours before delivery. Have you any statistics as to the possibility of or the frequency of occurrence of breaking of the cord in utero? Is there any explanation for the small size of these fetuses and the lack of appreciable gain of weight in the mother? The caloric intake was quite sufficient in both pregnancies. The patient is anxious to have a live baby. What precautions or suggestions can you offer that would be of aid in satisfying this wish?

M D New York

ANSWER.—There are no statistics of the frequency of spontaneous rupture of the cord in utero, but there are a few cases on record and none of them explain the cause of the brittleness of the cord. Sometimes the cord will break in a rapid delivery if it happens to be caught round the shoulders and is short in the first place.

There are many causes for stillbirths, and the facts given in this case are not sufficient on which to make a diagnosis or even a surmise. It would be necessary to know whether there

is any latent syphilis in either parent, whether the mother has chronic nephritis or diabetes or other general disturbance that could exert an influence on the fetus and its envelops. Further, a study must be made of the various deficiency diseases of the mother, avitaminosis or other metabolic disturbances. Finally, endocrine dysfunction has to be considered and here, of course, there is no end to possible theorizing.

As for future pregnancy, every possible general disturbance should be ruled out and the patient should be given the usual roborant and tonic regimen under consultation with an internist.

DEATHS FROM CARBON MONOXIDE

To the Editor—As I shall in the near future testify in a compensation court with regard to a death claim in which it is suggestive that death was caused by carbon monoxide poisoning following several hours work in the front chamber of a locomotive with an acetylene torch I would be grateful to you if you can give information on the following points: 1 Have you any facts or information about a catastrophe that occurred in Belgium a few years ago in which many people in a small town died after inhaling some form of poisonous gas? The importance of this is that these people died although the gas was drifting in the open air. This was reported at the time in the American newspapers. 2 Could a man after inhaling a considerable quantity of carbon monoxide gas walk unaided about 150 feet to a water fountain and then die at that point of this gas poisoning? Would the walk tend to revive him even though it was taken in a large engine room (a round house) where of course the air was not very good for the purpose intended—to get more oxygen? 3 Would the fact that this occurred on a very hot day with a high humidity increase his susceptibility to this gas and therefore make poisoning more easily possible under the circumstances? 4 To be killed by carbon monoxide poisoning is it absolutely necessary that one become unconscious and then die or is it possible for such an interval (question 2) of consciousness to occur and then death follow very soon afterward? This is the important point. This death occurred one year ago and no autopsy was done hence the litigation. Kindly omit my name if printed in THE JOURNAL. M D Pennsylvania

ANSWER—1 There is no reliable evidence on record that any of the deaths associated with the fog in Belgium resulted from poisoning by any form of gas drifting in the open air. This subject was fully discussed by the Belgian correspondent of THE JOURNAL in the issues for May 28 and Aug 6 1932.

2 It would seem to be most highly doubtful, to say the least, that a person after inhaling a fatal amount of carbon monoxide could walk 150 feet just before dying from the effects of the monoxide. Any form of physical work in an atmosphere containing carbon monoxide will tend to increase the rate of absorption of the monoxide.

3 It is not at all clear how heat and humidity can increase "susceptibility" to carbon monoxide.

4 The rule is that unconsciousness comes on before death in poisoning from carbon monoxide. Cases described in miners especially, of sudden death in mine explosions might be interpreted as an exception to this rule.

NEUROSYPHILIS

To the Editor—A woman aged 29 was first seen by her physician in 1928 because of a soreness about the genitalia. The blood Wassermann reaction was four plus. She was then given two courses of neoarsphenamine and an unknown number of intramuscular injections over a period of two years. At the end of this time her blood remaining four plus she was pronounced Wassermann fast and discharged. About a year and a half later she developed pains in her shin bones. Roentgenograms showed no periostitis. The blood Wassermann reaction was four plus. The reaction of the spinal fluid was four plus. Wassermann two plus. Pandy and it contained 16 cells per cubic millimeter. The gum mastic test was not done. For eight months following this she received irregular neoarsphenamine and iodobismutol injections. In January 1933 she came under my care. She complained particularly of a marked tremor of both hands which she stated had been progressing for the past five years. Complete physical examination revealed nothing of note. During the past year and a half I have given her ten injections of neoarsphenamine 0.45 Gm. fifteen injections of tryparsamide 2 Gm. eight injections of silver arsphenamine 0.15 Gm. six intramuscular injections of mercuric succinimide and ten injections of iodobismutol. She has also had three courses of mercury rubs. Potassium iodide had to be discontinued as the patient tolerated it poorly. The results have not been encouraging. In April 1933 the Wassermann reaction was four plus. In November it was three plus. At this time the spinal fluid showed three plus and the gum mastic reading was 01100000. Sept 12 1934 her blood Wassermann reaction was two plus. Her tremor is as bad as ever. The patient had chorea in childhood. Does this play any part in the etiology of the tremor? I have considered paralysis agitans and multiple sclerosis but find no corroboration. What further treatment would you advise? Should malaria therapy be considered? If published please omit name. M D Ohio

ANSWER—The patient is young, she has had adequate antisyphilitic treatment and the Wassermann test remains fast. This is an ideal case for therapy with malaria. Six months and again a year later, serologic tests should be made.

The attack of chorea during childhood probably bears no relationship to the tremor now present. The tremor may be a manifestation of neurosyphilis or it may be unrelated. For symptomatic relief of the tremor, scopolamine may be tried, if this is effective, the result should be apparent within two or three days.

REMOVAL OF BECK'S PASTE FROM KIDNEY

To the Editor—Two months ago I operated on a man for a large stone in the first inch of the left ureter. All of the urine from the left kidney was discharged through a fistula in the wound for three weeks. I recommended to the patient the passage of a ureteral catheter to dislodge anything that might be preventing the urine escaping through the ureter. We procrastinated at the patient's request as he hated to submit to the procedure. Thinking that I might get the fistula to close, I injected Beck's bismuth paste into the fistula using about 6 drachms of the paste. I did not realize how small in caliber the fistula had become and did not think that that amount could possibly reach the pelvis of the kidney as the patient is a muscular man, weighing over 200 pounds but it did reach the kidney and calices with no stopping of the urine through the fistula. He then submitted to the catheter in the ureter with the result that the urine stopped coming through the fistula immediately and all of it now passes through the bladder. How can I get rid of that paste in the pelvis and calices of the kidney? Have you any suggestions? The patient is passing shreds of pus in the urine and has some inflammation of the urethra and trigon. If you have any suggestions to make anything that might dissolve that paste and avoid his having the kidney operated on it would surely be appreciated. Kindly omit name. M D Wisconsin.

ANSWER—If the amount of bismuth paste in the pelvis of the kidney is small one might try to dissolve it by injecting warm oil into the kidney pelvis through a ureteral catheter. A thin oil is to be preferred. Though one should not be unduly optimistic about the outcome of this procedure, it might be tried and controlled with repeated roentgen examinations. If this does not dissolve the oil and wash out the bismuth paste, it will be necessary to remove it through a pyelotomy incision.

PSORIASIS OF SCALP

To the Editor—I have a patient who has a severe case of psoriasis of the scalp. Treatment with an ointment containing ammoniated mercury 10 per cent and salicylic acid 3 per cent applied twice weekly followed by tar soap shampoos and stimulating tonics has been entirely unsuccessful. Can you recommend a better treatment? Please omit name. M D Michigan.

ANSWER—The treatment that is being used is not strong enough for psoriasis of the scalp. An ointment consisting of ammoniated mercury 12 Gm., wool fat 4 Gm. and sufficient petrolatum to make 30 Gm. is often efficacious. This should be rubbed into the individual patches every night. It may be left on for a day or two or it may be washed out every morning. The scalp should be washed twice a week, in any event. Any soap will do for this purpose. If this treatment fails, an ointment consisting of oil of cade 4 cc., salicylic acid 2 Gm. and ammoniated mercury 4 Gm. may be tried. A 3 per cent chrysarobin ointment is effective but is likely to discolor the hair.

TREATMENT OF ULCER ON HEEL

To the Editor—A man aged 57 fell and fractured his right leg about a year ago. Following the break, the leg was put up in traction and as a result of neglect a pressure ulcer developed on the right heel. This was nearly an inch in diameter and extended to the periosteum but has gradually healed in from the sides with callus until now it is only a small sinus tract. The periosteum is covered by a thin layer of granulation tissue but this fails to increase to any appreciable extent. Can you suggest any form of treatment to help fill this in from the bottom or any surgical procedure to alleviate the existing sinus. Please omit name and address. M D Mass.

ANSWER—The os calcis should be irradiated. If there is no bone involvement, moist saline dressings should be applied with the patient in bed and the leg slightly elevated for one or two weeks or until the granulations are healthy, then skin grafting should be done.

RADIUM APPLICATIONS TO TONSILS

To the Editor—What is the current opinion about the use of radium in removing tonsils? The technique used is as follows: Two platinum needles are implanted in each tonsil and each needle contains 10 mg. of radium. The four needles are allowed to remain in place for two weeks one half hours and then the treatment is repeated every three weeks for a total of three or four such treatments. Please discuss. Kindly omit name. M D Missouri.

ANSWER—The consensus seems to be that the use of radium needles in the tonsils is not very good practice. Some years ago, attempts at removing tonsils with x-rays proved fallacious,

and while there was atrophy of the lymphoid tissue caused by the radiation and considerable diminution in the size of the tonsils themselves, they were not removed by this method but were later, in many instances, the seat of infection.

The implantation of platinum needles containing radium salt would, of course, produce destruction of certain portions of the tonsils, but there would be no assurance that they would be completely removed by this method.

In the last analysis, the only dependable method for complete elimination of the tonsils is their surgical enucleation.

HISTAMINE IN ARTHRITIS

To the Editor—I understand that histamine causes in most species a marked fall of blood pressure. Is it safe to treat a case of rheumatoid arthritis with this drug if the patient a woman aged 55 has a pressure of 110 systolic and 80 diastolic? GOLDIE FINE M.D. Philadelphia

ANSWER—Histamine by mouth has little or no physiologic action. For this reason it is given by the subcutaneous or the intravenous route. When given intravenously it is highly toxic. One milligram (one sixty-sixth grain) may cause nausea and as a consequence of this a marked fall in blood pressure. Hypotension might be considered a contraindication. In rheumatoid arthritis the joints involved are usually cold on account of vascular constriction. The use of various forms of heat to the joints will produce local vasodilatation without attendant danger.

VALUE OF ELECTROCARDIOGRAPHY

To the Editor—What if any serious cardiac diseases could exist without presenting any electrocardiographic evidence? Please omit name and address. M.D. New York

ANSWER—The electrocardiogram is of value in recording the various cardiac arrhythmias and myocardial damage involving the conduction system. Evidence is sometimes secured regarding disproportionate hypertrophy of the auricles or ventricles.

There are many anatomic lesions in which no electrocardiographic evidence can be obtained. For example, rheumatic valvular lesions without ventricular hypertrophy or myocardial damage, syphilitic aortitis, and early cases of hypertension. Coronary sclerosis with angina pectoris may present a normal electrocardiogram before thrombosis and myocardial infarction have occurred. There are probably some cases of coronary thrombosis of the smaller branches that show no electrocardiographic deformity.

TREATMENT OF BURNS

To the Editor—A man aged 72 was burned over a year ago and came under my care two months ago. I have tried all the usual treatments for burns but when I have it almost healed it breaks down. The burn covers nearly all the extensor surface of the thigh. If you have any suggestions I would appreciate them greatly. Kindly omit name. M.D. Pennsylvania

ANSWER—Large wounds of the type described are best treated by skin grafting. The field should be properly prepared for the reception of grafts and because the wound has frequently broken down it is probable that this would include excision of the superficial scar tissue after the granulating surface itself had been rendered clean and healthy. The most satisfactory type of grafts for the rapid covering over of these areas with skin are the small deep grafts or the Ollier-Thiersch grafts. The success of these procedures depends on experience in the grafting of skin and strict attention to technical details.

PREPARATION OF SCARLET FEVER TOXIN

To the Editor—Have you any information as to how the Dick extract the toxins from streptococci? As I understand it there is a patent involved somehow but if the method of extracting endotoxins is known I would appreciate the information. I am working on the problem of a possible toxoid in the case of appendicitis and other infections as a preventive and for active therapeutic treatment. I have certain information of definite value but I am interested in the Dick method for the moment. W. A. HUTTON M.D. Melrose Mass

ANSWER—Scarlet fever toxin is a soluble toxin not an endotoxin. It is obtained by growing hemolytic streptococci specific to scarlet fever in a suitable medium. The preparation is rendered sterile so that it is available for use in human beings by killing the bacteria in the solution or removing them by filtration through porcelain filters of appropriate density. The resulting solution containing the toxin is then standardized by comparison with a standard toxin by means of skin tests.

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *Written (Group B candidates)* The examination will be held in various cities throughout the country April 29 *Oral (Group A and Group B candidates)* New York June 10 Sec. Dr C Guy Lane 416 Marlborough St Boston

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written (Group B candidates)* The examination will be held in various cities of the United States and Canada March 23 *Final oral and clinical examination (Group A and Group B candidates)* Atlantic City N J June 10 11 Sec. Dr Paul Titus 1015 Highland Bldg Pittsburgh

AMERICAN BOARD OF OPHTHALMOLOGY Philadelphia June 8 and New York June 10 *Application must be filed at least sixty days prior to date of examination* Sec. Dr William H Wilder 122 S Michigan Blvd Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY New York June 8 Sec. Dr W P Wherry 1500 Medical Arts Bldg Omaha

AMERICAN BOARD OF PEDIATRICS Atlantic City N J June 10 and St Louis Nov 19 Sec. Dr C A Aldrich 723 Elm St Winnetka Ill **ARIZONA** *Basic Science* Tucson March 19 Sec. Dr Robert L Nugent Science Hall University of Arizona Tucson *Medical* Phoenix April 23 Sec. Dr J H Patterson 826 Security Bldg Phoenix

CALIFORNIA *Reciprocity* Los Angeles March 13 Sec. Dr Charles B Pinkham 420 State Office Building Sacramento

COLORADO Denver April 3 Sec. Dr Wm Whitridge Williams 422 State Office Bldg Denver

CONNECTICUT *Regular* Hartford March 12 13 *Endorsement* Hartford March 26 Sec. Dr Thomas P Murdock 147 W Main St Meriden *Homoeopathic* March 12 Sec. Dr J H Evans 1488 Chapel St New Haven

IDAHO Boise April 2 *Commissioner of Law Enforcement* Hon Emmitt Pfost 203 State House Boise

ILLINOIS Chicago April 9 11 *Superintendent of Registration* Department of Registration and Education Mr Eugene R Schwartz Springfield

MAINE Portland March 12 13 Sec. Board of Registration of Medicine Dr Adam P Leighton Jr 192 State St Portland

MASSACHUSETTS Boston, March 12 14 Sec. Board of Registration in Medicine Dr Stephen Rushmore 144 State House, Boston

MINNESOTA *Basic Science* Minneapolis April 23 Sec. Dr J Charnley McKinley 126 Millard Hall University of Minnesota, Minneapolis *Medical* Minneapolis April 16 18 Sec. Dr E J Engberg 350 St Peter St St Paul

MONTANA Helena April 2 Sec. Dr S A Cooney 7 W 6th Ave Helena

NATIONAL BOARD OF MEDICAL EXAMINERS The examination will be held in all centers where there are Class A medical schools and five or more candidates desiring to take the examination June 24-26 Ex. Sec. Mr Everett S Elwood 225 S 15th St Philadelphia

NEW HAMPSHIRE Concord March 14 15 Sec. Board of Registration in Medicine Dr Charles Duncan State House Concord

NEW MEXICO Santa Fe April 8 9 Sec. Dr P G Cornish Jr 221 W Central Ave Albuquerque

OKLAHOMA Oklahoma City March 12 13 Sec. Dr J M Byrum Mammoth Bldg Shawnee

RHODE ISLAND Providence April 4 5 Dir. Public Health Commission Dr Lester A Round 319 State Office Bldg Providence

WEST VIRGINIA Charleston March 18 State Health Commissioner Dr Arthur E McClue Charleston

WISCONSIN *Basic Science* Madison March 16 Sec. Prof Robert N Bauer 3414 W Wisconsin Ave Milwaukee

New York June Examination

Mr Herbert J Hamilton, chief, Professional Examinations Bureau reports the written examination held by the New York State Board of Medical Examiners in Albany, Buffalo, New York and Syracuse, June 25-28, 1934. The examination covered 9 subjects. Six hundred and thirty-one candidates were examined, 493 of whom passed and 138 failed. The following schools were represented:

School	PASSED	Year Grad	Number Passed
Stanford University School of Medicine	(1931)		1
University of Colorado School of Medicine	(1933 2)		2
Yale University School of Medicine	(1930 2)		2
George Washington Univ. School of Med	(1933 2) (1934 3)		5
Georgetown Univ. School of Med	(1931) (1933 3) (1934 2)		6
Emory University School of Medicine	(1933)		1
Loyola University School of Medicine	(1933 2) (1934)		3
Northwestern University Medical School	(1934 2)		2
Rush Medical College	(1933) (1934 3)		4
University of Illinois College of Medicine	(1932) (1934)		2
University of Louisville School of Medicine	(1932) (1934 2)		3
Tulane University of Louisiana School of Medicine	(1931) (1932) (1934)		3
Johns Hopkins Univ. School of Med	(1929) (1930) (1932)		3
University of Maryland School of Medicine and College of Physicians and Surgeons	(1933) (1934 9)		10
Boston University School of Medicine	(1934)		1
Harvard University Medical School	(1932) (1934 3)		4
Tufts College Medical School	(1934)		1
Univ. of Michigan Medical School	(1932) (1933) (1934 3)		5
University of Minnesota Medical School	(1933 2)		2
St. Louis University School of Medicine	(1933) (1934 9)		10
Washington University School of Medicine	(1932) (1934)		2
Creighton University School of Medicine	(1934)		1
Albany Medical College	(1934 14)		14
Columbia University College of Physicians and Surgeons	(1931) (1932) (1933 3) (1934 55)		60

Cornell University Medical College (1911) (1932 2), (1933 2) (1934 14)	19	Regia Università degli Studi di Roma Facoltà di Medicina e Chirurgia (1932)	1
Long Island College of Medicine (1933 3) (1934 67)	70	Regia Università di Napoli Facoltà di Medicina e Chirurgia (1925)* (1927) (1937)*	3
New York Homeopathic Medical College and Flower Hospital (1934 40)	40	Unversytet Jana Kazimierza Wydział Lekarski Lwow Poland (1926)*	1
New York University University and Bellevue Hospital Medical College (1933 5) (1934 71)	76	Saratov Medical Institute Russia (1922)	1
Syracuse University College of Medicine (1933) (1934 39)	40	University of Edinburgh Faculty of Medicine (1932)	1
University of Buffalo School of Medicine (1933) (1934 35)	36	University of St Andrews Scotland (1934)*	1
Univ of Rochester School of Medicine (1933 3) (1934 9)	12	Université de Geneve Faculte de Medecine (1933 2)	2
Hahnemann Medical College and Hosp of Philadelphia (1933)	1	Osteopaths	16
Jefferson Medical College of Philadelphia (1933) (1934 2)	3	Three hundred and two candidates were licensed by endorsement from June 1 to December 31 The following schools were represented	
Temple University School of Medicine (1932)	1	School	LICENSED BY ENDORSEMENT
Univ of Pennsylvania School of Medicine (1933) (1934 3)	4	College of Medical Evangelists (1930)	(1934) \ B M Ex
Woman's Medical College of Pennsylvania (1933)	1	Cooper Medical College, California (1891)	France
Medical College of the State of South Carolina (1931)	1	University of Colorado School of Medicine (1929)	California
Vanderbilt University School of Medicine (1933)	1	Yale University School of Medicine (1910)	(1932) \ B M Ex
University of Manitoba Faculty of Medicine (1925)	1	Georgetown University School of Medicine (1930)	(1932) New Jersey
Dalhousie University Faculty of Medicine (1933)	1	(1932) N B M Ex (1933 6) (1934 6)	Maryland
Queen's Univ Faculty of Med (1930 2) (1932 2) (1934 2)	6	Howard University College of Medicine (1932)	Tennessee
University of Western Ontario Medical School (1934 2)	2	Fmory University School of Medicine (1931)	(1933) \ B M Ex
McGill University Faculty of Medicine (1931) (1932)	6	Loyola University School of Medicine (1932)	(1928) Michigan
Medizinische Fakultät der Universität Wien (1929)* (1934)*	2	(1932) (1934) New Jersey (1934) N B M Ex	
Licentiate of the Royal College of Physicians of London and Member of the Royal College of Surgeons of England (1934 3)*	3	Northwestern University Medical School (1932)	(1933) \ B M Ex
University of London Faculty of Medicine (1932)	1	Rush Medical College (1915)	(1925) Illinois
Ludwig Maximilians Universität Medizinische Fakultät München (1932)*	1	(1932) N B M Ex	
Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultása Budapest (1932)*	1	Indiana Medical College School of Medicine of Purdue University (1906)	Indiana
Regia Università degli Studi di Roma Facoltà di Medicina e Chirurgia (1933)	1	Indiana University School of Medicine (1922)	(1925) California
Regia Università di Napoli Facoltà di Medicina e Chirurgia (1911)	1	(1922) (1928) (1932) (1933 3) Indiana	
Licentiate of the Royal College of Physicians and of the Royal College of Surgeons Edinburgh (1934)	1	State University of Iowa College of Medicine (1911)	(1918)
Licentiate of the Royal College of Physicians and of the Royal College of Surgeons Edinburgh and of the Royal Faculty of Physicians and Surgeons Glasgow (1931) (1933) (1934)*	3	(1928) (1929) (1930) (1932 2) Iowa	
University of Glasgow Medical Faculty (1934 2)*	2	University of Louisville School of Medicine (1928)	Minnesota
University of St Andrews Scotland (1933 2) (1934)	3	Tulane University of Louisiana Medical Department (1906)	Louisiana
Universität Bern Medizinische Fakultät (1931)	1	Tulane Univ of Louisiana School of Med (1915)	(1926)
Beogradskog Univerziteta Medicinski Fakultet Jugoslavija (1930)*	4	(1933) Indiana	
Osteopaths	1	Baltimore Medical College (1901)	Mass
School	FAILED	Johns Hopkins University School of Medicine (1927)	Kentucky
University of Arkansas School of Medicine (1932)	1	(1927) Connecticut (1924) (1931) 1933 2) N B M Ex	
George Washington University School of Medicine (1914)	1	(1917) (1918) (1927 2) (1928, 2) (1929)	(1930)
University of Georgia Medical Department (1930)	2	(1931) (1933) (1934) Maryland	
Loyola University School of Medicine (1933 2) (1934)	3	University of Maryland School of Medicine and College of Physicians and Surgeons (1913 2) \ N B M Ex (1931 2) (1932) (1933)	(1929) New Jersey
Rush Medical College (1930) (1934 2)	3	(1933 2) \ N B M Ex (1931 2) (1932) (1933)	(1934 2) Maryland
University of Illinois College of Medicine (1911) (1933)	2	Boston University School of Medicine (1931) \ N B M Ex	(1903) Mass
University of Louisville School of Medicine (1932)	2	Harvard University Medical School (1913) \ N B M Ex	
Tulane University of Louisiana School of Medicine (1928)	1	(1890) (1929) Massachusetts (1930) New Jersey (1922)	California
Boston University School of Medicine (1931)	1	(1926) (1928 3) (1929) (1930) (1931 3) (1932 4) \ N B M Ex	(1906) (1922)
Tufts College Medical School (1933)	1	Tufts College Medical School (1905)	Maine
St. Louis University School of Medicine (1910)	1	Massachusetts (1931) (1932) N B M Ex	
Washington University School of Medicine (1932)	2	University of Michigan Medical School (1911 2) (1932) N B M Ex	(1931) Maryland
Albany Medical College (1934 2)	2	University of Minnesota Medical School (1911 2) (1932) N B M Ex	(1934) \ B M Ex
Columbia University College of Physicians and Surgeons (1932) (1933) (1934 7)	9	St Louis University School of Medicine (1931 2) N B M Ex (1933) New Jersey (1934 2) Tennessee	(1930) Iowa
Cornell University Medical College (1933) (1934)	2	Washington University School of Medicine (1931 2) N B M Ex (1933) New Jersey (1934 2) Tennessee	(1918) Minnesota
Long Island College of Medicine (1933) (1934 6)	7	Creighton University School of Medicine (1933)	Iowa
New York Homeopathic Medical College and Flower Hospital (1934 13)	13	Albany Medical College (1932)	Maryland
New York University University and Bellevue Hospital Medical College (1931) (1934)	2	Columbia Univ College of Physicians and Surgeons (1930)	
Syracuse University College of Medicine (1934 6)	6	(1932 4), (1933) N B M Ex	
University of Buffalo School of Medicine (1934 9)	9	Cornell University Medical College (1933 2) \ N B M Ex	(1933 2) \ N B M Ex
University of Rochester School of Medicine (1932) (1934 2)	3	New York Homeopathic Medical College and Flower Hospital (1932) California (1932 2) (1933) \ N B M Ex	(1933) \ N B M Ex
Hahnemann Med College and Hospital of Philadelphia (1932)	1	New York University University and Bellevue Hospital Medical College (1932)	(1933 2) \ N B M Ex
Jefferson Medical College of Philadelphia (1931 2) (1934)	3	Syracuse University College of Medicine (1932 2) (1933 2) \ N B M Ex	(1932) \ N B M Ex
Temple University School of Medicine (1933)	1	University of Buffalo School of Medicine (1932 2) (1933 2) \ N B M Ex	(1930) Maryland
University of Pennsylvania School of Medicine (1933)	1	University of Rochester School of Medicine (1931) N B M Ex	
Woman's Medical College of Pennsylvania (1933)	1	Duke University School of Medicine (1932) \ N B M Ex	(1932) \ N B M Ex
Dalhousie University Faculty of Medicine (1928)	1	Medical College of Ohio (1890)	Diploma
Queen's University Faculty of Medicine (1929) (1934)	2	Ohio State University College of Medicine (1929)	Ohio
University of Toronto Faculty of Medicine (1928) (1931)	2	Starling Medical College Ohio (1898)	Penna.
McGill University Faculty of Medicine (1931)	1	University of Cincinnati College of Medicine (1932)	(1913) Ohio
Medizinische Fakultät der Universität Wien (1926) (1932 2)* (1933)* (1934)*	5	Western Reserve University School of Medicine (1928) \ N B M Ex	(1928) \ N B M Ex
Univerzita Komenského Fakulta Lekárska Bratislava Czechoslovakia (1929)	1	University of Oklahoma School of Medicine (1928)	Oklahoma
Université de Paris Faculte de Medecine (1930) (1932)*	2	Hahnemann Med College and Hosp of Philadelphia (1917) Virginia (1931) (1932) New Jersey (1933)	(1909) Penna
Albert Ludwigs Universität Medizinische Fakultät Freiburg (1930)	1	Jefferson Medical College of Philadelphia (1931) N B M Ex (1932) N B M Ex	(1934) Maryland
Friedrich Alexanders Universität Medizinische Fakultät Erlangen (1930)	1	University of Pennsylvania School of Medicine (1931) N B M Ex	(1914) Mass.
Friedrich Wilhelms Universität Medizinische Fakultät Berlin (1930)* (1931 2)* (1933)*	4	University of Pennsylvania School of Medicine (1932) \ N B M Ex	(1932) \ N B M Ex
Hamburgische Universität Medizinische Fakultät Julius Maximilians-Universität Medizinische Fakultät Würzburg (1932)*	1	Woman's Medical College of Pennsylvania (1918)	(1918) Penna
Schlesische Friedrich Wilhelms Universität Medizinische Fakultät Breslau (1934)*	1	Medical College of the State of South Carolina (1928)	(1928) S Carolina
Universität Greifswald Medizinische Fakultät Universität Heidelberg Medizinische Fakultät Universität Köln Medizinische Fakultät Universität Leipzig Medizinische Fakultät	1	(1930) New Jersey	
National University of Athens School of Medicine (1922)	1	Meharry Medical College (1932)	Tennessee
Regia Università degli Studi di Bologna Facoltà di Medicina e Chirurgia (1911)*	1	University of Tennessee College of Medicine (1929) (1931) (1932) (1933) Tennessee	(1930)
Regia Università degli Studi di Firenze Facoltà di Medicina e Chirurgia (1928)	1	Vanderbilt University School of Medicine (1929)	(1930) Tennessee
Regia Università degli Studi di Genova Facoltà di Medicina e Chirurgia (1930)	1	Baylor University College of Medicine (1931 2) (1932 2)	(1932) Texas
Regia Università degli Studi di Padova Facoltà di Medicina e Chirurgia (1932)	1	University of Vermont College of Medicine (1921) Vermont (1931) (1932) \ N B M Ex	(1913) Connecticut
Regia Università degli Studi di Palermo Facoltà di Medicina e Chirurgia (1932)	1	Medical College of Virginia (1932) (1933) Virginia	(1932) New Jersey
		University of Virginia Department of Medicine (1932) \ N B M Ex	(1932) \ N B M Ex
		Marquette University School of Medicine (1932 2) Wisconsin	(1932 2) Wisconsin
		University of Wisconsin Medical School (1928)	(1931) Wisconsin
		Wisconsin College of Physicians and Surgeons (1904)	(1904) Wisconsin
		University of Manitoba Faculty of Medicine (1931) \ N B M Ex	(1931) \ N B M Ex
		Queen's Univ Faculty of Medicine (1921) (1922)	(1928) Ontario
		University of Toronto Faculty of Medicine (1923)	(1929) Ontario
		(1929) Michigan (1932) N B M Ex	
		McGill University Faculty of Medicine (1930) (1933) California	(1924) Ontario
		Medizinische Fakultät der Universität Wien (1924)* (1926 2)* Austria	(1901)* California

- Universität de Strasbourg Faculté de Médecine (1918)* Germany
 Albert Ludwigs Universität Medizinische Fakultät (1914),* (1923)* Germany
 Freiburg
 Friedrich Alexanders Universität Medizinische Fakultät (1914)* Germany
 Erlangen
 Friedrich Wilhelms Universität Medizinische Fakultät (1914)* Germany
 Berlin (1911) Illinois* (1926) Albert* (1893)* (1914)*
 (1915) (1919) (1920)* (1922 5)* (1923 2)*
 (1924 4)* (1925 2)* (1926 2)* (1927 2)* (1928) Germany
 Georg August Universität Medizinische Fakultät Göttingen (1924)* (1925)* Germany
 Hamburgische Universität Medizinische Fakultät (1923)*
 (1925) (1926) Germany
 Hessische Ludwigs Universität Medizinische Fakultät Giessen (1903)* (1921)* (1930)* Germany
 Johann Wolfgang Goethe Universität Medizinische Fakultät Frankfurt am Main (1924) (1928)* Germany
 Julius Maximilians Universität Medizinische Fakultät Würzburg (1890)* (1901)* (1922), (1923, 2)*, (1926) (1927)* Germany
 Ludwig Maximilians Universität Medizinische Fakultät München (1915)* (1919 2)* (1922)* (1925)* Germany
 Philipps Universität Medizinische Fakultät Marburg (1928)* Germany
 Rheinische Friedrich Wilhelms Universität Medizinische Fakultät Bonn (1919) (1922)* Germany
 Schlesische Friedrich Wilhelms Universität Medizinische Fakultät Breslau (1921), (1925)* (1926 2) Germany
 Thüringische Landesuniversität Medizinische Fakultät, Jena (1922)* Germany
 Universität Heidelberg Medizinische Fakultät (1920)*
 (1922) (1923 2)* (1927)* (1928)* Germany
 Universität Köln Medizinische Fakultät (1920)* (1924 2)* Germany
 National University of Athens School of Medicine (1911) Alabama
 (1913) Illinois
 Magyar Királyi Ferencz József Tudományegyetem Orvostudományi Kara Hungary (1911)* Illinois
 Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultása Budapest (1911)* (1923)* Hungary
 Regia Università degli Studi di Roma Facoltà di Medicina e Chirurgia (1932) New Jersey
 Regia Università di Napoli Facoltà di Medicina e Chirurgia (1915) Illinois
 (1917) (1920) Italy (1923) Texas (1932) New Jersey
 American University of Beirut School of Medicine (1933)* A B M Ex
 Osteopatha New Jersey 6

*Verification of graduation in process

Book Notices

American Medicine By Dr Henry E Sigerist the William H Welch Professor of the History of Medicine The Johns Hopkins University. Translated by Hildegard Nagel Cloth Price \$4 Pp 316 with 30 Illustrations New York W W Norton & Company Inc 1934

This volume, published originally in German, is now made available in an English translation. It begins with an introduction which explains that the volume results from a lecture tour by the author through the United States. Dr Sigerist is familiar with the history of medicine in this country and since 1932 has been professor of the history of medicine in Johns Hopkins University. He writes well and is concerned always with the giving of a complete picture rather than with the development of a reference work. He traces the growth of medicine in the United States from the opening up of the soil and colonial period through the development of the great industries. Then he discusses in brief biographies the pioneers who contributed notably to American medicine, concluding this section with the story of the rise of Sir William Osler. In his picture of medical education he emphasizes the significance of the development of Johns Hopkins University School of Medicine, giving most of the credit for the modern reform to Abraham Flexner and failing to appreciate, as do many others, the highly significant work of the Council on Medical Education and Hospitals. While the publicity associated with the investigations by Flexner may have been largely responsible for directing public attention to the situation it was chiefly the work of the Council and the publicity given to the matter in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* that brought about the reform.

Dr Sigerist provides a most adequate outline of the whole procedure of examination and licensure. He discusses the relationship of physician to patient, describing the development of group practice and of the Mayo Clinic and urging health insurance as a rational solution of the problem of medical care for the multitude. He feels also that it would be wise to extend such systems to all the people rather than only to those in the lower income levels. He recognizes the responsibility that rests on the American Medical Association for the development of plans in the future and in this connection gives a brief outline of the development of the Association and of its headquarters office.

There are also brief discussions of the development of osteopathy and chiropractic as well as other one track systems of healing, including Christian science. The volume concludes with discussions of the hospitals and of preventive medicine, culminating with a consideration of American contributions to medical science and with a final tribute to Dr William H Welch. Dr Sigerist indicates that he proposes next to make a similar survey of medicine in Russia because the developments in Russia and in the United States he considers most significant for the practice of medicine in the future.

It is exceedingly interesting to have this point of view of the picture of American medicine. It is a point of view definitely biased by too limited contacts with strong minded people principally in the region of Baltimore and New York. The author apparently has been willing in many instances to accept, as authoritative statements founded more on prejudice than on fact. One might expect this of an occasional philosopher but it is not in accord with the methods of science or of sound history. One fears that the investigations of Dr Sigerist have been too superficial to warrant many of the conclusions which he rather lightly draws from his studies.

La tromboangitis obliterante. Por el Doctor Julio Diez jefe de servicio de cirugía del Hospital Alvear. Paper Pp 538 with 133 illustrations. Buenos Aires El Ateneo 1934

This monograph on thrombo-angitis obliterans presents a fairly complete review of this interesting disease. It is divided into four sections: (1) general conceptions of vascular pathology, (2) anatomic and clinical study of thrombo-angitis obliterans, (3) sympathetic ganglionectomy—its history, the basic principles underlying it, and its application to the treatment of thrombo-angitis obliterans, (4) other surgical methods of treating thrombo-angitis obliterans. There is an appendix containing brief clinical histories of 138 patients on whom ganglionectomy had been performed. Since some were operated on two or three times, there were 150 observations. The illustrations add greatly to the clarity of the work.

While much of the material is a review of the extensive literature, some original observations on pathology and the physiologic effects of vasomotor paralysis are presented. In 300 personal observations Diez has never seen an instance of thrombo-angitis obliterans in a nonsmoker or in a woman. He is of the opinion that the initial lesion is a stenosing arteriolitis and that this is the same lesion which exists in Raynaud's disease. Diez believes that Raynaud's disease in the female is equivalent to thrombo-angitis obliterans in the male and that the essential difference lies in the fact that Raynaud's disease does not progress and that thrombo-angitis obliterans does.

A large section of the monograph is devoted to a discussion of the value of ganglionectomy in the treatment of thrombo-angitis obliterans. Since Diez was the first to perform ganglionectomy in the treatment of this disease and has consistently advocated this procedure for the last ten years, the record of his experience and his conclusions as to its value are of interest. He is enthusiastic about the good results and feels that it is the method of choice. The freedom from recurrence after ganglionectomy in ninety-two patients (only forty-two of whom have been observed more than two years) is stressed as evidence of the value of this operation. The statement is made that when all patients have a ganglionectomy performed early in the disease, mutilating amputations will no longer be necessary. Yet the author admits that even in ganglionectomized patients the continued use of tobacco results in relapses and amputations. It is difficult to reconcile these two statements. As a matter of fact, one American surgeon has observed 266 patients who have had no ganglionectomy and who have continued in excellent condition free from relapse from two to ten years, merely by avoiding the use of tobacco. Diez states that he is not in accord with surgeons who delay ganglionectomy when vasomotor tests show no elevation of temperature. He recommends the operation in all cases of thrombo-angitis obliterans, both early and late, except in the hyperacute forms. He is convinced that prophylactic ganglionectomy is justifiable. He states that the operation results in immediate and complete relief of pain in all cases, marked improvement in the healing of ulcers and gradual improvement in the intermittent claudication. Until January 1933 he performed the operation by the abdominal route with general or spinal anesthesia. He is convinced that several of the deaths in the early cases were due

to this technic, and he now employs local anesthesia and operates by the lumbar route. Seven immediate operative deaths and five later deaths occurred in the 119 cases of his first series. In the last twenty-one cases in which local anesthesia was used there were no deaths. Diez reports that the operation was unsuccessful in 21.86 per cent of cases, which is almost exactly the percentage of failures reported in 1934 by Brown of the Mayo Clinic.

Diez's enthusiasm for ganglionectomy as the choice of treatment in all patients with thrombo angitis obliterans is not reflected in this country, where the tendency has been to limit its use to particularly favorable cases. His valuable report will stimulate further interest in the operation and will aid in establishing the correct indications for its use.

The Vitamin B Requirement of Man By George R. Cowgill Ph.D. Associate Professor of Physiological Chemistry in Yale University. Published for the Institute of Human Relations. Cloth. Price \$4. Pp. 261 with 16 illustrations. New Haven: Yale University Press, 1934.

This monograph presents results of research designed to determine indirectly the human requirement for vitamin B. The author reasoned that, if some common relationship should be found to hold for quantitative data derived from several animal species, there would be some justification for believing that the same relationship holds for human beings. Therefore measurements were made of the amounts of a given vitamin B concentrate required by different sized mice, rats, pigeons and dogs. From the several groups of data thus obtained, a mathematical relationship common to all was discovered. The derived formula suggests that body weight, total metabolism or calories and the maximum normal weight of the species are the three important variables determining vitamin B requirement. Experiments with pigeons and dogs confirmed the formula.

From the animal data a formula applicable to man was derived. This was tested by study of the vitamin B content of numerous human dietaries (a) that were known to have been used by persons who developed beriberi, and (b) that were not associated with the appearance of this disease. The amounts of vitamin estimated in the various diets were compared with requirements of the individuals subsisting on them in order to determine their adequacy as predicted by the formula. The results of such study were also compared with the incidence of beriberi in the groups studied. An excellent agreement was obtained between predictions based on the formula and facts of the presence or absence of beriberi. Clinical implications of this research explain the presence of beriberi in various localities about the world and indicate possible shortage of vitamin B in North America and other countries where manifest beriberi is rare.

The material of this monograph will serve as a basis for future research of beriberi and of vitamin B needs of human beings for optimal nutrition. This excellent reference work will be especially useful to vitamin investigators and those concerned with public health. A few of the chapters are named to indicate the character of the subjects covered: general discussion of beriberi, animal experiments—general methods, tests with the pigeon, the dog, the white rat and the mouse, the amount of vitamin B present in different foods, the vitamin B content of diets not associated with beriberi and vitamin B in relation to other clinical conditions. A comprehensive bibliography is included.

Proceedings of the National Conference of Social Work [Formerly National Conference of Charities and Correction] at the Sixty First Annual Session Held in Kansas City, Missouri, May 20-26, 1934. Permanent Headquarters: 82 North High Street, Columbus, Ohio. Published for the National Conference of Social Work. Cloth. Price \$3. Pp. 621 with illustrations. Chicago: University of Chicago Press, 1934.

Compared with volumes reporting the proceedings of previous years, the most striking contrast is the change from discussions of technic to programs of social reform. Social insurance is a frequent subject and health insurance is urged by numerous speakers. John A. Kingsbury, I. M. Rubinow and Kendall Emerson, M.D., present extended arguments in favor, while many others urge such insurance incidentally to general relief programs. The papers presented cover practically all phases of activity of social workers and constitute the latest and most authoritative presentation of their attitude on current problems.

Les lavages de plèvre. Leur emploi dans le traitement des épanchements pleuraux tuberculeux. Par le Dr. Pierre Weiller, médecin assistant au centre de triage antituberculeux de l'Hôpital Beaujon. Préface de Michel Léon Kindberg, médecin des hôpitaux de Paris. Paper. Price 76 francs. Pp. 131 with 23 illustrations. Paris: Masson & Cie, 1934.

Many a successful artificial pneumothorax has come to grief with the development of an empyema. This phrase is not simply a form with which to impress and remind the student of one of the common complications of artificial pneumothorax but sad to say, a truism. Many methods of combating this complication have been developed and described, none of them always successful. Lavage of the pleura is one of these methods and when well carried out is effective in a fair percentage of cases. The technic is simple. Pierre Weiller, who with F. L. de Murel has had a long experience with collapse treatment for pulmonary tuberculosis, describes in detail his methods of pleural lavage. In this monograph the indications for treatment and technic and the possible incidents during the treatment are well outlined. The average American physician will be able to find most of the important points regarding lavage theory in general in more readily available English works. For the phthisisist, however, and especially for one who likes to trace things to their source, this short, well written, concise monograph will be of great interest.

American Encyclopedia of Sex By Adolph F. Nemoeller, B.S., A.B., M.A. Special Adviser on Sexual Anthropology to the American Anthropological Society. Including a Dictionary of Sexology and Erotology, a Vocabulary of Sex Slang and Americanisms, a Miscellany of Erotic Curiosities, a Lexicon of Medico-Sex Legal Expressions, a Reference Library of Scientific Sex Works, a Collection of Erotic Essays and Articles, a Glossary of Foreign Sex Terms, a Manual of Noted Names in Protology, an Frotteion of Amatory Practices in America, a Compilation of Sexual Allusions in History and Literature. Cloth. Price \$5. Pp. 277. New York: The Panurge Press, 1935.

This is another of the sex books planned primarily to sell to those whose interest in sexual matters is above the average. The volume contains a considerable number of words in the sex field but fails to include most of the slang terms commonly used for the sex organs, the sex activities and the sex perversions. It is, however, sufficiently up to date to include a good definition of a fan dance. It fails also in the definition of such words as are particularly common among the Negroes in the United States in their discussions of sexual topics.

Five Hundred Delinquent Women By Sheldon and Eleanor T. Glueck with an Introduction by Roscoe Pound. Cloth. Price \$5. Pp. 539. New York: Alfred A. Knopf, 1934.

This book continues the series of researches made by these authors concerning delinquency in its various aspects. Previously they have studied male reformatory graduates and juvenile delinquents. The present book treats of female offenders, and the same technic is used that proved so successful before. Before the Gluecks made these reports there was no real knowledge extant to give one an idea of the efficiency of penal institutions. The number of crimes committed by recidivists was fairly good evidence that something was wrong but intense study and analysis of the situation were necessary before the success or failure of present methods could be fairly seen. In the present book five hundred women are studied. A vast amount of material covering the inmates' backgrounds before commitment to the institution, her institutional record and her behavior after discharge has been analyzed. Since the information is gained from only one institution (the Massachusetts Reformatory for Women), the conclusions drawn are possibly somewhat fallacious, for the Massachusetts reformatory where the study was made seems to obtain better results than many in other states. So much information is packed into this volume that it is almost impossible to give an adequate idea of the conclusions drawn. For example, there are almost 150 pages of tabulated results without discussions, which gives some idea of the work presented. This tabulation and a discussion of methods used and a list of definitions occupies about the last third of the book, and, although this part contains supposedly only the appendices, it would be read with profit before one studies the body of the book. The first third of the book proper would be the most interesting part to the chance reader. It describes the family background of the subject, a presentation of the reformatory picture, and contains two chapters entitled "A Gallery of Women" which give a graphic description of the lives led by and reactions of some

of the cases studied. The middle of the book is largely an analysis of the statistical material given in the appendix, which reveals that real success, as measured by complete social adjustment, is not to be expected of graduates of the Massachusetts reformatory. However, in the chapter of "Conclusion and Recommendations" the authors point out that improvement of ex-prisoners is likely to continue after their parole period. It is pointed out too that the conduct of these women was usually best during parole. This chapter contains many suggestions likely to shock any snugg socially satisfied citizen who reads it. There remains much room for improvement even in the study of the crime situation as well as in the treatment of criminals themselves. The work that the Gluecks are doing should present to many psychiatrists and other criminologists some concrete arguments calculated to arouse the public into giving them more help in dealing with crime.

L'année pédiatrique Première année (publiée en 1934) Par Robert Broca et Julien Marie. Préface du Professeur Robert Debre. Paper. Price 7.50 francs. Pp 167 with 46 illustrations. Paris: Masson & Cie 1934.

This small volume is comparable to some American year-books in medicine. It is free, however, from bibliographic references and is apparently written as a practical review of the recent advances in pediatric subjects not well understood by the average physician in the general practice of medicine. Each subject is treated in a concise textbook manner, with a brief general description of the disease, onset and course, symptomatology, diagnosis, prognosis and treatment. Apparently the authors intend to publish a similar book each year giving recent advances and useful facts on disease not generally known to those in general practice. Among some of the interesting subjects covered are acrodynia, erythema nodosum, Still's disease, meningococcemia, ethmoiditis, lipid nephrosis, acute epiphysitis, Meckel's diverticulum, modern prophylactic measures in measles, pyelitis, vitamin therapy and Hodgkin's disease. The subjects selected appear to be those in which the authors have had some experience. The thoughts expressed and treatment advised are not unlike those seen in recent revisions of American textbooks. The book is recommended to those interested in obtaining current views on some important pediatric subjects written in a concise and practical textbook manner. American yearbooks in pediatrics, however, offer the general practitioner a greater variety of subjects as well as a more effective treatment of them.

The Medical Record Visiting List or Physicians' Diary for 1935 Revised edition. Fabrikoid. Price 30 patients per week \$1.75. 60 patients per week \$2.00. 90 patients per week \$2.50. Pp 27 plus memoranda. Baltimore: William Wood & Company 1934.

This book has been available to the medical profession for many years in this form. It fills a well established need providing information concerning dosages, antidotes and artificial respiration, and made up in sizes for the recording of data concerning thirty, sixty and ninety patients. It is compact and well bound and includes a good pencil.

Useful Drugs. A List of Drugs Selected to Supply the Demand for a Less Extensive Materia Medica with a Brief Discussion of Their Actions, Uses and Dosage. Edited by Robert A. Hatcher Ph.M. Sc.D. M.D. and Cary Eggleston M.D. Prepared under the Direction and Supervision of the Council on Pharmacy and Chemistry of the American Medical Association. Ninth edition. Cloth. Price 60 cents. Pp 203. Chicago: American Medical Association 1934.

This book represents a valuable and increasingly effective phase of the efforts of the Council on Pharmacy and Chemistry on behalf of rational therapeutics. Since its first appearance in 1913 it has become a recognized work in its field. It has been adopted as a textbook by teachers of therapeutics in the best medical schools and by various examining and licensing boards. The various editions and revisions since that time have been undertaken in the effort to keep it abreast with the advance of therapeutics. Drugs that have become obsolete have been deleted and others the value of which has become established have been added. The statements of actions, uses and dosage of the various drugs are revised after discussion by the whole Council. They represent the latest and best results of therapeutics and pharmacologic revision. The present edition is in line with the constant aim of the Council which has

been to present a selective and informative yet comprehensive compendium of the more useful preparations in the medical armamentarium. There have been some additions to the list of drugs and a few have been deleted. Individual descriptions show evidence of careful editing. Typographically the text is an improvement on previous editions by reason of more generous spacing, which makes it easier on the eyes. As it stands, the book is an authoritative, intelligent, critical and entirely adequate textbook for the use of teachers and examiners, as well as for reference by the busy practitioner. It is an integral and constructive part of the Council's efforts in the promotion of the rational use of drugs.

The Mother's Encyclopedia. Compiled and Edited by the Editors of The Parents Magazine. One volume edition. Cloth. Price \$3. Pp 937 with illustrations. New York: Reynal & Hitchcock 1933.

The editor of the *Parents Magazine* has compiled from the back issues of that periodical articles on many topics, making a virtual encyclopedia of the child. There is an extensive collection of authors and the topics seem to include every phase of childhood from the physical, mental, social and other points of view.

Rules for Recovery from Pulmonary Tuberculosis. A Layman's Handbook of Treatment. By Lawrason Brown M.D. Sixth edition. Cloth. Price \$1.75. Pp 275. Philadelphia: Lea & Febiger 1934.

Six editions of this book have kept pace with the advancement of our knowledge of the control of tuberculosis. The volume is one of the most simple and practical statements available to the person who has the disease and who is able to approach the problem of his care with some intelligence. It can be unreservedly advised as a safe and useful book.

A Decade of Progress in Eugenics. Scientific Papers of the Third International Congress of Eugenics Held at American Museum of Natural History New York August 21-23 1932. Committee on Publication: Harry F. Perkins, Chairman; Charles B. Davenport, ex officio; Clarence G. Campbell, Madison Grant, Harrison B. Hunt, Frederick Osborn, Paul Ispenoe, Laurence H. Snyder and Harry H. Laughlin, Secretary. Cloth. Price \$6. Pp 531 with illustrations. Baltimore: Williams & Wilkins Company 1934.

This volume includes the scientific papers read at the Third International Congress of Eugenics. The contributions are roughly grouped on the subjects of anthropometry, race amalgamation, education, positive and negative eugenics, infertility and disease, differential fecundity, and human genetics. The concluding section of the book is devoted to a description of the extensive exhibits, organization and membership and other information concerning this group. Those who are especially interested in eugenics and who endeavor to keep abreast of advances in this field will find this volume most useful.

Aids to Obstetrics. By Leslie Williams M.D. M.S. F.R.C.S. Obstetric Surgeon to Out Patients, St. Mary's Hospital, London. Tenth edition. Cloth. Price \$1.25. Pp 219 with 4 illustrations. London: Baillière Tindall & Cox. Baltimore: William Wood & Co 1934.

In this edition the general arrangement is similar to the previous editions. On the structure the author has rewritten the entire text, bringing it into conformity with modern theory and practice in obstetrics. Several new illustrations have been added and Dr. G. W. B. Jones has collaborated in writing a new section devoted to the mental diseases sometimes associated with pregnancy. The number of times this work has reappeared gives evidence of its usefulness and popularity. It is well done, and the type and paper together with the workmanship, make a durable and serviceable volume for ready use.

Epidemiology in Relation to Air Travel. By Arthur Massey M.D. D.P.H. Medical Officer of Health for the City of Coventry. Cloth. Price 7/6. Pp 59 with 5 maps. London: H. K. Lewis & Company Ltd 1933.

The aerial transportation of mosquitoes is giving concern to epidemiologists who are particularly interested in the spread of yellow fever. The possibility also exists of the transmission of plague, cholera, malaria, relapsing fever or smallpox to those who travel in airplanes through inadequate control of sanitation of aircraft. Dr. Massey presents a brief outline of measures for suitable sanitary control, offering in this way a fundamental book in a new field.

Encyclopædia of Sexual Knowledge By A Costler M D A Willy M D and Others under the General Editorship of Norman Haire Ch M MB Cloth Price \$6 Pp 636 with Illustrations New York Coward McCann Inc 1934

It appears that this encyclopedia has sold 80,000 copies in France and has had a phenomenal success on the continent. It is issued under the general editorship of Norman Haire, who contributed articles on contraception, abortion and sterilization. It seems to present a good general consideration of the evolution of sexuality, the technic of intercourse, the hygiene of pregnancy, frigidity, impotence and various sexual aberrations and also a consideration of venereal diseases, prostitution and the white slave traffic. The volume contains a good deal of information not available elsewhere under a single cover and for the physician who requires this kind of book is an excellent compendium of the subject.

Medicolegal

Medical Practice Acts Conspiracy to Practice Medicine Unlawfully—Lester Tilton and Harry De Joannis were charged with conspiracy to practice medicine unlawfully. They were convicted the jury fixing their punishment at imprisonment in the penitentiary and a fine of \$2,000 each. The judgment was affirmed by the appellate court for the first district, Illinois (273 Ill App 52) and the defendants carried the case to the Supreme Court of Illinois.

The third count of the indictment charged that the defendants conspired to assist Lester Tilton in holding himself out to the public as being engaged in the diagnosis and treatment of human ailments particularly cancer, and in professing to prescribe for and heal cancer and maintaining an office for such purpose including the examination and treatment of patients having cancer, and in holding himself out as being a physician by using the words 'Doctor,' 'Physician' and the title 'M D.' Tilton not being a licensed physician. The defendants contended that this count should have been quashed, because it charged a common law conspiracy but enumerated acts which they were charged with conspiring to commit which were not crimes at common law but are only so by statute. Inasmuch as the practice of medicine without a license was not a crime at common law, they urged they could not be convicted under a common law form of indictment for a conspiracy to do such acts. But since said the Supreme Court, the doing of the acts charged is expressly forbidden by the medical practice act, it was impossible to find any merit in the defendants' argument. A criminal conspiracy at common law may involve the doing of an unlawful act by any means or any act by unlawful means, and the count under consideration properly charged a common law conspiracy. An agreement to do an act made unlawful by statute may be a common law conspiracy.

The fourth count of the indictment was based on section 46 of the Criminal Code which provides that "If any two or more persons conspire or agree together to do any illegal act injurious to the public health, they shall be deemed guilty of a conspiracy. The count alleged that Tilton did not possess a license to practice medicine as required by the medical practice act and that he and others conspired to do certain illegal acts injurious to the public health. The defendants urged that conspiring to hold out an unlicensed person as being duly qualified to treat human ailments is not injurious to the public health, that cancer is not a contagious or infectious disease, and although prescribing for it may be injurious to the individual, it is not so to the public in general. The medical practice act, observed the Supreme Court, was designed and intended better to protect the public health. It is as much in the interest of the public health that individuals should be protected from quacks, who have no proper medical qualifications preying on the credulous but incurably sick, as it is to protect congested areas against the sweep of an infection. That the cases may be isolated renders them of no less interest to the public. The gravamen of the offense charged by this count is to be found in the plan unlawfully to hold out to the public that Tilton was qualified and competent to treat cancer

successfully in human beings. It is this public holding out—this seeking for victims from among the general public—that constitutes the public injury, and it is precisely this kind of a public injury that the medical practice act is intended to prevent.

In the opinion of the Supreme Court, the trial court did not err in overruling the motion to quash the indictment or either of its counts. The judgment of the appellate court was therefore affirmed—*People v Tilton et al* (111), 191 N E 2-7.

Workmen's Compensation Acts The Femur as a Part of the Leg—For the purpose of fixing the compensation to be paid an injured workman, it became necessary to determine if the femur is a part of the leg. The workman contended that it was not, citing many medical and dictionary definitions of the word 'leg' to the effect that the leg is that portion of the limb consisting of the patella, tibia and fibula, or from the ankle to the knee. We have no quarrel with these anatomical definitions, said the Supreme Court of Arizona, but the question is, 'what does the word mean as used in our compensation law?' We think, continued the court, it is used in the sense of its common and accepted meaning, which is, according to Webster's New International Dictionary, 'A limb or member of an animal used for supporting the body, and in running, climbing, or swimming, sometimes, specif, that part of the limb between the knee and the foot.' The human body, said the court, has two arms and two legs, or four limbs. A complete arm, in common parlance, extends from where it connects with the shoulder blade to the hand, and a complete leg extends from where the ball of the femur fits into the socket of the hip to the ankle or foot. The Supreme Court therefore affirmed an award made by the industrial commission of Arizona from which the employee had appealed—*Ujczuch v Inspiration Consol Copper Co* (Ariz), 33 P (2d) 599.

Society Proceedings

COMING MEETINGS

- Alabama Medical Association of the State of Mobile, April 16-18 Dr D L Cannon 519 Dexter Avenue Montgomery Secretary
- American Association of Anatomists St Louis April 18-20 Dr George W Corner University of Rochester School of Medicine Rochester Secretary
- American Association of Pathologists and Bacteriologists New York April 18-19 Dr Howard T Karsner 2085 Adelbert Road Cleveland Secretary
- American Association on Mental Deficiency Chicago April 25-27 Dr Groves B Smith Beverly Farms Codfrey Ill Secretary
- American College of Physicians Philadelphia April 29 May 3 Dr E R Loveland 133 South 36th Street, Philadelphia Executive Secretary
- American Dermatological Association White Sulphur Springs W Va May 2-4 Dr William H Guy 500 Penn Avenue Pittsburgh, Secretary
- American Pediatric Society Cleveland May 2-4 Dr Hugh McCulloch, 325 North Euclid Avenue St Louis Secretary
- American Physiological Society Detroit April 10-13 Dr Frank C Mann, Mayo Clinic Rochester Minn Secretary
- American Society for Experimental Pathology Detroit April 10-13 Dr Shields Warren 195 Pilgrim Road Boston Secretary
- American Society for Pharmacology and Experimental Therapeutics Detroit April 10-13 Dr E. M K Geiling 710 N Washington Street Baltimore Secretary
- American Society of Biological Chemistry Detroit April 10-13 Dr H A Mattill State University of Iowa Iowa City Secretary
- Arizona State Medical Association Phoenix April 25-27 Dr D F Harbridge 15 East Monroe Street Phoenix Secretary
- Arkansas Medical Society Fort Smith April 15-17 Dr W R Brooksher 602 Garrison Avenue Fort Smith Secretary
- District of Columbia Medical Society of the Washington May 1 Dr C B Conklin 1718 M Street N W Washington Secretary
- Federation of American Societies for Experimental Biology Detroit April 10-13 Dr H A Mattill State University of Iowa Iowa City Secretary
- Louisiana State Medical Society New Orleans April 29 May 1 Dr P T Talbot 1430 Tulane Avenue New Orleans Secretary
- Maryland Medical and Chirurgical Faculty of Baltimore April 23-24 Dr Walter Dent Wise 1211 Cathedral Street Baltimore Secretary
- New Jersey Medical Society of Atlantic City April 30 May 2 Dr J B Morrison 66 Wilford Avenue Newark Secretary
- South Carolina Medical Association Florence April 23-25 Dr E A Hines Seneca Secretary
- Southeastern Surgical Congress Jacksonville Fla March 11-13 Dr Benjamin T Beasley 478 Peachtree Street N E Atlanta Secretary
- Tennessee State Medical Association Nashville April 9-11 Dr H H Shoulders 706 Church Street Nashville Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

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- Etiology, Symptomatology and Diagnosis of Hematuria A S Frazer Dothan —p. 237
Medical and Surgical Treatment of Hematuria T B Hubbard Montgomery —p. 238
Abdominal Injuries M B Davis Nashville Tenn.—p. 241
Carbolic Acid Gangrene W R Mecker and J O Muscat Mobile —p. 244
Filiform Broken Off in Male Urethra Recovered Report of Case J U Reeves Mobile —p. 247

American Journal of Ophthalmology, St. Louis

18: 1-102 (Jan.) 1935

- *Advancement of Superior Oblique and Inferior Oblique Ocular Muscles J M Wheeler New York —p. 1
Occurrence of Ciliary Processes on the Iris A B Reese New York —p. 6
Studies on Infectivity of Trachoma II Relation of Human and Simian Folliculosis to Infection Induced by Trachomatous Tissue in Monkeys L A Julianelle and R W Harrison St. Louis —p. 10
Anomaly of Ciliary Body Associated with Congenital Cataract R H Merrill New York —p. 15
Acute Dacryadenitis F B Frailek Ann Arbor Mich.—p. 19
Liquid Adhesive for Eye Dressing M F Weymann, Los Angeles —p. 21
Oculocardiac Reflex Report of Case Exhibiting Marked Reaction Following Enucleation of the Eyeball J H Bailey Brooklyn —p. 22
Operation for Glaucoma J G McLaurin Dallas Texas —p. 26
Glaucoma Capsulare T M Shapira Chicago —p. 31
Sutures for Lid Control in Cataract Operations W D Horner San Francisco —p. 33
Inclusion Blepharitis S H McKee Montreal —p. 36
Hyperplasia of Covering Epithelium of Tarsal Conjunctiva in Trachoma H D Lamb St. Louis —p. 47
Eyelid Reconstruction Necessitated by Extra Ocular Myositis Associated with Thyroid Disease G B O'Connor and G W Pierce San Francisco —p. 51

Advancement of Oblique Ocular Muscles—Wheeler submits two operative procedures by which the oblique ocular muscles can be reinserted according to the requirements of the abnormality. The operation on the superior oblique may be used for excessive elevation in adduction, and either advancement or recession of the superior rectus can be done conveniently along with advancement of the superior oblique. The operation on the inferior oblique is especially useful in depression of the globe accompanying ptosis and may in such cases be combined with advancement of the superior rectus. In the operation for shortening the superior oblique general anesthesia is administered. The eye is turned well down by means of a suture attached to the sclera just above the cornea. The conjunctiva is incised in the upper fornix and dissected so as to expose the insertion of the superior rectus. A suture is passed through the superior rectus tendon near its insertion and the tendon is cut between the suture and the insertion. The superior rectus is then allowed to retract and is separated from the underlying superior oblique tendon. A squint hook is slipped under the rather frail superior oblique and a double-needled suture of fine gut or silk is made to loop the middle third of the tendon several millimeters from the insertion. The needles are then carried into the superficial sclera temporalward from the original insertion. During the maneuver, the eye should be held extremely downward and inward. When the double-needled suture is tied the superior oblique is advanced in an amount to correspond to the distance from the points of entry of the needles in the tendon to the points of entry into the sclera. It does not matter whether the tendon is cut off near the original insertion or not. After the superior oblique is made fast to the sclera, the superior rectus is sutured back

in place and the conjunctival wound is closed with fine silk. In the operation for shortening the inferior oblique, either infiltration or general anesthesia is employed. A skin incision about 2 cm long is made along the orbital margin with the anterior attachment of the inferior oblique at about its center. The dissection is carried through the tarso-orbital fascia into the orbit and the inferior oblique muscle is exposed. The dissection is carried also downward for exposure of the periosteum a centimeter or more below the orbital margin. Two fine chromic gut sutures are passed through the tendon near its anterior attachment while the muscle is held on a squint hook. The tendon is cut free at its attachment and carried over the orbital margin. It is advanced as much as need be and secured to the periosteum on the facial surface of the superior maxillary bone by means of the gut sutures (000). The skin wound is then closed with fine silk sutures.

Archives of Internal Medicine, Chicago

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- Symptomatology of Myxedema Its Relation to Metabolic Levels Time Intervals and Rations of Thyroid J H Means and J Lerman, Boston —p. 1
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Paralysis of Bladder in Diabetic Patients W R Jordan, Richmond Va. and H H Crabtree Boston —p. 17
*Neuropathy in Diabetes Mellitus Lipid Constituents of Nerves Correlated with Clinical Data W R Jordan Richmond Va., L O Randall and W R Bloor, Rochester N Y —p. 26
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Tularemia Consideration of One Hundred and Twenty Three Cases with Observations at Autopsy in One C N Kavanaugh Lexington, Ky.—p. 61
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Significance of Phenolsulphonphthalein Test of Renal Function E. M. MacKay La Jolla Calif. and D A Rydand San Francisco —p. 131
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Neuropathy in Diabetes Mellitus—Jordan and his associates compared the amounts of various lipid constituents of nerves from persons with diabetes with those of nerves from nondiabetic persons. The phospholipid, cholesterol and cerebroside values of diabetic nerves were found to be considerably below the averages found in the "normal" nerves used for controls. The greater the vascular disease present and the lower the level of the nerve examined, the more marked were the chemical changes. The effect of the severity, duration and control (as judged by glycemia and glycosuria) of the diabetes was slight or vitiated by other factors. Occasionally marked variation occurred, unexplainable on the basis of vascular disease or of the known features of the diabetes. The lipid abnormality appeared in the absence of clinical evidence of neuropathy but the degree of the abnormality increased as the clinical signs of neuropathy progressed. The small number of cases and the many variables make the deductions unreliable. Work is being carried on to correct this.

Second Positive Wave of QRS Complex—Katz and Slater state that of approximately 8,000 serial cardiographic records 320 revealed a positive variation involving the terminal portion of the S wave in lead III. The data in fifty are reported, with necropsy records in three cases. From a critical analysis of these records it has been repeatedly observed in lead III that following an R wave there is a downwardly directed (negative) S wave, the upward limb of which rises to a variable distance above the iso-electric line in a sharp peak or summit and then descends with varying rapidity and a downward convexity to the iso electric line, forming thereby a separate and distinct positive wave. This wave may be sharp, pointed, slightly slurred or rounded at its apex, the catarcotic limb may be thickened or feathered. The height to which this wave mounts is variable and at times may exceed the height of the preceding R wave in the same complex by

as much as 5 mm. The contour of the descent of the wave is likewise variable, it may be a sharp and straight declivity merging at once with the so called ST segment or it may descend gradually to the iso electric line in a curving manner with a downward convexity. In its descent, the trough of the wave may occasionally reach a level of from 0.5 to 1 mm above or below the iso-electric line, rarely there may be a respiratory variation in its amplitude. Left axis deviation is found in each case. A Q wave, in the ordinary sense, is not present. The nature of the ST segment or the height and direction of the T wave that follows bears no relationship to the wave described.

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California and Western Medicine, San Francisco

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Canadian Medical Association Journal, Montreal

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Roentgen Ray Diagnosis of Placenta Praevia Report of Two Cases J Friedman and D O Macdonald Montreal—p 12
*Cryptomyces Pleomorpha New Organism Isolated from Blood of Case of Metastasized Carcinoma of Breast O C Gruner Montreal—p 15
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Surgical Repair of Facial Injuries and Harelip and Cleft Palate Deformities E F Risdon Toronto—p 51
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*Minimal Effective Dose of Histamine in Diagnosis of Achlorhydria F A L Mathewson Winnipeg Manit—p 59
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Cryptomyces Pleomorpha—Gruner isolated an organism from the blood in a case of carcinoma of the breast with intrathoracic metastasis. The organism was detected in the circulating blood by direct examination and among the tumor cells in the original neoplasm, in sections that had been made four years previously. Though in part resembling other fungoid organisms that have been described before in human pathology, this one seems to present additional features. Observations of the living cultures have shown that in some phases this organism mimics the cell elements of human blood, the so-called Plummer bodies and Russell fuchsinophil bodies of some malignant tissues and has forms that are like the free nuclei and various sized granules found in many sections of neoplasms. These mimeries explain how the organism may effectually escape detection in the routine observation of tissues and blood. The cultures after passage through infected rats and mice showed a dominantly blastomycetic form, with mycelial formation almost negligible. The reasons for the author's belief that the organism is single are (1) the constant occurrence of the dual forms in succession, at the same time intervals in all subcultures (2) the ability actually to observe the one form changing into the other, (3) the inability to separate them

permanently by plating, (4) the cultural characters, (5) the possession of pathogenicity, (6) its unique character and (7) the unlikelihood of a chance admixture of distinct organisms resulting in such a close symbiosis as actually to manifest conjugation. In the animal lesions produced, the organism is found closely mingled with the reactive infiltration of predominantly monocytic type and shows in the sections appearances that strongly recall those seen in sections of carcinomas and sarcomas, though such particles are usually regarded as unsentinel bacterial or degenerative components. The name given the new organism is *Cryptomyces pleomorpha*, and it is placed among the ascomycetes.

Histamine in Diagnosis of Achlorhydria.—Mathewson compared the stimulating effect on gastric secretion of a 0.25 and a 0.5 mg dose of histamine, on a selected group of patients, with the object of determining whether the smaller dose of histamine would detect the presence of achlorhydria as accurately as the larger dose. In cases of normal or average sensitivity of the gastric secretory apparatus the 0.25 mg dose of histamine is an effective stimulus, producing a response approximating that of the 0.5 mg dose. This compares favorably with that of Gompertz and Cohen, who employed even smaller doses. These investigators found that histamine hydrochloride in a dose of 0.25 mg was an effective gastric secretory stimulus. In cases of pseudo achlorhydria in which there is apparently a hyposensitive gastric secretory mechanism the 0.25 mg dose of histamine produced a decidedly smaller volume of secretion and a lower acid response than the 0.5 mg dose. The 0.25 mg dose of histamine is definitely less accurate in determining the presence of achlorhydria than the 0.5 mg dose. In clinical tests, in which the possibility of achlorhydria is to be considered no dosage less than 0.5 mg of histamine should be employed. It is advisable to quote dosages of histamine definitely in terms of histamine base, regardless of the preparation used.

Florida Medical Association Journal, Jacksonville

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Journal of Biological Chemistry, Baltimore

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Journal of Bone and Joint Surgery, Boston

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- Open Treatment of Congenital Dislocation of Hip Operative Technique
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M Gellman Baltimore—p 235

Reductions in Congenital Dislocation of Hip—Kidner
compares the results of twenty-six cases in which thirty-four congenital dislocations of the hip were reduced by open operation with thirteen cases in which twenty-two dislocations were reduced by the closed method. The results of closed reduction, even in very young children, are often unsatisfactory, although the only perfect end result from the clinical and roentgenographic standpoints falls in this group. Force should never be used to obtain reduction. Except in rare cases the anatomic changes inherent in congenital dislocation require open surgical treatment if reduction is to be permanently satisfactory. The results of open reduction are better than those of closed. A small incision which does little damage to the soft parts or muscle attachments is sufficient. Adhesion of the capsule to

the side of the ilium is the major factor in preventing reduction, and actual muscle contraction, except in the older cases, does not interfere with reduction. The period of immobilization in a plaster cast is much shorter after open reduction than after the closed method.

Tibial Peg Shelf in Congenital Dislocation of Hip—
Compere and Phemister state that a shelving operation is indicated in congenital dislocation of the hip when open reduction is accomplished and the acetabulum is too shallow, in older cases when the femoral head cannot be reduced, and after closed reduction when with usage the acetabulum proves to be inadequate. This operation is indicated also in the case of a congenitally inadequate acetabulum in which, during adult life, the hip becomes painful. The authors report a case in which three tibial peg grafts were used for the construction of an acetabulum. They have employed the tibial graft shelving operation in fourteen other cases of congenital dislocation of the hip and in five cases of pathologic dislocation following pyogenic arthritis with destruction of the head and the neck of the femur. This shelf creates a more firmly anchored and a heavier shelf than that made from the ilium. Wright extension or pin or wire fixation of the femur to the cast is not necessary. The periods of immobilization have been shortened and upward displacement of the shelf has not come about. The range of motion has been about as great as that obtained after the iliac-shelf operation. The operation necessitates two incisions. However, if one operating team removes the grafts while another exposes the hip, reduces the dislocation and prepares the field, the time is reduced to about that required for constructing an iliac shelf.

Operation for Ununited Fracture of Neck of Femur—
Colonna performed a new type of operation in six cases of old ununited fracture of the neck of the femur, the youngest patient being 48 years of age and the oldest 70. A curved incision is made, beginning about 1 inch behind the antero-superior spine and curving downward and crossing the femur about 5 inches below the tip of the greater trochanter. The fascia is divided and all muscles attached to the greater trochanter are cut near their insertion care being taken not to remove any portion of the underlying bone but to leave the upper extremity of the femur covered by a thin layer of muscle and fibrous tissue. The capsule is then opened longitudinally, after which it is divided transversely close to the greater trochanter, to preserve as much of the capsule as possible. The limb is then rotated outward and adducted, the upper extremity of the femur is freed by sectioning the piriformis, gemelli and obturators close to their insertion. The loose head is then removed and the cervicotrochanteric region is inspected. If spicules of the fragment of the neck remain, they are chiseled off flush with the inner surface of the shaft and this raw area is covered over with adjacent tissue. After the greater trochanter has been completely freed of all its muscle attachments, it can be easily pulled down and placed deep within the acetabulum. The thickened capsule and abductor muscles are then pulled down, holding the limb in about 20 degrees of abduction. The fibers are separated subperiosteally, exposing the shaft of the femur. A bony trough is made on the lateral aspect as far down as the abductor muscles (removed from the greater trochanter) will reach when the limb is in about 20 degrees of abduction. Before the bony flap is prepared, care is taken to have the patella pointing upward. Two small drill holes are then made in the shaft in the antero-posterior plane the muscles are drawn down snugly to this position and held in place by kangaroo tendon and the bony flap is sutured over the mass. The vastus lateralis is then carefully reefed over the new insertion of the gluteus medius and the gluteus minimus and the wound is closed in layers. A long plaster spica cast is applied from the toes to the axilla with the limb in about 20 degrees of abduction and in complete extension. After four weeks the plaster is bivalved, and active and passive movements are begun in bed. This is continued for several weeks and is combined with baking and massage of the muscles of the thigh and hip. Eight weeks after operation the patient is usually able to walk about with the aid of crutches.

Journal of Immunology, Baltimore

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- Development of Precipitins for Protein, Lipoid and Carbohydrate Fractions of S and R Forms of Tubercle Bacilli Christine E Rice Kingston Ont —p 19
- Hemolytic Streptococcus Toxins and Antitoxins I Medium for Toxin Production W G Malcolm and Louise Wyman Boston —p 31
- Id II Titration by Rabbit Intradermal and Ear Tests W G Malcolm and Louise Wyman Boston —p 33
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- Id IV Concentration of Scarlet Fever Streptococcus Antitoxin J Cienciarulo and W C Malcolm Boston —p 47
- Susceptibility to Pneumococcus Infection as Measured by Species Specific Agglutinins T J Curphey with technical assistance of Nancy Ferrante New York —p 55

Journal of Nervous and Mental Disease, New York

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- *Psychologic Factors in Etiology of Diabetes W C Menninger Topeka Kan —p 1
- Newer Results in Comparative Anatomic Investigation of Midbrain of Mammals Particularly Its Structure in Man E Grunthal Wurzburg Germany —p 14
- Tumors in Spinal Canal in Childhood Analysis of Literature with Report of Case W B Hamby Buffalo —p 24
- Genetic Relations of Certain Obsessional Neurotic Character Traits (Integrity Complex) O Bruel Copenhagen Denmark —p 43
- Treatment of Agraphia by Kinesthetic Stimulation and Psychotherapy F M Glaser New York —p 47

Psychologic Factors in Etiology of Diabetes—Menninger studied the psychologic factors in twenty two cases of mental disorder associated with diabetes which in every instance sought medical attention because of the mental symptoms although several had had medical treatment for the diabetes previously. The evidence gained from this study indicates that diabetes may be the direct result of psychologic disturbances. Conservatively five of these cases show such an origin of the diabetes. The close parallelism of the metabolic disturbance to the mental disturbance suggests to the author that this metabolic disorder may also be the result of the emotional conflicts. Certainly the psychologic factors greatly influence the course of an established diabetic state.

Journal of Urology, Baltimore

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- Renal Roentgenoscopy and Roentgenography at Operating Table C G Sutherland Rochester Minn —p 1
- Metall Casts of Kidney Pelvis Method for Teaching Pyelography L N Atlas and C A Bowers Cleveland —p 12
- Dangers of Acidifying Salt Therapy in Urologic Cases C D Oppenheimer New York —p 22
- *Repair of Urinary Incontinence Following Prostatectomy by Transplantation of Gracilis Muscle Report of Two Cases B S Abeshouse Baltimore —p 28
- Radical Relief of Vesicovaginal Fistula Report of Unusual Case of Eversion of Bladder Through Fistulous Opening and Review of Sixty Cases Seen at New York Hospital During the Past Ninety Years T J Kirwin and O S Lowley New York —p 51
- *Complete Rupture of Urethra Method of Repair in Delayed Cases E M Watson Buffalo —p 64
- Mucoid Carcinoma of Female Urethra J C Menville and V S Counsellor Rochester Minn —p 76

Dangers of Acidifying Salt Therapy in Urologic Cases—Oppenheimer points out in cases of alkaline infections of the bladder that in spite of large doses of acidifying drugs, such as acid sodium phosphate and ammonium chloride the urine obtained from the drainage tube remains alkaline. The reason for this continued alkalinity is the local infection of the bladder. In such cases, to persist in treatment with acidifying salts is to incur the risk of acidosis. Listlessness, drowsiness and even coma are sometimes induced. Renal insufficiency is commonly blamed when it may be no more than contributory. The patient is really in acidosis brought about by the ingestion of acidifying salts. In such cases, measures that abolish the acidosis quickly relieve the patient of his alarming symptoms. Serious acidosis does not follow the usual therapeutic dose of 8 Gm of ammonium chloride daily given in four divided doses if renal function is good. This dosage however, given to a patient with impairment of renal function may produce severe symptoms. The author has seen four cases in which the use of ammonium chloride in amounts not excessive for a normal

person led to acidosis. The salt was employed in one case with cardiac insufficiency for its diuretic effect and in three urologic cases for its acidifying effect on the urine.

Repair of Urinary Incontinence—Abeshouse states that the development of complete urinary incontinence following prostatectomy is due to the total destruction or derangement of both the internal and the external vesical sphincters. Various anatomic defects or pathologic lesions about the posterior urethra and vesical neck may be associated with the loss of function of both sphincters. Transplantation of the gracilis muscle has yielded excellent results in the treatment of incontinence. In two cases the author employed the operative technique originally described by Plaver and Callander. The results obtained by transplantation of the gracilis were satisfactory. In one case complete urinary control during the day and night was restored. In the other case complete control was restored during the night and in the reclining posture, but there was partial diurnal incontinence manifested by the leakage of some urine on the patient's assuming the upright position and following excessive muscular effort.

Complete Rupture of Urethra—Watson carried out the following procedure in three cases of complete rupture of the urethra in which the convalescence was uneventful. One patient has been free from stricture formation for eleven years and now has a clear urine free from infection. The second patient had no stricture, was under periodic observation for one and one-half years and was then lost track of. The third patient has been under observation for nine years and has a clear urine, free from infection but has a moderate stricture, which is dilated every three months to number 24 F with flexible bougies. The patient was placed in the exaggerated lithotomy position after suitable skin and genital sterilization, and a sound was placed as far as it would go gently in the urethra. An inverted U incision was then made in the perineum. The levator ani muscles were pushed back and the transversus perineae muscles were brought forward. The central tendon of the perineum was cut across and the anterior end of the urethra located. This was then freed up to its distal point care being taken to preserve as much of the urethra as possible. The rectum was then pushed back and the end of the prostate identified. The hardened scar tissue about the prostatic opening or about the urethra was excised. A number 28 catheter was then placed through the urethra bridging the wound and into the bladder. The freed end of the anterior urethra was pulled down as far as possible toward the prostatic portion. There still remained an unbridged portion of about 1½ inches. At this point two flaps were cut, one out of each side of the anterior urethra. A base attachment to the anterior urethra was maintained in each instance and the freed flap was rotated to permit its distal end to be sutured to the prostatic urethra. Three submucosal supporting sutures were then placed round the flaps, the catheter being used as a splint. The periurethral tissue was then built up round the anastomosed portion. The levator ani muscles were brought together and the skin and subcutaneous tissue closed with an oil silk drain carried down to the periurethral layer and brought out of the lower angle of the wound.

Ohio State Medical Journal, Columbus

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- Treatment of Tularemia L Foshay Cincinnati —p 21
- The Stillborn W W Brand Toledo —p 24
- Strangulated Hernia Factors Influencing Mortality A T Bowers Dayton —p 28
- Two Fatal Contact Cases of Acute Infection of the Nervous System J L Fetterman Cleveland —p 30
- Subcutaneous Fat Necrosis of the New Born G Shong Duluth, Minn and A Cowan Columbus —p 34

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Philippine Islands Med Association Journal, Manila

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New Methods in Gallstone Surgery R O Pribram Berlin Germany
—p 55
Incidence of Gastrojejunal Ulcer Following Gastro-Enterostomy J W
Hinton and R E Church New York—p 65
Melano-Epithelioma and Hemangio-Endothelioma of Anus A D Smith
and A C Broders Rochester Minn—p 74
Renal Tuberculosis and Nephrolithiasis as Associated Diseases D N
Eisendrath Paris France—p 77
Treatment of Acute Suppurative Arthritis Report of Thirteen
Cases Treated by Operation G A L Inge and F I Liebolt New
York—p 86
Subtotal Versus Total Hysterectomy R S Siddall and H C Mack
Detroit—p 102
Diverticula of the Stomach A B Rivers G A Stevens and B R
Kirklin Rochester Minn—p 106

Liver Glycogen Following Experimental Thyroid Feedings—Frazier and Frieman show in experiments on guinea pigs that the rate and degree of the glycogen depletion bears no direct relation to the number of days over which thyroid feeding has been continued. If in man similar events take place the importance of anesthesia and other factors that still further deplete the liver glycogen and prepare a fertile soil for serious hepatic degeneration must be kept in mind. The ineffectiveness of iodine on the circulating thyroid hormone as pointed out by Kunde is substantiated. Their experiments furthermore show that as long as the thyroid hormone gains access to the blood stream the liver stores of glycogen continue to be reduced markedly. The observations of Marine and of Frazier and Mosser that the beneficial effect of iodine in hyperthyroidism is the result of its effect on the thyroid itself would seem to be strengthened. Operation for hyperthyroidism throws an additional load on glycogen stores which are reduced in severely ill patients even under the best of conditions. Therefore the value of attempting to restore the liver glycogen by the judicious use of carbohydrates immediately after operation should be emphasized. The intravenous method offers the most rapid means in patients very ill after operation.

Lycopodium Granuloma—Erb reports six cases of lycopodium granuloma in which the spores were obviously introduced into the tissues during previous operative procedures. In four the resulting lesions bore a striking resemblance to tuberculosis with which they might easily be confused. Two of the patients developed intestinal obstruction from adhesions at the site of a previous operation and there is reason to believe that these were caused by the lycopodium spores. The author says that the use of lycopodium spores as a dusting powder in operating rooms should be discontinued. The reaction is essentially a foreign body one the spores having been killed by sterilization previous to introduction into the tissues. The fact that the spores are acid fast, as are also tubercle bacilli, and that the lesions produced by the spores are almost identical with tubercles even to the production of caseation leads the author to believe that the chemical composition of the spores may be an important factor in determining the type of reaction. While the presence of the spores in some instances

may give rise to little or no inconvenience to the patient they may lead to serious errors in diagnosis, which may result in radical or unnecessary surgery.

Ulcer Following Gastro-Enterostomy—From January 1928 to January 1933, Hinton and Church observed 583 cases of peptic ulcer and of this group 440 patients were not operated on at the time of admission. Of the 143 patients who had been operated on before entering the clinic, ninety had been operated on for chronic ulcers and seventy-nine of these had had gastro-enterostomies performed. Of this group thirteen patients had gastrojejunal ulcers which is 16.4 per cent of marginal ulcers occurring in the gastro-enterostomies during a period of five years. Of the thirteen patients five were operated on in hospitals in or around New York and eight were operated on at Bellevue Hospital no two patients were operated on by the same surgeon. From the review of the cases the authors feel that any conclusions drawn as to the percentage of gastrojejunal ulcers developing after gastro-enterostomy is most inaccurate unless the patient has been followed for a period of ten years and also seen at frequent intervals, with repeated roentgen examinations. Three of the patients who came to operation developed symptoms of a marginal ulcer after seven years and one ten and one-half years following gastro-enterostomy. When one realizes that the majority of the patients have been followed less than five years and that in seventy-nine gastro-enterostomies thirteen gastrojejunal ulcers developed and that of the thirteen cases three occurred after seven years it would seem that a ten year follow up is necessary in drawing conclusions as to the percentage of gastrojejunal ulcers. Gastrojejunal ulcers run the same course as do peptic ulcers. Too much dependence should not be placed on a negative gastro-intestinal examination for patients frequently will have a marginal ulcer in spite of several negative gastro intestinal series. Medical treatment should be tried for as long a period as the patient progresses satisfactorily, because marginal ulcers will get symptomatic relief from conservative treatment the same as will any peptic ulcer. If the patient continues to have severe pain under medical treatment, it usually means that the marginal ulcer is perforating into some adjacent viscus the pancreas and transverse colon being involved usually. For this reason it is best to submit a patient with a gastrojejunal ulcer suffering severe pain to a second operation rather than to continue medical treatment if pain is not relieved or improved promptly under conservative treatment.

Texas State Journal of Medicine, Fort Worth

30 551 616 (Jan) 1935

- Surgical Use of Radium E Fischel St Louis—p 528
Traumatic Rupture of the Duodenum C A Poinexter Crystal City—p 561
Life History of Gastric Ulcer W G McDeed and E Parker Houston—p 566
Survey of Children's Health Protective Measure in Texas H T Nesbit Dallas—p 573
Review of One Thousand and Seven Cases of Appendicitis with Survey of Some of the Causes of Morbidity and Mortality C H Harris Fort Worth—p 579
Remarks on Concussion Injuries of the Eye S A Schuster T P Schuster and C Gwinn El Paso—p 583
Eclampsia Etiology Symptomatology and Treatment W M Gambrell Austin—p 588
Surgical Indications in Late Toxemia of Pregnancy S B Tucker Nacogdoches—p 591
Sickness Insurance C C Cody Jr Houston—p 594

Virginia Medical Monthly, Richmond

61: 565-624 (Jan) 1935

- Medical Economics Medical Education Specialization and the Private Practitioner J C Flippin University—p 565
Id Insurance Hospital and Sickness W B Martin Norfolk—p 568
Id Federal State County and Municipal Relations to Medicine and Care of the Indigent Sick I C Riggan Richmond—p 571
Id Economics of Medical Care E Sdenstricker New York—p 574
Ovarian Hormones Review M M Pinckney Richmond—p 581
Role of Roentgenology in the Practice of Medicine W J Marquis Newark N J—p 586
Parasitology in Relation to Public Health M C Hall Washington D C—p 588
Diagnosis of Chronic Appendicitis D Davis Richmond—p 594
What Is Virginia Doing to Curb Venereal Diseases? T B Leonard Richmond—p 596
Relation of Syphilis to Heart Disease J W Hunter Jr Norfolk—p 600
Arachnoidism on Eastern Shore of Virginia W C Henderson, Nassawadox—p 605

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Bristol Medico-Chirurgical Journal

51 205 292 (Winter) 1934

- Some Aspects of Heart Disease in Childhood F J Poynton—p 205
Abscess of the Brain Reports of Two Cases E Watson Williams—p 231
Cerebral Dermoid P Phillips and D M Stone—p 247

British Journal of Children's Diseases, London

31 253 336 (Oct Dec) 1934

- The Story of Tracheotomy E W Goodall—p 253
Analysis of Over Four Thousand Cases of Educational Deafness Studied During the Past Twenty Five Years M Yearsley—p 272
*The Dick Test and Measles Complications I Taylor—p 290
Congenital Valvular Obstruction in Prostatic Urethra R Rutherford and J H Follows—p 297
Some Pediatric Eponyms VII Fowler's Solution W R Bett—p 302

The Dick Test and Measles Complications—Taylor studied the complications occurring in 227 cases of measles with reference to the Dick reaction of the patients. A positive reaction to the Dick test was used as an indication of a lack of circulating streptococcus antitoxin. In the majority of cases a single test was performed during the first week of the disease. The hemolytic streptococcus is undoubtedly responsible for a number of serious complications in measles. In some infections the toxic effects of the organism are overshadowed by its invasive activity and the use of antitoxic serum deficient in antibacterial action is likely to be followed by disappointing results, and the serum itself may thereby be unfairly discredited. The most striking feature of the results is the difference in the death rate, which is not proportionate to the difference in the incidence of pneumonia between the two groups. Anti-streptococcus serum would be most effectively employed not so much in the prevention of pneumonia as in preventing the streptococcus from invading the lungs when pneumonia is already present. One cannot expect the serum to cure pneumonia due to organisms other than the streptococcus. If it protects the lungs against secondary infection with streptococci, its use may be considered to have been successful, even when no dramatic improvement in the condition of the patient is noticed at the time of injection. The Dick reaction would be of only limited value in the selection of cases for treatment as a positive reaction is sometimes suppressed in the early stages of the disease and it is at this time that serum treatment would presumably be most effective. The clinical condition of the patient would probably be a better guide than the Dick test. Although it is not possible to forecast the course of the disease accurately, there are some cases in which from the beginning there is a fair degree of certainty that the disease will run a severe and possibly fatal course and these would seem to be the most suitable cases for serum treatment. The figures for otitis media do not encourage the belief that this complication can be prevented to any great extent by serum injections. The number of cases of laryngitis is too small to justify any conclusions. There is a fairly general opinion that anti-streptococcus serum is of great value in relieving the local condition in the larynx and the result of treatment of the laryngitis cases that the author mentions is in accordance with this view.

British Journal of Physical Medicine, London

9 135 156 (Dec) 1934

- Influenza and the Common Cold L Hill—p 136
Short Wave Therapy Some Clinical Experiences M Berry—p 137
Present Position of X Ray Therapy Note on Some Recent Advances in Control of Dosage F Herniman Johnson—p 139
Desert Climate of Upper Egypt Study of Solar Radiation in Region of Assuan with Especial Reference to Its Medical Values Gertrud Riemerschmid introduction by R K Brown—p 141
Study of Solar Radiation Observations Made in Desert Region of Upper Egypt Gertrud Riemerschmid—p 142
Present Position of X Ray Therapy F Herniman Johnson—p 149
*Treatment of Erysipelas by Ultraviolet Light N E Titus—p 150

Treatment of Erysipelas by Ultraviolet Radiation—Titus states that timidity in the treatment of erysipelas with ultraviolet radiation has kept down the dosage. He states that an increase of the dosage up to twenty times the erythema dose

has proved conspicuously successful. In competition with other forms of treatment, ultraviolet radiation has produced quicker and more complete results. The exact method by which the cure of erysipelas is attained is as yet undetermined. The author suggests four paths of research, all of which in their basis disregard any traditional bactericidal action of ultraviolet energy. It seems more rational to disregard ultraviolet radiation for any bactericidal action *in vivo*. Its use in the treatment of erysipelas can be credited as having withstood the test of time and its usefulness is attested by its universal effectiveness. In modern therapeutics ultraviolet radiation is widely available, easy to administer and on account of its quick action is of economic value because the patient can be removed from general precautions much more quickly.

British Journal of Radiology, London

7 705 780 (Dec) 1934

- *X Ray Kymography of the Heart P Stumpf—p 707
Examination of Heart by Roentgenkymographic Method I S Hirsch—p 728
New Instrument for Measurement of Ionizing Radiations T A Chalmers—p 755
Peptic Ulcer of Esophagus A E Connolly—p 764
X Ray Film Its Manufacture and Some Properties H A Edgerton—p 767

Roentgen Kymography of the Heart—Stumpf believes that because of the complexity of the movements of the heart a graphic method of kymography which records the movement of only a few points of the cardiac contour is not sufficient. The kymographic examination with many narrow slits serves the purpose of giving a good record of the changing contours of the entire shadow of the heart. The kymogram permits the determination of the extent, duration and relationship of the movement of various portions of the heart. It permits the topographic differentiation of the various structures that go to make up the median shadow. The functional significance of the varied movements may be determined by a study of their relationship to one another. The type of cardiac movement is individual and varies. However, the zonal distribution of regions of hypertrophy (ventricles and atrophy of the apex) may be determined. The variation in the type of movement is associated with functional changes. There are individual variations in the characteristics of the movement. Strong and weak heart actions, however, show characteristic pictures. The time relationships of the movements as shown by the kymograph may be determined with precision by a densographic method. It is particularly valuable in the analysis of the types of movement. The correlation of the time relationships is of great value in pathologic conditions. Valvular diseases are not always associated with characteristic wave changes. On the other hand myocardial changes even of minor extent definitely modify the character of the movement of the ventricular chambers.

British Journal of Urology, London

6: 313-426 (Dec) 1934

- *Personal Technic for Cure of Epispadias in Women O Mercier—p 313
Multiple Fibromas of Tunica Vaginalis G Gordon Taylor—p 370
Sarcoma of the Prostate Review of Literature O S Lowsley and F N Kimball—p 328

Technic for Cure of Epispadias in Women—Mercier performed an operation for the cure of epispadias in a girl of 17 in whom the urethra opened behind the symphysis and was no more than a sixth of an inch in length. The labia majora, the labia minora and the clitoris were separated by a furrow. On each side of this furrow, at the end of the labia minora, there was a stump appearing to be a vestige of an incompletely formed sphincter. Roentgen examination showed no separation of the pubic bones. The operation provided the elongation of the urethra as well as its narrowing and it restored the internal sphincter. The technic was a modification of Marion's. To provide the elongation of the incomplete urethra, a flap was dissected from the anterior wall of the vagina. Each side of this flap was fixed to the corresponding side of the furrow. Thus the internal part of this new canal was formed with the mucosa of the vagina. The new urethra having been shaped, the lateral stumps, which seemed parts

of an incomplete sphincter, were sutured together in the median line, as one would proceed for the cure of the cystocle. The lateral dissection was deeper and the sutures were placed as far as possible on each side. Reconstruction of the labia and of the clitoris completed the operation. After this radical procedure, the bladder was drained by means of a cystostomy. No catheter was placed in the new canal before the fifteenth day. On that day the cystostomy tube was removed, and a soft catheter was introduced into the new urethra and left until the suprapubic wound healed completely. Eighteen days after the operation the suprapubic wound was healed and the patient was able to urinate normally and to hold urine perfectly. The functional result is still perfect. The author believes that the success obtained depended on the fact that the tissues of the incomplete sphincter were brought together to surround a reformed urethral canal.

Guy's Hospital Reports, London

84 387 518 (Oct.) 1934

- Studies on Tumor Formation G W Nicholson —p 389
- Visceral Neuroses J A Ryle —p 436
- *Gastrectomy and Gastro-Enterostomy Anemia S J Hartfall —p 448
- Encephalitis in Whooping Cough Clinical Study of Two Cases C H Rogerson —p 468
- *New Study of Heat Production in Man T W Adams and E P Poulton —p 473
- Study of Etiology of Appendicitis W H Bowen —p 489
- Spondylitis Traumatica (Kummell's Disease) Case R Drummond —p 510

Gastrectomy and Gastro-Enterostomy Anemia—Hartfall states that the anemia following gastric operations is usually hypochromic, is commoner in women, is usually progressive and is most frequently encountered between the ages of 40 and 50. It is independent of the amount of stomach removed and the presence of histamine achlorhydria. The clinical features associated with the anemia are similar to those encountered in idiopathic hypochromic anemia, including in the more severe cases slight splenomegaly, glossitis and dystrophy of the skin and nails. Roentgen observations show that a considerable degree of gastro intestinal dysfunction is present in the majority of cases. The importance of rapid gastric and small intestine evacuation is mentioned. The symptoms complained of are chiefly gastro-intestinal and the incidence of abdominal pain, vomiting and diarrhea supports the view that a severe grade of gastro-intestinal dysfunction is present. Recurrent peptic ulceration is an infrequent contributing factor. Extreme modifications of diet are commonly encountered and are usually adopted to lessen the severity of gastro-intestinal symptoms. A survey of the dietary in twenty-five of the most severe cases shows that it is inadequate for maintenance of normal blood regeneration. It is grossly defective in both mineral and vitamin content. In the milder cases it was found that the hemoglobin defect could often be made good up to a point with iron and ammonium citrate. Sometimes further improvement can be achieved by the addition of a vitamin B rich substance, such as wheat germ or dried yeast. In the severer cases the treatment instituted was as for peptic ulcer. Additional sources of vitamins were given especially vitamin B. To prevent the development of chronic anemia, knowledge of the behavior of the gastro-intestinal tract after surgical intervention is indicated. The powers of adaptation to the new conditions need to be determined in those who may be regarded as complete surgical successes as well as among the failures. In this way it may be possible to avoid the causes of failure. The regular employment of one type of operation for similar cases must inevitably carry with it a certain number of failures. The ideal operation for the individual patient will be achieved only if he is subjected to a physiologic as well as a pathologic study in the preoperative period.

Heat Production in Man—Adams and Poulton point out that a comparison of the reported values for measured and calculated heat under basal or standard conditions shows that there is a fundamental error in the theory of the variable combustion ratio in which the respiratory quotient indicates the proportion of carbohydrate to fat that is being oxidized in the body. At high values of the respiratory quotient the calculated results are too low and at low quotients they are too high. If direct heat and carbon dioxide are plotted against each other

in one diagram and heat and oxygen in another there is a closer relation between the heat and the carbon dioxide than between the heat and the oxygen. The authors suggest that carbon dioxide should be taken as the basis of indirect calorimetry.

International Journal of Psycho-Analysis, London

15 387 534 (Oct.) 1934

- Evolution of Culture G Róheim —p 387
- Resistances at Conclusion of Analytic Treatment R Laforce —p 419
- Making Contact with the Child Patient Helen Sheehan Dare —p 435
- Some Factors Determining Fixation at Deuterophallic Phase Therese Benedek —p 440

Irish Journal of Medical Science, Dublin

No 108 639 686 (Dec.) 1934

- Musings Without Method H Law —p 639
- The Heart in Disease D A MacElean —p 644
- Anesthesia by Endotracheal Route R W Shaw —p 654
- Maternity Work in China Notes R E Tottenham —p 665

Journal of Hygiene, London

34 433 592 (Dec.) 1934

- Death Rates in Great Britain and Sweden Expression of Specific Mortality Rates as Products of Two Factors and Some Consequences Thereof W O Kermack A G McKendrick and P L McKinlay —p 433
- Globe Thermometer in Studies of Heating and Ventilation T Bedford and C G Warner —p 458
- Spermicidal Powers of Chemical Contraceptives VI Improved Test for Suppositories J R Baker and R M Ranson —p 474
- Toxicity to Animals of 1,4 Dioxan A Fairley E C Linton and A H Ford Moore —p 486
- Population Growth and Birth Control Biologic Study C A Gill —p 502
- Filtrability of Components of Alexin P S Strong and J T Culbertson —p 522
- High and Persistent Carrier Rates of Neisseria Meningitidis Unaccounted for by Cases of Meningitis S F Dudley and J R Brennan —p 525
- *Serologic Classification of Streptococcus Pyogenes F Griffith —p 542

Serologic Classification of Streptococcus Pyogenes—Griffith states that the hemolytic streptococci associated with scarlet fever, tonsillitis and septic conditions belong to one group or species designated *Streptococcus pyogenes*. Cultural and serologic aids for the identification of *Streptococcus pyogenes* are described. The epidemiologically significant types of *Streptococcus pyogenes* appear to be about twenty in number, though probably more than thirty types of serums will be necessary for the complete analysis of the group. So far twenty-seven individual serologic types have been defined. The irregularities that have been observed in the agglutination reactions of streptococcus cultures are ascribed chiefly to variations in type specificity. Different colonies may give type specific or group agglutination, and these distinctions are revealed macroscopically in the case of certain types by growth on homologous agglutinating serum agar. The principles involved in the serologic classification of a bacterial group are discussed.

Journal of Mental Science, London

80 629 824 (Oct.) 1934

- Some Recent Forms of Mental Treatment D F Rambaut —p 630
- The Occupational Therapy Program in the State of New York Eleanor C Slagle —p 639
- Educational Principles in Occupational Therapy W M Van Der Scheer —p 650
- Prolonged Narcosis in Mental Disorder Results of Treatment in One Hundred and Seven Cases R Strom Olsen and Muriel L M McCowan —p 658
- *Lumbar Puncture and Cerebrospinal Fluid in Two Thousand Cases of Mental Deficiency K C L Paddle —p 674
- Amyolytic Power of Cerebrospinal Fluid N Moulson —p 684
- Further Studies in Respiration of Psychotic Patients E Witthower —p 692
- Anxiety Its Nature and Treatment H Harris —p 705

Cerebrospinal Fluid in Mental Deficiency—Paddle examined the cerebrospinal fluids in 2000 cases of mental deficiency of both sexes all grades and ages. In 1,500 of these cases, observations were made on the after-effects of lumbar puncture. Postlumbar puncture symptoms developed in 17 per cent of these, vomiting in 14.2 per cent, headache in 6.8 per cent and pyrexia up to 101 F in 0.73 per cent. The incidence of vomiting was nearly twice as high in women as in men, being 20.1 and 10.5 per cent. It was also higher in the feeble-minded group

than in the imbecile or idiot group. There was a direct relationship between the rate of flow of the cerebrospinal fluid and the incidence of postlumbar puncture symptoms. When the former was rapid, the incidence tended to be high, when it was slow, the incidence was relatively low. The tests used on the cerebrospinal fluid were the Wassermann cell estimation, Pandy, colloidal gold and the acetic anhydride test of Boltz. Many pseudopositive Pandy and Boltz reactions were given by the fresh cerebrospinal fluid. Of the 2000 cerebrospinal fluids examined, fifty-five were abnormal. The Wassermann reaction was positive in nineteen cases, excess of cells existed in thirty-two, excess of globulin in forty-four and the colloidal gold reaction was positive in thirty. Of congenital syphilitic patients 23.9 per cent had abnormal cerebrospinal fluids. The incidence of abnormal cerebrospinal fluids was higher in those cases of mental deficiency complicated by epilepsy or paralysis than in those free from such complications. The cerebrospinal fluid of only one out of fifty-four mongolian defective patients gave a positive colloidal gold test. In the remaining fifty-three the cerebrospinal fluid was normal in every respect.

Journal of Physiology, London

83 1128 (Dec 14) 1934

- Depressor Substances in Extracts of Intestine J H Caddum and H Schild —p 1
Effect of Ovarian Hormone on Pituitary Thyroid and Adrenal Glands of Spayed Female Rats Dorothy H Andersen —p 15
Effects of Sympathetic Stimulation and of Adrenaline on Muscle Glycogen A B Corkill H P Marks and S Soskin —p 26
Measurement of Red Cell Volume V Behavior of Cells from Oxalated and from Defibrinated Blood in Hypotonic Plasma and Saline E Ponder and E J Robinson —p 34
Hypercoagulability of Blood Due to Intramuscular Injection of Sodium Citrate D De Souza and T D M Hocking —p 49
Reaction of Smooth Muscle of Gastrointestinal Tract of Skate to Stimulation of Autonomic Nerves in Isolated Nerve Muscle Preparations J A A Nicholls —p 56
Direct Chemical Estimation of Carbamino Compounds of Carbon Dioxide with Hemoglobin J K W Ferguson and F J W Roughton —p 64
Chemical Relationships and Physiologic Importance of Carbamino Compounds of Carbon Dioxide with Hemoglobin J K W Ferguson and F J W Roughton —p 87
Further Observations on Physiology and Pharmacology of Sympathetic Ganglion W Feldberg and A Vartiainen —p 103

Journal of State Medicine, London

42 681744 (Dec) 1934

- Serologic Diagnosis of Smallpox and Laboratory Investigation of Vaccinia W J Tulloch —p 683

Journal of Tropical Medicine and Hygiene, London

37 353 384 (Dec 1) 1934

- *Treatment of Epidermophyton Infection Notes A Whitfield —p 353
More Recent Views on Climatic Bubo and Some Allied Conditions H S Stannus —p 355
*Lupoid Variety of Cutaneous Leishmaniasis J M H MacLeod —p 358
Skin Conditions Found in Loa Loa Infections C C Low —p 359
Acladiosis and Paraccladiosis A Castellani and I Iacono —p 360
Tinea Imbricata (Tokelau) Short General Account with Report of Case in a European A Castellani —p 363
Tinea Decalvans Persians A Castellani —p 368
Some Recent Advances in Dermatologic Therapeutics R M B Mackenna —p 369
Ulcerative Granuloma of the Pudenda Treated with Intravenous Injections of Tartar Emetic and Dusting Powder Containing Calomel and Antimony Oxide Necrotic Colitis Death J B Cleland —p 371
Keratoma Plantare Sulcatum (Castellani) C C Aars —p 372
Creeping Eruption at the Natal Coast F C Cawston —p 374
Pinta Notes on Case Occurring in Ceylon S E Fernando —p 375
Use of Tinfoil in Treatment of Abrasions and Ulcers Note J A Corman —p 376

37 385-400 (Dec 15) 1934

- Treatment of Bilharzia Diseases by Antimony Potassium Tartrate with Consideration of Claims Advanced for Other Remedies F G Cawston —p 385
The Bilharzial Appendix H Barsoum —p 387
Clinical Aspect of Ascariasis R Cirges —p 387

Treatment of Epidermophyton Infection — Whitfield believes that in the absence of infection of the nails, which increases the difficulty of the problem immensely, cure may be obtained in the great majority of cases of epidermophyton infection. He has had numerous cases in which symptoms have not recurred after periods up to fifteen years after the cessation of treatment. The actual treatment of the disease

may be considered from three points of view: the prevention of infection in previously healthy persons, the prevention of reinfection in the patient and the actual treatment of the existing disease. He discusses the use of iodine, chrysarobin, benzoic acid, Castellani's fuchsin and resorcin paint, potassium permanganate, the heavy metals and sulphur in the treatment of the infection.

Lupoid Variety of Cutaneous Leishmaniasis — MacLeod reports a case of the lupoid variety of cutaneous leishmaniasis in which the nodules seemed to have resulted from a spread of infection along the lymph canals from the original focus. A dissemination of the organisms may also take place by way of the blood stream when a generalized outbreak of cutaneous lesions has occurred in cases of kala azar treated with antimony injections and occasionally in untreated cases. The cutaneous generalization in leishmaniasis corresponds to the so called exanthematous type of lupus vulgaris in which, from the breaking down of some internal focus such as a tuberculous gland, generally as a result of measles, multiple lesions of lupus vulgaris appear widely distributed over the cutaneous surface. The diagnosis of the lupoid form of leishmaniasis from tuberculosis may present considerable difficulty but it is generally aided by the history of the lesion having followed the bite of a fly which is practically never the case in tuberculosis of the skin. The type of cellular infiltration may be so similar in the two that it is impossible to base their differentiation on their microscopic appearance alone, and the final decision must rest with the demonstration of Leishman-Donovan bodies in sections or in the serum aspirated from the lesion by a fine pipet. When Leishman-Donovan bodies are present they are usually in profusion whereas in tuberculosis of the skin the bacilli are as a rule so sparsely distributed that many sections may have to be examined before one or two bacilli are discovered within or about a giant cell. This type of leishmaniasis does not respond satisfactorily to injections of antimony possibly because the organisms themselves are not active and some of them may even be degenerated; consequently it is best to treat it locally in much the same way as lupus vulgaris. Excellent results are obtained by curettage or by cauterization and as the infiltration is so well defined and does not extend into the subcutaneous tissue, it can be destroyed with little or no scarring.

Lancet, London

2 1431 1482 (Dec 29) 1934

- Some Recent Advances in Cardiology C Bramwell —p 1431
Continuous Suction Drainage with an Account of Case of Bilateral Empyema Treated by It M I Thomson —p 1435
*Periodicity of Microfilaria Bancrofti C Lane —p 1437
Agranulocytic Angina Four Cases Treated with Pentnucleotide D Hall —p 1441
Neoplastic Disease Belonging to Hodgkin Group Case E G B Calvert and H H Sanguinetti —p 1444
Prevention of Secondary Infection of Tuberculous Joints with Especial Reference to Immunization with Dick Toxin M C Wilkinson —p 1446

Periodicity of Microfilaria Bancrofti — Lane is of the opinion that much of the so called knowledge of infection with periodic Wuchereria Bancrofti in man is assumption. The central assumption is that in cyanide poisoning the flow of lymph ceases on death whereas Drinker has found that the postmortem flow in this condition is considerable in duration and quantity. It was essentially on a death from hydrocyanic poisoning that Manson based his hypothesis that in the periodic form of this filariasis microfilariae hide themselves by day in just those positions to which a postmortem flow of lymph would carry them. His hypothesis is left without foundation. On the other hand O'Connor reports that he has demonstrated precisely that anatomic condition which must be found in female worms if periodicity is produced by their simultaneous parturition and typical appearances of the worms at essential stages have been shown. As always in such cases, his work must be repeated by others but in the meantime theoretical objections by those who neglect to further this study cannot indefinitely be taken seriously. Analogies with Dirofilaria immitis are inexact and must not be given undue weight. The proper material for the study of this periodic filariasis of man is man with this periodic filariasis.

Presse Medicale, Paris

43:116 (Jan 2) 1935

- *From Desensitization to Nonsensitivity of Habituation Interpretation of Mechanism of Action Against Simple and Anaphylactic Shocks F Arlong and L Langeron—p 1
 New Posologic Technic for Gold Treatment of Pulmonary Tuberculosis G F Capuani—p 3
 Therapeutic Physiology of Barbiturate Intoxications R Massière and G Beaumont—p 4

Desensitization and Nonsensitivity by Habituation—Arlong and Langeron believe that true desensitization to protein shock does not exist, but that an organism is rendered temporarily refractory. The absence of specific factors in anti-anaphylactic agents, as, for example, the action of peptone against the shock of another peptone, suggests to them the hypothesis that a state of nonsensitivity may result from habituation to repeated shock rather than true desensitization.

Schweizerische medizinische Wochenschrift, Basel

85:4972 (Jan 19) 1935

- Treatment of Hypertrophy of Prostate H Wildbolz—p 49
 Treatment of Prostatic Hypertrophy C A Pettavel—p 54
 Biliary Peritonitis Without Perforation E Ruppner—p 56
 *Tracheotomies During and After Cervicothoracic Operations (Göter Operations) W Capelle—p 58
 Retrovisceral Strumas B Breiter—p 59
 Gingival Metastases of Hemangio-Endothelioma of Thyroid H Matti—p 59
 *Resection of Artery Combined with Unilateral Removal of Adrenals in Therapy of Endarteritis Obliterans of Extremities M Donati—p 61
 Simultaneous Occurrence of Gastric Cancer and Gastric Ulcer H Kunz—p 65

Tracheotomies During Cervicothoracic Operations—

Capelle shows that space-limiting processes in the cervicothoracic region (usually caused by deep-lying goiters) press on the trachea. The softened tracheal cartilages bring on the danger of acute suffocation (bending or inspiratory collapse of the tracheal wall). Mild forms of asphyxia due to these causes can be overcome by overpressure respiration (Sauerbruch), but the more severe forms require surgical aid. To be free from such complications during surgical interventions it has been recommended that the operation be performed while the tracheoscope is in place. If during the operation it becomes evident that complications may develop later, the surgeon will try to produce a support for the trachea. Kocher did this by a suture Sauerbruch by suspension of the goiter stumps on the sternocleidomastoid muscle. However, in stenoses that are located below the level of the attachment of the sternocleidomastoid muscles Sauerbruch's method is not suitable. Asphyxia may develop also after the operation in cases in which this could not be foreseen. In these cases it appears most reasonable to perform a tracheotomy in the reopened operative wound. However, the prognosis of the patients who have been tracheotomized in this manner is extremely unfavorable. The post-mortem examination often reveals generalized sepsis. In view of this fact the author raises the question whether it is permissible to perform a tracheotomy through a new operative wound. He thinks that the danger of an extensive wound infection might be prevented by opening the trachea higher up at a site removed from the surgical region and that the stenosis might then be overcome by means of long flexible catheters. He points out that, in postoperative asphyxia tracheotomy is frequently postponed too long.

Resection of Artery and Unilateral Adrenalectomy in Endarteritis Obliterans—Donati reviews the opinions of others on the value of resection of arteries and of adrenalectomy in endarteritis obliterans. He reports a case in which arteriography had shown that the largest vascular trunk was closed and that only the branches of the deep femoral artery became injected. The fluctuation index was zero. Complete obliteration of the femoral artery had been proved. Arterectomy of the femoral artery had an immediate effect on the pain as well as on the temperature of the member. Subsequent removal of the left adrenal gland improved the effect further. About ten months after the intervention the circulatory conditions were improved to such an extent that blood pressure which formerly had not been perceptible in the affected leg was now measurable. The increase in temperature persisted trophism was

satisfactory, and the wound, which had remained open for several months, was now permanently closed. The patient was able to resume his occupation, which compelled him to stand for long periods. The author believes that adrenalectomy promotes the effect of arteriectomy in an extremity in which severe trophic impairment has already developed. This case confirms the harmlessness of the resection of a rather long portion of the obliterated femoral artery and shows that arteriectomy combined with unilateral adrenalectomy, performed in two stages is of value in endarteritis obliterans.

Polinicino, Rome

42:129168 (Jan 28) 1935 Practical Section

- Medullary Concussion Syndrome of Intermittent Paraplegia G Jona—p 129
 *Hemoglobinuria Due to Plasmochin Case L Ficacci—p 136
 Cholecystography in Diabetic Patients G Zappalà—p 139

Hemoglobinuria Due to Plasmochin—Ficacci refers to a man, aged 25, with a history of malaria and bronchial catarrh, who was under observation for recurrence of the malaria. Oral administration of 0.16 Gm of plasmochin during several days was well tolerated by the patient. When, however, 0.18 Gm of plasmochin was orally administered for a period of three days, symptoms of hemoglobinuria (fever, icterus, urobilinuria) developed. Subsequent administration of 5 Gm of quinine for a three day period did not produce any disturbance. The author concludes from this that the hemoglobinuria was produced by the plasmochin and that the line between toxic and medicinal doses of plasmochin is narrow.

Semana Medica, Buenos Aires

41:19892064 (Dec. 27) 1934 Partial Index

- Radicular Syndrome of Inferior Brachial Plexus Due to Osseous Dystrophy J C Montanaro and R Sanchez Elia—p 2006
 *Dietetic Treatment of Peptic Ulcer H J d'Amato—p 2009
 Hypertrophic Stenosis of Pylorus in the New Born Two Cases in Which Operation Was Performed R Kreutzer and J E. Rivarola—p 2015
 Left Mega Auricle O F Noguera M H Moreau and G Costa Bertani—p 2022
 Atypical Typhobacillosis of Landouzy's Type I R Steinberg—p 2034
 Salivary Lithiasis Surgical Pathology J E Igarzabal—p 2038.

Dietetic Treatment of Peptic Ulcer—D'Amato's treatment of peptic ulcer is as follows. The first week the patient is fed solely on white of eggs, butter and sugar. The amount of white of eggs that the patient takes varies between eight and fourteen daily, distributed in four or five feedings. The white of eggs is taken alone without any modification and on an empty stomach. The amount of butter taken by the patient should be 100 Gm daily distributed in four or five feedings. The butter should be made up into sugar coated pills and given at least fifteen minutes after the white of eggs has been taken. The patient may have plenty of weak tea with sugar. At least 100 Gm of sugar a day should be taken. The same diet is continued during the second week with the added juice of ten oranges and the juice and pulp of ten tomatoes of medium size. These two foods are taken just after the butter or a little later, but not when the ingestion of the white of eggs is near. From the third week on a gradual diminution of the amount of white of eggs and of butter, an increase of the diet and a gradual change to other foods should begin. In this week the patient may receive fresh vegetables, cereals, fruits, fresh brewers yeast and some other foods, such as beef bouillon with oats, rice soup, whole wheat soup, potato puree and baked sweet potatoes eaten with salt and butter. The yeast is dissolved in a tablespoonful of beer and taken with each meal. The fourth week the patient should be given some yolks of eggs, whole wheat bread and fruits. The egg yolks may be taken alone or beaten in a small amount of wine sweetened with sugar. The bread may be eaten plain or toasted with butter. The fruits should be eaten raw, with a preference for oranges, bananas and plums. Lemonade may also be taken. The fifth and sixth weeks the patient may have calf's liver, sheep or calf brain and a little pork. These foods should be cooked or fried in lard or beef fat not in oil. By this time he may also have nuts. After the sixth week the patient gradually goes on a general diet avoiding, however, foods containing little or no vitamins such as sterilized flours, decorticated cereals, olive

oil, oleomargarine, creamless cheese, preserved meats, white fish, wine, beer, tea and chocolate. This diet may be given for a length of time suited to the case. It results in the stopping of pain and of recurring acute crises. The treatment, whether alone or with the aid of medical therapy, gave satisfactory results in uncomplicated peptic ulcer. Sometimes it resulted in the cure of the patient. It also proved satisfactory when used preoperatively in peptic ulcer presenting complications. The author reports more than 100 cases in which good results were obtained.

Klinische Wochenschrift, Berlin

14 140 (Jan 5) 1935 Partial Index

- *Thyroid and Ovary A Loeser—p 4
- *Aspects of Interrelation Between Gonads and Other Endocrine Organs
Excretion of Sex Hormones in a Woman with Suprarenal Insufficiency
H Eng—p 6
- Action of Acetylcholine on Pilomotor Muscles F T Brucke—p 7
- *Aspects of Carotene and of Vitamin A Metabolism H Wendt—p 9
- Penetration of Ferments into Artificial Membranes W Heupke—p 14
- *Erythremia with Migraine Gout and Thrombophilia F P Weber—
p 15
- Pelger Huet's Familial Anomaly of Nuclei of Leukocytes J Leitner and
I J van Leeuwen—p 17
- Indophenol Blue Oxygen Reaction in Cancer Patients E Schirt—
p 19

Thyroid and Ovary—Loeser explains by experiments the efficacy of di-iodotyrosine in menopausal disturbances. The removal of the ovaries from female guinea-pigs is followed by a morphologically demonstrable hyperactivity of the thyroid, which is due to the fact that the anterior lobe of the hypophysis produces more thyroid active substance. This excess in the secretory activity of the anterior hypophysis and the morphologic signs of thyroid hyperactivity produced thereby can be suppressed by oral administration of di-iodotyrosine. The point of attack of di-iodotyrosine is the anterior lobe of the hypophysis.

Relation Between Gonads and Other Endocrine Organs—Eng describes the clinical history of a woman who died of adrenal insufficiency. Especial attention was given to the elimination of hormones. It is worthy of note that the condition of the patient took a turn for the worse following menstruation and particularly after the onset of pregnancy. It is possible that the endocrine disturbances during menstruation and pregnancy had some influence, however, it would have been impossible for the woman to live much longer with the adrenal function practically extinguished. The author indicates in diagrams the results of the urinalysis for the presence of hormones. During the woman's first stay at the clinic her hormone elimination was normal while during the second stay when she was pregnant it was somewhat reduced. A comparison of the clinical observations with the results of the hormone analyses indicates that these permit no conclusions regarding a connection between the patient's general condition and the sexual functions.

Carotene and Vitamin A Metabolism—Wendt reports clinical and experimental studies. Serum analysis of healthy persons revealed for carotene an average of 86 Lovibond units (yellow) and for vitamin A an average of 14 Lovibond units (blue). In healthy persons the carotene and the vitamin A contents proved to be subject to considerable fluctuations. In prolonged feeding experiments with carotene and vitamin A, the carotene and vitamin A contents did not increase further, once they had reached a certain maximum. It was found that some organs stored carotene and vitamin A. The author's experiments corroborated the observations of Juszat, who found that following the administration of vitamin A to rabbits there develops hyperlipemia and hyperlipodemia. However, it proved impossible to increase the fat content of the serum of dogs by treatment with vitamin A. In human subjects the results varied. In disorders in which the fat resorption was impaired, the serum had low carotene and vitamin A values or vitamin A was lacking entirely. Patients with exophthalmic goiter showed extremely low carotene and vitamin A values or a complete absence of vitamin A. Following successful iodine therapy or after surgical treatment, the vitamin A content increased again. The highest carotene and vitamin A values were found in diabetes mellitus, and the fat content of the serum was found to be greatly increased. Insulin exerted no influence on the carotene and vitamin A contents. The carotene and vitamin A

contents of the serum were abnormal also in patients with pernicious anemia. After liver therapy the vitamin A content was found to increase in patients with pernicious anemia, however, this was not the case following administration of a liver extract. Medication with a vitamin A preparation did not produce a remission in pernicious anemia. There seemed to be no relation between pernicious anemia and vitamin A.

Erythremia with Migraine, Gout and Thrombophilia—Weber reports a case presenting erythremia, migraine, gout and thrombophilia. In 1932 the patient passed through a condition resembling collapse, which lasted two days and had the aspects of a coronary thrombosis. He also complained of pains in the region of the spleen, which became considerably enlarged. The patient was under treatment for one year, but occasional venesections and a high fat diet produced no noticeable improvement in the erythremia. The gout improved under treatment. Months later at a new consultation, the patient stated that he had lived on a high fat diet and his condition was somewhat improved. However months later he had to be hospitalized, his general condition was poor and he had had tarry stools. Because of this symptom a duodenal ulcer was assumed and the suitable treatment was instituted but without avail, for the feces remained black. The patient died, and the necropsy revealed no ulcerations in esophagus stomach or duodenum. The hemorrhage must have originated in a strongly hyperemic portion of the ileum which must have been produced by a thrombotic or embolic infarct. The heart contained a number of thrombi. The spleen showed old infarct scars, and the splenic artery had an old thrombotic occlusion. The bone marrow was fatty in parts, but the largest portion was red and this portion contained only a few fat cells with a large number of megakaryocytes. The leukocytes were increased even more than the erythrocytes, and for this reason it seems justified to speak of erythroleukemia. The author is inclined to accept the neoplastic theory of the etiology of the leukemias and of erythroleukemia and calls attention to the shortcomings of Hitznerberger's theory, according to which erythremia is caused by an overproduction of Castle principle in the stomach.

14 4172 (Jan 12) 1935 Partial Index

- Influence of Fatigue on Elasticity of Connective Tissue A Arnold.
—p 44
- *Action of Short Waves on Course of Brucella Abortus Infection.
G Izar and P Moretti—p 46
- Malignant Hypertension (Cerebral Form) Malignant Pseudo Uremia)
J Olivet—p 47
- *Experiments on Danger of Air Embolism in Intravenous Injection
K Nemec—p 55
- *Mechanism of Takata-Ara Reaction and Its Practical Significance as
Functional Test of Liver F Oefelein—p 56

Action of Short Waves on Course of Brucella Abortus Infection—Izar and Moretti tried the short waves in treating nine cases of Brucella abortus infection. They used a tube apparatus of from 250 to 350 watts, which could be adjusted to wavelengths of from 4 to 8 meters and 15 meters. They employed only the 4 and 8 meter wavelengths. The organs treated were the spleen alone and the spleen and liver together. The treatments lasted from fifteen to twenty minutes and were repeated every day or at intervals of several days. The treatment always resulted in a reduction in the size of the spleen and liver and was always well tolerated. In some cases six or nine sessions resulted in complete cure, while in others the rays were applied from fifteen to more than twenty times. Six patients were completely cured and one was improved, but in two the results were still doubtful after a large number of treatments.

Experiments on Air Embolism—To determine what quantities of air entering the blood stream by intravenous injection are tolerated, Nemec injected into himself gradually, with an ordinary injection syringe, 2, 3, 4 and 5 cc. of air and did not observe the slightest symptoms. After two days he repeated the experiment by injecting at once rapidly 5 cc. and by controlling his heart action with the phonendoscope. Again he observed neither subjective nor objective symptoms. This experiment with 5 cc. of air he repeated several times and always with the same negative results. Colleagues watched the experiments. The author also experimented with 10 cc. of air. At the first injection of this quantity he experienced

a slight restlessness and a feeling of oppression immediately following the injection. However, these sensations did not last more than ninety seconds. He thinks that they may have been the manifestation of a rudimentary embolism or of a nervous reaction. He cites observations made by Jedlicka on two horses given injections of large amounts of air and surviving the experiment. Later experiments were made on animals in a slaughterhouse. The animals were killed by opening of the carotid artery one hour after the air had been injected and it was observed that, as long as the heart action continued a foamy blood stream was discharged by the carotid and other arteries. The author concludes that an embolism resulting from a large amount of air does not need to terminate fatally as long as the cardiac action and defense movements of the body succeed in breaking up the air bubbles. This explains the favorable effect of artificial respiration (possibly in connection with oxygen inhalation) in accidental embolisms that develop in the course of an operation. Death caused by an embolism takes place instantaneously as the result of obstruction of the heart with a large air bubble, while small bubbles may pass through heart and lungs without severe symptoms. In the cerebral vessels they may cause disturbances after several hours. The quantities of air he tried on himself (5 and 10 cc.) are too small to permit general conclusions, but the repeated negative results indicate that under normal conditions quantities of 10 cc. or less are without danger.

Takata Ara Reaction as Functional Test of Liver—Oefelein cites three experiments that he conducted to clarify the action mechanism of the test. The experiments indicate that the positive outcome of the Takata-Ara reaction is largely determined by the ammonium ions. Since the liver is the site of detoxication of the blood ammonia, the amount of ammonium ions in the blood serum is an indicator of the functional capacity of the liver. He studied the ammonia content of the serum of patients with and without hepatic disorders so as to detect whether there is a parallelism between the ammonia content and the positive outcome of the Takata-Ara reaction. It was found that in all cases of positive Takata-Ara reaction the ammonia content of the blood serum was greatly increased and as a rule there was a parallelism between the degree of positivity of the reaction and the height of the ammonia content. The Takata-Ara reaction as a functional test is a specific indicator of parenchymal lesions of the liver.

Medizinische Klinik, Berlin

31:136 (Jan 4) 1935 Partial Index

- *Definition of Allergic Diseases L. Aschoff—p 1
Clinical Experiences with Eugenic Sterilization A. Mayer—p 3
Law for Prevention of Defective Offspring. Matzner—p 8
Therapy of Chronic Hypokinetic Constipation in Older Persons N. Ortner—p 15

Allergic Diseases—Aschoff says that the term allergic should be restricted to disorders that appear in attacks on the basis of a hypersensitivity of the tissues. He deplores that at present there is a tendency to extend the term allergic by transferring the observations on the artificial allergy in animals to human subjects. This has gone so far that the allergic conditions that become manifest in the course of infectious diseases are made the center point in the discussion of allergic conditions. Instead of speaking of an allergy in infectious diseases or of an allergizing effect of infectious diseases, the process is considered apart from the infection as an allergic disease. This can be said especially of tuberculosis, which has been designated the prototype of allergic diseases. A disturbing confusion has been produced in that etiologically different and only symptomatologically somewhat similar disturbances are designated as allergic diseases because certain local histologic changes have a resemblance to the allergic inflammations that are produced artificially in animals. This applies for instance to the fibrinoid swellings of the connective tissue observed in physical and chemical injuries or in infectious processes. Since these fibrinoid swellings of the connective tissue are especially frequent in the artificially produced allergic inflammations, their appearance in human beings is interpreted as indicative of the fact that allergic factors are involved, and the entire disorder irrespective of its etiology is designated as an allergic disease.

A clinical symptom, such as the rheumatic one, which may be produced by widely different causes, has been identified with definite histologic changes, so that even if there is no clinical sign of rheumatism the term rheumatic or allergic is applied wherever a fibrinoid degeneration of the connective tissue exists. The author considers it necessary to raise objections to this disregard of all specific pathogenic and pathologic laws. He points out that the knowledge of the many different etiologically different diseases only because they have the same symptom namely pain advancing from joint to joint. From these points of view he criticizes Loewenstein's theory of the tuberculous etiology of rheumatism and also the attitude of Klinge, Roessle and Gerlach, who announce their departure from Virchow's cellular and organic pathology and oppose to this analytic method their own synthetic approach. The author considers this a step backward. He emphasizes that only a sharp etiologic differentiation makes an effective causal therapy possible and that the indiscriminate grouping together of syphilitic, tuberculous, rheumatic and atherosclerotic disorders under the heading of allergic disorders makes an effective therapy impossible.

Zeitschrift für Kinderheilkunde, Berlin

67:174 (Dec 19) 1934

- Influenza of Children in Family E. Nassau—p 1
Changes in Reaction of Sole of Foot in the New Born in Response to Stimulation or Other Influences T. W. Richards and O. C. Irwin—p 16
*Anemia Neonatorum Anni Noll—p 21
Bruckner's Climate Periods and Epidemiology of Diphtheria in Europe W. Schwarz and G. Fachini—p 29
*Symmetrical Parietal Fenestrations M. Zarß—p 54
Studies on Development of Musculature in Children of School Age. A. Ruotsalainen—p 67

Anemia Neonatorum—Noll gives the history of a newborn infant having great pallor and a large spleen. The infant recovered without special treatment and during the existence of these symptoms it apparently felt well. The blood picture was characterized by a great reduction in the erythrocytes and in the hemoglobin content, by a flooding out of nucleated erythrocytes and of primary cells (that is, immature elements) and by the appearance of myeloblasts and myelocytes. There were poikilocytosis and anisocytosis and a hemoglobin deficiency in the cells. The color index was somewhat below 1. The family anamnesis gives no indications that would help to clarify the origin of this type of anemia. In this case the mother stated that at the end of her pregnancy she had had influenza and a severe cough. In another case the preceding child in the family had icterus gravis, and in still another a number of abortions and premature births had preceded the birth of the infant with anemia. The course of anemia neonatorum is usually favorable. The symptoms generally disappear between the second and the seventh month of life. Blood transfusions and iron and arsenic medication have been employed in other cases. In regard to the etiology of anemia neonatorum, various theories have been advanced. Ecklin assumed the diaplacental transmission of a virus or a toxin as the cause. Other authors discussed the possibility of an essential weakness of the hematopoietic system, and Grulee considered a close relationship between anemia neonatorum and erythroblastosis. In this connection the author points out that the blood picture as well as certain symptoms are similar in anemia neonatorum, congenital dropsy and icterus gravis neonatorum. For this reason it has been assumed that these three disorders are manifestations of the same blood disease, namely, an erythroblastosis. However even if anemia neonatorum is classified with the erythroblastoses, its origin is still unknown, for the etiology of the erythroblastoses has not been explained.

Symmetrical Parietal Fenestrations—Zarß shows that the term foramina parietalia permagna is erroneously applied to the abnormally large parietal openings for he maintains that they are not identical with the small parietal foramina known in normal anatomy. He demonstrates that the large parietal openings are the manifestations of developmental deficiencies and that they nearly always concur with other developmental disturbances and are an indication of anomalies in the ossification of the cranium. He describes a case of his own

observation, in which it was possible to observe the abnormally large parietal openings continuously from birth onward in a child with a microcephalic tower head and an extremely large accessory fontanel. He thinks that these abnormally large parietal openings should be designated as symmetrical parietal fenestrations.

Zentralblatt für Gynäkologie, Leipzig

59 129 192 (Jan 19) 1935

- *Diagnosis of Pregnancy by Demonstration of Histidine in Urine K. Brandisch—p. 132
 *Does Onset of Labor Pains Depend on Cosmic Influences? H. Kirchhoff—p. 134
 Experiences with Frey's Counting of Labor Pains E. Baumann—p. 144
 Shortening of Normal Delivery with Simultaneous Alleviation of Pain F. Schenk and F. Friedl—p. 151
 Value of Tests for Completeness of Placenta W. Breipohl—p. 155
 Chickenpox as Serious Complication of Puerperium T. Kohlhaage—p. 160
 Significance of Visual Disturbances During Gestation N. Acs—p. 161

Diagnosis of Pregnancy by Histidine in Urine—Brandsch employed the histidine reaction suggested by Kapeller-Adler on the urines of 121 women who had not completed their first half of the pregnancy period of fifty-six women who had advanced beyond that stage of eight women who had an abortion in the second or third month of pregnancy, of two women with tubal pregnancy, and on 120 specimens of urine from nonpregnant women. During the early stages of pregnancy the histidine test is not sufficiently reliable to permit the diagnosis of pregnancy for he obtained 19 per cent of negative results. In the women who were in an advanced stage of pregnancy the incorrect results amounted to 9 per cent and in the nonpregnant women to 10 per cent. The author concedes however that the urine of a large percentage of pregnant women contains histidine while this can be said of only a small percentage of nonpregnant women. He considers this an interesting peculiarity of the metabolism during pregnancy. The test is not sufficiently exact to constitute a reliable basis for the diagnosis of pregnancy.

Onset of Labor Pains—Kirchhoff advances evidence which indicates that there is a relationship between cosmic manifestations and the onset of labor pains but he is unable to state whether this biologic manifestation and the atmospheric processes have a causal connection or whether both are parallel results of great cosmic processes. He points out that a number of other physiologic manifestations show a sinelike curve in the twenty-four hour period parallel to the atmospheric processes. However in most of these the curve is the reverse of that representing the onset of labor pains or the blood sugar where these show an elevation the others show a downward trend and vice versa so it is with temperature, blood pressure pulsation elimination of water and basal metabolism. They all adhere to the twenty-four hour rhythm even if a person has to work at night instead of in the daytime. The author points out that it is of course self evident that the cosmic influence is not the only determining factor in the onset of labor pains. All other necessary factors must have reached the point of maturity before the exogenic cosmic factor can exert its influence.

Vrachebnoe Delo, Kharkov

17 625 688 (No 10) 1934 Partial Index

- Synthesis in Medicine and in Sanitation I. A. Liberman—p. 633
 Correlation of Physiology and Clinic I. M. Sribner—p. 641
 Pathologic Anatomy and Laboratory Clinical Diagnosis B. N. Dubinskaya—p. 645
 Inadequacy of Modern Concept of Neuroses from Pathogenic Clinical and Practical Points of View T. I. Yudin—p. 647
 Strumectomy and Pulmonary Tuberculosis G. N. Keves—p. 651
 *Use of Hypertonic Salt Solution in Postoperative Period J. J. Genkin and P. A. Milyavskaya—p. 655
 Therapy of Myoma Uteri in Young Women D. E. Schmundak—p. 659

Hypertonic Salt Solution by Rectum—Genkin and Milyavskaya state that hypertonic solution of sodium chloride administered rectally is a prompt and effective remedy in treating motor disturbances of the intestine in the postoperative period. They administered an enema of 100 cc of a 15 per cent solution in cases of postoperative colic or meteorism when other measures failed and always obtained a prompt evacuation

of the intestine. The method is likewise valuable as an aid in differentiating between functional and mechanical ileus. Because of its efficacy, the authors prefer this method to intravenous introduction of solution of sodium chloride. They administered a 5 per cent solution of sodium chloride by the rectal drip method in cases of intestinal obstruction. The slow method of administration has the advantage of replenishing the organism with chlorides in addition to ridding the intestine of toxic material.

Acta Chirurgica Scandinavica, Stockholm

76 1 225 (Jan 15) 1935

- Experiences with Treatment of Fractura Colli Femoris Medialis by Pegging Method of Smith Petersen—Sven Johansson G. Nyström—p. 1
 Contribution to Chemistry of Primary Calculi of Small Intestine G. Bliv—p. 25
 Unusual Variety of Retroperitoneal Hernia E. Schildt—p. 35
 *Swallowed Foreign Bodies O. Perslow—p. 63
 Flaring Up and Spreading of Infection After Removal of Prostate Tamponades E. Schildt—p. 93
 Septic Osteomyelitis as Etiology of So Called Typical Lesion of Sesamoid Bone of First Metatarsal Bone K. Bennet—p. 103
 Esophagogastrostomies According to Method of Heyrowsky A. L. Haglund—p. 109
 Origin and Treatment of Malacia of Semilunar Bone (Kienbock's Disease) O. Hulten—p. 121
 Complications Due to Foreign Bodies in Stomach E. Norinder—p. 136
 Intestinal Intussusception at Cecal Tumors E. Ehnmark—p. 147
 Submucous Empyema in Upper Respiratory Passages K. E. Groth—p. 212

Swallowed Foreign Bodies—Perslow has collected 225 cases of swallowed foreign bodies treated in seven Swedish hospitals between 1910 and 1929. The material in which all kinds of objects are represented is classified into different groups each comprising objects of similar nature. He maintains that the majority of swallowed objects are evacuated spontaneously without causing the slightest trouble or discomfort. Such is the case with all rounded objects. Spontaneous evacuation may also be expected in the case of all objects pointed at one end such as pins, safety pins, drawing pins, nails and screws. Experience shows on the other hand, that objects pointed at both ends readily get stuck during the passage, giving rise to severe complications. The author advises that these cases be kept under careful observation in the hospital while the others may be kept under observation in the outpatient department. He maintains that roentgen examination is indispensable in order to obtain a close knowledge as to the true nature of the swallowed object. He warns against relying on the history. A large number of foreign bodies have been removed by operation (usually gastrotomy), although in the author's opinion there was never really any indication for it, since in most cases there were no symptoms of any ill effects. As a life saving measure, operation had to be undertaken in only a few cases. The reason for the early operations seems to have been distrust of spontaneous evacuation. The author describes three cases in which the foreign body stuck in the esophagus and in which extraction by esophagoscopy was out of the question. By means of a soft stomach tube he pushed the foreign body down in the stomach. This method was successful in each case. He describes four cases of foreign bodies stuck in the esophagus in which repeated attempts at extraction by esophagoscopy failed. In all these cases the foreign bodies were removed by laparotomy, the stomach being opened sufficiently to allow the whole hand to be introduced and the foreign body grasped by a long pair of forceps introduced through the cardia. This procedure would seem to be the safest method. The author concludes that cases of swallowed foreign bodies should in the majority of instances be treated expectantly with bulky foods, such as puree, and restriction of fluids. The passage of the foreign body should be followed by roentgen examinations. Should the object tend to remain in the stomach, the patient should be put to bed and lie on his right side. If the foreign body remains in the cecum, its onward passage is best furthered by raising the foot end of the bed. He warns against giving laxatives. There is no indication for operation until intestinal symptoms or those of peritonitis appear, or until repeated roentgen examinations have proved the body to be impacted, but operation should be immediately preceded by roentgen examination.

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FEVER THERAPY FOR GONOCOCCIC INFECTIONS

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For generations, gonococcic urethritis has been treated mainly by irrigating, or by injecting into the urethra various chemical solutions that were thought to have an antiseptic or germicidal effect. The gamut of the so-called urethral germicides has been run from the old standbys potassium permanganate and the "nonirritating" silver proteins argyrol and protargol to another group of miracle workers, the aniline dyes, mercurochrome, gentian violet and acriflavine. Each group and each substance has had its more or less vociferous protagonists, but the use of such substances is now gradually diminishing. This is not to imply that all these different chemical substances do not have any therapeutic value, but only that at various times too much reliance has been placed on this or that compound or group of compounds.

There is no doubt that many patients with gonorrhea have been cured by such methods, but many other patients have not been cured or have been cured only after weeks or months of treatment. So true is this that one cannot help wondering whether the disease was cured as the result of the treatment or as the result of those internal factors which constitute the natural defense against infection. In any event it cannot be denied that, even at the present time, the treatment of gonorrhea is an uncertain affair.

BACTERICIDAL ACTION OF HEAT ON THE GONOCOCCUS

In the past, many observers have noted an inhibitory effect of high temperature on gonococcic infections. Thus, Finger, Ghon and Schlagenhauser¹ failed to induce urethritis by injecting gonococci into the urethra of a patient who already had a temperature of 39 or 40 C (102.2 or 104 F), whereas urethritis always developed when the organisms were injected into afebrile subjects. Guiard² in 1894 had a patient with gonorrhea whose urethral infection subsided spontaneously after scarlet fever. Bogdan³ in 1893 cited a case

of gonorrhea in which the urethral discharge had spontaneously disappeared during an attack of pneumonia but recurred after the fever had subsided. Neisser and Scholtz⁴ always found it difficult to cultivate the gonococcus in cases in which patients had a fever. Luys⁵ in 1917 made a similar observation after a patient of his had had an attack of mumps during which the temperature had attained 40 C (104 F). Culver⁶ recorded a similar case in 1917 in which the urethral infection was cured after the patient had had a four-day bout of malaria with a temperature of 40.5 C (104.9 F). He claimed that a sudden rise of temperature to 39 C (102.2 F) was sufficient to destroy the gonococcus. However, the experience of others, such as Nobl⁷ and Nicoll,⁸ was different.

Bacteriologists have long known that *Neisseria gonorrhoeae* can best be isolated and cultivated at a temperature of 37 C (98.6 F), and that the organism does not grow so well at temperatures greater than 38 C (100.4 F). Steinschneider and Schäffer⁹ in 1895 noted that a temperature of from 40 to 41 C (104 to 105.8 F) for a few hours was sufficient to kill the gonococcus. Wertheim¹⁰ in 1900 claimed that the organism grows well at 40 C (104 F) and can even tolerate 42 C (107.6 F), but this claim has not been substantiated by other investigators. Santos¹¹ was able in 1913 to isolate gonococci from pus that had been subjected to a temperature of 45 C (113 F) for less than forty-five minutes or to a temperature of 50 C (122 F) for less than five minutes. Ungermann,¹² on the other hand, found that some strains of gonococcus resisted 41 C (105.8 F) for ten hours and that a few strains even withstood 52 C (125.6 F) for seven hours. On heating the male urethra with diathermy, Boerner and Santos¹³ could not isolate the gonococcus after ten hours at 39 C (102.2 F), three hours at 41 C (105.8 F), and fifty-seven minutes at 41.7 C (107 F). Ylppö¹⁴ treated vulvovaginitis of a girl, aged 5 years,

4 Neisser A and Scholtz W. Gonorrhoe in Handbuch der pathogenen Mikroorganismen. Jena 3: 168 1903.

5 Luys, G. Textbook on Gonorrhea and Its Complications. London: Bailliere Tindall & Cox 1917 pp 25-26.

6 Culver, Harry. The Treatment of Gonorrheal Infections by the Intravenous Injection of Killed Gonococci Meningococci and Colon Bacilli. J A M A 68: 362 (Feb 3) 1917.

7 Nobl, G. Klinischer Beitrag zur Biologie der Gonokokken. Wien Klin Rundschau 46: 863 886 1901.

8 Nicoll M. Three Cases of Gonococcus Septicemia with Arthritis Following Scarlet Fever. Arch Pediat 31: 804 1914.

9 Steinschneider and Schäffer. Zur Biologie der Gonokokken. Berl Klin Wchnsch 32: 984 1895.

10 Wertheim E. Ueber das Verhalten des Gonococcus auf kunstlichen Nährböden. Arch f Dermat u Syph 51: 139 1900.

11 Santos G. Résistance du gonocoque aux températures de 45 et 50. Action directe des courants de diathermie, Arq do Inst bact Camara Pestana 4: 211 1913.

12 Ungermann E. Eine einfache Methode zur Gewinnung von Dauerkulturen empfindlicher Bakterienarten und zur Erhaltung der Virulenz tier pathogener Keime. Arb a d k Gsndtsamte 51: 180 1919.

13 Boerner R and Santos C. Ueber eine neue Art von Elektroden zur Behandlung der Gonorrhoe mittels Diathermie. Med Klin 10: 1062 1914.

14 Ylppö A. Ueber die Fieberbehandlung der Vulvovaginitis gonorrhoea bei kleinen Mädchen. Therap Monatsh 30: 580 1916.

From the Section on Fever Therapy (Drs Desjardins and Popp) and the Section on Urology (Dr Stuhler), the Mayo Clinic.

1 Finger E, Ghon A, and Schlagenhauser F. Beitrage zur Biologie des Gonococcus und zur pathologischen Anatomie les gonorrhoeischen Processes. Arch f Dermat u Syph 28: 3 1894.

2 Guiard F P. La blennorrhagie chez l'homme. historique bacteriologie clinique. Traitements anciens et nouveaux. Préface du Professeur F Guyon, Paris Rueffet Cie 1894 p 284.

3 Bogdan M. Disparition d'un écoulement blennorrhagique pendant le cours d'une pneumonie. retour de l'écoulement après la guérison. Arch de dermat et syph 4: 253 1893.

by means of hot baths, beginning at a temperature of 39 C (102 F) and gradually increasing the temperature of the water to 41.5 C (106.7 F). After eight daily baths of one hour, Ylppo could no longer isolate the gonococcus. Koch and Cohn¹⁵ in 1928 expressed the opinion that the gonococcus can more readily tolerate a high temperature when in vivo than when in vitro. This opinion rested on the fact that, during an acute infectious disease in man, the infection may resist a temperature of 40 C (104 F) for several days.

FEVER THERAPY BY MODERN METHODS

For a number of years artificial fever, induced by the injection of bacteria or protein substances, by general diathermy or by short wave radiations, the heating effect of which had been fortuitously discovered by Whitney, who also realized its possible therapeutic value, has been used to treat syphilis of the nervous system, chronic arthritis and certain other conditions. During the last few years also the value of this method in treating acute gonococcal arthritis has been made increasingly clear. The rapid relief from pain and subsidence of inflammation obtained by thorough heating of the affected joints themselves, without general elevation of body temperature is remarkable enough, but still more startling is the almost theatrical effect of increasing the general body temperature of such patients to between 41.1 C (106 F) and 41.7 C (107 F) and maintaining it at this level for five or more hours.

Quite naturally observations of this kind led a few physicians to consider the possible value of such a procedure in gonococcal infections of the urethra and its associated structures. This possibility was brought into the realm of probability by the fundamental experiments of Carpenter, Boak, Mucci and Warren.¹⁶ These investigators undertook the task of determining the thermal death time of the gonococcus at temperatures that can be tolerated by man. They subjected fifteen strains of *Neisseria gonorrhoeae* to temperatures of 39, 40, 41, 41.5 and 42 C (102, 104, 105.8, 106.7 and 107.6 F). The different strains had been under cultivation from one month to twelve years. The resistance to fever of the different strains was found to vary, cultures that had been isolated ten and twelve years previously tolerated heat for a longer time than recently isolated cultures. Nevertheless it was found that at a temperature of 41 C (105.8 F) 99 per cent of the gonococci were destroyed in from four to five hours, but to destroy the remaining 1 per cent required heating at this temperature for from eleven to twenty-three hours.

When subjected to a temperature of 41.5 C (106.7 F) and 42 C (107.6 F), 99 per cent of the gonococci were killed in two hours whereas the remaining 1 per cent required heating from seven to twenty hours at 41.5 C or from five to fifteen hours at 42 C. From these results, Carpenter, Boak, Mucci and Warren concluded that artificial fever might be a valuable aid in the treatment of gonococcal infections.

RESULTS OF TREATMENT

Stimulated by the work of Carpenter, Boak, Mucci and Warren, and by the unpublished observations of Simpson we undertook to test the method in cases of

gonorrhea, both acute and chronic, with or without complicating lesions. Between December 1933 and September 1934 we have undertaken to treat by this method thirty-three patients with gonococcal infections of the genito-urinary tract, that is to say, thirty-three patients were referred for fever therapy. Of these thirty-three patients, four received only one session of treatment and either they did not reappear for treatment or the idea of treating them had to be abandoned for lack of cooperation, these four patients must be excluded from further consideration.

Of the remaining twenty-nine patients, twenty-five completed the treatment and were cured. By cure we mean precisely what is implied by the word cure: complete cessation of urethral discharge, disappearance of symptoms and of gonococci, in spite of repeated examinations.¹⁷ Moreover, these patients have remained free from discharge, symptoms and gonococci for from one to several months depending on how recently their treatment was completed. Ten of these patients (nine men and one woman) had a complicating acute gonococcal arthritis and the arthritis also was cured.

In nine of these twenty-five cases the urethral discharge ceased and smears were free from gonococci after the first session of treatment. In four cases the urethral discharge ceased and smears were free from gonococci after the second session of treatment. In three cases the urethral discharge ceased and smears were free from gonococci after the third session of treatment. In two cases the urethral discharge ceased and smears were free from gonococci after the fourth session of treatment. In four cases the urethral discharge and smears were free from gonococci after the fifth session of treatment. In two cases the urethral discharge did not cease and smears did not become negative until the patients had received seven and ten sessions of treatment, respectively. This fact will be commented on later. In one of the twenty-five cases the patient received eight sessions of treatment and was cured, but it is not certain how many sessions he received before the smears became negative.

Of the twenty-nine patients who can be said to have received systematic treatment, four were not cured. One was a woman aged 18, with acute urethritis. The second was a woman who had a relatively chronic urethritis, with cervicitis, salpingitis, and an acute gonococcal arthritis of the right knee. The third and fourth patients were girls, aged 5 and 8 years, respectively, who had acute gonococcal vaginitis. At the time the first two patients were treated, the only fever chamber available was not air tight, and great difficulty was experienced in inducing a sufficiently high temperature and in maintaining the fever long enough to be effective. Moreover, one of these patients (the first named) did not tolerate the treatment well. Her pulse rate was flighty, and nausea and vomiting supervened at each session of treatment. This relatively unusual complication greatly increased the difficulty of treatment. As for the young girls with acute vaginitis, the condition of both improved, the discharge did not cease completely, however, although each received eight sessions of fever. It is true that, during some sessions, it was impossible to maintain the temperature consistently above 41.1 C (106 F), and the early sessions were far from satisfactory. This may have had a great deal to do with our failure to cure these patients with fever alone.

¹⁵ Koch J and Cohn A. Gonokokkeninfektionen in Kolle W, Kraus R and Uhlenhuth P. Handbuch der pathogenen Mikroorganismen 4: 705 1928.
¹⁶ Carpenter C M, Boak Ruth A, Mucci L A and Warren S L. Studies on the Physiologic Effects of Fever Temperatures. J Lab & Clin Med 18: 981-991 (July) 1933.

¹⁷ In all cases smears were made and examined each day except on days that the patients were treated.

From the foregoing it may be seen that all the male patients who cooperated faithfully were cured, whereas for the female patients a cure appears to have been more difficult to obtain. As has been explained, much of this difficulty arose from imperfect insulation of the first fever chamber, with which most of the female patients were treated, but this does not account altogether for the failure to cure all the female patients. With the improved chambers that we now have and with greater experience we are convinced that the cure of a large proportion of female patients can be obtained, we doubt, however, that the percentage of such patients who can be cured can ever attain 100. The nervous system of the average woman is less stable than that of the average man. Probably related to this circumstance is the relative instability of the gastro-intestinal tract of the average woman. The skin of the average woman also is more sensitive, moreover, secondary infection is more common than among men. All these factors tend to make treatment more difficult and less effective.

In spite of these difficulties, however, there is no doubt that a large majority of female patients who have gonococcal infections can be cured by this method in much less time than by the methods heretofore in vogue.

As an example of the possibilities, the following may be of some interest. One day, one of us received a visit from a physician who was accompanied by another man. The physician told the following story. A few weeks previously, the wife of the man who accompanied him had noticed a vaginal discharge which she could not understand and she asked the physician about it, but, not even thinking of the possibility of gonococcal infection, he told her that the discharge was not significant and would probably subside spontaneously. Both husband and wife had always been healthy and had lived regularly. About a week later she again mentioned the subject to the physician, who again regarded the matter as insignificant and did not even trouble to examine the discharge.

A short time afterward, the husband presented himself to the physician and complained of a urethral discharge, smears of which contained an abundance of gonococci. The physician then proceeded to examine smears taken from the wife, and these also contained innumerable gonococci, moreover, on examination, left-sided salpingitis was found. All factors of a clear history indicated that the infection of both patients had been innocently acquired.

Having heard that another patient from the same locality had been cured by the fever method, the physician had come to inquire about it on behalf of his companion and of the companion's wife. They were told that promises of cure could not be made but that previous experience encouraged us to believe that a cure might be possible, whereupon it was decided that the husband would be treated first and, if the treatment should prove successful, his wife could then be given the benefit of the same procedure. Briefly, the husband's urethritis was cured after four sessions of fever. Then the wife, who already had a complicating salpingitis on the left side, also submitted to treatment. Owing to an unusually sensitive skin, a sufficiently high temperature could not be attained during the two initial sessions of fever. After this the skin tolerated a satisfactory degree of temperature, and four additional sessions of treatment were sufficient to cure not only

the urethritis but also the salpingitis. Both husband and wife have been perfectly well since then.

TECHNICAL CONSIDERATIONS

How do patients tolerate such treatment? In treating gonococcal infections, the aim is to destroy the infecting organism directly by subjecting it to a sufficiently high temperature for a sufficient length of time. At the outset, it was arbitrarily decided to raise the temperature to between 41.1 C (106 F) and 41.7 C (107 F) and to maintain it at this level for five consecutive hours. On the average it requires from sixty to ninety minutes, and in some cases even longer, to bring a patient's temperature to 41 C (105.8 F), and at the end of a session of fever at this level it requires approximately the same length of time for the temperature to return to normal. The temperature of many patients could be raised more rapidly, but to push the fever too rapidly would be to strain the power of the skin to adapt itself and might result in burns, which should and usually can be avoided. The majority of patients tolerate treatment quite well and the way patients behave under treatment is an absolute function of the character and temperament of the individual. Persons who are determined to get well as quickly as possible take their sessions of fever without a whimper, some even sing (not from delirium but to while away the time) and smoke during each session. Others begin to ask to be released from the chamber long before the treatment session has been completed. Naturally, five hours at a temperature of from 41.1 C (106 F) to 41.7 C (107 F) or even a little higher is not only a fairly strenuous cardiovascular functional test but also a thorough test of the character of an individual. Pampered persons, without intestinal fortitude, or persons who do not understand the meaning of self restraint, are bad subjects for fever therapy, and their failure to cooperate often makes effective treatment difficult or impossible.

At first also the treatment sessions were repeated, in cases in which the urethral discharge had ceased after the first session, only when the discharge reappeared. Moreover, when the discharge did not disappear after the first or after subsequent sessions, several days (from three to seven) was then allowed to intervene between sessions. As experience soon showed, it was unwise to allow so many days to elapse between the sessions of fever. Since then we have modified this procedure, and now only two days is allowed to intervene between the different sessions of treatment. In this way, whenever the discharge ceases, whether this is after the first, second or any subsequent session of treatment, it usually does not reappear.

If patients could be treated every day instead of every second or third day, the disease could be cured more rapidly and with even greater certainty, but this is hardly feasible. A temperature of from 41.1 C (106 F) to 41.7 C (107 F) maintained for from five to six or eight hours taxes the strength of the average individual to a considerable degree. If measures to prevent it were not taken, considerable loss of weight and strength would occur and would probably continue for some days. The loss of weight would result from loss of fluids by perspiration, and the loss of strength would result chiefly from loss of chlorides. This difficulty is largely obviated by causing the patients to drink, during each session of treatment, from 2 to 5 liters of a 0.6 per cent solution of sodium chloride. As a result of this procedure, the weight of the average

patient actually increases during a treatment session, and the incidental fatigue, instead of continuing for days, usually disappears in from twelve to twenty-four hours. To minimize the fatigue further and to make the long sessions more bearable, especially for nervous and apprehensive patients, sedatives are given from time to time. Of these we have found codeine, pentobarbital sodium (nembutal) and sodium amytal the most satisfactory. Dilaudid is not reliable and may give rise to unnecessary complications. Morphine is to be avoided because of its tendency to induce nausea and sometimes vomiting, which may considerably interfere with treatment.

Another significant feature of the treatment as applied in this series of cases was that three patients had to be subjected to seven, ten and twelve sessions of fever, respectively, before the gonococcal infection was cured. This was attributable to two factors—the temperature and the time during which it was maintained. In these particular cases either the temperature was not raised sufficiently or the time during which the fever was maintained was too short, usually the two factors combined to diminish the effectiveness of treatment. In gonococcal infections there is no doubt that the therapeutic efficacy of fever is absolutely a function of the degree of temperature attained and of the time during which an adequate degree of temperature is maintained. Patients vary considerably in the readiness with which their temperature can be elevated and, as a corollary, the temperature of some patients can be raised to any desired degree in much less time than that of other patients whose mechanism of temperature control is much less labile or more resistant to external influences.

When these three patients were treated the treatment was supervised by a medical assistant who was obliged to work in another service during the latter part of the afternoon. Therefore if the temperature of a patient was slow to rise this was not compensated for by extending the total duration of the session, the patients were withdrawn from the fever chamber at a fixed time, regardless of the period during which a temperature between 41.1 C (106 F) and 41.7 C (107 F) had been maintained. In these particular cases, for the reason given, such a temperature was not maintained for five hours but only for four or even three hours. This is why so many more sessions were required to effect a cure.

This experience caused us to modify the scheme of treatment as it relates to the time factor, which is quite as important as the temperature factor. The present scheme of treatment is to raise the patient's temperature to 41.1 C (106 F) and to maintain it between 41.1 C (106 F) and 41.7 C (107 F) for six hours at each of the two initial sessions of treatment which are regarded as test sessions. If by this time the urethral discharge has ceased and gonococci have disappeared from smears, one or two additional sessions of fever are given in order to prevent any possibility of recurrence. If the discharge has not ceased after the second session of treatment, however, the subsequent sessions are extended to seven or eight hours during which a temperature between 41.1 C (106 F) and 41.7 C (107 F) is maintained as steadily as possible. With this scheme of treatment, more than four sessions should seldom be required to effect a cure.

Of course, an individual who, either because the skin is exceptionally sensitive or because there is a strong natural resistance to fever, cannot be brought to the

required degree of temperature, or whose temperature cannot be maintained at this level for a sufficient time, may occasionally be encountered. If, in such cases, the same tendency manifests itself at each of three or four consecutive sessions, a cure will probably not be obtained. Naturally, this depends on the degree of discrepancy between the required maximal temperature and the temperature actually attained and maintained. Such cases fortunately, are quite exceptional. Not infrequently, at the first session or two, there may be some difficulty in raising the patient's temperature to the proper level. When this is the result of sensitiveness of the skin and an abnormal tendency to local erythema (from excessive accumulation of heat in an area in which the circulation or the distribution of sweat glands may be deficient) the difficulty can generally be overcome by cooling this area with ice or covering it with a bandage. But when the difficulty is the result of a tendency to diffuse erythema from an extensive functional inefficiency of the sudoriferous system, the problem may solve itself. One or two sessions of moderate fever may so increase the functional capacity of the perspiratory mechanism that more effective treatment may subsequently become feasible.

As for the ten cases in which urethritis was complicated by gonococcal arthritis, the inflammatory process subsided quite rapidly. Moreover, the articular inflammation in these cases has not recurred for weeks or months since the patients were treated.

The temperatures mentioned throughout this paper represent rectal temperatures.

As long as the patient's rectal temperature remains below 40 C (104 F) the temperature is taken every ten or fifteen minutes, but after the temperature has risen above this level it is taken and recorded every five minutes. Sufficiently accurate recording thermometers have not yet become available, and we have insisted throughout on the careful use of a hand thermometer. This has one important advantage. Recording mechanical thermometers are quite impressive for visitors, but a functional failure might prove disastrous. Moreover, when a nurse is given a dial to watch and is instructed to govern her actions by its indications, her natural tendency is to give her attention to the dial rather than to the patient. We feel therefore, that the hand method of taking the rectal temperature has advantages which should not be lightly cast aside.

APPARATUS

The treatment in the cases reported has been carried out by means of the air-conditioned fever chamber known as the "Kettering hypertherm," the development of which has been the result of the collaboration of Dr. Walter M. Simpson of the Miami Valley Hospital, Dayton, Ohio, and of Mr. C. F. Kettering, director of the Division of Research, General Motors Corporation also of Dayton.¹⁸ The chamber consists of a horizontal box, the base or bed of which can be rolled in or out at will. The patient lies on this bed, resting on a comfortable air mattress which is rolled into the chamber proper, and the chamber is then hermetically closed by means of a sliding vertical panel, through which the head of the patient projects. Thus, when the chamber is closed, the patient's body is within the chamber while the head is outside, resting on a shelf provided for the purpose. At the foot of the chamber, in a special compartment, is the simple machinery that heats and

¹⁸ We are indebted to Dr. Simpson and Mr. Kettering for their kindness in placing these fever chambers at our disposal.

humidifies the air. The temperature of the air within the chamber is controlled by a thermostat and can be varied at will. The relative humidity of the air is controlled by a humidistat, and this factor also can be increased or decreased as may be required. By means of a fan the heated and humidified air is forced between the two layers of the double ceiling of the chamber, down over the patient, and thence back to the special compartment at the foot end of the chamber, through a metal grill in the partition which separates the patient from the mechanism. The column of heated and humidified air is thus made to circulate around the patient about ten times a minute. The patient's body is entirely free within the chamber, and no electrodes or other electrical gadgets of any kind come in contact with the patient at any time. This is one of the chief advantages of this method of fever therapy over any method that involves diathermy or short-wave radiations with their electrodes or condenser plates. Another important advantage is the facility with which the patient's skin can be examined, the rectal temperature taken and all the physical needs of the patient attended to, throughout a session of treatment. This is made possible by sliding panels on each side of the chamber; these can be opened at any time for the supervising physician to examine the patient's skin or for the specially trained nurse to take the patient's temperature, to change the single blanket that covers the patient when it becomes soaked with perspiration, for the introduction of a bed pan, or for any other purpose. Also, in case of emergency, the chamber can be thrown open and the patient withdrawn in a few seconds.

CONTRAINDICATIONS

In the past advanced age, cardiac and renal disturbances, arteriosclerosis, pulmonary tuberculosis and diabetes have repeatedly been mentioned as formal contraindications to fever therapy in general. There is no doubt that old age, organic lesions of heart and kidneys and arteriosclerosis greatly increase the risk of fever therapy. As for pulmonary tuberculosis and tuberculous lesions generally, there are reasons for believing that, in selected cases at least, fever therapy may indeed prove a valuable therapeutic procedure. This possibility is now being investigated.

Wilder and others have demonstrated that well controlled diabetes does not preclude even major surgical procedures. For this reason, Wilder felt that diabetes, if under satisfactory clinical control, should not bar a patient from fever therapy if this should otherwise be indicated. Having under his care a man with diabetes who had recently acquired a gonorrheal urethritis, and the diabetes having been under control for some time, Wilder referred him for fever therapy. Needless to say, other contraindicating factors did not exist. After the first session of fever the patient had a reactive flurry, but this subsided rapidly. On the whole, he tolerated the treatment just as well as any other patient and the gonococcal infection was cured. The discharge did not cease and smears continued to show gonococci until after the seventh session of treatment. This was because, at each of the early sessions, the required degree of fever was not maintained long enough; the patient was withdrawn from the chamber after only four hours of maximal fever. If this could have been avoided, and if, from the very start, the required temperature had been maintained for at least five, and preferably six, hours, it is certain that the number of sessions could have been materially reduced. This case

is not described in greater detail because Wilder intends to make a complete report of it. It is mentioned here only to bring out the fact that diabetes need not bar a patient from fever therapy, but it is essential that the diabetic manifestations should be under good clinical control and that the patient should be free from other complicating disturbances.

COMMENT

Treatment of this kind requires the constant attention of nurse technicians, who must be carefully selected and specially trained. Just as important, however, such treatment must have the constant supervision of a physician familiar with all the details of the method. By constant attention on the part of the nurse we mean that she must not leave the patient for an instant as long as the patient is in the chamber. If she must absent herself momentarily, her place must be taken by another technician or by the supervising physician. The nurse technicians and the physician on service are not allowed to go out to lunch; lunch is brought to them and is eaten in the service. If fever therapy is conducted in this way, and if the patients subjected to such treatment are carefully selected, only minor complications need be anticipated. Such minor complications include herpetic lesions around the lips and mouth, occasional blisters in skins that are unusually sensitive and that are slow to adapt themselves to a rapid rise in temperature, and muscular tetany, usually limited to the hands and feet but which may sometimes (as in one of our cases) affect the abdominal muscles. This is an uncommon disturbance, is apparently the result of overventilation and disappears almost instantly on administration of carbon dioxide and oxygen, it often abates just as promptly on intravenous injection of 10 cc of calcium gluconate.

Fever therapy, especially for conditions that require such high temperatures, should preferably be conducted in an institution where the work can be properly organized. There is no reason why any well trained physician could not undertake such treatment. But for a physician to think that he can turn a button in the morning and leave the patient to the tender mercies of a technician, while he goes down town to call on other patients and attend to his usual practice, would be a dangerous fallacy. In most cases perhaps nothing serious would happen, but the physician would never know when, on returning, he would have to face a major calamity, the responsibility for which would rest on him and not on the technician.

SUMMARY AND CONCLUSIONS

Between December 1933 and September 1934, thirty-three patients suffering from simple urethritis or from urethritis complicated by cervicitis, salpingitis or arthritis were referred for fever therapy. Four cases must be excluded because the patients did not return after the first session of fever or because they failed to cooperate and the idea of treating them had to be abandoned.

Of the twenty-nine remaining patients, twenty-five received systematic treatment and were cured.

The average number of sessions of fever required to effect a cure was 5.4. The largest number of sessions required was twelve in one case, this was owing to the fact that, during the early sessions, an adequate degree of fever was not attained or was not maintained long enough. The lowest number of sessions of fever required for cure in any case was three.

Four patients were not cured, probably because the required degree of temperature could not be attained or consistently maintained for a sufficient time.

During the early phase of this work the sessions of fever were repeated only when the urethral discharge reappeared, that is, after a lapse of from three to seven days. Later, only two days was allowed to intervene between sessions.

At first also a rectal temperature between 41.1 C (106 F) and 41.7 C (107 F) was maintained for five hours in most cases, but in some cases such a degree of fever was not attained or it was not consistently maintained for five hours. This explains why a few patients required as many as seven, ten and in one case even twelve sessions of fever to effect a cure.

Now, the first two sessions are regarded as test sessions, and a temperature between 41.1 C (106 F) and 41.7 C (107 F) is maintained for six hours. If by that time the urethral discharge continues and gonococci are still found in smears, the duration of subsequent sessions is increased to seven or eight hours. With such a scheme of treatment, more than four sessions of treatment should seldom be required.

The case of a husband and wife, both suffering from gonococcal urethritis, the wife having a complicating unilateral salpingitis, and both husband and wife being cured after four and six sessions of fever, respectively, illustrates the possibilities of the method.

Well controlled diabetes does not contraindicate fever therapy for gonococcal infection or for any other condition for which fever therapy may be indicated. The case of a man who had diabetes, and who was cured by fever therapy, substantiates this conclusion.

When fever therapy is properly carried out, with specially trained nurse technicians in constant attendance, with the constant supervision of a physician familiar with all phases of such treatment, and when the cases are carefully selected, only minor complications need be anticipated. These include herpes labialis, an occasional skin blister, and muscular tetany (hands, feet and sometimes the abdomen), which promptly disappears on administration of carbon dioxide and oxygen or on intravenous injection of calcium gluconate.

As sedatives, codeine, pentobarbital sodium and sodium amytal have been found most satisfactory. Dilaudid is unreliable and may lead to collapse. Morphine should be avoided because of its tendency to induce nausea and sometimes vomiting, which may seriously interfere with an adequate intake of fluids and chloride during treatment.

Fever therapy, especially for conditions requiring a high temperature, should be conducted in an institution where adequate facilities and trained personnel are available. It cannot be carried out in conjunction with other medical practice without increased risk.

The Heating of Tomato Juice—In very careful experiments made by the late Dr. Grose it was found that four hours heating of tomato juice of natural acidity involved a destruction of 20 per cent of its vitamin B at 100 C. (212 F), 33 per cent at 110 C. (230 F), 47 per cent at 120 C. (248 F), 55 per cent at 130 C. (266 F). Thus there is no sudden destruction or suddenly accelerated rate of destruction at any particular point, but rather, like most chemical reactions, the reaction by which vitamin B is destroyed under such circumstances runs at a rate which increases gradually with increasing temperature. There may of course be further losses if the food is cooked in water (or canned) and the cooking water (or liquid in can) rejected—Sherman, H. C. Food and Health, New York: Macmillan Company, 1934.

STUDIES OF VELOCITY AND THE RESPONSE TO INTRAVENOUS INJECTIONS

V THE APPLICATION OF THE INTRAVENOUS DRIP METHOD TO CHEMOTHERAPY AS ILLUSTRATED BY MASSIVE DOSES OF ARSPHENAMINE IN THE TREATMENT OF EARLY SYPHILIS

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NEW YORK

In chemotherapy the optimum therapeutic result is obtained by the introduction of the specific agent in quantities that suffice to destroy the noxious invader without seriously or permanently injuring the cells of the host. Under controlled conditions, this ideal is approached in animals that have been experimentally infected with syphilis and then promptly and adequately treated with arsphenamine.¹ In human syphilis the problem offers greater difficulties: treatment is delayed, the dosage must be augmented, idiosyncrasies are encountered, there occur technical errors in the administration of the drug, and untoward reactions may follow varying from mild and transitory disturbances to fatal poisoning.

In a previous communication, one of us (Hyman) demonstrated that the "rapid intravenous introduction of pharmacologically active or inert chemicals, drugs and biologic fluids may give rise to alarming and, at times, fatal symptoms"—a syndrome which was termed "speed shock." It was further shown that the "slow intravenous introduction of these same agents and even highly toxic substances (anaphylatoxin, histamine) could be accomplished with impunity by means of the intravenous drip." These results made it necessary to reinvestigate the specific toxicity of many substances. If untoward reactions, in part at least, were technical and hence preventable, potent therapeutic agents might be administered, by means of the intravenous drip, in doses far greater than at present employed, and thus without serious damage to the cells of the host. The present study deals with such an investigation, as suggested by Chargin, and it has for its purpose an intravenous drip of massive doses of arsphenamine in the treatment of early syphilis, approximating the ideal of a "sterilisatio magna."²

TECHNIC

The drip was set up in the manner previously described.⁴ Dextrose in 5 per cent solution was administered by the usual gravity method at a rate of 100 cc

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1. Jadassohn J. Handbuch der Haut und Geschlechtskrankheiten. Berlin: Julius Springer, 18: 552, 1927.

2. Hirschfeld Samuel, Hyman H. T. and Wanger Justine J. Influence of Velocity on the Response to Intravenous Injections. Arch. Int. Med. 47: 259 (Feb.) 1931.

3. Ehrlich Paul and Hata S. The Experimental Chemotherapy of Syphilis. English translation New York: Reiman Company, 1910, p. 149.

4. Hyman H. T. and Hirschfeld Samuel. The Therapeutics of the Intravenous Drip. J. A. M. A. 100: 305 (Feb. 4) 1933.

per hour. At the end of the hour there was added a solution of 0.1 Gm of neoarsphenamine dissolved in 50 cc. of 5 per cent dextrose solution. During the succeeding hour the dextrose was given again and this in turn was followed by the arsphenamine until the total daily dosage had been administered. Thus in a period of fifteen hours a patient might receive 1,500 cc of 5 per cent dextrose and 1 Gm of neoarsphenamine. The treatment was usually started at 8 or 9 a. m. and was continued throughout the day, the needle remaining *in situ*. The patients were kept in bed. A semisolid diet, rich in carbohydrates, was ordered and this, together with the intravenous dextrose, served to protect the liver from damage by the arsenic.

CHOICE OF MATERIAL

Only male patients in good physical condition were chosen for this study, and all were suffering from early syphilis. One patient presented himself in the seronegative primary stage, while the remainder had infections not older than three months. Consequently the clinical manifestations were limited to the chancre or secondary eruptions or both.

MASSIVE DOSAGE OF NEOARSPHENAMINE IN THE TREATMENT OF EARLY SYPHILIS

The twenty-five patients on whom we shall report received almost 100 Gm of neoarsphenamine, or an average of 4 Gm per patient (table 1). This dosage was usually administered over a period of five days. The daily dosage averaged 0.8 Gm of neoarsphenamine or 160 mg of arsenic. In the majority of instances 0.5 Gm was administered on the first day in order to test out the reaction of the patient to the drug. On succeeding days the usual dose was 1 Gm, but in some instances in which for technical reasons the drip was removed, a lesser amount was given. In a few instances (case 16) as much as 1.3 Gm was administered daily.

The use of the so-called massive doses of arsenic, especially in the treatment of early syphilis, had long since been employed by Scholtz,⁵ Pollitzer,⁶ and more recently by Schreus.

Scholtz⁵ administered, in divided doses, over a period of twenty-four hours, a total dosage of from 0.85 to 10 Gm. These injections were given at 8 a. m. and 2 p. m. of the first day and at 8 a. m. the following morning. Pollitzer⁶ administered, on three successive mornings, daily doses calculated on the basis of body weight, giving approximately 0.1 Gm of arsphenamine for each 25 to 30 pounds (11.3 to 13.6 Kg) of body weight. The total dose would accordingly vary between 1.2 and 1.35 Gm. Schreus⁷ and Bernstein gave a total of from 1.2 to 1.5 Gm of neoarsphenamine in three injections in a single day and repeated this dosage every week for five or six weeks until a total amount of from 6 to 9 Gm was administered.

In average therapy the single dose of neoarsphenamine varies from 0.3 to 0.6 Gm (a minimum of 0.1 and a maximum of 0.9 Gm). This dosage is usually administered at intervals of from five to seven days and ordinarily there are from eight to ten injections in a series, so that a total of approximately 5 Gm of neoarsphenamine or its equivalent given over a period of

from six weeks to three months constitutes an average course. By contrast, we endeavored to administer the entire amount of an average course over a period of a few days.

The Cooperative Clinical Group,⁸ by way of comparison, administers from 3 to 3.5 Gm of arsphenamine in the course of six weeks. They suggest from 0.3 to 0.6 Gm (0.1 Gm per twenty-five pounds of body weight) on the first, fifth and tenth days, and then 0.4 Gm at weekly intervals for four doses or until six weeks has elapsed. Our dosage given over a period of five to six days thus exceeds the amount that this group gives over a period of as many weeks.

From the standpoint of the cure of the syphilis, the advantages of the present scheme appear to be self evident. It affords an approach to Ehrlich's original conception of a sterilizatio magna, in that it makes possible the massing of the dose of arsphenamine at a time when it can exert its most potent action.

TABLE 1—Daily and Total Dosage of Neoarsphenamine in Grams

Case	Name	First Day	Second Day	Third Day	Fourth Day	Fifth Day	Sixth Day	Total Days	Total Dose
1	D M	0.5	0.4	0.9	0.6			4	2.4
2	W S	0.6	0.9	1.0	0.4			4	2.9
3	C S	0.5	1.0	1.0	1.0			4	3.5
4	L S	0.5	1.0	1.0	0.8			4	3.3
5	W C	0.6	1.0		0.9	0.7		4.5	3.2
6	O S	0.8	1.0	0.6	1.0			4	2.9
7	J S	0.6	1.0	1.0	1.0	0.4		5	4.0
8	J C	0.7	1.0	1.0	0.9	1.0		5	4.6
9	A S	0.6	1.2	1.2	0.9	0.8		5	4.7
10	J D	0.9	0.8	1.0	0.9	1.2		5	4.8
11	W C	0.6	1.1	1.1	1.2	0.7		5	4.7
12	E O	0.6	1.1	1.2	0.8	1.1		5	4.8
13	A F	0.4	1.1	0.6	1.2	0.8	0.4	6	4.5
14	C R	0.6	1.2	1.1	0.7			4	3.6
15	H L	1.2	1.2	1.3	1.3			4	5.0
16	L T	0.6	1.3	1.3	1.25			4	4.45
17	J B	0.3	0.9	1.3	1.1	0.5		5	4.4
18	E R	0.8	1.1	1.1	0.9			4	3.9
19	G C	0.9	1.0	1.0	1.0	0.6		5	4.5
20	R R	0.9	1.0	1.0		0.5		4.5	3.4
21	S S	0.7	1.0	1.0	0.9	0.9		5	4.5
22	H B	1.0	0.5	0.7		1.0	1.0	5.6	4.2
23	B S	0.6	1.0	0.3	1.0	1.0	0.1	6	4.0
24	J K	0.6	1.0		1.0		0.2	4.6	2.8
25	T H	0.9	1.0	0.8	1.0	0.6		5	4.3

THE EFFECT OF MASSIVE THERAPY ON THE CLINICAL MANIFESTATIONS OF EARLY SYPHILIS

The effect of these massive doses on the clinical manifestations of the syphilitic infection was specific, as was to be expected. Chancres and secondary eruptions healed rapidly, those with markedly infiltrated lesions less rapidly than those less infiltrated. In most of the instances in which secondary eruptions were present a Herxheimer reaction became manifest about twenty-four hours after therapy was instituted, lasted until the following day, and then gradually faded out. Almost invariably there was an accompanying rise in temperature, varying between 101.5 and 104 F and reaching its height in twenty-four hours. It is of interest to observe and important to stress that in those cases in which no secondary eruption was present the temperature frequently rose exactly as in the other group of cases. This temperature rise may be regarded as a type of "Herxheimer" reaction.

⁵ Scholtz W. Diagnose Differentialdiagnose und Behandlung der Haut und Geschlechtskrankheiten. Leipzig: S. Hirzel 1930: p. 434.
⁶ Pollitzer, S. The Principles of the Treatment of Syphilis. J. Cutan. Dis. 24: 633 (Sept.) 1916.
⁷ Schreus H. T. and Burmeister E. Vorläufige Ergebnisse der Salvarsanbehandlungen. Arch. f. Dermat. u. Syph. 154: 168 1917.

⁸ Stokes J. H., Cole H. A., Moore J. E., O'Leary P. A., Wile U. J., Clark Tahaferro, Parran Thomas and Uallton Lida J. Cooperative Clinical Studies in the Treatment of Syphilis. Early Syphilis. Results of Treatment in Early Syphilis. Section II, Ven. Dis. Inform. 13: 207 (June) 1932. Section III. *ibid.* 13: 253 (July) 1932.

EFFECT OF MASSIVE DOSES OF ARSPHENAMINE
ON SEROLOGIC TESTS

In a paper in 1921, Chargin⁹ expressed the view that the serology is the most valuable guide for determining the efficacy of any method of treatment in early syphilis. This dictum still holds true, and while seronegativity does not necessarily mean "cure," it is the most tangible yardstick that can be employed in any discussion of the efficacy of treatment in syphilis.

The serologic results in our twenty-five patients may be grouped in three categories. In the first group we include six patients (5, 10, 13, 22, 24 and 25), who were lost from observation before a change in the serologic reaction could be anticipated (table 2). One of these patients disappeared after the first week, one after the third week, one after the fourth week, two

patients. It is necessary also to comment on patient 15. In the seventeenth week, though he had no clinical manifestations of syphilis, his Wassermann reaction was 2 plus. We have included him in the seronegative group with this explanation. Subsequently, his test became negative also (table 2).

In his classic survey of the subject, Moore¹⁰ states that 52.6 per cent of the cases of early syphilis become seronegative on or before the end of the third month. The Cooperative Clinical Group,⁸ treating their seropositive primary and secondary cases with bismuth and mercury compounds as well as with arsenic, give, as average results, a seronegative serum in slightly more than 50 per cent and they state that the best results varied between 61 and 82 per cent. By way of comparison, and realizing the limitations of so small a

TABLE 2—Results of Wassermann Test

Case	Name	Total Dose Neoarsphenamine	Wassermann Before Treatment	1st Wk	2d Wk	3d Wk	4th Wk	5th Wk	6th Wk	7th Wk	8th Wk	9th Wk	10th Wk	11th Wk	12th Wk	13th Wk	14th Wk	15th Wk	16th Wk	Comment
1	D M	2.4	4		4	4	4	4	4		1	Neg								
2	W S	2.9	4			4		4	4		4								3	
3	G S	3.0	4		4	4	4		4	3		±	Neg						Neg	4 months later negative
4	*L S	3.3	4		4	4		4		±	Neg							Neg		5, 6, 7 and 8 mos. later Wassermann negative
5	W C	3.2	4			4	4	4	4	4	4	4	Lost						4	Lost
6	O S	2.9	3		3	4	4	4	4	4	4	4			4					3 months later negative
7	*J S	4.0	4		4	4	4	3	2	1	Neg			Neg					Neg	8 and 9 months later negative
8	J C	4.6	4		4	4	4	4	3		n c	Neg		Neg						
9	*A S	4.7	4		4	4				4	3	Neg								
10	J D	4.8	4	Lost																
11	*W C	4.7	Neg		4	4		2			Neg		Neg		Neg					4 months later negative
12	E O	4.8	4		4	4	4		4			2	Neg							
13	A F	4.1	4	4	4	3	Lost													2 and 6 months later negative
14	C R	3.6	4	4	4	4	4		4		4		2	2	±	Neg				13 positive Wassermann until 7 months later then Wassermann negative
15	H L	5.0	4	4		4			4	4	3	4	4	4	4		4	4		
16	*L T	4.45	4		2		2	Neg	Neg	Neg										3 and 4 months later negative
17	*J B	4.4	1		2		±		±	3			3	Neg	1					
18	E R	3.0	4	4	4		4		4											4 months later negative
19	G C	4.0	4	4	4		4	Neg	3	1	Neg									
20	R R	3.4	4	4	4															
21	S S	4.5	4		4	4		4		4	4	Neg	Neg	Neg		Neg				
22	M B	4.2	4	Lost																
23	B S	4.0	4	4	4	4	4	4	4	1	Neg									
24	*J K	2.8	4	4	4	4	4	Lost												
25	T H	4.3	4	4	4	4	4	4	Lost											

* Dark field examination of the primary sore in these cases showed presence of *Spirochaeta pallida*.

after the fifth week, and one after the ninth week. In all these instances the Wassermann reaction was still 4 plus.

The remaining nineteen patients were observed beyond the critical period of three months. These patients may be subdivided in the last two categories: the seropositive and the seronegative groups.

The seropositive group contains but one individual, patient 6, who was still positive in the sixteenth week. This man, who was one of the earlier in the series, received but 2.9 Gm. of the drug.

The seronegative group includes eighteen of the group of nineteen patients who were followed for more than three months. The period for the clearing serologically averaged ten weeks. In two instances (cases 2 and 20) a negative test was not obtained for more than three months. Patient 20 was not seen between the second and the sixteenth week. Patient 2 received only 2.9 Gm. of the drug, as he was one of the earlier

group, we cannot refrain from pointing out that eighteen of the nineteen patients that we followed, or slightly less than 95 per cent, attained seronegativity in a period averaging less than three months, though they received neither of the adjuvant heavy metals.

THE TOXICITY OF THE ARSPHENAMINE WHEN
ADMINISTERED BY THE MASSIVE METHOD

Pain in and about the site of injection was present at one time or another in every instance. The pain varied considerably in degree and duration. It was present in spite of the fact that no perivascular infiltration occurred in any of the cases. A mild and self-limited phlebitis occurred only three times. In only one instance was the pain sufficiently severe to demand the temporary discontinuance of the drip. Usually it was easily controlled by the administration of acetylsalicylic acid with or without codeine phosphate. As this type of pain occurs fairly frequently with drip therapy when

⁹ Chargin, Louis. Antisyphilitic Therapy. A Comparative Study of Some Intensive Methods. J. A. M. A. 76: 1154 (April 23) 1921.

¹⁰ Moore, J. E. The Modern Treatment of Syphilis. Baltimore: Charles C. Thomas, 1933. p. 188, table 7.

dextrose alone or saline solution is used, it cannot be attributed to the arsenic employed

NITRITOID CRISLS

No instance of nitritoid reaction was recorded in this series, though it is the general experience that such reactions occur in from 1 to 2 per cent of all cases in which other methods of administration have been employed¹¹ This supports our earlier work² in which we stated our conviction that these nitritoid crises, as well as the so-called anaphylactoid phenomena were nonspecific and probably identical with 'speed shock'

FEBRILE REACTIONS

Temperature elevation occurred within the course of the first thirty-six hours in 80 per cent of the patients In five of those who had secondary skin eruptions a typical Herxheimer skin reaction also occurred reaching its height twenty-four hours after therapy The cutaneous reaction persisted until the following day The average temperature approximated 101.5 F, but in

SYSTEMIC REACTIONS

General systemic reactions were not very severe in character and necessitated temporary cessation of treatment in only a small number of instances Chief among these symptoms were headache, nausea and vomiting, which occurred in twelve (48 per cent) of the group Abdominal cramps occurred in eight (32 per cent) of the patients and varied in severity but were never sufficiently severe to require interruption of the treatment Among the other general symptoms observed were loss of appetite in two (8 per cent), chilliness in five (20 per cent), and marked sweating in four (16 per cent) Two of the patients, or 8 per cent, complained of inordinate weakness These symptoms are often enough encountered in all types of arsenotherapy

SKIN REACTION

The cutaneous by-effects, which were eight in number in our series, were remarkably mild in type They were entirely of the exanthematous variety, six being scarlatiniform in character, one urticarial and one morbilli-

TABLE 3—Daily and Total Elimination of Arsenic in the Urine

Case	Name	Age	First Day Mg	Second Day Mg	Third Day Mg	Fourth Day Mg	Fifth Day Mg	Sixth Day Mg	Seventh Day Mg	Total Arsenic phen- amide Gm	Arsenic Content of Neonarsphen amide Mg	Total Elimina- tion Mg	Per Cent Elimi- nation
1	D. M.		23.5	34.7	21.1	40.5				2.4	490.0	134.5	37.0
2	W. S.		17.7	23.2	40.9	7.3				2.9	530.0	94.0	16.2
3	G. S.		8.9	37.5	17.7	9.1	4.1			7.5	700.0	77.0	11.0
4	L. S.		8.7	40.1	74.7	25.4	7.7			3.1	680.0	114.0	17.8
5	W. C.	31	14.6	44.4	10.1	26.8	29.1	6.6		3.2	640.0	140.6	21.9
6	O. S.	44	10	52.1	29	76.0	6.5			2.9	580.0	174.5	30.0
7	J. B.	25	23.6	25.5	61.7	31.0	13.1			4.0	800.0	106.5	20.8
8	J. O.	37	37.5	24.0	18.0	30.1	36.8			4.6	940.0	147.0	15.9
9	A. S.	31	3.8	55.0	70.6	14.6	21.1			4.7	940.0	169.0	17.8
10	J. D.	42	20.1	23.3	29.6	31.8	32.3			4.8	990.0	155.0	16.1
11	W. C.	26	17.0	26.6	33.6	63.8				4.7	740.0	141.0	19.0
12	E. O.	24	16.5	22.0	46.3	24.2	26.2			4.8	900.0	145.0	16.1
13	A. F.	21	8.3	21.3	53.3	41.8	35.4	37.1		4.7	900.0	203.5	23.6
14	C. R.	18	12.6	25.1	72.7	7.2				3.6	720.0	77.0	10.6
15	H. L.	29	27.1	60.6	40.3	31.3				5.0	1,000.0	169.0	16.0
16	L. T.	35	21.8	37.6	39.6	33.8	8.6			4.4	890.0	175.5	15.2
17	J. D.	24	11.1	34.6	31.1	41.9	19.0			4.4	840.0	177.7	16.2
18	E. R.	2	45.3	116.1	55.2	37.1	2.2	6.1	8.1	3.9	780.0	296.3	37.2
19	O. C.	29	27.3	92.3	11.7	44.8	7.2			4.7	900.0	213.1	23.6
20	R. R.	27	10.1	64.7	40.7	11.0	24.9			3.4	640.0	150.3	22.1
21	R. S.	4	37.7	54.1	20.4	21.7	37.0			4.5	900.0	180.0	20.1
22	H. B.	33	23.7	20.0	46.8	1.6	61.9	58.7		4.2	840.0	226.9	27.0
23	B. S.		57.5	29.8	12.8	23.6	69.2	24.1		4.0	800.0	274.2	23.0
24	J. K.	30	2.4	58.8	3.3	52.4	8.5	19.7		2.8	660.0	166.9	29.8

Last urine specimen lost so determination is made on dosage up to this point

several instances it exceeded 103 The temperature elevation bore no relationship to the eruption, either in its extent or in its character Whenever the temperature rose beyond 101.5 F there were usually accompanying symptoms, such as malaise, nausea, vomiting and anorexia In such instances, treatment was temporarily suspended Usually within twelve hours after the cessation of drip therapy the temperature fell to normal, and treatment could be resumed without further interruption In only four instances was it necessary to lose a complete day of therapy

Secondary temperature reactions occurred in 68 per cent of the cases and these were markedly irregular both in extent and in the day of appearance as compared with the Herxheimer temperature The secondary temperature elevations approximated 102 though in one instance the temperature rose to 105.6 On interruption of treatment the temperature dropped to normal in a few hours, and only rarely was there any cause for alarm

Febrile reactions also occur in patients treated by the usual ambulatory methods

In five the eruption appeared at or immediately after the termination of treatment and in three while the patient was still under treatment In none did the eruption last longer than three days There was only slight itching and no desquamation In the three in which eruption developed while under treatment the injections were immediately stopped until the eruption disappeared In two of the latter the eruption reappeared when treatment was resumed, but again it was evanescent in character No eruption of the eczematoid variety was observed and no further skin outbreak of any type was seen during the period of observation, which in many cases is now longer than five months

CLINICAL EVIDENCES OF LIVER DAMAGE

Not a single instance of jaundice occurred either during treatment or during the ensuing period of observation Bile was never found in any urine specimen and the icteric index showed no elevation after completion of the course

POLYNEURITIS

Polyneuritis was observed in eight cases (32 per cent) It was moderately severe in two instances in which there were muscle pains and paresthesias in the

¹¹ Schamberg J. F. and Wright C. S. Treatment of Syphilis New York D. Appleton & Co. 1932 p. 243

hands and feet, chiefly the latter. The symptoms appeared after the termination of treatment, usually within a few days, and persisted in the two severe cases for a period of six weeks. The condition was less marked in the other six cases and consisted chiefly of paresthesias, much milder in character and lasting less than three weeks. No relationship existed between the onset of polyneuritis and the quantitative arsenic elimination in the urine of these patients (table 3).

Because polyneuritis is more frequently associated with neoarsphenamine, we plan to employ arsphenamine in a future study.

LATE PARENCHYMATOUS DEGENERATION

The most dreaded complications of arsenotherapy are the severe late intoxications, including the eczematoid and exfoliative dermatitides, parenchymatous degeneration of the liver and kidneys and peripheral polyneuritis of a severe and lasting nature. To date we have not encountered a single instance of any of these untoward manifestations.

THE URINARY EXCRETION OF ARSENIC

Under the direction of Dr. Sobotka of the Chemistry Laboratories of the Mount Sinai Hospital, Dr. Leifer studied the urinary excretion of arsenic in all our patients. The chemical procedure used was a slight modification of the Green¹² iodometric microtitration. It would have been highly important to study the fecal excretion as well, but time did not permit.

Estimating that neoarsphenamine contains 20 per cent of arsenic, we concluded that the average urinary excretion was 21.1 per cent. The results varied between 10.6 and 37.2 per cent. In only two instances did the total elimination fall below 15 per cent (table 3).

The main channel of excretion of arsenic is unquestionably the feces. Mathieu¹³ found that the fecal arsenic excretion was approximately 2.5 times that of the urine. Clausen and Jeans¹⁴ reported it to be five times as great, and Underhill and Davis¹⁵ showed that the fecal elimination is considerably higher than the urinary excretion.

The figures of urinary excretion alone, consequently, serve only as an index, and the average figure of 21.1 per cent may be taken to mean only that the total elimination was probably proceeding satisfactorily in amount and rate.

There was no apparent relationship between the amount of urine excreted and its arsenic content. In no instance did there occur any suppression of or interference with urinary function. The daily urine specimens showed no renal irritation of any consequence except for the occasional and transitory presence of minor traces of albumin. In many instances the urinary output was voluminous, reaching from 5,000 to 6,000 cc in twenty-four hours, probably because of the diuretic action of the intravenous dextrose.

In twenty-two cases the blood urea was determined before and after the course of treatment. In only one instance was there any evidence of nitrogen retention. The blood bilirubin (icterus index) similarly was normal throughout the course of observation.

COMMENT

Our main object in this presentation is a consideration of the intravenous drip as a method of introducing massive doses of chemotherapeutic agents. We believe that we have demonstrated the possibility of administering truly colossal doses of an effective chemical agent without seriously or permanently damaging the cells of the host. The untoward symptoms that we have noted are not sufficient to deter us from further studies along these lines. It would be a great blunder, however, to employ this method under other than ideal conditions, for serious harm and even death might follow an uncontrolled popularization of our method. It is clearly to be understood that this is a report of an experiment, and that we regard the method as still in the experimental stage and by no means ripe as yet for clinical trial except under ideal institutional conditions.

Aside from the obvious economic advantages to the patient and to the community of an abbreviated and more concentrated therapeutic procedure, the work has a wider public health significance. In the recent article by the members of the Cooperative Clinical Group⁸ under the auspices of the United States Public Health Service and sponsored by the League of Nations Health Organization, it was stated that "the aim in early syphilis may be crisply defined as, first, the prevention of transmission by treatment and, secondly, the individual cure."

Viewed from the point of view of public health, the method has the advantage of requiring institutionalization of the patient during the florid and infective stage of the disease. Under the present ambulatory form of treatment the patient is sent back to mingle with the community during the height of his infectivity, a practice not followed in any other infectious disease. Such a type of management, from the point of view of the community, would be analogous to administering diphtheria antitoxin to a stricken child in an outpatient department and then permitting that child to mingle with the community while the throat cultures were still positive and while the disease was still in its infective stage.

The five days of hospitalization necessitated by the massive dose therapy should afford a maximum amount of protection to the community by the strict isolation of the patient during the greatest period of infectivity. The concentration of therapy within five days will probably reduce the period of infectivity very markedly.

The Cooperative Clinical Group stresses that none of its patients were treated with arsenic alone. Our omission of mercury and bismuth compounds in the treatment of this small group was intentional and was done solely with the idea of executing an uncomplicated experiment. In our future work we plan to give our patients the benefit of combined therapy, and it is fair to assume that even more striking results should be obtained.

SUMMARY

Conscious of the fact that our experiences are extremely limited, we do not wish to stress the comparative figures other than to state that the method suggests a means of control of early syphilis from the point of view of public health and from that of the individual patient, which would warrant further and more extensive clinical trial. Quite aside from the discussion of the treatment of syphilis, it is our belief that these experiments open a new and wide field in

12 Green H H. *South African J Sc* 11: 72, 1918.
13 Mathieu L. *Rev med de l'est* 50: 713, 1922.
14 Clausen S W and Jeans P C. *The Distribution and Excretion of Arsenic After Intravenous Administration of Arsphenamine in Children*. *Am J Syph* 6: 556 (July) 1922.
15 Underhill F P and Davis S H. *The Excretion of Arsenic After Serial Administration of Arsphenamine and Neoarsphenamine*. *Arch Dermat & Syph* 5: 40 (Jan) 1922.

chemotherapy We have demonstrated that it is possible by means of the intravenous drip to administer colossal doses of an effective chemotherapeutic agent without seriously or permanently damaging the cells of the host There is no good reason why this technique cannot be used in many other invasions of the host by living substances

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THE EFFECTS OF HYPERPYREXIA PRODUCED BY RADIANT HEAT IN EARLY SYPHILIS

WITH A DESCRIPTION OF A SIMPLE METHOD OF PRODUCING HYPERPYREXIA

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The application of heat in various ways for the production of an artificial fever has been employed since very early times, and by many races, for the treatment of human disease However, it has only been during the past fifteen years that hyperpyrexia as a therapeutic measure has been critically studied Its use in the treatment of syphilis of the central nervous system has become an established practice, and in many instances strikingly beneficial results have been obtained in which chemotherapy alone had failed to arrest the disease Increasing experience has eliminated much of the danger of the procedure, and the introduction of simple methods of elevating body temperature has increased its availability

Since Wagner von Jauregg's¹ original report in 1918 on the use of malaria in the treatment of dementia paralytica, a number of other methods of inducing hyperpyrexia have been introduced Among these are inoculation with the parasites of relapsing fever and rat-bite fever, the injection of foreign proteins such as a mixed typhoid-paratyphoid vaccine, the intramuscular injection of sulphur in oil, and certain physical methods such as hot baths, heat cabinets, the electric blanket, diathermy and radiothermy The therapeutic results obtained with many of these methods have been similar Since the effect common to all these is the elevation of body temperature, and because the beneficial results are often dependent on the degree of fever obtained, it is generally felt that the hyperpyrexia is the important factor in the treatment rather than the manner in which it is produced

The present report is concerned with the effects of general hyperpyrexia in early syphilis, with particular reference to the dark field examinations, the clinical course of early syphilitic lesions, and the changes in the serologic reactions The problem was undertaken because of the brilliant results obtained by fever therapy in late syphilis involving the central nervous sys-

tem and because of the known susceptibility of *Spirochaeta pallida* to high temperatures It was thought that, if the temperature of all the tissues of the human body could be elevated to the thermal death point of the spirochetes for a sufficient length of time, a complete sterilization of these organisms could be accomplished

During the course of this work a simplified method of producing artificial fever was developed The technique of this procedure will also be reported here

REVIEW OF THE LITERATURE

Animal and In Vitro Experimentation—Weichbrodt and Jahnel² in 1919 showed that scrotal syphilitic chancres in rabbits healed more rapidly than usually if the animals were placed at frequent intervals in an incubator heated to 41 C for half-hour periods

Schamberg and Rule³ in 1926 reported that rabbits could be prevented from developing syphilis by a series of eleven hot baths on consecutive days in which the animals' temperature was raised 2.22 degrees C (4 F), provided the baths were given within four days after intratesticular injection of *Spirochaeta pallida* In 1927 they were able to cure two rabbits with primary testicular sores by a series of hot baths in which the animals' temperatures were maintained at from 40.7 C (105.2 F) to 42.8 C (108.9 F) for from fifteen to twenty minutes They were also able to cause the healing of a secondary syphilitic lesion on the foot of a rabbit by fifteen hot baths In 1928 these authors⁴ showed that *Spirochaeta pallida*, heated in vitro at 41 C (105.8 F) for one hour, was no longer capable of producing syphilis in rabbits

Frazier,⁵ experimenting with rabbits and using hot baths, noted a definite inhibition of the clinical progress of a syphilitic infection when the animals' temperatures were elevated to from 41.2 C (106.2 F) to 42.8 C (110.6 F), but no effect when the temperatures were kept between 39.7 C (103.5 F) and 41.1 C (106 F) for twenty minutes

Laps⁶ found that temperatures of 40.2 C (104.3 F) for eighty-five minutes, or 40 C (104 F) for ninety-five minutes were optimum for preventing syphilitic infections in rabbits

Carpenter, Boak and Warren⁷ were able to render syphilitic lesions in rabbits sterile of *Spirochaeta pallida* by multiple unsustained fevers of from 41 C (105.8 F) to 42 C (107.6 F), produced by radiothermy They also found that one febrile period of six hours at from 41.5 C (106.7 F) to 42 C (107.6 F) also destroyed the spirochetes In vitro, they demonstrated that the thermal death-point of *Spirochaeta pallida* was 42 C (106.7 F) sustained for one hour, 41 C

2 Weichbrodt R and Jahnel F Einfluss hoher Korpertemperaturen auf die Spirocheten und Krankheitserscheinungen der Syphilis in Tierexperiment, Deutsche med Wchnschr 45 483 (May) 1919

3 Schamberg J F and Rule Anna M Studies on the Therapeutic Effects of Fever in Experimental Rabbit Syphilis Arch Dermat & Syph 14 243 (Sept) 1926

4 Schamberg J F, and Rule Anna M The Effect of Extremely Hot Baths in Experimental Syphilis Arch Dermat & Syph 17: 322 (March) 1928

5 Frazier C N Effect of Elevation of Body Temperature on the Course of Experimental Syphilis in the Rabbit, Arch Dermat & Syph 16 445 (Oct) 1927

6 Laps A Influence of Temperatures on the Development of Primary Lesions and the Effect of Heat in the General Treatment of Syphilis Med contemp Lisbon 47 395, 1929, mentioned by Besse mans and Thury

7 Carpenter, C M Boak R A and Warren S S The Healing of Experimental Syphilitic Lesions in Rabbits by Short Wave Fevers J Exper Med 56 751 (Nov) 1932 Boak R A Carpenter C M and Warren S S The Thermal Death Time of Treponema Pallidum in Vitro with Special Reference to Fever Temperatures ibid 56 741 (Nov) 1932

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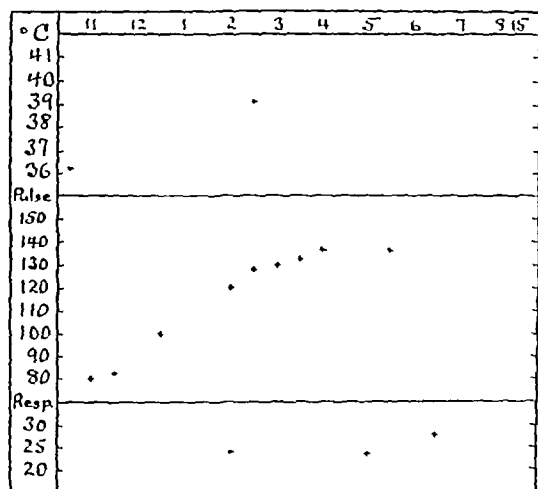
¹ Wagner von Jauregg Julius Ueber Einwirkung der Malaria auf die progressive Paralyse Phys Neurol Wchnschr 20: 132 (Aug 31) 1918

(105.8 F) for two hours, 40 C (104 F) for three hours, and 39 C (102.2 F) for five hours

Kolmer and Rule⁸ showed that, if rabbits were inoculated intratesticularly with *Spirochaeta pallida* four days prior to complete immersion in water at 45 C (113 F) for twenty minutes daily for fifteen days the testicular infection was prevented and the inguinal lymphatic glands became sterile. If the same procedure was followed, with the exception that the testicles were kept out of the water, active testicular lesions developed. This indicates that the effect of the elevation of the temperature was mainly local in these experiments.

It is clear from the animal experimentation and the *in vitro* studies reported that *Spirochaeta pallida* can be destroyed at temperatures that may be induced in man with safety. Two factors are of importance: the height of the temperature within the tissues, and the duration of time that this is maintained.

Clinical Studies—The first clinical studies on the effect of hyperpyrexia produced by physical means on syphilis in human beings were done by Schamberg and Tseng⁹ in 1927. They treated fourteen patients, among



Temperature chart with the blanket method

whom were four cases of secondary syphilis, with a series of hot baths. The cutaneous manifestations cleared promptly. No dark field examinations were reported. They state, however, that no definite conclusions could be drawn from this work but suggested that hyperpyrexia as an adjunct to other methods might prove of therapeutic aid.

Between the years 1925 and 1929, Kerl¹⁰ observed 1,600 cases of early syphilis treated with combined arsenic, bismuth and malarial therapy. He concluded that malarial therapy was of little curative value in early syphilis when the infection was of one or two years' duration, but that it was of definite value in the treatment of late secondary syphilis.

Kemp and Stokes¹¹ in 1929 stated that fever therapy alone will cause involution of primary and secondary

manifestations of syphilis but is markedly inferior to arsphenamine or bismuth compounds.

Neymann and Osborne¹² were unsuccessful in treating primary syphilis by means of hyperpyrexia produced by diathermy.

Bessemans and Thiry,¹³ in an exhaustive report in June 1933, studied the effect of local heat produced by means of hot water baths and diathermy on the lesions of primary and secondary syphilis in man. They recorded the tissue temperature at the base of the lesions by means of a thermo-electric needle. The therapeutic response was dependent on the height and the duration of the temperature obtained. It required a tissue temperature of 42 C for one hour, or 40 C for two hours to render the spirochetes present immotile and avirulent. They showed that the primary and secondary lesions so treated involuted promptly, while those which were not heated progressed in the usual manner.

TECHNIC OF INDUCING HYPERPYREXIA

In the series of cases reported here, hyperpyrexia was induced by means of a specially constructed, electrically controlled heat cabinet, in which an infra-red element was the source of heat.¹⁴ The temperature within the cabinet was maintained between 130 and 160 F, and the humidity was increased by a container of water at the bottom of the cabinet. The patient, without any special preparation, was placed in the cabinet with the entire body enclosed except the head. The temperature, as a rule, rose rapidly, reaching 40 C (104 F) within one and one-half hours. During this time the axillary temperature was noted by means of a recording thermometer and the oral temperature was taken at fifteen minute intervals. When the patient was removed to his bed, the oral temperature and the pulse were taken at one-half hour intervals during the treatment, and then hourly until normal.

When the desired degree of temperature was reached, the patient was removed to his bed, wrapped in warm blankets and encased in a bag made of rubber sheeting. During this procedure, the temperature usually fell from 0.3 to 0.5 degree C, but this was quickly recovered. The patient maintained his fever for a period of from six to seven hours by this means and was then removed from the blankets and given a warm alcohol rub. Hyperpyrexia was considered to begin when a temperature of 39 C was reached. Warm lemonade containing 0.6 per cent sodium chloride and sugar to taste was administered throughout the treatment, the patient receiving 3 or 4 liters.

Blanket Method¹⁵—During the past two months we have devised a simple method of inducing hyperpyrexia by wrapping the patient carefully in blankets and rubber sheeting. Oral temperatures of from 40 C (104 F) to 41 C (105.8 F) could be produced and maintained for six hours by this means. This was accomplished in each of the seventy-five instances in which it was attempted. The accompanying chart illustrates the changes in oral temperature, pulse rate and respi-

8 Kolmer J. A. and Rule Anna M. Hot Baths in Experimental Primary Syphilis of Rabbits and in Trypanosomiasis in Rats. Arch. Dermat. & Syph. 27: 660 (April) 1933.

9 Schamberg J. F. and Tseng Hsien Wu. Experiments on the Therapeutic Value of Hot Baths with Special Reference to the Treatment of Syphilis and Some Physiological Observations. Am. J. Syph. 11: 337 (July) 1927.

10 Kerl W. Malaria Behandlung der Frühsyphilis. Arch. f. Dermat. u. Syph. 157: 294 (1929).

11 Kemp J. E. and Stokes J. H. Fever Induced by Bacterial Proteins in the Treatment of Syphilis. J. A. M. A. 92: 1737 (May 25) 1929.

12 Neymann C. A. and Osborne S. L. The Physiology of Electro-pyrexia. Am. J. Syph. & Neurol. 18: 28 (Jan.) 1934.

13 Bessemans A. and Thiry U. New Experiences with the Application of Local Heat and Diathermy by Long Waves (Slightly Damped) in the Treatment of Primary and Secondary Syphilis in Man. Urol. & Cutan. Rev. 37: 377 (June) 1933.

14 Through the courtesy of the Electrical Research Corporation we were permitted to use this apparatus known as the Hyperpyrexicator.

15 Technical aid in developing the blanket method of producing artificial fever was rendered by Miss Sarah Nieder.

rations that occur during the average treatment in which the blanket method is used. After the patient is wrapped in the blankets and rubber sheeting there is an even and gradual rise in the oral temperature, usually 0.2 degree C in fifteen minutes or 0.8 to 1 degree C per hour, 39 C (102.2 F) is reached in from three

the principle of preventing radiation of heat from the body surface, which is also an integral part of the technic described by Neymann and Osborne in their diathermy method. These authors¹² also attempted to use blankets alone but were unsuccessful in obtaining temperatures of therapeutic height. They state that

TABLE 1—Clinical Material

Case	Sex	Age	Date of Entry	Stage of Syphilis	Duration of Infection	Location of Lesions	Type of Lesion	Previous Treatment	Period of Observation	Number of Treatments
1	♀	41	8/6/33	Secondary	Lesions present 2 weeks	Face, chest, arms and tongue	Mucous patch under tongue papules on body	None	5 wks	2
2	♀	40	11/2/33	Secondary	Eruption present 1 month	Face, trunk, limbs, labia and about anus	Maculopapular eruption, condylomas about anus	None	7 wks	7
3	♂	40	12/23/33	Secondary	1 month	Penis, general maculopapular eruption	Primary on prepuce, maculopapular eruption	None	10 wks	16
4	♀	23	6/7/33	Primary	2 weeks	Labia minora	Single superficial ulcer	None	9 wks	8
5	♀	23	6/15/33	Secondary	Sore throat 2 weeks	Generalized papular eruption, mucous patch on tonsil	Papular eruption	None	10 wks	8
6	♀	20	6/20/33	Secondary	6 weeks	Generalized maculopapular eruption	Labial ulcer	None	6 wks	8
7	♀	40	7/23/33	Primary	Lesion noted 4 days	Tongue	Superficial ulcer	None	0 1/2 wks	8
8	♀	24	2/2/34	Secondary	Eruption 3 weeks	Generalized eruption, papules on vulva	Large, infiltrated papular, mucous patches on vulva	None	9 wks	8
9	♂	24	6/7/33	Late secondary, condylomata lata	4 years recurrent	About anus	Large moist condyloma	None	7 wks	8
10	♂	23	10/26/33	Late secondary	3 months	Anus	Condylomata lata	None	26 wks	16
11	♂	23	10/27/33	Primary	3 weeks	Penis	Chancre	None	2 wks	4
12	♀	48	1/5/34	Secondary	2 weeks	Generalized eruption, vulva	Mucous patches	None	10 wks	12
13	♂	25	1/28/34	Primary	3 weeks	Penis	Chancre	None	4 wks	5
14	♀	29	5/24/33	Recurrent secondary	10 years	Tongue and vulva	Mucous patch	None for 2 years	2 wks	2
15	♂	40	6/8/33	Secondary	Eruption 3 weeks	Generalized eruption, mucous patch lips and penis	Mucous patch	None	9 wks	7
16	♂	40	7/1/33	Secondary	Eruption 6 weeks	Generalized eruption, fissures at angles of mouth	Mucous patch	None	5 wks	6
17	♀	16	10/25/33	Primary	2 weeks	Vulva	Sore on vulva	None	3 wks	7
18	♂	20	12/23/33	Primary	7 days	Penis	Chancre	None	6 wks	7
19	♂	24		Secondary	1 month	Generalized eruption, penis	Maculopapular eruption	None	5 days	1
20	♂	17		Secondary	3 months	Penis	Superficial sore	None	5 days	1
21	♀	20		Secondary	1 month	Generalized eruption, mouth	Papular eruption, mucous patches	None	5 days	2
22	♂	28		Secondary	2 months	Anus	Condylomas	None	5 days	2
23	♂	41		Secondary	2 weeks	Generalized eruption, genitals	Papule on skin	None	5 days	2
24	♂	38		Secondary	4 days	Generalized maculopapular eruption, induration on penis	Induration on penis	None	5 days	2
25	♂	20		Secondary	1 month	Face, penis, scrotum	Papules	None	5 days	1
26	♂	31		Primary	3 weeks	Penis	Chancre	None	5 days	1
27	♂	44		Secondary	1 month	Generalized maculopapular eruption, sore on penis	Maculopapular eruption	None	5 days	2
28	♂	31		Primary	6 days	Penis	Chancre	None	5 days	1
29	♂	18		Secondary	Generalized eruption 2 months		Papule	None	5 days	2
30	♂	24		Primary		Penis	Chancre	None	5 days	2
31	♂	40		Primary	5 days	Penis	Chancre	None	5 days	2
32	♂	28		Primary		Penis	Chancre	None	5 days	1
33	♀	14		Primary	1 month	Labia	Chancre	None	5 days	2

to four hours and 40 C (104 F) in from four to five hours. The oral temperature is maintained between 40 C (104 F) and 40.5 C (104.9 F) or higher for the period desired. The pulse rarely exceeds 140 per minute and the respiration rate 28 per minute at any time during the treatment. The rate of rise of temperature can be greatly increased by placing a common electric bake over the bed for one to two hours before the heavy woolen blankets, canvas and rubber sheeting are wrapped around the patient. This method employs

they observed a rise of temperature up to 102.2 F in eight hours by this means.

Haddon and Wilson¹⁶ state that they were able to induce hyperpyrexia by means of blankets and hot water bottles, but they do not describe the method or the degree of fever they obtained.

Technic. The patient requires no preparation and may have his breakfast. Long woolen socks are placed

16 Haddon S. B. and Wilson George. Thermic Treatment of Neurosyphilis. Pennsylvania M. J. 36: 829 (Aug.) 1933.

on the feet and legs. A heavy woolen blanket, a large canvas sheet and a rubber sheet large enough to cover the entire patient are placed on the bed. Each limb, the trunk and the shoulders are wrapped individually with warm, thin bath blankets. Then the entire body is wrapped in a bath blanket no part of the patient being left uncovered except the face. Seven bath blankets are used.

the temple are taken at one-half hour intervals during the treatment and then hourly until normal.

General Care of Patient During Hyperpyrexia—The care of the patient during the treatment is the same whether the blanket method or the heat cabinet is used. A hypodermic injection of morphine sulphate one-fourth grain (0.016 Gm) and atropine sulphate 1/150 grain (0.0004 Gm) is given for restlessness, usually

TABLE 2—Darl Field Examinations for *Spirochaeta Pallida*

Case	Location of Lesion Examined	Before Treatment	After First Treatment			Subsequent
			Immediately	12 Hours	24 Hours	
1	Under tongue	Positive	None seen	No serum obtainable	Lesion not visible	
2	About anus	20-25 per field	5-6 per field with loss of motility	6-7 per field nonmotile	40 hours 15-20 per field majority nonmotile with occasional actively motile	After 2d treatment 12 motile after 3d treatment, 1 in 2 fields after 4th became negative and remained negative. biopsy of condylomas after 6th treatment negative
3	Penis	Negative (6 exams) 4 on recurrent lesion	1 spirochete in 3-4 fields	2 spirochetes in entire preparation		Spirochetes were not found after the 4th day after treating the recurrence
4	Labia minora	Numerous	8 hrs numerous nonmotile		Negative	Remained negative
5	Papule on back	Positive	Negative			2 days later positive 5 days later 2 treatments positive 7 days later 2 treatments became negative inguinal gland negative for spirochetes
6	Labial ulcer	2 per field	Nonmotile spirochetes	2 slightly motile	Negative	7 days after 1st treatment 2 spirochetes negative and remained negative after 2d treatment
7	Tongue	Positive	Negative	Negative	Negative	
8	Skin papule	1 in 5-6 fields	Negative	Negative	Negative	Inguinal lymph gland removed 2/3/34 negative
9	Condyloma	Positive	1 active numerous nonmotile	21 hours negative	26 hours 1 after 1st treatment	3 days after 1st treatment negative
10	Anus	Positive	Negative	Negative	Negative	Negative left inguinal gland removed 11/14/33 negative
11	Penis	10/27/33 positive	Negative			
12	Vulva	4-6 per field	8-10 motile			7 days after 1st treatment 23 per field 9 days after 1 in 2 fields 12 days later no serum inguinal gland removed 1/6/34 negative
13	Penis	Positive	2 per field		Negative	
14	Tongue and vulva	Positive	Positive	Positive	Positive	3d day negative
15	Penis	Positive	Positive	Negative	Negative	Negative
16	Mouth penis	Lip positive Penis positive	Positive Positive	Positive Positive	Positive Positive	Negative on 5th day Remained positive throughout observation
17	Vulva	Positive	3 sluggish motile spirochetes per field	Negative	Negative	
18	Penis	Positive		2 spirochetes		2 days after treatment negative remained negative
19	Penis	Positive	3 spirochetes per field	Negative	Negative	Negative
20	Penis	Positive		1 motile		Negative 3 days later
21	Labia	3 motile spirochetes		36 hours negative		Negative
22	Condyloma	Positive	8-10 motile spirochetes per field			Negative after 2d treatment
23		Positive	Positive			2 days after treatment 1 to 45 fields after 4d treatment negative
24	Penis	Positive		12 spirochetes per field		2 days after treatment 15 per field after 2d negative on 3d examination
25	Penis	Positive	Negative	Negative	Negative	
26	Penis	Positive	Negative	Negative	Negative	
27	Penis	Positive	12 spirochetes per field	Negative	Negative	
28	Penis	Positive	Negative	Negative	Negative	
29	Penis	Positive	1 spirochete	Negative	Negative	
30	Penis	Positive	3 nonmotile spirochetes	Negative	Negative	
31	Penis	Positive	3 per field active			Negative after 2d treatment
32	Penis	Positive	Negative	Negative	Negative	
33	Labia	Positive	Positive	Positive	Positive	

The heavy woolen blanket, the canvas sheet and the rubber sheeting are then successively brought over the patient. Two more heavy woolen blankets are used one covers the lower half of the body, including the feet, the other is wrapped around the entire patient. One hundred and sixty cubic centimeters of hot (100 F) lemonade containing 0.6 per cent of sodium chloride and sugar to taste is given orally at one-half hour intervals, the patient receiving from 3 to 4 liters of the fluid. The oral temperature and the pulse at

when the temperature reaches 39 C (102.2 F), following which the patient may sleep through the treatment. Morphine sulphate one-sixth grain (0.01 Gm) may be given later if necessary. The patient is carefully observed throughout the period of hyperpyrexia for any unusual reactions. A rapid rise of temperature above 40.5 C (104.9 F) should be controlled by loosening the blankets, fanning the body, administering cool drinks or, if the condition is alarming, by a cool colonic flush. A rapid rise of the pulse rate above 150, a

tendency to collapse, or the onset of tetany are indications for reducing the temperature or discontinuing the treatment. The blood pressure should be taken before the treatment is started and, in the event of an unusual reaction during the treatment, should be retaken. There is a tendency for the systolic blood pressure to fall from 20 to 30 mm of mercury. A decline of the systolic blood pressure below 80 mm of mercury should be considered sufficient to discontinue the treatment. The blood pressure is an excellent indicator of the patient's condition. The necessity of careful nursing

Patients of advanced age, those with serious cardiac or pulmonary disease, or those with a severe degree of arteriosclerosis were not accepted for the treatment. It may be stated that a patient who is not a good physical risk for a major abdominal operation would be a poor risk for hyperpyrexia as well. The development of an infection of the upper respiratory tract during the course of treatments was considered sufficient cause to discontinue them until the patient had recovered. The patient is subjected to a physical examination before each treatment.

TABLE 3—Serologic Changes and Clinical Course of Lesions

Case	Before Treatment			After Treatment			Clinical Course of Lesions
	Blood Wassermann	Kahn	Spinal Fluid	Blood Wassermann	Kahn	Spinal Fluid	
1	++++	++++		10/6/33	++++	++++	Eruption faded promptly mucous patches cleared in 3 days
2	++++	++++		1/17/34	++++	++++	General eruption cleared in 1 week condylomas became drier within 1 week and cleared in 3-4 weeks
				3/7/34	+	++	
				2/21/34	++++	++++	
3	++++	++++		2/7/34	Neg	+	Generalized eruption faded in 1 week large penile sore cleared in 1 week 11 days after 8th treatment
				2/21/34	Neg	++	mucous patches appeared on ventral surface of penis which cleared within 1 week after resuming hyperpyrexia treatments lesion began to clear within 24 hours no recurrence developed within 7 weeks of further observation
				4/11/34	++++	+++	In spite of negative dark field lesions healed slowly in three weeks lesion was frequently abraded for dark field examination
4	++++	++++	6/23/33 Neg	6/28/33	++++	++++	Papules on covered parts of body healed in 2-3 weeks papules on forehead persisted and increased in number fever which patient had before treatment subsided after 1st treatment sore throat cleared 7 days after 1st treatment
				7/14/33	++++	++++	Primary cleared in 1 week eruption faded rapidly
5	++++	++++	6/21/33 Neg	6/28/33	++++	++++	Lesion cleared 3-4 days
				7/14/33	++++	++++	
6	++++	++++	6/23/33 Neg	9/9/33	++++	++++	After 7th treatment neg
				7/13/33	++++	++++	After 2d treatment 7/20/33 neg
7	++++	++++		8/27/33	++++	++++	Lesions cleared rapidly leaving deep pigmentation symptomatically improved immediately mucous patches developed on lower lip 10 days after 8th treatment
8	++++	++++	Wass neg Kahn neg globulin normal colloidal gold 3321000000	2/15/34	++++	++	3/10/34
				2/28/34	++++	++++	Wass neg Kahn neg globulin normal colloidal gold 0000000000
9	++++	++++	Negative	6/17/33	++++	++++	Condylomas became drier and smaller promptly completely healed in 3 weeks
				6/24/33	+++	++	
				6/30/33	++++	+++	
				7/9/33	+	++++	
10	++++	++++	Negative	12/20/33	+	++	3/28/34 neg
				1/10/34	++	++	Lesions cleared promptly
				3/21/34	++++	++	
11	Negative	Negative		1/31/34	++++	++++	3/1/34 neg
12	++++	++++		2/7/34	++++	++++	Lesions healed promptly within 1 week
				2/14/34	++++	++++	Lesions healed in 12 days 20 days after 8th treatment mucous patch appeared on vulva
				2/21/34	++++	++++	
13	++++	++++		10/24/33	++++	++++	Lesion healed in about 10 days
14	++++	++++					Lesion healed within 5 days after treatment
15	++++	+++	Negative	6/14/33	++++	++++	6/23/33 neg
				6/21/33	++++	++++	Eruption cleared rapidly mucous patches cleared within 5 days
				6/30/33	++++	++	
				7/17/33	++++	++++	
				8/17/33	++++	++++	
16	++++	++++		7/13/33	++++	++++	7/28/33 neg
17	Neg			10/30/33	Neg	+	All lesions except fissures at corners of mouth healed promptly
				11/15/33	Neg	Neg	Lesions healed in 5 days
18	Neg			1/11/34	Neg	Neg	Chancres cleared slowly

attention during the treatment cannot be over-emphasized. The hyperpyrexia is usually well tolerated, and we encountered no serious untoward reactions in this series. As a rule, the patient recovers from his treatment quickly and is able to return to his work within twenty-four hours. The procedure requires twenty-four hours of hospitalization. Herpes simplex occurred in practically every patient after the first or second treatment but did not recur during the rest of the series. No burns were encountered. In no instance was it necessary to discontinue the treatment because of untoward reactions.

ADVANTAGES OBTAINED FROM USE OF THE BLANKET METHOD

The blanket method, as described, has been used in a sufficient number of cases to indicate that hyperpyrexia may be regularly induced by this means. It has the following advantages. First, the necessity of expensive electrical equipment is eliminated. Second, there is no danger of electrical burns. Third, in our experience it is less exhausting to the patient than diathermy or the heat cabinet. The rise in temperature is gradual and there is little disturbance of the pulse and respiratory rates.

Fourth, through these advantages it increases the availability of artificial fever therapy

CLINICAL STUDIES

Plan of Clinical Investigation—As our purpose in this problem was to study the effects of hyperpyrexia on the lesions of early syphilis, only patients in the primary and secondary stages of the disease were accepted. All these patients presented lesions in which *Spirochaeta pallida* was demonstrated by dark field examination. Only one patient had received any antisyphilitic chemotherapy, and she had late secondary manifestations from which numerous spirochetes were demonstrated.

There were thirty-three patients in this series (table 1), twelve being females and twenty-one males. The ages varied from 14 to 46, the majority falling between 20 and 30 years. Twelve were in the primary stage and twenty-one presented various lesions of secondary syphilis.

The cases may be divided into two groups: those that were under our complete control for a period varying from two weeks to six months, and those we were permitted to study for five days only before administration of arsphenamine. There were fifteen patients in the latter group and eighteen in the former. With the five-day cases, observations were made on the dark field examinations only, while in the others the course of the clinical lesions and the serologic changes, in addition, were studied. All patients were hospitalized during their period of contagiousness.

Following admission to the hospital, the patient was carefully examined as to his physical fitness for pyretotherapy, and the dark field examinations were recorded. Dark field examinations were done immediately after the period of hyperpyrexia, twelve hours later, and at twenty-four hour intervals until the experiment was concluded. The blood Wassermann and Kahn tests were done frequently, and the effect on the clinical course of the lesions was noted. Several spinal fluid examinations were done. Treatments were given at intervals of from three to four days.

DARK FIELD EXAMINATIONS

Of the thirty-three patients studied, dark field examination immediately after the first treatment failed to show the presence of *Spirochaeta pallida* in ten cases. Dark field examinations were considered negative only when a fifteen minute search failed to reveal *Spirochaeta pallida*. In nine cases the dark field was positive immediately after the first treatment but became negative before the second treatment was given. In several instances a distinct change in the motility of the organisms was noted immediately after treatment. A complete loss of motility in some, or the occurrence of sluggish and occasionally convulsive movements in others, was observed. It is interesting to note that Bessemans and Thiry¹⁵ reported similar observations in their work on the local heating of syphilitic lesions. These changes are evidence of injury to *Spirochaeta pallida*, as shown by investigators¹⁷ using chemical spirocheticides.

Summarizing the results by dark field examination, twenty-two of the cases, or 66⅔ per cent, became negative after the first hyperpyrexia treatment, seven or

21.2 per cent became negative after the second, one, or 3 per cent, became negative after the third treatment, and one case, or 3 per cent, after the fourth treatment. In one patient, a five-day case, the dark field remained positive after two treatments, and in a second patient, except for a fissured papule at each commissure of the mouth, all lesions, including a generalized maculopapular eruption, moist papules over the genitalia, and mucous patches in the mouth, cleared and became negative for *Spirochaeta pallida* after two treatments. The fissures at each corner of the mouth persisted and were still positive for *Spirochaeta pallida* by dark field examination after six treatments, at which time the observation period was concluded.

Table 2 shows the results of the dark field examinations.

CLINICAL COURSE OF LESIONS

In general, it may be stated that the clinical course of the lesions paralleled the dark field examinations. When the spirochetes disappeared, healing took place promptly. The response of the lesions, as well as the dark field examination, was dependent on the character of the treatment given and the location and type of lesion present. When the patient received six or seven hours of a temperature over 40 C (104 F) the result was prompt, with disappearance of *Spirochaeta pallida* from the lesions and rapid healing. When the hyperpyrexia was not so satisfactory and the temperature remained for the most part between 39 C and 40 C, the response was not as satisfactory.

The type of lesions also affected the clinical course, as mucous patches and superficial moist papules healed rapidly after treatment, that is, within from five to seven days, while deeply infiltrated papules and large condylomas involuted more slowly, requiring from two to three weeks. We found that the lesions on the face—that is, the exposed surface of the body—during the treatment involuted more slowly than those on the covered parts of the body. This is illustrated by case 5, in which there was a generalized maculopapular eruption with moist papules over the vulva, mucous patches in the mouth and infiltrated papules over the forehead. All the lesions cleared rapidly except those on the face, where they even increased in size. In case 16 we were unable to cause the fissured papules at each corner of the mouth to heal or become negative for *Spirochaeta pallida* by dark field examination after six treatments, while the rest of the lesions cleared promptly with two treatments.

In three cases of secondary syphilis clinical recurrences were observed. In one, a mucous patch developed on the glans penis eleven days after the eighth treatment. This lesion was positive for *Spirochaeta pallida* but cleared promptly within three days when pyretotherapy was resumed, also becoming negative for *Spirochaeta pallida*. In the second of these cases a mucous patch appeared on the vulva twenty days after the eighth hyperpyrexia treatment. This was positive for *Spirochaeta pallida* and cleared within twelve days after pyretotherapy was resumed. In the third patient a mucous patch developed, positive by dark field for *Spirochaeta pallida*, on the lower lip ten days after the eighth hyperpyrexia treatment. In none of the patients with primary syphilis were recurrences observed.

SEROLOGIC CHANGES

Of the eighteen cases under observation a sufficient length of time for serologic changes to be noted, fifteen

17 Wilkes Weiss, Dorothy, and Weiss, Charles. Experiments on the Purification of Cultures of *Spirochaeta Pallida* by Chemical Method. *J. Infect. Dis.* 38: 289 (April) 1926.

presented strongly positive blood Wassermann and Kahn reactions, and three were negative before treatment. The latter remained negative during their periods of observation, that is, two, three and six weeks, respectively. In those with strongly positive serologic reactions, there were some temporary fluctuations, but all showed strongly positive blood Wassermann and Kahn reactions at the conclusion of their hyperpyrexia treatments.

Spinal fluid examinations were done in seven patients before treatment, in four of these the spinal fluid was re-examined after treatment. In three cases the spinal fluid was examined only after treatment had been given. A total of fourteen spinal fluid examinations was done, but none showed definitely abnormal changes.

Table 3 presents the serologic changes.

EFFECT ON THE PATIENTS

Among those patients with secondary syphilis, all experienced symptomatic relief. Patient 5 was of interest, as at the time of entry she had a fever as high as 38.5 C (101.3 F) for several days. Immediately following the first treatment her temperature became normal and remained so.

COMMENT

From the observations reported here concerning the effects of hyperpyrexia on the lesions and clinical course of early syphilis, it is evident that artificially produced fevers of from 39 C (102.2 F) to 40.5 C (104.9 F) and maintained for a period of six or seven hours do not sterilize the human body of *Spirochaeta pallida*. This is shown by the three clinical recurrences that developed after the hyperpyrexia treatments had been discontinued. The fact that the patients who had strongly positive blood Wassermann and Kahn tests on entry showed no permanent change after hyperpyrexia would indicate that the infection had not been greatly affected.

Experimental workers have shown that *Spirochaeta pallida* will die at 40 C (104 F) in two hours in vitro, and also in human tissues, and in shorter periods of time at higher temperatures. In the hyperpyrexia treatments as given in this work the optimum temperature of 40 C (104 F) is not obtained in all the tissues of the body. The temperature of the skin of the uncovered portion of the body, that is, the face, is lower than that of the covered parts of the body at the height of the treatment, and probably never exceeds 39 C (102.2 F). It is of interest that lesions which were on the face of patients regressed much more slowly than those on the covered parts of the body. According to the work of our colleague Dr. John J. Sampson, there is a wide variation in the temperature attained by the skin, the subcutaneous tissue, the muscles and the venous blood as measured by means of a needle thermocouple. He found that the temperature of the venous blood in the median basilic vein rose more slowly than the other tissues and did not exceed 39.4 C (102.9 F), even when the oral temperature was 40.7 C (105.3 F). In general, the venous blood remained from 1 to 3 degrees C below the oral temperature. The temperature of the subcutaneous tissue also remained considerably below the oral temperature. The temperature of the intramuscular tissue exceeded the oral temperature by from 0.8 to 1.4 degrees C, and the rectal temperature tended to approach these ranges.

Neymann and Osborne¹² also noted that the temperature of the subcutaneous tissue rose more slowly than the other tissues of the body. As they state, it is probably because of the inability to raise the temperature of the entire body to a sufficient height that accounts for the unsatisfactory results obtained by others and ourselves in the treatment of early syphilis by means of artificial fever.

The prompt disappearance of *Spirochaeta pallida* from lesions exposed to a high temperature substantiates the view that this organism can be destroyed by temperatures between 40 C (104 F) and 41 C (105.9 F). If a method could be devised that would raise the temperature of all the tissues of the body to a proper height, the eradication of early syphilis by this means might be accomplished.

A description of a method of inducing hyperpyrexia by the use of blankets alone is included in this report. Its simplicity and the fact that expensive equipment is not needed should increase the availability of this mode of therapy. The treatment given in this way has been less exhausting to the patient than other methods that we have used.

SUMMARY AND CONCLUSIONS

1 In thirty-one of thirty-three cases of early syphilis, or 94 per cent, the dark field examination was rendered negative for *Spirochaeta pallida* by means of hyperpyrexia alone.

2 The clinical lesions of early syphilis healed promptly in all cases in which the dark field examination became negative.

3 Three clinical recurrences were observed after cessation of the treatment.

4 The serologic reactions were not reversed from positive to negative in any case.

5 Inability to elevate the temperature of all the tissues of the body to the thermal death point of *Spirochaeta pallida* probably accounts for the failure to sterilize the body of these organisms.

6 Hyperpyrexia alone is not a satisfactory method of treatment of early syphilis.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DR. CHARGIN, LEIFER AND HYMAN
AND DR. EPSTEIN AND COHEN

DR. HOWARD J. PARKHURST, Toledo, Ohio. Drs. Epstein and Cohen have produced therapeutic fever in a series of cases by a method that is interesting because of its simplicity, availability and cheapness. I refer to the blanket method, which may be carried on very well in the home, the only requirement being the constant supervision of a thoroughly experienced nurse. Like all other methods in use, it has shortcomings. It is unfortunate that the temperature of all parts of the human body cannot be raised uniformly to the thermal death point of the spirochete. Perhaps in the future this may be accomplished by some combination of radiant and penetrating heat, or otherwise. Much more work is required. An important point that was not brought up in this paper is the possible value of fever therapy not used alone but as a supplement to the usual chemotherapy in the treatment of early syphilis. Richet and his co-workers in France and Tenney in New York have published favorable reports, and further investigations should be made.

DR. CLYDE L. CUMMER, Cleveland. If found free from untoward results and undue complications, the method proposed by Dr. Chargin and his co-workers would present great advantages. However, the number of cases is insufficient for final conclusions as to the clinical and serologic results or the frequency and seriousness of the complications, and the time period

covered by the observations is not long enough to judge of the efficiency of cure as compared with the generally accepted methods which have been so carefully studied by many workers since Ehrlich's discovery. Certain questions arise. First, what will be the effect of condensing treatment on the development of natural resistance, and when the rest periods come, what about the incidence of neurorecidives? What about the later effects on liver, skin and cardiovascular system and the nervous system? The well recognized tendency of arsenic to accumulate and the occurrence of remote effects sometimes after the lapse of years makes one wonder what one could expect with this method of massive treatment. The percentage of neuritic symptoms was high. While they cleared up in some cases after the lapse of some time, will there be permanent damage? The number of complications impressed me as being rather high, compared with the figures of the combined research of Cole, Moore, Weil, Stokes and O'Leary, in which the total reactions range between 1920 to 1931 in some 163,000 injections as about fifteen in a thousand, or 15 per cent. The figures of Drs Chargin, Leifer and Hyman showed that the skin reactions were present in 33 per cent of cases, polyneuritis in 32 per cent, and fever in 80 per cent or more. Doubtless some patients showed more than one of these sequelae. The basis of comparison is not fair, because these figures are based on patients and these group studies were based on the number of injections. The chief drawbacks to the method are the effects on the veins, the possibility of later systemic effects, the high incidence of immediate skin and nerve complications, and the uncertainty of permanently curative results as compared with the well established routine, and the requirement of hospitalization, which prohibits general employment in large clinics and in many private patients.

DR. WALTER M. SIMPSON, Dayton Ohio. I will restrict my discussion to the paper by Drs Epstein and Cohen. It is now apparent that simple fever production is the common denominator of all the methods that have been employed for the fever therapy of syphilis, whether malaria, relapsing fever, rat-bite fever, foreign protein substances, hot baths, electric blankets, diathermy, radiotherapy or the newer radiant heat methods. There is no evidence that the malarial plasmodium possesses intrinsic merits. I have completed the treatment of some fifty cases of neurosyphilis, and the results obtained with a variety of physical modalities including diathermy, radiotherapy and radiant heat methods, indicate that they are at least comparable to those obtained with malaria. In all these cases I have combined antisyphilitic chemotherapy with artificial fever. Many reports in the literature indicate that the combination of fever therapy and chemotherapy gives the most prompt and lasting results. The application of fever therapy to early syphilis is still strictly experimental. In forty-six patients with fresh syphilis in whom positive dark fields were obtained and in whom the fever was rapidly elevated to 106 F and maintained there for five hours, I have never succeeded in finding spirochetes in the primary lesion after the first treatment with fever. I have made thermometric gradient studies which indicate that there is no essential difference in the deep temperature levels produced by either radiant heat or high frequency methods. The two are equally effective. One important drawback to some of the physical methods is the slow induction of fever. Any method that prolongs for from two to four hours the elevation of temperature to 106 F provides an exhausting experience for the patient. This is readily overcome by utilizing one of the methods available for the rapid induction of fever, which can then be controlled readily for maintenance at the desired temperature level. All my patients are now being treated as ambulatory patients. I have finished the treatment of some 325 patients without accident. No patient has been injured by the treatment, and a minimum course of fever therapy for syphilitic patients has been fifty hours of sustained fever, usually given in ten weekly treatments of five hours each, with the fever sustained between 105 and 106 F. In the present state of knowledge it is hazardous to carry out this treatment in any place but an institution, under the careful and constant supervision by a physician who has made himself thoroughly aware of all the medical and physical principles involved utilizing trained nurse-technicians.

DR. HAROLD N. COLE, Cleveland. It may be that it would be better to have a method that will bring the temperature up to 106 rapidly and hold it at a level and then drop it, but it will not be possible for different institutions to have expensive machines such as Dr. Simpson has or the one that has been installed over at the City Hospital. But I think this should be followed out, and it may work very well along with the other methods in the treatment of syphilis. I am interested in the drip method that Dr. Chargin and his co-workers have suggested. It is true that there seemed to be quite an increase in the amount of toxic symptoms from this method and that it will have to be toned down, but the idea that these authors have started on is very good. If it should be possible to use somewhat smaller doses and immediately follow them up with bismuth therapy not giving a lapse of treatment this might be a valuable addition to the treatment of syphilis.

DR. HARRY M. ROBINSON, Baltimore. In discussing the paper by Drs Chargin, Leifer and Hyman, I apologize for attempting to talk on a technic with which I am not familiar. There is some gap between animals and human beings that it has never been possible to fathom. One can accomplish in animals easily what one apparently can never accomplish in human beings. The danger of mass therapy always brings forth to me the danger of abortive therapy. Some patients will become negative serologically with one or two injections of arsphenamine of moderate dosage, 0.3 Gm for a female, 0.4 Gm for a male, and a comparable dose of neoarsphenamine. Other patients, as Dr. Chargin and his co-workers have shown will not become seronegative under two courses of arsphenamine interspersed with bismuth compounds. Certainly the future danger of neurorecurrences or cardiovascular disease is very great, and one must tread this matter of therapy gingerly. In the University Hospital clinic of which I have charge, treatment for two Negro patients of 0.45 Gm. each had been ordered. I advised that my associate use a 0.9 Gm ampule, dividing it giving half to one patient and half to the other. When we went to look for the 0.9 Gm ampule it was nowhere to be seen. Instead, there were two 4.5 Gm ampules lying on the table, and each of these Negro patients had received at one injection 4.5 Gm. Strange to relate, one patient developed no untoward reactions, and the other no more than moderate nausea and vomiting. It is also strange in view of the experience of Dr. Chargin and his co-workers, that the Wassermann reaction did not become more rapidly negative and in one patient we had to continue the treatment as any other patient received it. The other patient failed to return and we could never locate him.

DR. NORMAN N. EPSTEIN, San Francisco. There are three points I want to emphasize. First, although radiant heat is a simple method of producing hyperpyrexia, this procedure should be done with extreme care. As Dr. Simpson has stated, it requires a trained nurse in constant attendance and physicians experienced in fever therapy. Second, several patients can be treated simultaneously. One nurse can take care of four or five patients if placed conveniently close to one another. The temperature can be raised rapidly by radiant heat, combining the blanket method with a simple electric baker over the bed for one or two hours. Third, the patient is ambulatory and remains in the hospital for only twenty-four hours for a single treatment. In this way fever therapy can be made a part of routine antisyphilitic therapy without interfering with the economic status of the patient. Any patient with central nervous system syphilis who fails to react satisfactorily to a reasonable amount of chemotherapy should be given fever therapy as well.

DR. LOUIS CHARGIN, New York. I realize that our experience with this method of therapy has been too limited to warrant its recommendation as a routine method. Our experience, however, does demonstrate that it merits further trial, particularly in the treatment of early syphilis. Such a trial should, however, be given under fully controlled conditions, which include proper choice of material, hospitalization of the patients, accuracy in technic and careful observation during and after treatment. I should like to repeat that this method of therapy is an approach to Ehrlich's *therapia sterilisans magna*. From knowledge gained in experimental animal syphilis and experience in human syphilis it is fair to assume that if a scheme can be devised that will permit of the massing of the organic

arsenicals in sufficient quantity with safety, such a method will offer the best outlook for a cure of syphilis in the greatest percentage of cases. The intravenous drip method is an effort in this direction. In administering such large amounts of the arsphenamines in so short a space of time, we naturally feared the toxic effects of the arsenic, but we are glad to be able to state that these have been comparatively mild in character. Our greatest difficulty has been with polyneuritis. The percentage of cases observed has been higher than is usual with the other intensive method of therapy, but all the cases have cleared up in a comparatively short time. We hope to continue this work but expect to use arsphenamine instead of neoarsphenamine, since the former is more stable. Perhaps we shall thus avoid the high percentage of polyneuritis. Dr. Cummer has brought up the question of natural resistance. It seems that the majority of opinion is not in favor of waiting for immunity to develop. The tendency seems to be rather to treat intensively as soon as the diagnosis has been established. Dr. Cole's suggestions are well taken. In the next series of cases we hope to make use of both bismuth compounds and arsphenamine and can perhaps show even better results than in this series of cases. The experience of Dr. Robinson is by no means unique since there are already reported in literature several such instances, in none of which there seems to have been serious damages as a result of these enormous doses of arsenic.

PULMONARY MANIFESTATIONS IN HUMAN TULAREMIA

A CLINICAL STUDY BASED ON THIRTY-FIVE UNSELECTED CASES

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The pleuropulmonary manifestations of tularemia have never been the subject of a detailed clinical report, although they are now regarded as a part of the disease.¹ This report is based on an analysis of the clinical evidence of pleuropulmonary involvement discovered in thirty-five cases in which the diagnosis of tularemia was made either by an agglutination test or by the recovery of the organism.

Data relative to the individual tularemic infections are listed in table 1. The respiratory symptoms, physical signs and roentgenologic diagnoses of the thirty-five cases are presented in table 2. Both clinical and roentgenologic evidences of intrathoracic disease were found in seventeen patients and roentgenologic evidence alone was present in fifteen. Chest films in thirty-two of thirty-four patients were abnormal and roentgenologic changes in these films are the subject of a separate report.² This presentation deals primarily with the seventeen patients in whom clinical indications of pleuropulmonary involvement were found. These cases will be grouped for discussion under three headings:

1. Tularemic pneumonia, seven cases
2. Tularemic bronchitis, seven cases
3. Tularemic pleural effusion, three cases

From the Department of Internal Medicine, University of Virginia Hospital.

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2. Archer, V. W., Blackford, S. D. and Wissler, J. E. Pulmonary Manifestations in Human Tularemia. A Roentgenologic Study Based on Thirty-Four Unselected Cases. This issue, p. 895.

TULAREMIC PNEUMONIA

Physical and roentgenologic signs of pulmonary consolidation were detected in seven cases (20 per cent of the entire series). In this group the diagnosis of tularemia was difficult because the usual clinical criteria were often lacking. Tularemia was suspected in one instance (case 34) from the history and from bilateral ulceroglandular lesions that occurred before the pneumonia. It was proved subsequently by the agglutination test. In another (case 10), enlargement of the cervical glands appeared several days after the pneumonia was detected, but the diagnosis of tularemia was not made until a biopsy of these glands two months later suggested the repetition of the agglutination. Ulceroglandular lesions were not apparent in the remaining five patients of this group, and the diagnosis of tularemia was based on agglutination tests made because of fevers of unknown origin (cases 1, 5 and 26) or because of chest conditions of unproved etiology (cases 28 and 30).

The symptoms of pneumonia in this group were variable and in general were less severe than those seen in ordinary pneumonia. All seven patients had some degree of cough, but usually it was not serious. There was no rusty sputum. The sputum was profuse and bloody in one instance (case 5), in which there was also a lung abscess. Chest pain was absent in five, but it was severe in two (cases 1 and 28). Some patients had chills at the time of the onset of tularemic symptoms, but chills were absent at the beginning of the pneumonia. In four patients (10, 26, 28 and 34), bronchitis preceded or was associated with the consolidation. The physical signs were those usually found in pneumonia and in most cases they were lobular in distribution, however, in at least one (case 28), the involvement was both lobular and lobar. In cases in which the time of consolidation could be determined, it was detected on the second, fifth, sixth, eighth, eighth and sixteenth day after the tularemic infection. The physical signs persisted for from a few days to three weeks. The temperature fluctuated from 103 to 106 F., and in those patients who survived, the fever remained after the disappearance of signs. The pulse rate was remarkably slow in relation to the fever, in no case was it consistently faster than 110. Rapid respiration and cyanosis were noted only in the terminal stages of the fatal cases. The leukocyte count was within the limits of normal with the exception of one case (case 10). Three (patients 5, 26 and 34) of these seven patients died.

Detailed reports of case 5^{1d} and of case 30² will be found elsewhere. The other five cases of tularemic pneumonia (cases 1, 10, 26, 28 and 34) are presented here with the primary emphasis on the pulmonary involvement.

CASE 1.—A farmer aged 34, admitted, July 25, 1927, complained of nausea, vomiting, backache and prostration of eight days' duration. Routine studies revealed nothing except a temperature of 102.8 F. In view of the season, the fever and the normal leukocyte count, treatment for typhoid was instituted. August 8, pleurisy developed on the left and three days later typical signs of pneumonic consolidation were noted. August 12 a roentgenogram confirmed the diagnosis of pneumonia. The fever began to subside August 16 and was gone by the 20th. The patient was discharged, September 7, with a diagnosis of typhoid in spite of repeated negative Widal tests and of many negative cultures of the blood, urine and stool for typhoid bacilli.

The subsequent recognition of a case of tularemia caused this patient to be recalled for an agglutination test, Feb 7, 1928, which was positive (1 80) Roentgen films in 1928 and 1933 have revealed marked fibrosis in the chest

CASE 10—A feeble-minded boy played with the skin of a freshly killed squirrel, Nov 28 1929 The next day he had four convulsions and was admitted to the hospital that night in a convulsive state, with a temperature of 105 F Dulness and increased whispered voice were noted in the left apex Laboratory studies, which included agglutination tests for typhoid undulant fever and tularemia as well as lumbar puncture, were essentially negative The leukocyte count was 14 000 December 9 a roentgenogram revealed pneumonic infiltration with apparently central softening in the left upper lobe. During his first weeks in the hospital the boy presented a wide variety of symptoms Pus was aspirated from a deep cervical abscess, which developed about December 15

Necropsy—Four hundred cubic centimeters of fluid and, apparently, pneumothorax were found on the left Fibrinous exudate covered the pleura on both sides and there was extensive purulent involvement of the tracheobronchial glands Small pneumonic patches with a few minute zones of necrosis were present in the left upper lobe The left lower lobe was almost completely consolidated, with a central cavity, 3 cm in diameter, connecting with a bronchus The right upper lobe was in an earlier stage of consolidation Several small zones of focal necrosis were noted in the right middle and lower lobes Bacterium tularense was recovered from animals inoculated with macerated lung tissue

CASE 28—A farmer, aged 68 began to have "dizzy spells," July 26, 1933 A sharp pain in the right side of the chest with chills, fever, nausea and vomiting began the following day Because of these symptoms he was admitted July 31 He had no respiratory symptoms other than the chest pain

TABLE 1—Data Relative to Individual Tularemic Infections

Case*	Sex	Race	Age	Occupation	Type of Tular emia	Source of Inoculation	Incuba tion Days	Chief Complaint on Admission	Duration of Chief Complaint Days	Initial Indention for Agglutination Reaction	Maximum Aggluti nition Titer	B Tu larense Found	Fatal	Autopsy
1	♂	W	34	Farmer	T	?	?	Fever	8	Fever	1/80			
2	♂	W	18	Student	T	Rabbit	2	Fever	3	Patient's request	1/320			
3	♂	W	63	Banker	UG	Rabbit	1	Fever	10	History	1/640			
4	♂	N	54	Farmer	UG	Rabbit	7	Glands	23	Ulcer and glands	1/160			
5	♂	N	38	Farmer	T	Opossum	4	Cough (acute)	30	Fever	1/5,280		+	+
6	♂	N	63	Housewife	UG	Rabbit	7	Ulcer	14	Ulcer and glands	1/160			
7	♂	W	19	Student	UG	Rabbit	5	Gland	56	Gland biopsy	1/160			
8	♂	N	27	Farmer	UG	Tick?	?	Hematuria	1	Fever	1/160			
9	♂	W	57	Housewife	UG	Tick?	?	Fever	8	Fever	1/160			
10	♂	W	15	None	G	Squirrel	1	Convulsions	1	Gland biopsy	1/160			
11	♂	W	46	Housewife	UG	Rabbit	4	Ulcer	7	Ulcer and glands	1/160			
12	♀	W	23	Housewife	UG	Rabbit	2	Ulcer	3	Ulcer	1/1,280			
13	♀	W	38	Housewife	UG	Rabbit	2	Arthritis	25	History	1/640			
14	♂	W	51	Painter	UG	Rabbit	?	Cough (chronic)	600	Ulcer and glands	1/160			
15	♂	N	9	Student	UG	Tick	2	Fever	4	Fever	Negative	+	+	+
16	♂	W	41	Farmer	T	?	?	Fever	5	Fever	1/320			
17	♂	W	31	Farmer	UG	?	?	Fever	14	Fever	1/1,280			
18	♂	N	12	Student	OG	Rabbit?	2	Conjunctivitis	3	Conjunctivitis	1/320	+		
19	♀	N	41	Housewife	UG	Rabbit?	?	Gland	45	Gland	1/640			
20	♂	W	11	Student	UG	Rabbit	2	Gland	29	Gland	1/640			
21	♂	W	4	None	UG	Rabbit	2	Gland	29	Gland	1/640			
22	♂	W	8	Student	UG	Rabbit	2	Gland	29	Gland	1/1,280			
23	♂	N	54	Farmer	UG	Rabbit	8	Glands	25	Glands	1/1,280			
24	♀	W	23	Housewife	UG	?	?	Jaundice	120	History	1/640			
25	♀	N	50	Housewife	UG	Rabbit?	?	Gland	50	Gland	1/640			
26	♂	W	23	Farmer	T	Rabbit	1	Fever	6	Fever	1/80	+	+	+
27	♂	W	8	None	OG	?	?	Conjunctivitis	7	Conjunctivitis	1/80			
28	♂	W	68	Farmer	T	?	?	Pain in chest	4	Chest condition	1/320			
29	♂	N	9	Student	UG	Rabbit	?	Gland	19	Gland	1/640			
30	♂	N	19	Farmer	T	Rabbit	2	Fever	3	Chest condition	1/160			
31	♂	W	15	Student	UG	Tick?	?	Gland	38	Gland	1/160			
32	♂	N	10	Student	UG	Rabbit	3	Ulcer	3	Ulcer	1/160			
33	♂	W	38	Clerk	UG	Rabbit	2	Chronic peritonitis	320	History	1/160			
34	♀	W	42	Housewife	UG	Rabbit	5	Fever	3	Ulcer and glands	1/160	+		
35	♂	N	18	Student	T	?	?	Dyspnea	60	Chest condition	1/320			

* The first thirteen cases have already been reported briefly (Blackford S D Virginia M Monthly 58:10 [April] 1931) Cases 15, 19, 30 and 35 are being reported by Archer Blackford and Wisler* Cases 2 and 23 have been reported in detail (Blackford S D Virginia M Monthly 60:107 [May] 1933) Cases 20, 21 and 22 have been reported by W W Waddell Jr and W C Willis (J Pediat 2:187 [Feb] 1933)

† T typhoidal UG, ulceroglandular G glandular OG oculoglandular

Jan 15 1930 a cervical gland was removed for diagnosis Discovering no acid-fast organisms, the surgical pathologist suggested a second agglutination test for tularemia This was positive (1 160) on January 30, which was the first day with out fever He was discharged, February 9 He was readmitted in May on account of bilateral conjunctivitis the cause of which could not be determined No recent information about this patient has been obtainable

CASE 26—A farmer aged 24, skinned a rabbit during the afternoon of June 30, 1933 The next morning as he started to work he fainted and later he became feverish with headache, weakness and anorexia He was admitted, July 5, with cough, prostration and a temperature of 105 F Generalized bronchitis was found on physical examination but the routine laboratory studies were negative July 9 signs of consolidation were noted in the left lower lobe A roentgenogram on July 11 showed consolidation from the second to the fifth rib with a central area of rarefaction about 3 by 5 cm on the left and infiltration in the second interspace on the right Three days later physical signs of extensive bilateral consolidation were present and the agglutination test was positive for tularemia (1 80) The patient died suddenly the next day

Chest examination revealed atypical signs of either fluid or consolidation in the right side of the chest posteriorly The temperature was 103.2 F Two days later, thoracentesis was attempted but no fluid was found August 3, the chest signs were definitely those of pneumonia On the 8th, tularemic agglutination, taken because of the typical character of the chest condition, was positive (1 40) the titer increased to 1 320 in later examinations In roentgenograms of the chest made on the 22d, after the physical signs had disappeared, evidence of pneumonia in the right base was still visible The patient was discharged, August 27 Chest films in January 1934 showed residual signs of bronchitis

CASE 34—A housewife aged 42 dressed a rabbit, Nov 2, 1933 Three days later she went to bed with chills, fever and headache She was admitted, November 10, with a temperature of 104 F Multiple bilateral ulcerations on the hands and bilateral epitrochlear and axillary adenopathy were obvious There were a few rales in the right hilus area but no respiratory symptoms The laboratory studies were unimportant Roentgen films on admission revealed great enlargement of the right hilus Definite physical signs of pneumonia were first found on November 15 In the roentgenograms of the 18th,

a further increase in the enlargement of the right hilus with a surrounding pneumonic area was noted and there was a small area of necrosis near the hilus. The patient became increasingly toxic and died, November 19. A blood specimen obtained after death gave the first positive agglutination for tularemia (1:160).

TULAREMIC BRONCHITIS

Clinical bronchitis was diagnosed in twelve cases. In only seven of these twelve was the bronchitis uncomplicated. These seven patients gave typical contact histories and exhibited the ulceroglandular lesions of tularemia.

All these patients had a moderate to severe cough, generally beginning within a week of the tularemic inoculation and continuing for from a few days to more

tration, productive cough, headache and periods of delirium. Scattered patches of fine rales were heard under the left scapula, and a tentative clinical diagnosis of bronchopneumonia was made. Roentgen study on the 30th revealed bronchial changes in this area, but pneumonic infiltration was indefinite. The fever subsided about two weeks after admission. Agglutination tests for tularemia became increasingly positive to a titer of 1:640. The patient was discharged, Jan. 2, 1928. He died of accidental injuries April 28, 1929.

CASE 14—A house painter, aged 51, skinned a rabbit in October 1927. A few days later he noticed an ulcer on the hand and glands in the axilla. He was confined to bed for ninety-three days on account of febrile symptoms and a severe cough. The cough persisted after convalescence and was so severe that the patient had to stop working. Nov. 17, 1929, the patient said that he "coughed up about a cupful of bloody

TABLE 2—Respiratory Symptoms, Physical Signs and Roentgen Diagnoses

Case	Respiratory Symptoms				Physical Signs			Roentgen Diagnoses										Number of Films Taken
	Cough	Sputum	Chest Pain	Dyspnea	Time Signs Found After Inoculation	Consolidation	Bronchitis	Pleural or Pleural Fluid	Time Film Taken After Inoculation	Normal	Pneumonia	Necrosis	Peribronchial Thickening	Pleural Fluid	Apparent Excess of Calcium	Nodular Infiltration	Abnormality Undetermined	
1	1+		2+		16 days	+		+	23 days		+		x					3
2	2+	1+	+		18 days	+	+	+	59 days		+		x					3
3	2+	2+		1+	11 days	+	+		14 days		+		+					1
4	2+				37 days		+		64 months						+			1
5	2+	3+			32 days	+		?	26 days		+	+						1
6	2+				10 days		+		61 months								+	1
7									60 months				+					1
8																		0
9									53 months				+					1
10	1+				2 days	+	+		12 days		+	?						1
11									44 months				+					1
12	1+		1+	1+	30 days	?		+	21 days				x?	+				3
13									29 months				+		+			1
14	3+	2+			20 months		+		30 months				+		+			1
15									0 days							+		1
16									17 days				+		x			3
17									16 days				x		+			2
18									25 months						+			1
19	2+	1+			43 days	?	+		66 days				+					1
20									9 months				+		+			1
21									9 months				+		+			1
22									9 months	+			+		+			1
23	2+	1+			6 days		+		12 months				+		+			1
24									14 months						+			1
25	1+				40 days		+		12 months	+					+			1
26	3+	1+	2+		6 days	+	+	*	12 days		+	+						1
27									11 days	+		+	x					2
28	2+	1+	2+		8 days	+	+		31 days		+				x			3
29									4 months						+			1
30	1+				5 days	+			7 days		+		x		+			3
31									42 days				+					1
32									21 days				+					1
33									11 months				+		+			1
34	1+				8 days	+	+		8 days		+	+						6
35	2+		3+	3+	3 months			+	3 months					+				1
	17	8	6	4		11	12	7		3	9	4	21	3	15	1	1	

* x indicates a roentgen finding not apparent in the first films but present in a subsequent film.

than thirty months. In four cases (3, 14, 19 and 23) the cough was unproductive. None of the patients experienced chest pain. The dyspnea recorded in one instance (case 3) was probably of cardiac origin. Rales were heard in every case; they were localized and rather fine in some instances, generalized and coarse in others. In two cases (3 and 19) there were physical signs suggestive of consolidation but the suspicion of pneumonia could not be confirmed by roentgen studies. Patients 3 and 14 had high and protracted fevers, the other five were treated in the outpatient clinic after mild febrile reactions at home.

Acute and chronic bronchitis are illustrated by the reports of the two patients (3 and 14) who were hospitalized.

CASE 3—A banker aged 63, skinned a rabbit Nov. 16, 1927. The next day he complained of fever, headache and weakness. He was admitted November 27 with a fever of 103.6 F. pro-

sputum" during one twenty-four hour period. Following this similar episodes occurred several times a month and in addition he suffered from dyspnea, chest pain and tiring easily. However, all these symptoms gradually improved until the time of his admission. He entered the hospital, April 15, 1930, because he thought he had tuberculosis. A few scattered small and medium moist rales were heard in the left apex anteriorly, and a questionable clubbing of the fingers was noted. Roentgen study of the chest revealed enlargement of both hilus zones and many discrete areas of calcium deposit, but there was no evidence of active tuberculous infection. Sputum examinations for acid-fast organisms were negative. Tularemic agglutination was positive (1:160). The patient left the hospital against advice two days after admission and no subsequent information has been obtainable.

TULAREMIC PLEURAL EFFUSION

A diagnosis of pleural effusion was made in four cases in this series. Pleural effusion was found once at necropsy in a pneumonic case (case 26), the diag-

nosis in the other three (cases 2, 12 and 35) was made during life and the fluid aspirated and studied. In these three surviving cases the diagnosis of tularemia was obvious once (case 12) from history and ulceroglandular lesions, but tularemia was not apparent in the other two (cases 2 and 35). Patient 2 was thought for two years to have tuberculosis of the pleura and lung. The diagnosis of tularemia was finally made when the patient requested an agglutination test after reading about the disease in the newspapers. The other was believed to have a tuberculous effusion until tularemia was proved by the routine agglutination test for an obscure condition of the chest.

These three patients had cough, which was productive in one instance (case 2). Chest pain was severe in two (cases 2 and 35) and mild in one (case 12). There was marked dyspnea in one (case 35) and slight dyspnea in the other two (cases 2 and 12). Patient 2 had physical signs of bronchitis, pleural fluid and consolidation. Another (patient 12) had probable consolidation in addition to the effusion. The third patient (35) was admitted for the removal of fluid from the left side of the chest and reported that fluid had been aspirated from the right side of the chest three months previously.

High fevers, relatively slow pulse rates and normal leukocyte counts characterized all three cases.

The pleural fluid in each instance was slightly cloudy and straw colored. The specific gravities varied from 1.022 to 1.042, the total protein in the fluid from 4.5 to 5.6 per cent. The highest cell count was 3,400. Lymphocytic cells predominated in all the differential counts. No acid-fast organisms were identified in the stained smears and no evidence of tuberculosis was obtained from guinea-pig inoculations. Efforts to isolate *B. tularensis* from the fluids by animal inoculation and culture, made in two instances (cases 12 and 35), were unsuccessful, the same fluids, however, agglutinated the organism in high dilutions.

Case 35 is reported in detail elsewhere.² The other two are presented here.

CASE 2—A schoolboy, aged 19 years, admitted, Aug. 17, 1927, had a fever of 103.8 F. He had been sick three days with chills, fever and a pain in the right side of the chest. Physical examination and laboratory studies were essentially negative. Owing to the season and a high fever with a normal leukocyte count a tentative diagnosis of typhoid was made in spite of the fact that the patient had recently completed a series of typhoid inoculations. During the first ten days in the hospital a moderate cough with dyspnea developed, and on August 27 numerous diffuse squeaks were heard in both lungs. The following day an extensive pleural and pleuropericardial rub was present over the left side, and it was thought that there were also signs suggestive of consolidation. By the 31st, the rub was replaced by signs of fluid. Aspiration on this date removed 10 cc. of a slightly cloudy straw-colored fluid with a specific gravity of 1.042 and a total protein content of 4.5 per cent. There were 90 per cent small lymphocytes in the differential smear. No acid-fast organisms were found and a guinea-pig was inoculated but subsequently lost. September 1, therapeutic thoracentesis removed 850 cc. of similar fluid. Definite signs of multiple small areas of consolidation were found in both lungs on the 6th. The high fever began to subside about ten days later. No definite evidence of fluid was seen in the first roentgen films, taken on the 29th, but it was thought that there was evidence of tuberculosis in the parenchyma of the lung. The patient was sent to a tuberculosis sanatorium October 25 with a diagnosis of tuberculous pneumonia and tuberculosis of pleura, in spite of the fact that

repeated sputum examinations for acid-fast organisms had been negative. The patient was discharged from the sanatorium in June 1928, after gaining 40 pounds (18 Kg). He returned to the hospital, Jan. 15, 1930, asking that a blood test for "rabbit sickness" be done because he remembered having skinned a sick rabbit a few days before his first admission to the hospital. The agglutination was positive (1:320). Peribronchial infiltration was seen in roentgen films taken in October 1933.

CASE 12—A housewife, aged 25, skinned a rabbit, April 9, 1930. Two days later there was a sudden onset of fever, accompanied by aching, nausea, vomiting and a hacking cough. She was admitted, April 14, with a fever of 103.2 F. Ulceroglandular lesions were found and a tentative diagnosis of tularemia was made. Chest examination and laboratory studies were negative. Tularemic agglutination on April 28 was positive (1:1,280). A roentgen film of the chest on the 30th indicated probable bronchiectasis in the right base. May 6, local roentgen therapy to the ulcer and glands was instituted with some relief of symptoms. Defervescence began on the 8th, but daily examinations of the chest were continued. Signs of fluid in the right base were definite by the 14th. A roentgen film on this date revealed an increase in the density previously noted, but it was thought that there was insufficient evidence to warrant a diagnosis of pleural effusion. On the 17th a diagnostic thoracentesis removed 400 cc. of slightly cloudy straw-colored fluid with a specific gravity of 1.022 from the right pleural space. This exudate contained 3,400 cells per cubic millimeter, with 72 per cent lymphocytes in the differential count. No acid-fast organisms were found and guinea pig inoculations were negative for both tuberculosis and tularemia. *B. tularensis* was not recovered in the special mediums used, but the fluid agglutinated the organism (1:640). The patient was discharged, May 23. A roentgen film in September 1933 revealed a moderate increase of the lung markings in the right base.

COMMENT

Tularemia has been shown to affect the thoracic viscera in a high percentage of cases which came to necropsy, but this study demonstrates for the first time that pleuropulmonary infections are frequent in patients who recover from the disease. Clinical methods detected lung or pleural involvement in approximately half of this unselected series, and roentgenograms revealed abnormalities in the chest in more than 90 per cent.

Physical and roentgenologic examinations established the presence of consolidation in one fifth of this entire series and of those patients who were first seen within forty days of the onset of tularemia, pneumonia was found in one fourth. These figures may not represent the true frequency of pulmonic consolidations in all tularemic infections, since in rural areas only the most severe cases are hospitalized. On the other hand, these data indicate that pneumonia is a much more common manifestation of tularemia than would be expected from the fact that only three cases³ have been published under the name of "tularemic pneumonia." This study points out further that, while pneumonia is one of the most serious manifestations of tularemia, it is not so fatal as is generally believed. Only two recoveries⁴ after consolidation in tularemia have been reported. Four of these seven patients with proved consolidation survived. There was no definite proof of lung necrosis in any of these surviving patients. Conclusive roentgenologic evidence of "central softening" in the consolidated areas was found in each of the three fatal cases. This "central softening" represented cavitation.

³ Permar and MacLachlan^{1b}; Gudger^{1a}; Tureen L. L. *Tularemic Pneumonia* J. A. M. A. 99:1501 (Oct. 29) 1932.

⁴ Sante L. R. *Pulmonary Infection in Tularemia* Case Report Am. J. Roentgenol. 25:241 (Feb.) 1931. Tureen².

in the two patients who came to necropsy. The pathologic studies in these two instances were entirely consistent with the observations reported in tularemic pneumonia.

Bronchitis alone or in conjunction with other pulmonary disease was found clinically in more than one third of this series, and there was roentgenologic evidence of peribronchial thickening in three fifths of all the patients. The prognosis was not serious when bronchitis alone was present. Patients in whom clinical bronchitis was uncomplicated were usually no more ill than those without clinical indications of respiratory involvement, and none of them died. In the absence of necropsy studies of uncomplicated cases it could not be proved that the bronchial changes resulted from tularemia and not from secondary infection. However, inflammation of the bronchi was found in an unconsolidated portion of the lung in one of the patients dying of tularemic pneumonia, and this finding suggests that the bronchitis was also due to tularemia. The frequency with which bronchitis followed tularemic infection is a further indication that it was a part and not a complication of the disease.

Fluid in the pleural cavity was found in four of these thirty-five cases. In three instances it was associated with physical signs of pneumonia. The exudate was aspirated for diagnostic examination in three of these four patients. These exudates were strikingly similar on routine laboratory study to the exudates found in tuberculous effusion, but two of the fluids agglutinated *B. tularensis*, and tubercle bacilli were demonstrated in none of them. The effusions were presumably due to tularemia, since previous and present necropsy studies have shown that pleural fluid may be associated with pneumonia of definitely tularemic origin.

Gudger¹ has called attention to the fact that pulmonary lesions are prominent in certain cases of the typhoidal type of tularemia and that these pulmonary manifestations are often diagnosed with difficulty. These statements were confirmed in this study. Seven of the eight patients with the typhoidal type of infection had serious pulmonary lesions. The chest symptoms and signs were outstanding in these cases and the diagnoses of tularemia were made only by agglutination tests. When tularemia is not recognized as the cause of the respiratory involvement, diagnoses of tuberculosis or of bronchopneumonia may be made erroneously.

In regions in which tularemia is prevalent, the disease should be considered when suspected pulmonary tuberculosis cannot be proved. Tularemia agglutinations should be obtained also in all atypical pneumonias, particularly if they are accompanied by a high fever with a relatively slow pulse rate and a relatively low leukocyte count. It has been a local custom in the past year to secure tularemic agglutinations in all unusual chest conditions, and three of the present cases were recognized as tularemia only as a result of this routine procedure.

SUMMARY

Thirty-five consecutive cases of tularemia were reviewed with reference to the pleuropulmonary manifestations of the disease during life. Clinical evidences of such involvement were found in seventeen of the thirty-five cases. Pneumonia was proved by physical and roentgenologic examinations in seven instances (20 per cent of the entire series), clinical bronchitis alone,

as evidenced by cough and rales without other signs, was found in seven other patients (20 per cent), and pleural fluid was aspirated from three patients (8.6 per cent).

PULMONARY MANIFESTATIONS IN HUMAN TULAREMIA

A ROENTGENOLOGIC STUDY BASED ON THIRTY-FOUR UNSELECTED CASES

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Thirty-five cases of tularemia have been recognized at the University of Virginia Hospital since 1927. Thirty-four of the diagnoses have been confirmed by characteristic agglutination reactions, the remaining one by recovery of the organism after death.

Roentgen study of the chest had not been made in a single case in this series prior to the tularemic infection. Chest films have been taken in thirty-four of the thirty-five cases at some time subsequent to the inoculation. Roentgenograms of the chest were obtained in eighteen patients during the active stage of the disease (i.e., within three months of inoculation), eight of these returning after recovery for further roentgen examination. Chest films after recovery were made in sixteen of the remaining cases. It is unfortunate that films were not obtained during the active stage of the disease in all the cases, but it was not until late in this series that it was realized that positive pulmonary changes are so uniformly present. In recent cases, early and serial films are made as a routine.

PULMONARY MANIFESTATIONS IN ACTIVE TULAREMIA

The roentgen films in this group have been reviewed and interpreted in accordance with the following classification:

Pulmonary consolidation, seven
Peribronchial thickening, seven
Pleural effusion, three
Nodular infiltration, one

PULMONARY CONSOLIDATION

Tularemic pneumonia has been described in ten of the fourteen complete routine necropsy reports quoted by Gundry and Warner¹. It appears to be primarily a bronchopneumonia with a lobular type of involvement, often accompanied by areas of focal necrosis. Confluence of the lobules may lead to large areas of caseous consolidation, in which cavitation may be found if secondary infection is present.

Roentgen studies of tularemic pneumonia give results in accord with its known pathologic changes, but the diagnosis cannot be made by chest films alone. The pathologic process was followed in one patient (patient 34) dying on the sixteenth day after infection, by

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¹ Gundry, L. P., and Warner, C. G. Fatal Tularemia. Review of Autopsied Cases, with Report of a Fatal Case. *Ann. Int. Med.* 7: 837 (Jan.) 1934.

serial roentgenograms from the seventh to the fifteenth day. The first films revealed a great enlargement at the right hilus, which subsequently increased and was surrounded by pneumonic infiltration. Central necrosis in the hilus region was visible on films taken the day before death. An autopsy permit was refused in this case. In the other two fatal cases (cases 5 and 26), however, necropsy examination confirmed the roentgen interpretation of necrosis, one presented an area of central softening in the midst of an extensive pneumonia, and the other presented consolidation with multiple abscess formation. Three surviving patients gave roentgen evidence of infiltration without rarefaction, and these patients have been roentgenologically studied since recovery: one had practically no residual change six weeks later, one had a thickening of the bronchial tree after five months, and one had marked fibrosis after five years. Roentgenograms in the fourth surviving patient revealed definite pneumonia with what appeared to be central softening. Follow-up films could not be obtained in this case.

One of the necropsies (case 5) has been reported already in detail and a second one (case 26) will be reported elsewhere.

One illustrative report presents the salient features of pulmonary consolidation.

CASE 30—H. W., a Negro farmer, aged 19, picked up a dead rabbit, Aug. 24, 1933. Two days later there was a sudden onset of fever, headache and malaise. He was admitted, August 29, on account of a general toxic condition: fever of 103.6 F., vomiting, abdominal pains and a slightly productive cough. The physical examination and laboratory studies were negative except for suppression of breath sounds and showers of moist rales in the left side of the chest, anteriorly. A pneumonic area from the second to the fifth rib on the left was seen in a roentgenogram (fig. 1) made August 31. Definite physical signs of pneumonia were found September 1. The patient became afebrile September 3. A routine agglutination test for tularemia was positive in a titer of 1 to 160 on September 4. Almost no residual change was discernible in chest films made on September 9. The patient was discharged on September 10. He returned by request on October 7 for further roentgen examination. There had been apparently some increase in the calcium deposit in the right hilus zone (fig. 2).

PERIBRONCHIAL THICKENING

The correlation between the tularemic necropsy material and the roentgen appearance of peribronchial thickening can be made only by deduction. The necropsy studies in tularemic pneumonia show that it is primarily lobular in type, which implies that the inflammatory process begins in and around the bronchi. If this process does not proceed to consolidation, the inflammatory changes should produce the picture of peribronchial thickening in roentgen films. This roentgenologic finding may represent bronchitis, peribronchitis, fibrosis or a combination of the three.

An uncomplicated increase in peribronchial markings was noted in the films in seven active cases (cases 3, 16, 17, 19, 27, 31 and 32) of this series. There was usually some haziness in addition to the thickening in these active cases, and it was thought to represent an acute bronchitis or peribronchitis rather than a simple fibrosis.

The report of one case with both clinical and roentgen evidence of bronchitis will suffice for illustration.

CASE 19—E. P., a Negro woman, aged 41, a housewife, skinned rabbits frequently during the fall of 1931. About November 25 she accidentally cut her right index finger, and

this was followed by a "waxing kernel in the armpit" and a "severe cold," the symptoms of which consisted of feverishness, chills, malaise, weakness, nasal discharge and a cough. Although she was quite sick, she did not go to bed. She came to the outpatient department, Jan. 11, 1932, complaining of axillary enlargement. A few rales and signs suggestive of consolidation were found in the right posterior hilus region. Tularemic agglutination, taken January 14, was reported positive in dilutions up to 1 to 640. Roentgen films (fig. 3) January 20 revealed thickening of the lung markings most marked in both hilus regions. No subsequent data could be obtained.

PLEURAL EFFUSION

Fluid in the pleural space has been reported in three of fourteen tularemic necropsies. Verbruyck mentioned the presence of 100 cc. in each pleural cavity in association with pneumonia. Goodpasture and House found 200 cc. in one pleural sac but discovered no evidence of intrapulmonary involvement. Bunker and Smith recorded finding 840 cc. in one pleural cavity and noted that, in addition to pneumonic consolidation of this lung there were six or eight white areas on the surface, which did not extend into the lung substance. One of the fatal cases (case 26) of our series presented a probable pneumohydrothorax, with 400 cc. of fluid. These observations prove that tularemia must be considered as a rare but possible cause of pleural effusions.

The roentgen examinations of the chests in our series were of no assistance in identifying the tularemic nature of the effusions. One case serves to illustrate.

CASE 35—S. H., a Negro schoolboy, aged 18 years, admitted to a hospital in Washington, Sept. 30, 1933, had a "cold" and pain in the right side of the chest of two weeks' duration. There were definite signs of fluid in the right base and a thoracentesis removed fluid but there is no record of the amount or nature of this fluid. A roentgen film was taken just before his discharge, November 10, which was considered to be negative except for some thickening of the pleura on the right side. The boy returned to his home feeling somewhat weak and with a persistent cough but was otherwise in fairly good health until December 23 when he was suddenly awakened by a severe inspirational pain in the right side of the chest, which lasted off and on for about a week. His local physician made a diagnosis of pleurisy with effusion and kept him in bed until dyspnea and a temperature of 104.4 F. necessitated admission to this hospital, Jan. 4, 1934. Signs of a large amount of fluid in the left side of the chest were found on examination. The patient was greatly relieved by the removal of 500 cc. of fluid, January 6. No acid-fast organisms could be stained. Guinea-pig inoculation was negative for tuberculosis. January 8, an additional 600 cc. of fluid was aspirated. In view of the high fever with a low leukocyte count a diagnosis of tuberculous effusion seemed most likely, even though several sputum examinations were negative for acid-fast organisms. A tularemic agglutination taken as a routine, January 9, was reported positive in dilutions of 1 to 320. January 11, 75 cc. of fluid was removed and an unsuccessful effort made to recover *Bacterium tularensis* by animal inoculation and cultures of this fluid. However, the fluid agglutinated the organism in dilutions of 1 to 160. Immediately after this aspiration anteroposterior (fig. 4) and lateral films were made, which showed a massive hydrothorax in the posterior portion of the left side of the chest. There was a slight haziness and increase in the lung markings of the right side of the chest. The patient was almost afebrile and practically free from symptoms at the time of his discharge, Jan. 14.

NODULAR INFILTRATION

Lesions of peribronchial and bronchial lymph nodes have been recorded in three of the fourteen tularemic necropsies. This glandular involvement may be independent of lesions in the lung, since in one instance no

intrapulmonary change was observed. Lymphadenitis in the hilus region was noted in the three necropsies of our series and it was found roentgenologically in the fourth fatal case. It seems probable that enlargement of the hilus glands is a frequent occurrence in severe tularemic infections.

Tularemic involvement of the hilus glands may be mistaken in roentgenograms for the puerile type of tuberculosis, as is demonstrated by the following case which will be reported elsewhere in more detail.

CASE 15—M. T., a Negro schoolboy, aged 9 years, was bitten in the left axilla by a tick June 29, 1931. Two days later he was taken violently ill with fever, headache, weakness and prostration. He was admitted, July 5, with a fever of 104.5 F. The most conspicuous finding on physical examination was suppuration from a gland in the left axilla the size of a pigeon egg. There were no respiratory signs or symptoms. Nothing abnormal was found in complete laboratory studies which included the routine agglutinations for unexplained fevers. A chest film (fig 5) was made July 7 and a marked increase of the lung markings in the mesial half of both lungs was noted. These increased markings were more pronounced on the right side, and they appeared to be primarily an enlarge-

ment of the lung markings. With films taken before the tularemic infection, second, peribronchial thickening and calcium deposits are such common changes in supposedly normal chests that it is a matter of personal opinion as to what constitutes an abnormality. The first criticism could not be obviated in the cases available; the second criticism was recognized and led to conservatism in interpretations of the roentgenograms.

It has already been mentioned that roentgenographic peribronchial thickening may represent bronchitis, peribronchitis, fibrosis or a combination of the three factors. It was stated that the hazy appearance of the thickening present in the active cases was thought to be due primarily to bronchial and peribronchial inflammation. This hazy appearance was generally absent in the thickening seen in the patients who recovered and this was interpreted to mean that fibrosis largely accounted for the changes observed. The thickening was generalized in some cases and localized in others. In a few instances the fibrosis occurred in areas known to have been involved at the time of acute infection. Most of the localized areas were not apical. In the



Fig 1.—Pneumonic consolidation in the left base.

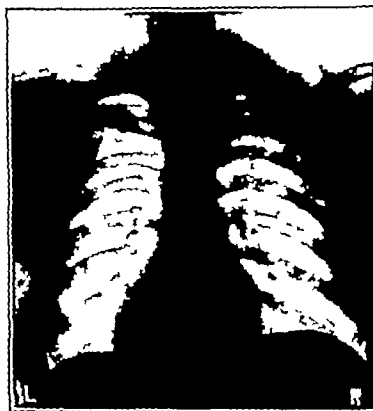


Fig 2.—Same as figure 1 one month later showing resolution of pneumonia with residual fibrosis and questionable increase in calcium deposit.

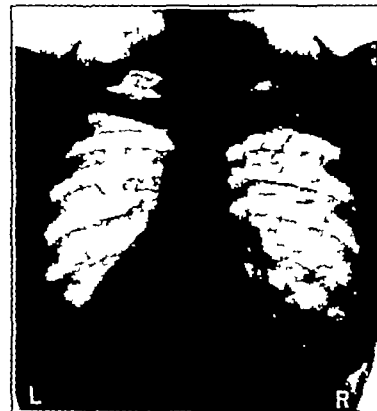


Fig 3.—A case showing marked thickening of the trunk markings.

ment of the hilus nodes. It was thought that these manifestations represented a massive tuberculous involvement of the simple puerile type. The patient became progressively more toxic and died July 9. Necropsy revealed tubercle-like areas in the right lung, bronchial lymph nodes, spleen and liver. A few minute areas of focal necroses were found in the microscopic study of the lungs. Bacterium tularensis was isolated by the U. S. Hygienic Laboratory from a guinea pig inoculation with a postmortem specimen of blood.

RESIDUAL CHANGES IN CHEST FOLLOWING TULAREMIA

Eight of the group in whom roentgen films were made during the active stage of the disease returned by request for further roentgenologic observation. Sixteen of the other patients in this series had their first films made at some time subsequent to three months after the infection. The twenty-four films in this recovered group have been reviewed and classified as follows: peribronchial thickening alone, nine; peribronchial thickening with apparently an excess of calcium, eleven; apparently an excess of calcium alone, four; mediastinal enlargement, cause undetermined, one; and within normal limits, two.

These roentgenologic interpretations might be subject to two criticisms. First, no comparison could be made

in cases in which apical thickening occurred, the possibility of a tuberculous etiology could not be ruled out. The incidence and amount of fibrosis in these tularemic patients indicated that tularemia was the probable cause of the lung changes, but other preexistent or coexistent causes of pulmonary fibrosis could not be absolutely excluded.

When no previous films are available for comparison it is obviously difficult to estimate an increase in calcium deposits following tularemia. One cannot be certain that extensive calcification as a result of tuberculous infection might not have antedated the tularemic infection. In one of the present cases an excessive amount of calcium was observed in a film taken so soon after the tularemic infection that tularemia could not have accounted for the deposits. On the other hand, calcification in this series generally appeared to be greatly out of proportion to that seen in comparable groups without tularemia, and in one instance (case 30) it was thought that a definite increase in calcium deposit could be noted in films taken six weeks after recovery. There are so many points of similarity in the body reaction to tuberculosis and tularemia that it would not be surprising to find that tularemia also produced calci-

fication in the lungs. This study can offer no conclusive proof to this effect, but the data are sufficiently suggestive to indicate the need for further observations.

There was an enormous enlargement in the superior mediastinum in one patient (patient 6) whose films were made five years after the tularemic infection. The appearance of this lesion was consistent with a malignant condition or of pulmonary syphilis, but the patient seemed in unusually good condition and would not submit to further diagnostic studies. In view of the fact that another patient (patient 18) has recently had suppuration from a tularemic gland three years after infection it may be that this mediastinal shadow represents persistent enlargement of tularemic glands and residual fibrosis.

The roentgen films of only two (patients 22 and 25) of the thirty-four patients were considered to be within the limits of normal.

SUMMARY

Definite pulmonary changes demonstrated by roentgen examination are present in a high percentage of cases of tularemia.



Fig. 4—Massive pleural effusion resulting from tularemia.



Fig. 5—Nodular infiltration in acute tularemia simulating the puerile type of tuberculosis.

The changes in the active cases are (1) pneumonia, with or without necrosis, (2) pleural effusion, (3) nodular infiltration, (4) peribronchial thickening.

The residual changes are (1) increased fibrosis, (2) an apparent increase in calcification.

Every atypical chest case occurring in tularemic territory should have the benefit of a diagnostic agglutination.

Distribution of Follicle Stimulating Factor and Luteinizing Principle—These hormones are present in varying degrees of concentration in different parts of the body, and especially in the anterior part of the pituitary gland of all mammals and the placenta of human beings and some mammals. It is also found in the urine under certain conditions which include pregnancy, after the menopause, hydatiform mole, chorionepithelioma, some cancers and the urine of men suffering from testicular teratomata. The injection of prolactin into sexually immature animals is rapidly followed by signs of activity in the genital organs, which display ripening of the graafian follicles, follicular hemorrhages and luteinization in the ovaries and hypertrophy in the walls of the uterus. All these changes are due to the action of this hormone upon the gonad and not to any direct effect upon the uterus because they do not occur in castrated animals. Hence prolactin is said to be gonadokinetetic and not uterokinetetic in function.—Robinson, A. L. and Datnow, M. M. *The Differential Diagnosis of Pregnancy*, *Lancet* 11 (Jan 5) 1935.

INTERPRETATION OF ROENTGENOGRAMS IN PULMONARY TUBERCULOSIS

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Serial roentgen studies of pathologic changes of superinfections and reinfections (secondary) in pulmonary tuberculosis reveal that the lesions are either exudative or productive in character from the earliest time that patients come under observation. These lesions have a tendency to heal. The end result of the healing manifestations in pulmonary tuberculosis, demonstrable on the roentgen film, permits of a division into five types.

The exudative lesion terminates in one of three ways: (1) It may completely resolve and leave no traces in the roentgenogram; (2) it may resolve and leave a residual of a few fibrotic strands; or (3) it may undergo caseation and cavity formation. The productive lesions present themselves in one of two forms:

(1) fibrotic strands with small nodules and (2) fibrosis with numerous small cavitations resembling a bronchiectasis.

EXUDATIVE LESIONS

1 Complete Resolution—Early in the development of this lesion there are coalescent multilobular areas of decreased aeration varying in size from a small patch to a lobe or lung, an area of exudation or consolidation, and with it perhaps a certain amount of atelectasis (fig. 1). This completely resolves in from six weeks to six months, leaving no traces of the lesion in the roentgenogram. During resolution, annular shadows sometimes appear, which may be confused with cavities. These annular shadows are not true cavities and disappear as resolution progresses. True cavities, which close spontaneously, usually leave some evidences (of fibrosis) in the roentgenogram.

2 Resolution with Fibrosis—The roentgen changes are similar to the lesion described in the previous paragraph (fig. 2). Resolution takes place in from six to eighteen months, leaving a few fibrotic strands as a residue. Here also annular shadows resembling cavities may present themselves, disappearing as resolution progresses.

3 Caseation and Cavity Formation—The lesion may be small or large. In the early stages it resembles the lesions just described. Nature's attempt at healing is to localize the lesion and expel the products of the infection. The result is caseation with cavity formation in a comparatively short time (fig. 3). Cavities serve as constant sources of tubercle bacilli. Superinfections to other portions of the lungs may occur. This caseating lesion may terminate in two ways: (1) It may completely excavate itself and leave one (fig. 4A) or more cavities; or (2), after excavation, the involved lobe or lung may retract, causing deformities—deviation of the trachea, heart, mediastinum, retraction.

tion of the chest wall and the like, all to the affected side (fig 4B). Pleural thickening also assists in producing deformities.

PRODUCTIVE LESIONS

1 *Fibrosis with Nodules*—This type is not preceded by a demonstrable exudative lesion. On the roentgenogram are found small dense nodular shadows interspersed with fibrous strands (fig 5A). The lesion is very often bilateral. It may be limited to the apexes

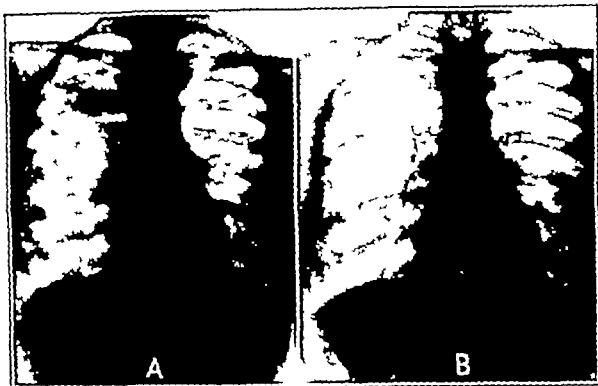


Fig 1—E. L. a white girl aged 17 years. A small coalescent exudative lesion in right infraclavicular area Dec 17 1927. B two months later complete resolution with no trace in the roentgenogram Feb 14 1928.

or upper lobes, remain stationary, or progress slowly and eventually result in extensive involvement of the lungs.

2 *Fibrosis with Small Cavitations*—At times the nodular lesions in the previous type coalesce, caseate and produce small cavities (fig 5B). Following this, small milary foci may develop adjacent to the lesion. A gradual extension of the lesion may occur by frequent bronchogenic spreads.

The types described here are not serial changes of one lesion. They all represent pulmonary tuberculosis. Clinically as well as roentgenologically, each type runs its own characteristic course, showing changes that are peculiar to it.

The exudative lesion that caseates and forms cavities shows many varieties combinations of excavation, exudation, fibrosis, deformities and the like. These changes are incidental to this type and because of these various stages of this one lesion, have fallen heir to many names, such as chronic ulcerative fibrocaceous ulcerocaceous and mixed cavernous lesions.

As mentioned in the beginning of this paper, the healing manifestations determine the type of lesion. Superinfections in my experience, show no roentgen evidences of healing by calcification. If it does occur it is exceedingly rare. The healing manifestation of the primary infection is resolution with a residue of one or more calcareous foci. The dissemination attending or immediately following the primary infection may heal by calcification.

Milary tuberculosis is not included in the types described, for it is an accidental rupture of a caseating focus into the blood. This accident develops into a local or a generalized milary tuberculosis. The liberation and wide dissemination of many organisms result in a generalized milary tuberculosis with a fatal outcome in a comparatively short time (fig 6A). When few organisms are released from a caseating focus,

they may develop milary lesions wherever arrested. At times, a caseating focus may discharge at intervals. There are then crops of tubercles appearing with each discharge of organisms. In the lungs, the manifestations of an intermittent hematogenous spread show discrete and conglomerate tubercles of varying sizes (fig 6B). In the beginning, the area involved is not great but with each succeeding discharge of organisms more and more lung structure becomes involved. In two patients I have seen such milary lesions resolve leaving no traces in the roentgenogram. A bronchogenic spread of the infection either from a cavity or from a ruptured caseating tracheobronchial lymph node sometimes resembles a milary tuberculosis (fig 6C). Often it is an acinous spread of a benign nature eventually disappearing.

From this brief description it is apparent that the roentgenographic study of the pathologic changes in tuberculosis reveals a qualitative as well as a quantitative component. An evaluation of the quantitative component resulted in the National Tuberculosis Classification: minimal, moderate and extensive, modified by A, B, C and so on. An evaluation of the qualitative component demands some other designation to the lesion.¹ That this has occurred to others, the evaluation of the qualitative component is quite evident when one examines the literature. Many classifications have been offered. Most classifications depend on autopsy material without serial roentgenographic correlation. The autopsy material presents the terminal stage of the disease giving no information as to progression or intermediate stages.

This presentation is a modification of the clinical classification of Ornstein, Ulmar and Dittler.³ They used the terms benign-exudative, exudative-productive

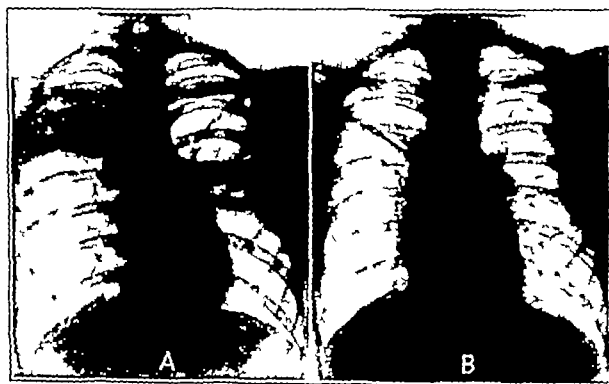


Fig 2—L. H. F. a Negro youth aged 15 years. A coalescent exudative lesions in right upper lobe and central portion of the left lung Nov 29 1931. B resolution of exudative lesions with residual of fibrotic strands Jan 16 1934.

chronic-proliferative and caseous-pneumonic. While these terms are satisfactory they are also confusing. They portray a pathologic state rather than a clinical impression. These authors are now dividing all their

1 In addition to the qualitative element of the lesion the anatomic description as well as the quantitative component may be utilized. The lesions may be acinous, lobular, multilobular or lobar, discrete or coalescent, local or general, unilateral or bilateral, minimal, moderate or extensive.

2 Bendove R. A. Resolution and Healing in Pulmonary Tuberculosis. *M. J. & Rec.* 121: 36 (Jan 7) 1925. Krause A. The Healing and Disappearance of Tubercles. *Am Rev Tuberc.* May 1922 quoted by Bendove.

3 Ornstein G. G. Ulmar David and Dittler E. L. Benign Acute Pulmonary Tuberculosis. *Am Rev Tuberc.* 23: 223-247 (March) 1931. A Clinical Classification of Pulmonary Tuberculosis. *ibid.* 23: 248-285 (March) 1931.

cases into exudative and productive lesions⁴. The exudative lesions may (1) resolve quickly, (2) resolve slowly or (3) show no resolution. In 1931 Shipman⁵ independently presented a clinical classification which closely resembled that of Ornstein Ulmar and Dittler.

COMMENT

From a clinical standpoint, with the aid of the roentgen study all cases of pulmonary tuberculosis can be divided into two groups. One group has practically



Fig 3—K M a Negro youth aged 19 with tuberculous arthritis of the left elbow. A routine examination of the chest showed no pulmonary tuberculosis April 28 1933 B coalescent exudative lesion in the right upper lobe December 8 C four months later the lesion is almost completely sloughed away leaving a large cavity April 13 1934

no mortality rate and can be considered benign, the other has a high mortality rate and should be considered malignant.

The benign lesions run mild clinical courses. Their prognosis is good and requires no active intervention such as collapse therapy measures. The malignant lesions usually run a stormy course, often metastasize

Benign

Exudative — complete resolution
— resolution with residual fibrotic strands.

Productive — stationary
— slowly progressive.

Malignant

Exudative — cavitation — without deformity
— with deformity

Productive — coalescence of nodules with cavity formation

and spread. These are the only types that compel the use of collapse therapy measures. The prognosis in the untreated case is bad.

The pathologic mutations observed in serial roentgenograms reveal whether a lesion is benign or malignant. This information aids in determining prognosis and treatment. A malignant lesion may be superimposed on a benign lesion by a reinfection or superinfection. In the productive lesions, when the nodules coalesce, caseate and produce cavities, the lesion should be considered malignant.

The foregoing graphic presentation of the various types of tuberculosis summarizes the correlation between the clinical and the roentgenologic changes.

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⁴ Ornstein G G and Ulmar David. Personal communication to the author.

⁵ Shipman S J. Clinical Classification of Pulmonary Tuberculosis. California & West Med 34 172 (March) 1931.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRs ARCHER, BLACKFORD AND WISSLER
AND DR TAYLOR

DR L R SANTE St Louis. It is hazardous to attempt the diagnosis of any radiologic study without full consideration of the clinical history. The paper of Drs Archer, Blackford and Wissler brought out that there is a much more widespread involvement of the pulmonary tissues in tularemia than was formerly suspected. Their work seems to point out that the infection is primarily a septicemia which extends to the lung

at times producing lung destruction with pleural effusion, depending on the extent and severity of the infection. The residual fibrosis referred to in these cases is perhaps nothing more than one would expect when large areas of lung tissue were involved. In one instance in which bronchial development was found, the patient recovered and remained normal without evidence of residual fibrosis for two years but now I understand that he is again having lung trouble. The closest consideration should be given to the possibility of the healing of tularemia lesions by a calcium deposit. Up to the present it has been generally accepted that healing by calcification is considered evidence of a tuberculous cause of the primary infection, that

is, that tuberculosis heals by calcification. I think therefore that one must be very careful in stating that tularemia also heals with calcification unless one has undisputable evidence. In Dr Taylor's paper the division into benign and malignant types of tuberculosis after following the cases through to the end result is a more or less simple matter and seems to me a very interesting study. When one attempts to apply it to new cases however in an endeavor to estimate the prognosis that is another matter. I doubt whether it will be possible to predict what is going to happen in any case of pulmonary tuberculosis there are too many complicating factors involved.

DR KENNON DUNHAM Cincinnati. This symposium in one way or another brings out the necessity for clinical consideration as well as roentgen study. The papers stress the necessity



Fig 4—A A H a white woman aged 34. Lungs show cavities no deformities two year history. B J C a white woman aged 36. Retraction of right side of the chest and lung with deviation of trachea heart and mediastinum to right three year history.

for consultation. In other words, the radiologist should be a consultant and not a technician. Dr Sante has stressed history taking and I wish to emphasize consultation. Few radiologists will make good physical examinations or take good histories but they can learn much from men who do and they will teach those who do not. Our patients must be our first care. These papers show that consultation is necessary, because the clinical aspect must be considered and this will lead to further roentgen studies. Pulmonary tuberculosis is an infection and must be so

considered. The fan type is a lobular pneumonia. The bronchogenic spread produces bronchopneumonia, and the acute infection involving the greater part of a lobe is a lobular pneumonia. As in other pulmonary infection there are absorption and repair (scar tissue) and breaking down (abscess). I warn against a too fine classification especially against diagnosing a benign type of pulmonary tuberculous inflammation. Some infections show much more virulence than others but this is common to all inflammations. I urge caution. My experience does not justify cocksureness. I have seen very few cases of pulmonary exudate due to tuberculosis that were benign. They may clear

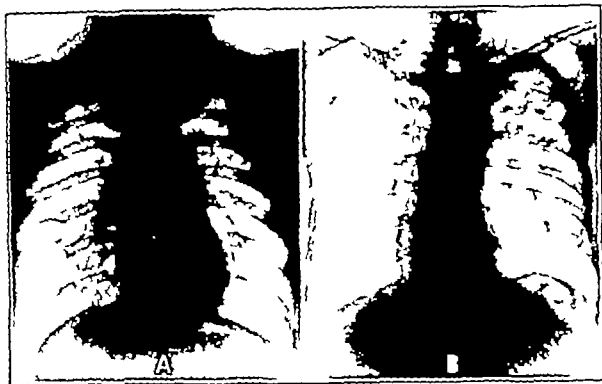


Fig 5—4 D R a white man aged 24. Numerous small nodules in the upper lobes eight year history. B M C a Negro man aged 37. Fibrosis with numerous small cavitations in the upper lobes ten year history.

up for a time but they have a nasty way of returning. When such cases are noted one should look for a focus of tuberculosis in some other part of the body such as surgical tuberculosis or a lymph node infection. These patients need great care after the lung has cleared. Humility and consultation are the watchwords in dealing with pulmonary inflammation. Physicians cannot know enough and therefore must tread lightly with all the knowledge at their command.

DR EUGENE P. PENDERGRASS Philadelphia. I think that in certain communities a routine agglutination test for tularemia in unexplained chest lesions is to be encouraged and I feel quite sure that this accounts for the large number of cases that Drs Archer, Blackford and Wissler reported. It has always seemed to me that a radiologist should approach a diagnostic problem by asking himself just what conditions could cause the appearance seen on the roentgenogram. The possibilities could be suggested to the clinician referring the patient and further efforts made to differentiate the lesion by approved clinical methods. In the Archer, Blackford and Wissler report the cases of tularemia could simulate any one of several conditions such as lymphomas, tuberculosis of childhood or adult influenza, Friedländer's pneumonia, mycotic infections, fusospirillary disease, sporotrichosis, spirochetosis, and possibly other things that I have not mentioned. The unusual feature of this infection is the possible deposition of calcium in a healing or healed lesion. There must be other infections besides tuberculosis that will cause calcification and healing but it has been taught so long that calcification in a lesion usually means a healed or healing tuberculous process that it behooves one to be careful. Dr Taylor's plan of grouping cases is of value for short time supervision provided the patients are examined at regular intervals and the other indications (sedimentation test, white blood count, volume

and quality of the sputum and temperature) are not disregarded. I have become impressed with the fact that grouping is all right for the immediate case but does not work satisfactorily when the study is carried over a period of years. Benign exudative lesions may interchange with benign productive lesions or benign productive (slowly progressive) with malignant exudative lesions with cavitation. As a rule, the true proliferative or productive lesion is seen in adults from 30 years up and these lesions are liable to remain constant. Lesions in adolescence may do anything. They are very unstable and I believe it is unsafe to group them as benign or malignant. I have had an opportunity to study the films of some of Dr McPhedran's patients, and it is safe to predict that many radiologists would be surprised to see what a so-called benign lesion developed into. Because of these cases, I should hesitate to accept Dr Taylor's ideas as to prognosis. Dr Taylor refers to annular shadows. I would strongly recommend rotated films to determine whether an annular shadow is a cavity or not. There are many cases in which it is impossible to distinguish between annular shadows and cavities in good stereoscopic films. Cavities close to the hilus posteriorly are often missed in the postero-anterior view. Dr Taylor states that superinfections do not heal by calcification. I should like to ask whether he means hematogenous or bronchogenic exogenous or endogenous infections.

DR JAMES L. DUBROW, Des Moines, Iowa. It is unsafe to diagnose pulmonary lesions as benign or malignant from the roentgenographic appearance alone. The basis for etiologic diagnosis is correlation of clinical with laboratory observations.

DR G. E. PFAHLER Philadelphia. The fact must not be lost sight of that tuberculosis and carcinoma can exist jointly in the same case, which means that the finding of tubercle bacilli doesn't rule out cancer. Likewise to emphasize what has already been said here one must not be satisfied always that a final diagnosis can be made at a single examination.

DR HYMAN I. SPECTOR St. Louis. I just want to make one remark and that is that at times an attempt is made to differentiate an interlobar effusion from a malignant condition or a tumor. I remember two such cases in which the clinical signs and symptoms were those of a malignant growth but the x-ray shadow looked more like an effusion. At necropsy both effusions and malignant growths were found.

DR HENRY K. TAYLOR New York. I am not changing the concept of the pathology of pulmonary tuberculosis but presenting it from a slightly different point of view. I have deliberately omitted the clinical aspect from this paper and therefore shall not discuss the various clinical points raised. While I

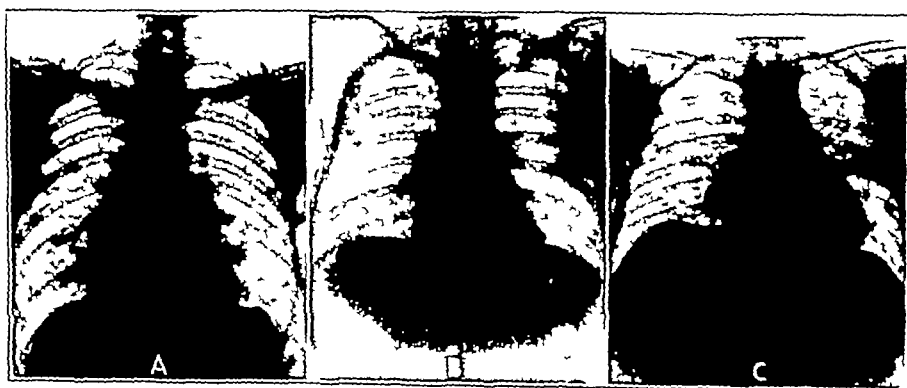


Fig 6—4 J Z a white man aged 31 admitted May 26, 1932. One year before a tuberculous cervical gland was excised and drained for five months. In April he had complained of weakness, fever, cough, expectoration, anorexia and loss of weight. A roentgenogram June 8 showed miliary tuberculosis. He died July 7. Autopsy showed generalized miliary tuberculosis. B H W a Negro man aged 24 admitted Nov. 17, 1933. A cervical gland had been excised three years before. Present illness started three months before admission with cough. Two months later enlargement of the abdomen. A roentgenogram November 20 showed few small acinous exudative lesions in the lower lobes. These lesions increased in size and number until the lungs were completely involved December 26. He died Jan. 10, 1934. Autopsy showed miliary lesions in the lungs, peritoneum, spleen, adrenals, prostate and pancreas. C T De L a white man aged 39. Bronchogenic spread from cavity in the left apex.

consider the roentgen examination only an aid to the clinician, the clinician will not and should not undertake to diagnose and treat without serial roentgen examinations of the chest. This presentation is based on serial examinations, clinical as well as roentgenologic. The conclusions drawn from this study are

summations at the end of the whole study. The problem now is to apply one's observations profitably while the patient is alive, and it can be done. At no time during the observation of a patient is a definite diagnosis made or prognosis given from the first or second examination, or from any single examination, unless it is recognized as a caseating lesion. I have seen many exudative lesions disappear without collapse therapy measures. If, in a benign exudative lesion a pneumothorax should be induced or a phrenicectomy performed, either measure would receive credit for the cure of a lesion that would disappear with bed rest alone. Dr Dunham mentioned that he does not see cases presenting benign lesions. The benign lesion is not new. The literature contains many case reports of benign lesions. The benign lesion probably occurs more often than one suspects but it is overlooked, for the clinical symptoms are mild, being no more severe than an ordinary cold, and roentgen examinations are not usually made. I have seen caseating lesions, collapsed early, not completely sloughed out, continue to caseate under pneumothorax. Dr Pendergrass asserts that there is an interchange of lesions. Various types may appear in one individual, these are not serial changes of a lesion. Superinfections do vary. A so-called interchange of the lesion may be a spill. The course of a spill cannot be predicted at the onset. It may assume characteristics of any type described. I have not observed superinfections. Adult type lesions, heal by calcification. Recently, Pinner stated that some hematogenous spreads heal by calcification. Several years ago Miller commented on the difficulty of actually determining calcification in the roentgenogram. If any one can show me pulmonary roentgenograms devoid of calcareous deposits before a lesion appears, the same cases with subsequent tuberculous lesions, and calcareous deposits after the lesions heal, I will accept the statement that tuberculous lesions heal by calcification. Until then I will concede its possibility and then only as a rarity.

DISLOCATIONS OF THE CERVICAL SPINE

SOME PREDISPOSING CAUSES

THEODORE PREWITT BROOKES, M.D.

ST. LOUIS

Reviewing a series of sixty-five of my own cases of traumatic dislocations of the neck, seen during the last six years. I am impressed with the presence of systemic predisposing causes in a certain small group. From a mechanical point of view the more obvious offenders are stairways and automobiles, constituting twenty-one cases, or one third of the total. As a toxic predisposition, of course alcoholism heads the list being definitely present in six cases and presumably responsible in several more.

Among destructive bone conditions tuberculosis and osteo-arthritis of the cervical spine must be classified as direct causative factors and are not included in a study of traumatic dislocations. The possible existence of such lesions must be kept in mind. I have seen one dislocation of the cervical spine reduced, only to find by later developments that it was in reality an early case of cervical Pott's disease.

DISLOCATION DURING ILLNESS

Three cases developed in adults during treatment of other conditions. One was under the care of regular physicians, while the other two were seen by cultists. The former, case 17, showed severe rotary dislocation of the atlas after a siege of some weeks with peritonsillar abscess, tonsillectomy and adenitis. This was

overlooked by several attending physicians in different communities, apparently by reason of infection in the neck. The lesion was eventually recognized and reduced some nine months after its occurrence.¹ It is a question whether or not this was one of the interesting group of nontraumatic dislocations described by Berkheiser and Seidler.² I am inclined to believe that it belongs to the group with weakened soft tissues, permitting dislocation with a minimum of violence. Such a case, occurring in the practice of Dr F. H. Albee, was reported by Mixer and Osgood.³

MANIPULATIVE DISLOCATIONS

One of my own patients and one seen with Dr F. A. Jostes suffered rotary dislocation of the atlas during treatment by cultists for painful muscles in the neck or chest. The former, case 40, presented a muscle strain and the latter, case 61, a myalgia of the neck with a "cold in the head." Each patient had received violent manipulation of the neck by cultists. Patient 40 suffered bilateral dislocation of the atlas, while patient 61 had marked rotation and unilateral dislocation of the atlas. The manipulators might maintain that the subluxation existed prior to the treatment and persisted by reason of the patient's failure to continue the "course of adjustments." However, such is not the history. The first patient received no definitive treatment of his dislocation for an entire year. The second man waited three weeks before consulting a competent physician. When he learned his ailment he refused for weeks to permit reduction, preferring to retain his displacement to use as an "exhibit" during legal proceedings against the cultist. A dozen such manipulative dislocations of the atlas came to light through the presentation of Blaine's paper before the American Medical Association in 1925.⁴ On the other hand, one of our cases had been recognized by a cultist and referred to a competent surgeon after being inadequately handled by former medical attendants.

DISLOCATION DURING PRODROMES OF DISEASE

A more subtle preliminary to dislocation is seen in the prodromal stage of acute illness. This has proved confusing in five cases. A child does some awkward thing and then falls. Discomfort and complaint are no more than are to be expected from a fall. The next day the youngster is found to be suffering with an acute infectious disease and remains in bed. On recovery from the illness a wryneck is noted and assumed to be toxic in origin. It is only after failure of expectant treatment that more careful examination reveals an actual dislocation of one of the vertebrae. The conclusion is forced on me that during the prodromal stage of an illness the youngster is more or less cranky and restless, probably even less sure footed than usual and does some bizarre climbing or tumbling about that even his juvenile judgment would veto under normal circumstances. It is also probable that the tissues of the neck are less resistant to strains and pulls, permitting displacement with less than the usually required trauma.

1. Brookes, T. P. and Ewerhardt, F. H. On Reducing and Treating Cervical Dislocations. *Arch. Phys. Therapy* 13: 463-467 (Aug.) 1932.

2. Berkheiser, E. J. and Seidler, Ferdinand. Nontraumatic Dislocations of the Atlanto-Axial Joint. *J. A. M. A.* 96: 517-523 (Feb. 14) 1931.

3. Mixer, S. J. and Osgood, R. B. Traumatic Lesions of the Atlas and Axis. *Ann. Surg.* 51: 203-210.

4. Blaine, E. S. Manipulative (Chiropractic) Dislocations of the Atlas. *J. A. M. A.* 85: 1356-1359 (Oct. 31) 1925.

From the Department of Surgery, Washington University School of Medicine.

Read before the Section on Orthopedic Surgery at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

DIFFERENTIAL DIAGNOSIS

In earlier papers attention has been called to the frequency with which so-called simple rotary dislocations of the spine are overlooked. In injuries occurring during acute illnesses there is reason for attributing the condition to a toxic torticollis but no adequate excuse for faulty diagnosis. In toxic wry-neck, the head is rotated and held down on one side by a spastic, shortened sternocleidomastoid muscle. Movement in any direction is painful, much more so than in dislocation, and constant. The deformity becomes corrected as the condition subsides. In rotary dislocation the head is twisted and held down by a bony block. The shortened sternocleidomastoid muscle on the down side of the head is soft and flaccid, while the corresponding muscle on the upward side of the rotated neck is taut and prominent. A certain amount of motion is easily made in the direction of displacement, while efforts to rotate the head in the direction of correction cause pain or are stopped by a sense of mechanical block at the site of dislocation. The deformity becomes more noticeable as atrophy of dis-

In the latter cases of the series much help has been given by Dr Sherwood Moore and his associates Dr Hugh M Wilson and Dr T S Jung, operating the fluoroscopic unit in the Mallinckrodt Institute of Radiology. Incomplete reduction and even overcorrection have been demonstrated on occasions. It was then possible to replace accurately the dislocations while still under observation and apply the curass with the assurance that a second plaster would not be necessary as soon as films were made.

TECHNIC OF REDUCTION

Figures 6 and 7 show the adaptation of the Taylor⁵ technic in this series. It has been used in the bilateral dislocations and in dislocations with known fracture complications. The Walton⁶ technic has been used in the majority of unilateral simple dislocations. Some cases have required repeated use of both methods. In either technic the operator must be thoroughly familiar with the planned procedure for the particular case. Accurate diagnosis is the first requisite. He will then make a careful review of the articulated cervical spine



Fig 1 (case 58) —A. M. Extreme fracture dislocation without cord symptoms. Fracture extends through both laminae of the axis permitting the body of this vertebra to be displaced downward in front of the body of the compressed third cervical. The posterior margin of the body of the second caught on the anterior margin of the crushed third stopping further angling and fracture of the cord. The odontoid held to the ring of the atlas and the body of the axis as the latter broke away from the laminae thus saving the cord from laceration.

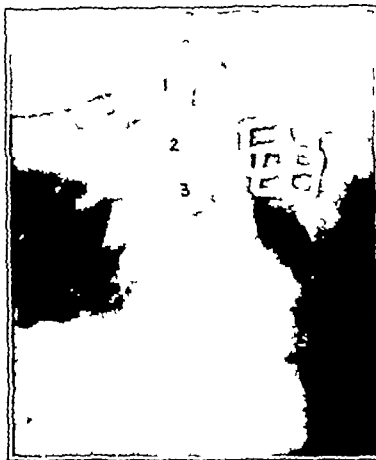


Fig 2 (case 58) —Roentgen appearance through plaster-of-paris curass after reduction. Normal cervical curve has been restored. Body and laminae of the axis are in approximation. Fragments of the third vertebra in satisfactory alignment. Two buckles appearing on the print are in the Sayre head sling which was used during the Taylor technic of reduction. The head sling was also used to hold neck in hyperextension during application of the cast (fig 7). It will not be removed until the cast is removed or changed.



Fig 3 (case 58) —Appearance three months following reduction. Fracture through the laminae of the axis has healed completely. The ventral face of the third is in apposition with and united to the body of the vertebra. Compression of the body of the third is satisfactorily expanded and shows bone regeneration. There is slight tilting of the second which cannot be improved.

use develops in the tissues thrown out of commission on the down side of the neck.

ROENTGENOLOGIC AID

Roentgenograms, accurately taken and carefully interpreted, will verify the clinical observations in the majority of instances. Inability to demonstrate the dislocation in the roentgenograms should not however, settle the diagnosis in the doctor's mind. Despite the remarkable development of technic and knowledge in the field of roentgenology, lesser dislocations or subluxations cannot always be shown conclusively on the films. This is especially true in the region of the atlas and axis. Routine roentgenograms call for three exposures: lateral of the cervical spine and two antero-posterior views, of which one is taken through the open mouth to show the first two vertebrae. Frequently, additional oblique views are required to show the articular processes

as well as of the literature on the subject. A fair proportion of recent, uncomplicated cases may be reduced without anesthesia. I feel that cases of long standing, cases with fracture complications, and cases of severe extent can be better handled under general anesthesia. Redislocation occurs too often in cases in which temporizing methods have been used with failure to secure full correction and accurate reseating of the articular processes. Such failure may also be due to delay in reduction with development of changes in intervertebral joints or irreparable damage to the articular capsule. During the preparation of this paper patient 55 has returned, with redislocation six months after

5 Taylor A. S. Fracture Dislocation of the Neck. A Method of Treatment. *Arch Neurol & Psychiat.* 12: 625-639 (Dec.) 1924. Fracture Dislocation of the Cervical Spine. *Ann. Surg.* 90: 321-340 (Sept.) 1929.

6 Walton G. L. A New Method of Reducing Dislocation of Cervical Vertebrae. *J. Nerv. & Ment. Dis.* 20: 609-611, 1893. Further Observations on Cervical Dislocation and Its Reduction. *Boston M. & S. J.* 140: 445-447, 1903.

successful reduction. It is believed that the capsule or ligaments were torn severely. Open operation was resorted to, the method described by Mixer⁷ as amplified by Jackson⁸ being used. The surgical procedure was not to reduce the dislocation but to maintain the

CASE 9 (previously reported⁹)—R. W., a girl, aged 6 years while playing at home one evening fell over a chair hurting her neck and leg. The next morning she had the mumps and spent two weeks in bed. On getting up she was found to have a wryneck. She was treated several weeks by several physi-

cians, including myself, for toxic myositis. Additional roentgenograms compared with the original films led to the correct diagnosis of rotary dislocation of the third cervical vertebra. This was reduced four months after the injury.

CASE 39 (previously reported¹⁰)—A. R., a girl, aged 8 years, after a fall in the school yard, had a wryneck that disabled her. A short time later, 'German measles' developed and she was taken to the Contagious Disease Hospital. There the correct diagnosis of traumatic dislocation was made, but for some reason she continued to be treated by a number of physicians and cultists for various alleged conditions. The history is confusing as to the exact length of time between the injury and the appearance of the rubella but there is no question that the infection was credited by several persons with causing the wryneck. Severe rotary dislocation of the atlas was successfully reduced three months after injury.

CASE 43—R. McG., a white boy, aged 4 years placed a chair atop a small table and climbed into it. He fell to the floor. The neck was crooked, the condition becoming more noticeable forty-eight hours later at which time a left submaxillary adenopathy developed. He was treated for septic adenitis for nearly three weeks. As the fever and inflamed glands subsided, Dr. Adrian Bleyer recognized the traumatic nature of the displacement and asked for orthopedic consultation.

Examination showed that the head was tilted to the left and that the chin was rotated to the right of the midline. The child could rotate the chin still farther to the right but he came to an abrupt stop at the midline in an effort to rotate it to the left. Films taken at



Fig. 4 (case 58)—Degree of hyperextension in plaster cuirass found necessary to maintain reduction in this particular instance, taken two months after injury. Patient comfortable and ambulatory.



Fig. 5 (case 58)—Celluloid doll collar applied after four months in plaster casts.

replacement. Reduction by the Taylor technic was first done, and a plaster cuirass was applied and bivalved. Three days later a heavy strand of braided silk was passed through the posterior ring of the atlas and tied to the spinous process of the axis. The success of the operation is not yet determined. I believe that it is applicable only to the atlanto-axial recurrent dislocations. The chances of successful reduction by open surgical approach are too doubtful to warrant their use except after all other means have failed and repeated displacements have recurred. The questionable value of open reduction in the neck has been well brought out by Taylor⁵ and latterly by Towne.⁶

ILLUSTRATIVE CASES

CASE 2 (previously reported⁹)—E. W., a white man, aged 36, fell down some steps and was immediately brought to the City Hospital, unconscious. On regaining consciousness he complained of pain in the neck. Roentgen examination showed anterior dislocation of the first cervical vertebra. He had an unexplained elevation of temperature for nearly three weeks apparently due to a respiratory tract infection. This was one of the earlier cases in the series and was treated by head traction over the head of the bed without results. Reduction was done by the Walton⁹ manipulation three weeks after injury. It is believed that the fall followed dizziness associated with the invasion by an acute infection of the respiratory tract. Owing to the delay, the reduction was not anatomically perfect though clinically satisfactory.

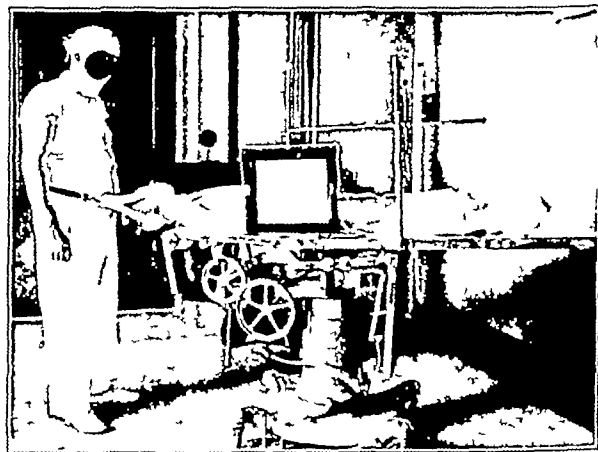


Fig. 6—Adaptation of Taylor technic in the Department of Operative Fluoroscopy of the Mallinckrodt Institute of Radiology, Washington University School of Medicine. Any stationary table is used. Counter traction is secured by crossed shoulder straps of muslin. Ends of these may be held by assistants or fastened to the table. Traction is applied with a Sayre head sling attached to a belt about the operator's waist. His hands are free to manipulate the head and neck. The roentgenologic unit is set up behind the table. A fluoroscopic screen is ready to be moved into position.

the Mallinckrodt Institute of Radiology by Dr. Sherwood Moore showed anterior luxation and rotation of the second cervical vertebra (fig. 8). Four weeks after injury, the dislocation was

7 Jackson, R. H. Simple Uncomplicated Rotary Dislocation of the Atlas. *Surg. Gynec. & Obst.* 45: 156-164 (Aug.) 1927.

8 Towne, E. B. Injuries of the Spinal Cord and Its Roots Following Dislocation of the Cervical Spine. *Surg. Gynec. & Obst.* 57: 783-787 (Dec.) 1933.

9 Brookes, T. P. Dislocation of the Cervical Spine. *J. Missouri M. A.* 27: 177-180 (April) 579-582 (Dec.) 1930.

10 Brookes, T. P. Dislocations of the Cervical Spine. Their Complications and Treatment. *Surg. Gynec. & Obst.* 57: 772-782 (Dec.) 1933.

reduced under nitrous oxide oxygen anesthesia at the St. Louis Children's Hospital the Walton technic being used. A plaster-of-paris curass was applied. Reduction was verified by roentgen examination. The cast was worn for three weeks after which a Thomas collar was worn for two months. Routine physical therapy was employed during this time. Complete recovery occurred, with full use of the neck.



Fig. 7—After fluoroscopic verification of reduction the patient and the underlying steel strip are pushed off the table as far as the patient's waist. Cephalad end of steel strip is supported on a length of gas pipe set in a floor flange. When forceful hyperextension is indicated traction is maintained during application of plaster. The shoulder straps have been cut away in the illustration and the patient is being steadied by traction on the wrists. The head sling may remain until the cast is removed, or special clips may be used to permit unlocking and removal of the sling after the cast has set.

CASE 53—B O'B a Negro man aged 54 seen Aug 17 1933, at City Hospital No 2 through the courtesy of Dr Franklin Walton and Dr H E Hampton had two days previously been seated in an open window. He became suddenly dizzy and pitched out of the window, landing on his head some 15 feet below. He complained of pain in the back of his neck. Motion of the neck was possible through a limited arc. No gross neurologic changes were noted. Roentgenograms by Dr E W Spitzig showed an interesting and unusual double dislocation of the cervical spine (fig 9). The first five vertebrae were displaced forward on the sixth until the articular processes of the fifth were caught in the intervertebral notch anterior to the articular facets of the sixth and rested on the pedicles of the sixth. A second dislocation existed between the seventh cervical and the first thoracic vertebrae, the sixth and seventh being displaced anteriorly for a distance of one fourth of the depth of the vertebral body. August 18 under ether anesthesia the Taylor technic secured complete reduction, verified by roentgenograms. The patient remained unconscious however after the anesthetic. Reflexes were completely abolished and the patient died forty-eight hours later. Autopsy by Dr D L Harris revealed marked arteriosclerosis of the brain with softening of the left lateral lobe above the occipital area due to thrombosis of the posterior branch of the middle cerebral artery. An area of softening a week old was present. Evidently the first symptom of thrombosis was dizziness, resulting in the fall and dislocation of the neck. The area of softening was in a silent area of the brain and gave no gross neurologic signs at first but later caused death.

CASE 58—V M a white girl aged 16 years, was pitched out on her head during a collision between two automobiles. The case is reported and figures 1 to 3 are shown to illustrate the consecutive steps in the case of a severe injury of this character. At the City Hospital she was found to have fracture dislocation of the first second and third cervical vertebrae, fracture of the superior maxilla and Colles' fracture of the

left wrist. Thirty-six hours after injury, fracture dislocation of the neck was reduced by the Taylor technic and a plaster curass applied. Roentgenograms by Dr LeRoy Sante showed the position to be fair but not perfect. Manipulation under anesthesia was again done a week later. This time roentgenograms showed good replacement. A close check up was necessary as the tendency was for the second vertebra to slip down in front of the compressed and deformed third. Full hyperextension in the curass was maintained for sixteen weeks. A celluloid 'doll collar' was then applied, to be worn during the

Classification of Sixty-Five Dislocations

Location of Dislocation	
First cervical vertebra	27
Second cervical vertebra	17
Third cervical vertebra	4
Fourth cervical vertebra	7
Fifth cervical vertebra	9
Sixth cervical vertebra	1
Seventh with fifth cervical vertebra	(1)
	66
Nature of Dislocation	
Unilateral	47
Bilateral	18
	65
Results	
Attempted reduction	60
Complete reduction	47
Partial reduction	14
Failure of reduction	1
Deaths from reduction	0
Deaths from injury	2
Redislocations requiring repetition of reduction	6

remainder of the year following the injury. The patient has good range of motion and roentgenograms show firm union with good position.

CONCLUSIONS

Stairways, automobiles and alcoholism are obvious predisposing causes of traumatic dislocations of the neck. In adults, an approaching illness may precipitate a fall and dislocation. In children, restlessness and irritability are frequently unrecognized prodromes of an acute infectious disease. A fall during such a prodromal stage may more easily produce dislocation of



Fig. 8 (case 43)—R McG a boy with toxic adenitis. Forward slipping of the body of the second cervical vertebra. Rotation and tilting of the first and second vertebrae are evident from the obliquity of the posterior rings.



Fig. 9 (case 53)—B O'B an adult with thrombosis of the middle cerebral artery. Double dislocation. There is clearly shown a bilateral dislocation of the fifth. The inferior articular processes are caught in front of the superior articular processes of the underlying sixth. In addition there is definite though less marked anterior dislocation of the seventh marked anterior dislocation of the seventh on the first thoracic vertebra.

the upper cervical vertebrae by reason of the impairment of ligaments and other restraining tissues. Development of the impending infectious disease confuses the clinical picture and has led in a number of cases to the erroneous diagnosis of toxic torticollis.

PEPTIC ESOPHAGITIS—WINKELSTEIN

JOUR. A. M. A.
MARCH 16 1935

ABSTRACT OF DISCUSSION
Dr R. D. SCHROCK, Omaha I should like to add another of the causes I have in mind the anesthetist who is careless in leaving his patient to be transferred from the operating table to the stretcher by some one who is not quite aware of the danger of rapidly slipping off the child, or even an adult, neck. Emphasis should be given the accurate reduction as indicated by careful, readable roentgenograms and the very sharp hyperextension of the neck to maintain over a period of time sufficient to permit not only firm soft parts healing but firm bony formation, so making the damaged cervical region stable to withstand the minor falls that children particularly are subjected to and the consequent danger of the very serious accident that may result from what would be relatively minor falls.

Dr CARL B. DAVIS, Chicago Dr Brookes's paper covers the field of dislocations of the cervical spine with predisposing causes, in a manner that surpasses anything I have seen. Most physicians are familiar with the group that are produced by trauma. The nontraumatic group described by Berkhesier and Seidler in addition to Dr Brookes's cases, is an interesting division. A valuable aid in the reduction of these cases is that offered by an anatomic specimen consisting of a cervical vertebra articulating in normal relationship. Before treating the patient, Dr Brookes is in the habit of reproducing the deformity on the anatomic specimen. In this manner he obtains a very clear idea of the various steps to be used in the reduction. I feel sure that if I had made use of this anatomic specimen in some of my own cases I would have achieved better results. I suggest to those who are interested in the subject that it will be well worth the trip to St. Louis to see Dr Brookes handle some of these injuries.

PEPTIC ESOPHAGITIS A NEW CLINICAL ENTITY

ASHER WINKELSTEIN, M.D.
NEW YORK

The causes of esophagitis are usually given as follows:

- 1 Irritative (mechanical thermal and chemical irritants including alcohol and tobacco)
- 2 Specific (syphilis, tuberculosis actinomycosis)
- 3 Secondary as a complication of (a) cardiospasm, (b) diverticula or (c) neoplasms

Recently I have observed some patients with a type of esophagitis that does not seem to fit into this classification. The features of these cases are so distinctive as to impress one with the probability that they form a separate clinical entity. They are, therefore, presented for consideration.

REPORT OF CASES

CASE 1—S. P. a man aged 77 for three years had complained of typical symptoms of duodenal ulcer, viz late hunger pains some nausea and sour vomiting. He presented a deformed duodenal bulb radiographically. This attack was relieved by a Sippy regimen. Three months later the symptoms of duodenal ulcer returned. In addition he complained of dysphagia with lower substernal pain after meals. A large stomach tube met an obstruction at the lower end of the esophagus. An esophageal neoplasm was suspected. Radiography revealed a markedly irregular narrowing of the lower third of the esophagus without any dilatation above (fig 1). Esophagoscopy by Dr Rudolph Kramer showed inflammation of the lower 3 inches of the esophagus. A biopsy was performed and the

From the Medical Department Mount Sinai Hospital.
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tissue showed "acute and chronic inflammation." The patient was treated with olive oil before meals, an ulcer diet, alkalis and atropine. After one month he lost his symptoms and remained well for six months. The symptoms both of the ulcer and of the esophagitis then returned. He also complained of "heartburn" and constant burning pain under the lower part of the sternum. Again his symptoms disappeared on ulcer therapy. The roentgenogram of the esophagus then became normal but the irregular duodenal bulb persisted. He has now been well for fourteen months. Fractional test meals taken during the attacks showed marked hyperchlorhydria.

CASE 2—W. R., a man, aged 56 suffered from an acute perforation of a duodenal ulcer after seven years of peptic ulcer symptoms, viz, pain and heartburn three hours after meals relieved by food and alkalis. Following the gastrotomy operation marked esophageal symptoms set in. He complained of dysphagia inability to swallow solids, and pain under the lower part of the sternum. After several weeks of these symptoms he was examined at the clinic. A large stomach tube met an obstruction at 14 inches. Radiography showed an irregular out dilatation (fig 2). Esophagoscopy showed a swollen and inflamed mucosa at 35 cm. A biopsy specimen revealed "acute and chronic inflammation." The symptoms of ulcer were also present and so severe that three months after the perforation a partial gastrectomy was done by Dr A. A. Berg. The resected antrum and duodenum in addition to the ulcer was also the site of a severe gastritis and duodenitis. After this operation the esophageal symptoms grew steadily worse. The large stomach tube met an obstruction at 14 inches. Radiography revealed spasm and irregular narrowing of the lower third of the esophagus. Esophagoscopy showed narrowing intense congestion and a granular appearance of the mucosa, 34 cm from the mouth. The biopsy specimen of the mucosa, 'acute purulent inflammation' (fig 3). He was treated in the hospital with a special therapy for peptic ulcer, viz, a continuous alkalinized intragastric milk drip through the Rehuss tube. His symptoms improved rapidly and he gained weight. He was seen again several months later with another attack of mild esophageal symptoms. The curve of gastric acidity before the partial gastrectomy was quite high (free hydrochloric acid between 80 and 90) and moderate after the operation (from 30 to 40).

CASE 3—L. A., a man aged 57 because of dysphagia obstruction at the cardia by stomach tube radiography and loss of weight was told five years before admission to the hospital that he had carcinoma of the esophagus. He complained of dysphagia lower substernal pain radiating through to the back heartburn inability to swallow solids and sour regurgitation. The course of his illness was a chronic one with exacerbations and remissions for five years. Esophagoscopy by the late Dr Sydney Yankauer revealed a small punched-out ulcer 15 cm above the cardia. Radiography showed irregular spasm of the lower part of the esophagus (fig 4). The biopsy specimen was reported 'acute and chronic epithelial and subepithelial inflammation. A fractional test meal showed a marked hyperchlorhydria (100 free acidity). With antacids and a bland diet he has had three similar attacks. In the last two and a half years he has had three similar attacks. The last attack radiography showed a circular constriction at the lower third of the esophagus. Esophagoscopy then revealed evidence of inflammation without ulceration and a biopsy specimen was reported acute and chronic inflammation. Between the attacks his general health has been excellent.

CASE 4—S. W., a man aged 61 complained of epigastric pain two hours after meals relieved by food and alkalis and that his food would 'stick' under the lower part of the sternum. Because of this symptom his age and a loss of weight in six weeks of 12 pounds (54 Kg), a carcinoma was suspected. The large stomach tube met an obstruction at 17 inches. A test meal showed marked hyperchlorhydria (90 free acidity). Radiography revealed an irregular narrowing of the lower part of the esophagus and also some irregularity on the adjacent lesser curvature (fig 5). Esophagoscopy revealed an inflamed mucosa and the biopsy specimen was reported "acute

and chronic inflammation." His symptoms disappeared on ulcer therapy. Four months later there was a recurrence of the dysphagia for a few weeks. He now has ulcer symptoms and radiography reveals an ulcer of the lesser curvature immediately above the incisura angularis.

CASE 5.—M. L., a man aged 55 for four years had attacks of epigastric pain two hours after meals with heartburn and sour belching. He also had mild dysphagia. A fractional test meal showed hyperchlorhydria (64 free acidity). A partial



Fig 1 (case 1)—Irregular narrowing of lower third of esophagus without dilatation above.

gastrectomy for multiple duodenal ulcers was performed by Dr. A. A. Berg. Following the operation he complained of severe dysphagia, lower substernal pain and sticking of solids at the lower part of the esophagus. Radiography revealed narrowing and irregularity of the lower part of the esophagus (fig. 6). The large stomach tube could not be passed beyond 14 inches. Esophagoscopy showed inflammation of the mucosa and the biopsy specimen was reported 'acute and chronic inflammation'. A fractional test meal resulted in a high acid curve (60 free acidity). He was relieved after one month of ulcer therapy. Two months later the same symptoms recurred and roentgenograms revealed marked constriction of the lower third of the esophagus. This time the biopsy specimen was reported 'acute purulent inflammation'. After two months he again lost his symptoms and has remained well for fifteen months.

COMMENT

Certain features are prominent in this group. The patients were all elderly men in whom, because of certain esophageal symptoms, carcinoma was suspected. While the symptoms did suggest the diagnosis of carcinoma, the prolonged course of the disease and the results of biopsy were sufficient to exclude that diagnosis.

It is apparently a chronic disease, characterized by exacerbations and remissions resembling those of peptic ulcer. The association with duodenal ulcer in three cases, and with a preexisting peptic ulcer of the esophagus in case 3, and the subsequent lesser curvature ulcer in another case is striking. The type of substernal pain, heartburn, sour regurgitations and the hyperchlorhydria in all recall the clinical features of peptic ulcer of the esophagus which have been described in

this country by Jackson² and Friedenwald.³ Indeed, the localization is identical and the radiographic observations of an irregular spasm of the lower part of the esophagus without dilatation above are common to the two. However the esophagoscopy in the cases described here reveals a diffuse inflammation without a definite ulcer. The biopsy reports were variously "acute and chronic inflammation" and "acute and chronic purulent inflammation." Ectopic islets of gastric glands were not encountered. Finally the relief obtained by antacid and ulcer therapy is quite definite and impressive. It is easy to exclude other esophageal diseases. Traumas and excessive irritation are conspicuously absent in the history and there was also no suspicion of syphilis. The features here are obviously not those of so-called cardio-spasm, in which the characteristic roentgenogram with a diffuse dilatation with a smooth lower end of the esophagus is always present.

As a result of these observations one cannot avoid the suspicion that the disease in these five cases is possibly a "peptic" esophagitis, i. e., an esophagitis resulting from the irritant action on the mucosa of free hydrochloric acid and pepsin. The mechanism is not entirely clear. The frequent, almost constant presence of duodenitis and antrum gastritis in peptic ulcer has been well known since the studies of Konjetzny and Puhl in Germany and Aschner in this country. This "peptic" esophagitis may be analogous to such states. The eroding gastric juice rising into the lower part of the esophagus and held there by a mild spasm of the cardia may injure a mucosa made susceptible by age and the "ulcer constitution." Secondary infection



Fig 2 (case 2)—Irregular narrowing and spasm of lower part of esophagus without dilatation.

may readily explain the more or less purulent nature of the inflammation. Mild spasms of the cardia and lower esophagus are not uncommonly seen radiographically in peptic ulcer of the stomach and duodenum.

² Jackson, Chevalier. Peptic Ulcer of the Esophagus. J. A. M. A. 92: 369 (Feb. 2) 1929.
³ Friedenwald, Julius. Feldman, M. and Zinn, W. P. Tr. Am. Gastro. Enterol. A. 31: 93 1929.

JOUR. A. M. A.
MARCH 16, 1935

A review of the literature on diseases of the esophagus has failed as yet to reveal any definite reference to the disease picture herein described. However, the possibility of other agencies should not be overlooked entirely. As emphasized in my paper on cardiospasm,⁴ psychic factors play an important role in the production of esophageal symptoms. It may be that in the cases with actual ulcer the psychic reaction of the individual to his disease induces esophageal or cardiac spasm with a secondary infectious inflammation totally unrelated to an acid or peptic factor. A simple reflex mechanism might possibly do the same.

It is interesting to speculate with these cases in mind, on the symptom of heartburn. This has been explained as due to the action of acid gastric contents on a hyperirritable esophageal mucosa. It seems important, particularly in the severe instances and especially when heartburn is the only symptom of ulcer to examine the lower part of the esophagus by radiography and esophagoscopy for esophagitis. Recently I encountered the following case.

A man aged 55 had suffered for seven and a half years with severe heartburn after meals. Radiography of the stomach and duodenum was negative. Esophagoscopy by Dr Kramer revealed a swollen mucosa at 34 cm. A biopsy specimen was reported subacute and chronic esophagitis. He had a moderate hyperchlorhydria.

SUMMARY AND CONCLUSIONS

- 1 A group of patients had unusual and distinctive esophageal symptoms.
- 2 The course, location, radiologic examination and pathologic features, the association with peptic ulcer and hyperchlorhydria, and relief by ulcer therapy suggest that the disease is a "peptic" esophagitis.

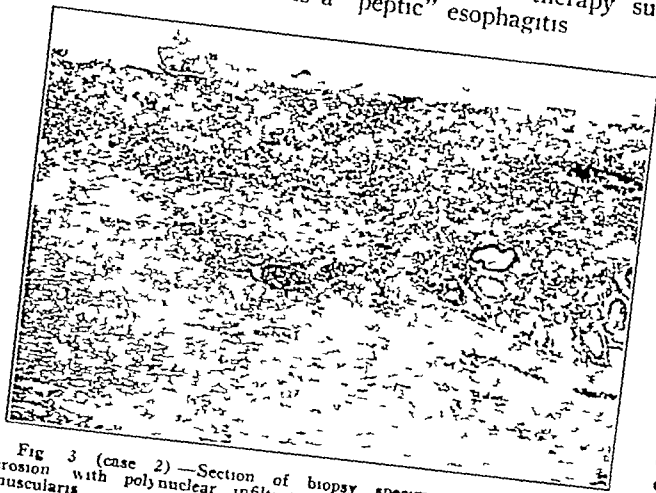


Fig 3 (case 2)—Section of biopsy specimen showing epithelial erosion with polynuclear infiltration of the mucosa, submucosa and muscularis.

- 3 Heartburn may be due to "peptic" esophagitis.
- 4 This disease is important in differential diagnosis especially from carcinoma of the esophagus.

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ABSTRACT OF DISCUSSION

DR. CHEVALIER JACKSON, Philadelphia. I am in hearty accord with the writer of this paper. Chronic esophagitis is a common disease due to a variety of causes not all of which are known or at least proved. My experience coincides with that of the author that the cause of this kind of esophagitis is similar to the causes of gastric ulcer, but here controversy is

encountered. If we were to start the discussion now on the causes of gastric and duodenal ulcer we wouldn't get through today except with the chairman's help. Nevertheless I think that the word 'peptic' is justified by the fact that all of these ulcers in the esophagus, the stomach and the duodenum are within the area of the gastric juice and for parallel reasons this form of esophagitis, which is also within the area flooded intermittently by the gastric juice I think is quite properly

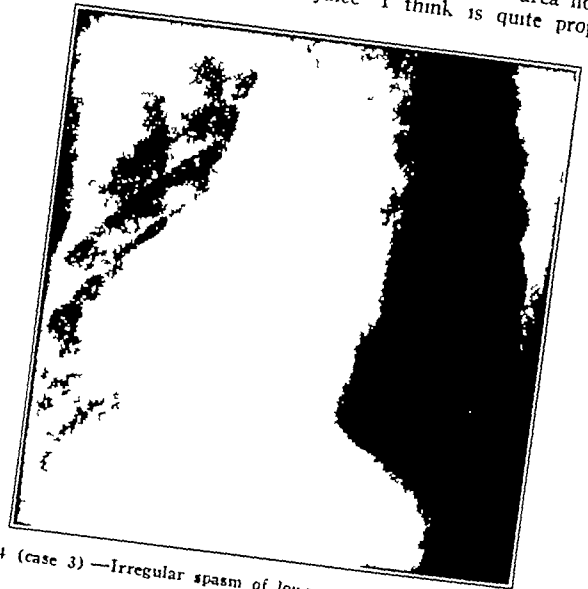


Fig 4 (case 3)—Irregular spasm of lower part of esophagus.

called 'peptic'. Whether the juice is the primary or perpetuating factor is a matter for discussion. This form of inflammation is often seen at the lower end of the esophagus in cases of herniated stomach, a condition that has become more and more a matter of great diagnostic importance in a patient presenting himself with gastric symptoms. The chief reason I think why so little has been heard of peptic esophagitis is that so few esophagoscopies are done in patients with gastric symptoms. I should like to add a point that I think is borne out by every one of the cases presented by the author, namely, that in every patient with unyielding gastric symptoms esophagoscopy is indicated. It is well known that the roentgen ray is one of the most important of all diagnostic means. But additional information is obtainable with the esophagoscope.

DR. RUDOLPH KRAMER, New York. Dr. Winkelstein has made a contribution to knowledge of diseases of the esophagus in separating this group of cases from the conglomerate mass of heterogeneous conditions involving the lower end of the esophagus. It is an interesting coincidence that two days ago at the American Bronchoscopic Society, Drs. Moersch and Camp reported a series of cases identical with those of Dr. Winkelstein. I think Dr. Winkelstein's hypothesis as to peptic esophagitis and its etiology is most reasonable. There are two conditions both dependent on the time element which appear to be of great importance. In the first one is confronted by a patient in the middle or later years of life with heartburn, dysphagia, substernal pain, loss of weight and irregular constriction of the lower esophagus on roentgen examination and these symptoms have been present for a short period of time. The picture is that of a carcinoma of the esophagus and that is what both the patient and the physician fear is present. In the second situation the patient has had the foregoing symptoms for a long period, perhaps several years. Carcinoma although still a possibility is hardly likely to be the cause of the condition. One would consider peptic ulcer of the esophagus or cardiospasm. In either situation recourse must be had to esophagoscopy for a definite diagnosis. The appearances on esophagoscopy are an edematous or a reddened, thickened mucosa which may at times be granular. This involves usually the lower half or third of the esophagus but occasionally it may spread upward to involve the rest of it to a lesser degree. In addition there may be an exudate in small patches or in large plaques. There is a marked narrowing

of the lumen which can, however be completely traversed by the esophagoscope and the cardia entered without difficulty. In following out the principle of always doing a biopsy on tissue that has the slightest appearance of abnormality, I have found chronic inflammation of the mucosa and submucosa in all these cases, and acute purulent inflammation often associated with this. There may be variations in the degree of infection in the same case at different periods. This has been noted both on esophagoscopy and on histologic examination of the excised tissues. It is important to rule out carcinoma as soon as possible and further, to institute appropriate therapy as established by Dr Winkelstein so as to prevent the physical and mental deterioration of these patients.

DR. HENRY A. RAFSKY, New York. To detect the lesions of the lower third of the esophagus I wish to call attention to two simple and yet valuable aids. The first is the timing of the swallowing sounds. Normally they should be heard at the cardia from seven to ten seconds after the ingestion of fluids. A persistent delay or absence of the swallowing sounds may be the first indication of the presence of a carcinoma of the lower end of the esophagus. The return of the swallowing sounds is also of prognostic value. An original diagnosis of carcinoma of the esophagus may have to be revised if the sounds return. This was recently demonstrated in a patient at the Lenox Hill Hospital who had a herniated stomach. The string test is also of value in detecting an erosion or a small ulceration of the lower end of the esophagus notwithstanding the fact that other methods fail to reveal the lesion. The presence on the string of two small blood stains, probably no larger than the head of a pin with a clear area of space in between, is pathognomonic of an ulcer or erosion. I recently saw two patients with a syndrome similar to that described by Dr Winkelstein—one was 67 years of age and the other was 70. The patients had in addition periodic manifestations of cerebral arteriosclerosis, and it was interesting—I don't know whether it was a coincidence or not—that when they had a remission in the cerebral symptoms the gastric symptoms likewise cleared up. The pain and heartburn disappeared and the patients

phagia are the outstanding symptoms. The pain of two of our patients reached such intensity that a previous diagnosis of angina pectoris had been made and it was only after electrocardiographic studies and the subsequent course of events that we were able to demonstrate that the pain was definitely related to diffuse spasm of the esophagus. As pointed out by the

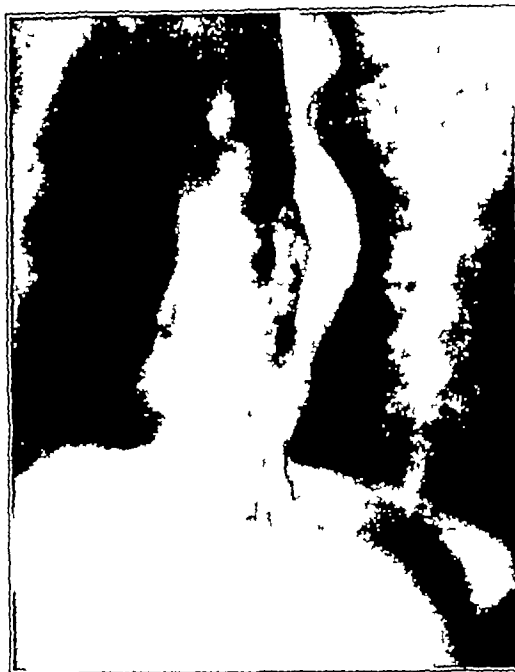


Fig. 6 (case 5)—Narrowing and irregularity of lower part of esophagus.



Fig. 5 (case 4)—Irregular narrowing of lower part of esophagus and some irregularity on adjacent lesser curvature.

gained in weight and there was a return of the swallowing sounds. There was a persistent hyperchlorhydria in one patient and persistent achlorhydria in the other.

DR. H. J. MOERSCH, Rochester, Minn. I wish to corroborate the excellent presentation of Dr Winkelstein. As Dr Kramer has stated two days ago before the American Bronchoscopic Society I, in conjunction with Dr Camp of the Mayo Clinic reported a series of cases which, I believe had features identical with those of the group of cases reported by Dr Winkelstein. However, the paper prepared by Camp and me bore the title Diffuse Spasm of the Lower Third of the Esophagus rather than Peptic Esophagitis. Pain and dys-

author we believe the condition is associated with intra-abdominal disease. Three of our patients were operated on for intra abdominal disease and with removal of the intra-abdominal condition the esophageal symptoms completely subsided. All our patients were between 50 and 70 years of age and were equally divided as to sex.

DR. ASHER WINKELSTEIN, New York. It is gratifying to hear that a man with Dr Chevalier Jackson's experience in esophagoscopy has seen this type of esophagitis with some frequency. My experience has been limited to eight cases. This is possibly due to the fact that I have studied only cases presenting severe esophageal symptoms. Dr Rudolph Kramer, the esophagoscopist at Mount Sinai Hospital, deserves credit for careful and repeated studies of these cases. I still have this group of patients under observation and will carry out Dr Rafsky's suggestions. It is always interesting to hear of the coincidence of scientific observations. The cases mentioned by Dr Moersch are apparently the same as I have described.

Epidemic of the Sweat—The fifth and last epidemic of the sweat occurred in 1551. Again it started in England this time in Shrewsbury, in April, where 900 died in a few days.

Only once after this date (we take our information from Senf) has a sickness resembling the English sweat occurred unless we identify the disease—as many have done—with the Picardy Sweat. About two hundred and fifty years after the fifth epidemic, that is in 1802 at Rottingen in Franconia, a similar but regionally limited malady appeared. It is impossible to identify the sweating sickness with any epidemic disease now prevalent. Purely on the basis of synchronous occurrence, Schnurrer and others believe that it was a modified form of typhus and it is true—as Senf points out—that it did not spread into any of the countries where typhus was prevalent at the time. However, this opinion is not convincing. The sickness remains an entirely individual condition which could not—were it to reappear at present—be properly classified with any of the known infectious diseases—Zinsser, Hans, Rats, Lice and History, Boston, Little, Brown & Co., 1935.

A COMPARISON OF THREE ELECTRICAL METHODS OF PRODUCING ARTIFICIAL HYPERTHERMIA

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AND

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There has been considerable interest of late in various methods of producing artificial hyperthermia in patients. A comparison of three available "electrical" methods was undertaken in this laboratory in order to study the specific effects, if any, to simplify the procedures used and to reduce the cost of installation and operation of the equipment, if possible. Various workers have reported the use of (a) hot baths,¹ (b) "diathermy currents" (1,000 kilocycles-), (c) radiothermy (10 000

Malaria has had a wide usage, mainly because of the apparent simplicity of the clinical procedure. Careful observation of the latter method, however, has demonstrated many of the concurrent physiologic changes common to all methods (blood pressure fall, cardiac or respiratory embarrassment and the like). There are some disadvantageous after-effects of the malarial infection (anemia, intoxication, rupture of the spleen) which are absent when purely electrical methods are used to raise body temperature. The chief disadvantages of the electrical methods for producing fever artificially are the expense of the equipment and the danger of burns (which can be avoided in the main, by suitable technic). In different clinics there is considerable variation in the height to which the body temperature is elevated as well as the duration of the maximum temperature. Some workers elevate the temperature of the patients to a certain point usually from 40.5 to 41 C (104.9 to 105.8 F), after which they allow the

temperature to come down spontaneously, or they delay this fall by the use of hot water bottles or heat pads and blankets. Some imitate the paroxysms of malaria (multiple treatments with short intervals between) while others may give more or less prolonged fever periods with long intervals between them.

Those employing high frequency currents for the production of therapeutic fevers have applied two widely different frequencies—one relatively low around 1 000 kilocycles (300 meters), as generated by the ordinary diathermy machine the other relatively high 10 000 kilocycles (30 meters) as produced by tube oscillators (radiothermy). Those using the lower frequency apply the current to the patient by means of metallic electrodes held in contact with the body by various jackets or binders. The patient is covered with blankets or encased in an insulating bag and after the fever level is reached the current is shut off and the

temperature allowed to fall spontaneously. Others place the patient in a high frequency field between the two large metal plates of the radiothermy, without actual contact, heating being accomplished by dielectric losses and induced currents. The patient treated by this type of equipment must have the moisture removed from the skin by some means in order to prevent burns if high temperature levels are to be reached.

If we are right in supposing from our clinical results⁴ and laboratory experiments,⁵ that therapeutic fever is effective in certain infections because of the thermal death time, i e, the time-temperature combination which is necessary to bring about the death of the infective agent^{3c} it makes but little difference which method of producing the fever is used, provided it can be controlled. It is necessary only to adjust the technic to conform to this principle. Such a concept entails

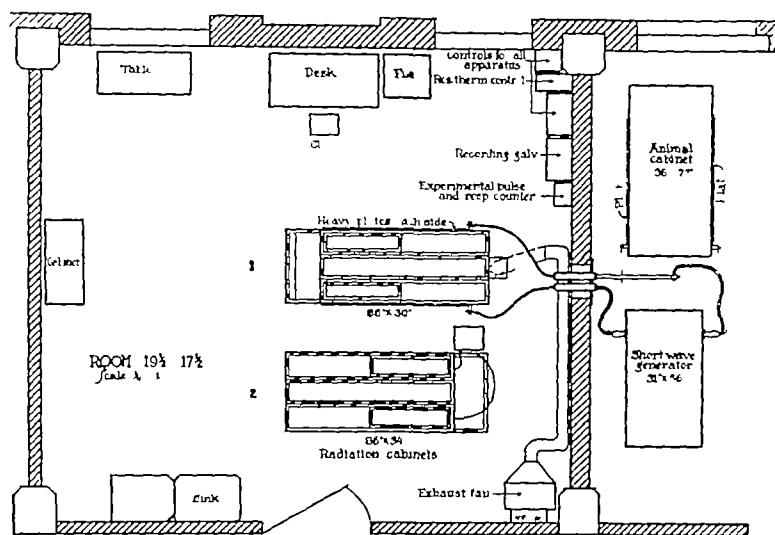


Fig 1—Diagram of treatment room showing arrangement of cabinets, oscillators and control apparatus.

kilocycles³), (d) enclosed bags containing heaters,^{2c} and other methods. Many physicians have utilized chemicals or bacterial products for producing fever

This work was aided by grants from the Rockefeller Foundation for Medical Research.

From the Department of Medicine, Division of Radiology of the University of Rochester School of Medicine and Dentistry.

We are indebted to Dr W R Whitney of the Research Laboratory of the General Electric Company for his cooperation and advice in addition to the loan of much equipment. Dr C M Carpenter gave us many helpful suggestions concerning the experiments with the high frequency oscillator. Dr McCann, Dr Morton, Dr Wilson and others of the clinical staff made available suitable patients for this test. Prof T R Wilkins and B O'Brien of the Department of Physics gave consultation and advice. Equipment was lent by Mr Harry Gordon of the Rochester Telephone Corporation, Mr Henry Klum of the Rochester Gas and Electric Company, Mr Lamb of the Taylor Instrument Company and Mr Charles Renaud of the General Electric X-Ray Corporation. Mr Herbert Mermagen gave technical assistance during the experiments with the high frequency oscillator.

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4. Bishop F W, Horton C B and Warren S L. New York State J Med 32: 997-1001 (Sept) 1932. Warren S L and Wilson K M. Am J Obst & Gynec 24: 592-598 (Oct) 1932.

5. (a) Bishop F W, Carpenter C M and Warren S L. J Exper Med 56: 719-723 (Nov) 1932. (b) Boak R A, Carpenter C M and Warren S L. J Exper Med 56: 725-739 (Nov) 1932. Carpenter C M, Boak R A and Warren S L. ibid 56: 751 (Nov) 1932. (c) Carpenter C M, Boak R A, Mucci L A and Warren S L. J Lab & Clin Med 18: 981-990 (July) 1933. (d) Carpenter and Warren.

a rather different method of approach to the problem of fever therapy, namely, the elevation of the body temperature to a predetermined temperature and its maintenance there for a specified length of time.

The routine in this clinic, in brief, consists in elevating the patient's temperature (rectal) during a period of from one to two hours to a level of from 41.5 to 41.7 C (106.7 to 107 F) and maintaining it there for five hours or longer, since it was found that this time-temperature relationship was generally efficacious, although any other procedure or time-temperature relation may be used if found to be therapeutically

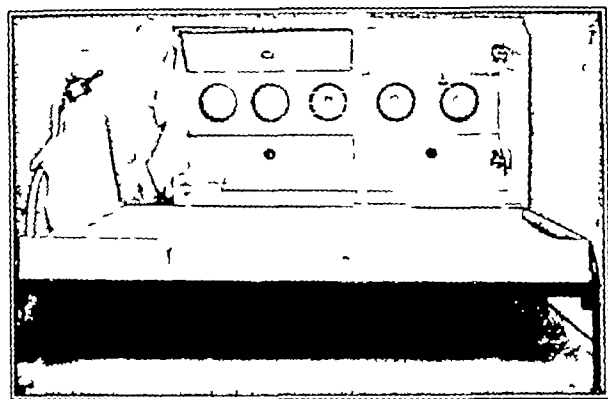


Fig. 2—Radiant energy cabinet open showing the simple arrangement of lamps with screens which prevent contact with the patient

effective. At the end of the interval the temperature of the patient is lowered by blowing cool air on the skin with a fan.

Temperature, pulse, respiration, blood pressure, heart sounds, color changes and the like are watched carefully throughout the procedure. The clinical procedure is essentially the same regardless of the method of producing the fever and has been described in greater detail in a previous paper¹¹ in which the diathermy equipment was used.

The average ambulatory patient is rather tired following the treatment but is usually well enough to

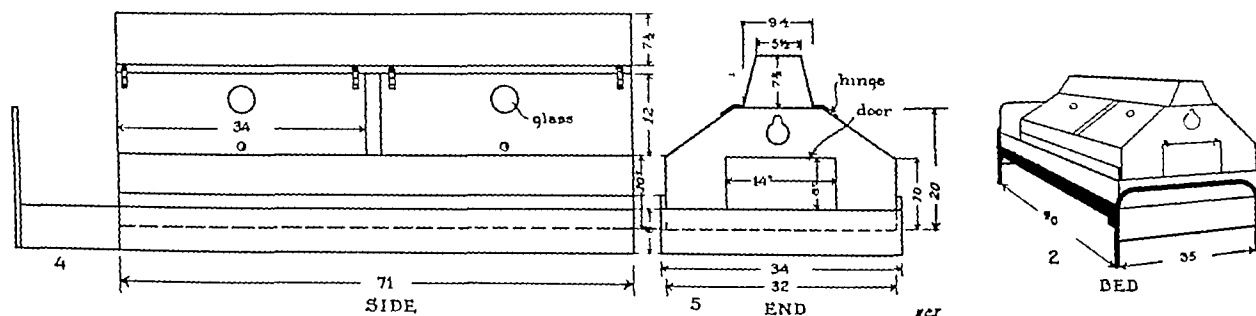


Fig. 4—Dimensional and constructional details of radiant energy cabinet.

be discharged from the hospital the next day. The procedure is safe for the patient who is in fairly good general physical condition. Many different diseases have been studied and treated and while the physiologic changes obtained both during and after the fever have been essentially identical with all three described methods, they are not within the scope of this report. The methods and apparatus used are now well organized, as far as general principles are concerned, and may be readily adapted to fit special conditions.

INSTALLATION OF APPARATUS

In order to evaluate the various electrical methods of elevating the temperature of a patient, the treatment room was equipped to meet all requirements. In one corner of the treatment room (fig. 1) is a wall-mounted control box, with a number of outlets controlled by various switches. All apparatus is controlled from this point. The box contains all necessary rheostats and meters. Above this control panel is a shelf which holds a duplex recording galvanometer and accessory apparatus for the resistance thermometer, a recording wattmeter, a watt-hour meter and other equipment.

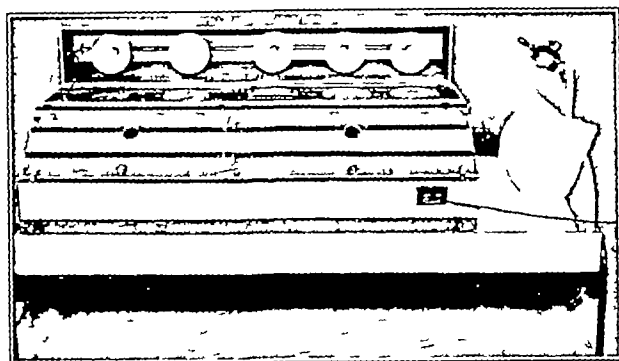


Fig. 3—Box closed. Lamp housing hinged back provides accessibility.

The first type of apparatus used for the heating of the patient is an ordinary high power "diathermy machine" with a frequency of 1,000 kilocycles (300 meters) and an available current through the patient of from 5 to 6 amperes. This is applied to the trunk of the patient by means of large block tin electrodes. As pointed out in a previous publication,¹¹ the method entails not only the efficient elevation of the patient's temperature but also its maintenance over a considerable period of time (five hours or more). Means must be provided to prevent the loss of heat by the patient during the rise and to compensate for the losses during the period of maintenance of his fever. Blankets (from eight to fourteen) and hot water bottles have been

employed, but their use was soon discontinued because the blankets are heavy and cause a sense of restraint. They were also difficult to manipulate during the treatment for blood pressure, examinations, making of electrocardiograms, use of urinals, and change in position. Moreover, the laundry cost is high for the blankets, so that we use a heat-retaining chamber or cabinet by preference.

This "cabinet" consists of a shallow wooden box which rests on the framework of the common hospital

cot and contains a rubber-covered mattress measuring 80 by 200 cm (31 by 79 inches). Hinged to this box is a light, somewhat coffin-shaped box made of cellophane fastened to a wooden framework which when closed,

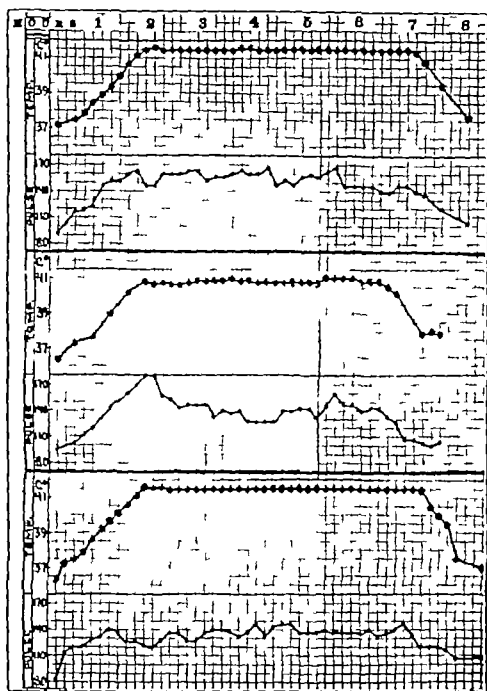


Fig 5—Comparison of normal curves obtained by the three methods of elevating body temperature. Upper diathermy, center radiothermy, lower radiant energy.

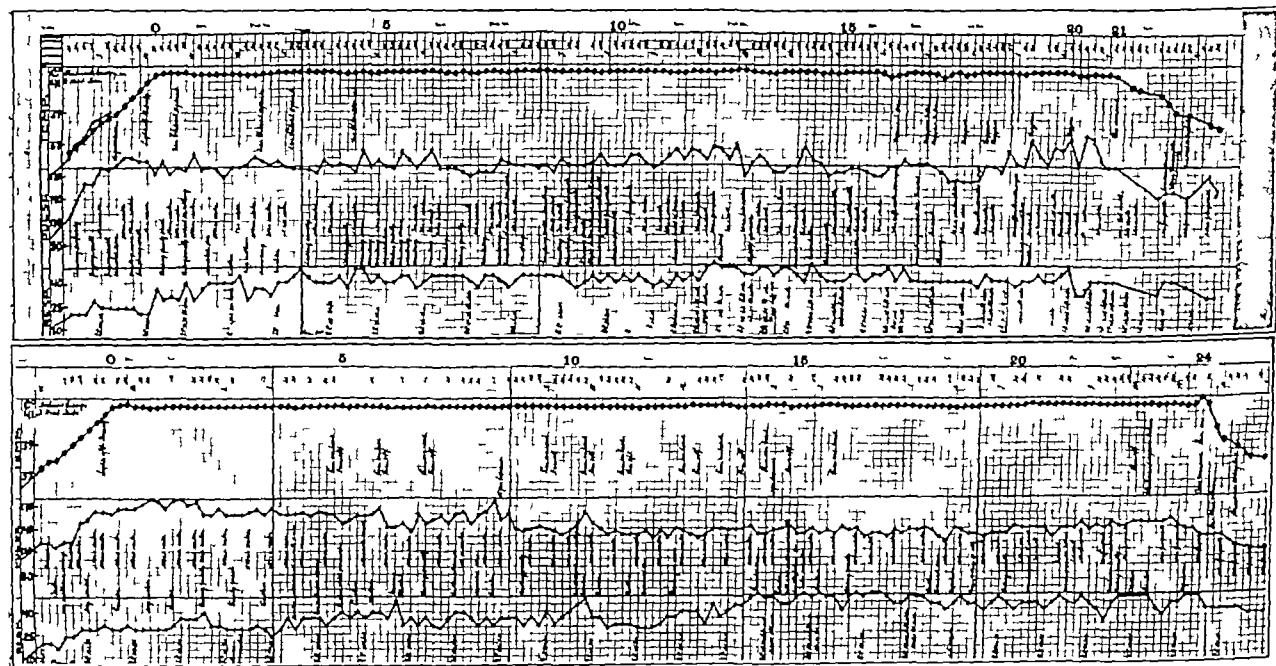


Fig 6—Two characteristic curves of temperature, pulse and respiration in patients maintained for twenty-one and twenty-four hours respectively at 41.5°C (106.7°F) rectal temperature by the radiant energy method.

fits tightly around the mattress.^{2a} The exterior has been gayly painted to lessen the sepulchral appearance. For use with the diathermy or low frequency equipment, the box was wired for eight 60-watt carbon filament lamps controlled by a rheostat. By this means the air surrounding the patient may be maintained at a temperature sufficiently high to compensate for losses of heat

from the patient by radiation, sweating and the like. The head of the patient protrudes from one end of the box through a large opening provided for this purpose. Two pieces of terry cloth, cut to conform to the shape of the neck are hung, one inside and one outside, of the box. Regardless of how the patient moves about, at least one of these is effective in closing the space around the neck. Fixtures for attaching restraining cuffs for the hands and ankles and the axillae are available. Two doors are provided on each of the sloping sides of the box to permit examination or manipulation of the patient during the treatment. Small windows allow observation of respiration and reading of any instruments within. Small holes are provided to permit the use of thermometers for observation of the air temperature as well as for a recording rectal resistance thermometer kept constantly in the patient, and for electrocardiographic leads and the like. When the patient's temperature is at the desired height, the electrodes for the high frequency (diathermy) currents may be removed and the temperature maintained by the lamps.

The second method (radiothermy) employs a system of two 500-watt radio transmitting tubes, oscillating in a push-pull Hartley circuit at a frequency of approximately 10,000 kilocycles, or a wavelength of 30 meters. This circuit and the generator have been described by Page⁹ and are similar to those used by Bierman,^{2a} Hinsie and Carpenter,^{2c} Neyman,^{2e} Simpson,^{2f} Tennen^{2g} and others. With such high frequencies it is merely necessary to place the patient in some available part of the field of the oscillatory circuit, whereupon currents are set up in the body resulting in the genera-

tion of heat. The common method has been to place the patient on a stretcher on the oscillator housing, in the electrostatic field between the large protected plates supplied by the manufacturer as standard equipment. If the temperature of the patient is to be elevated to

41.5 C (106.7 F) and kept at this level, it is essential for the patient to be under constant observation during the procedure. Since this temperature is near the upper limit of safety, it is necessary to make frequent temperature observations (every ten minutes). From the clinical standpoint the position of the patient is very unsatisfactory in such an arrangement, so that we have changed the setup somewhat by using a cabinet separated from the oscillator.

On account of limited space in the treatment room, the "short wave" (30 meter) oscillator is placed in an adjoining room (fig. 1) and is operated by remote control from the panel in the treatment room. The radio frequency conductors are brought through the 22 cm (8½ inch) brick wall in porcelain tubular insulators. The leads through the wall are separated by a distance of only 8 cm (3¼ inches), constituting, in effect, a radio frequency feeder system. Separation of the leads through the wall to any great extent results in large losses from absorption by the bricks. The conductors entering the treatment room terminate in sockets into which the leads from the patient's treatment cabinet are plugged. The length of each lead from the wall socket to the plate in the cabinet is 120 cm, through the wall 22 cm, and from the wall leads to the machine 100 cm, or 242 cm total per lead.

The cabinet for use with the short wave (30-meter) machine is similar in shape to the one described.^{2a} Several other arrangements may work satisfactorily, but we have found the use of a cabinet to be simple and convenient. This cabinet is also of cellolex and is shellacked to prevent absorption of moisture. It is mounted on a wooden frame on casters instead of a metal cot, because of the absorption of power by the latter material in a rapidly fluctuating field. The box and its surroundings should contain a minimum of metallic objects or other conductors (including paint). A mattress would accumulate moisture during the treatment, so that a canvas stretcher is provided, which has openings along the edges for the circulation of air. The space below the stretcher is enclosed and forms a duct through which warm or hot air may be forced. Within each of the double-walled sides of the cabinet is an aluminum plate, 25 cm by 130 cm by 1.5 mm thick, which may be slid lengthwise for optimum orientation of the field in relation to the patient. These plates are 74 cm (29 inches) apart and are connected to the high voltage terminals of the transmitting helix, thus forming part of the oscillatory circuit. It is, of course, as necessary as before to minimize heat losses. While heating lamps cannot be placed within the cabinet, it is still possible to warm it by other means and incidentally lessen the accumulation of moisture on the patient, which, because of its conductive properties, would allow currents to concentrate on the skin of the patient and produce burns. At the end of the air duct, beneath the stretcher and sufficiently far removed from the plates, are several resistance type heaters connected to the control panel on the wall by a cable. At the opposite end of the cabinet, and attached so as to remove the air from above the stretcher, is a 145 cm (60 inch) length of 10 cm (4 inch) semirigid rubber and canvas hose connected to an exhaust fan. Hot air is thereby drawn along and under and over the patient constantly drying up perspiration, and the hot, humid air is removed from the cabinet and room. The cabinet may be lifted back on its hinges without interfering with the hose

connection. The top of the cabinet has a removable panel, which can be replaced by a cellolex panel on which are mounted in a row six 60 watt carbon filament bulbs in standard parabolic reflectors. These lamps are put in place after the temperature of the patient has reached the desired level and the high frequency machine has been shut off, because the wires and reflectors shunt a large amount of energy from the patient. These lights can be controlled by their individual socket switches or by a rheostat and are sufficient to maintain the patient's temperature while he is in the cabinet. Windows and doors are provided, as in the first cabinet. A resistance thermometer or thermocouple cannot be used with this high frequency apparatus while the high frequency current is on. It is necessary to shut off the machine to take the rectal temperature, even with a standard mercury thermometer, or to listen to the heart or to take the blood pressure. When the patient's temperature has reached the desired level it can be maintained by using the radiation from the lamps in the removable panel, and any thermometer can be used. The moving hot air alone is insufficient to maintain the temperature level because of the heat loss due to the evaporation of sweat, unless high air temperatures (60 C [140 F] or more) are used. It is not desirable to continue the use of the high frequency currents during the long period of maintenance because of the danger of burns, although this technic is possible with suitable precautions.

A number of experiments were conducted to determine whether or not the alternating electromagnetic field from a solenoid energized by the high frequency currents had any particular properties that would give it an advantage over the ordinary high frequency electrostatic field. It was hoped that the currents induced in the body by this means might be of sufficiently low potential to permit the use of electrical thermometers and possibly reduce the danger of burns on the skin. Helices of sizes up to those permitting the insertion of the entire body were employed. While very high powers were not available, it was found that the electromagnetic field per se possessed no particular advantage over the electrostatic field as far as its applications to systemic fevers were concerned, although it seemed to have possibilities for local administrations. A fairly wide frequency range or spectrum was investigated. (The radiotherm was built and lent to us by the General Electric Company through the courtesy of Dr W. R. Whitney.)

A third method (radiant energy), which now supercedes the others in our clinic, is the result of our observations that the use of the lights in the treatment box had a considerable accelerating effect on the rise in the patient's temperature. It was soon found that, with suitable changes in the cabinet, the temperature of the patient could be elevated by the use of the lamps in the box alone (radiant energy) without the use of any high frequency currents. This principle is old but is one that has not been much adapted to meet present requirements. It was suggested that the absorption of the infra-red radiation by the skin was largely responsible for the rise in the patient's temperature. Experiments were conducted to test this point. With other conditions remaining the same, the same bulbs in the box were painted black to reduce the shorter wavelength radiation but still allowing the air to be heated as before (from 50 to 60 C [122 to 140 F] during

elevation of temperature, and from 30 to 45 C [86 to 113 F] during maintenance) It was found that under these conditions the patient's temperature rose very slowly Substituting clear bulbs of the same wattage for the painted ones caused a marked increase in the rate of rise of the patient's temperature without a significant change in the temperature of the air surrounding the patient It was then decided to place more powerful bulbs in reflectors, mount them on the exterior of the box, and irradiate the patient through holes cut in the flat roof of the cabinet (figs 2, 3 and 4) Five 200 watt Robert Schwartz heating lamps are so arranged that three irradiate the trunk of the patient and two the lower extremities Two smaller bulbs are mounted in the foot end of the box This type of lamp was chosen because they are strong emitters of infra-red rays Tungsten lamps of the same wattage were not so satisfactory These lamps are controlled by a rheostat since they deliver more energy than is usually required The life of the bulbs is prolonged, since they are operated at less than their rated voltage These changes were made in the first cabinet described so that it can now be used either with the diathermy machine or with radiant energy alone

COMPARISON OF METHODS

Since January 1930, 448 treatments have been given to 312 patients The diathermy method was used for 157 treatments, the radiotherm for twelve treatments, on twelve patients and the radiant energy method for 279 treatments Three of these patients were treated with both the radiotherm and diathermy, with an interval of from one to three weeks between

Since the results in this clinic seem to be identical, no matter what the method of elevating the temperature may be (fig 5), a comparison may be based on cost and ease of use

The first method requires a diathermy machine of fairly large power, representing an investment of from \$200 to \$900, with associated equipment such as electrodes and binders There will be a certain cost of maintenance Considerable time is required to apply the electrodes properly, as well as to readjust them if they become disarranged during the period of heating If the electrodes become loosened through movements of the patient, electrical burns are likely to occur In unstable or refractory (paretic) patients this is a potential danger There may be variable upward coasting of the patient's temperature after the diathermy machine has been turned off (fig 5), depending on the amount of heat temporarily stored in the tissues through which the current has been passing The energy applied by this method is rather localized, and the rise in general temperature is brought about by the circulation of the heated blood to other parts of the body

There is usually some fall in the patient's temperature when the box is opened to remove the electrodes This has to be made up subsequently With this method a higher pulse rate is noted (fig 5) (10 per cent average above patients heated by infra-red radiation only), and it is believed to be due to a greater heating of the heart and lungs by the passage of the current through them, or due to the patient's apprehension from restraint of the chest (electrode binder)

Considering the method that employs the short wave oscillator, radiotherm, we find that the initial investment

is very high This equipment has the advantage over the directly applied electrode method in that the patient is not so restrained The small number of actual treatments utilizing the radiotherm represents six months' active experimentation with this procedure The effect of varying the electrode size and distance, their position in relation to the body, and major changes in wavelength were studied Efficient methods of passing hot air over the patient and eliminating excessive cooling by the rapid evaporation of the sweat had to be worked out All this was expensive and time consuming After the greatest simplification was achieved (fig 1), the equipment was still cumbersome and difficult to manage from the nursing standpoint in contrast to the other methods The equipment was satisfactory for lower ranges of fever temperature, and several lower powered oscillators have been constructed in this laboratory and used with very satisfactory results for local applications⁷ The safety of the patient at the high level of 41.5 C (106.7 F, figs 5 and 6), where sudden elevation to dangerous temperatures (42 C [107.6 F] or above) may occur, demands frequent temperature observations This is difficult to do with the current on, and the high frequency currents must be shut off for the rectal temperature to be taken The mouth and axillary temperatures are unreliable We feel, however, from our rather extensive experimentation with this equipment in patients, on ourselves and in animals, that the clinical results obtained are based, in the main, on the heat produced in the body of the patient and are no different from those obtained by any other electrical method of elevating the temperature While little is actually known about the temperature gradients occurring in patients treated by the radiotherm, we believe that, if any selective heating of an organ is brought about by a difference in its electrical characteristics, the effects are neutralized by the blood flow Aside from this, it would seem a difficult matter to utilize any specific heating effects, even if they can be demonstrated on excised tissue,⁸ since the intensity and orientation of the field (and consequently the heating) varies so much from patient to patient and to a great degree in the same individual if his position in respect to the plates is changed

In the third system under consideration radiant energy (infra-red and visible radiation) is applied to the skin over a large area The distribution of heat is brought about in the same manner as all other methods, *i e*, the circulation of the warmed blood to other parts of the body The heat transfer of the method is comparatively rapid, since the blood is so diffusely distributed over the whole body in the capillary bed of the skin that it is readily heated by the absorption of the radiant energy The temperature rise starts immediately after the patient is exposed to the radiation and the rise is uniform and ceases practically at once when the radiation is turned off The fact that there is little or no upward coasting of the patient's temperature when the radiation is turned off indicates that the blood stream conveys the heat away about as fast as it is supplied, and therefore the skin temperature is not excessively raised (maximum 43 C before sweating begins) Blisters may be produced if the energy input is pushed too far in some area of decreased cir-

7 Bishop F W Radiology 21 487 491 (Nov) 1933
8 McLennan J C and Burton A C Canad J Research 5 550
556, 1931 Schereschewsky J W Pub Health Rep 48 844 848
(July 21) 1933

culation (scars, edematous areas and the like), or if some part should come too close to the lamps. These can be avoided if a towel or sheet is placed over the part as soon as a hyperemia is noted. Any method that applies energy diffusely over a large area of the body automatically reduces the danger of too great concentration and consequently burns. It seems obvious from a physical standpoint, physiologic processes (sweating) being disregarded, that to raise the temperature of a patient of a certain weight to a given degree it will require the absorption and retention of a definite amount of energy. For example, assuming 0.83 as the average specific heat of tissue and $h = 0.24 I^2 R t$ (Joules law), to raise a 60 Kg patient 5 degrees C in one and a half hours would require an effective energy of approximately 200 watts continuously applied during the interval, or 300 watt hours.

The energy put into our cabinet (from 0 to 1,000 watts) is ample to overcome all such losses as the evaporation of sweat, the heating of the box and enclosed air, and heat losses from all other causes, with sufficient reserve to supply the 200 watts or more necessary to raise the patient's temperature the required number of degrees in the specified time. Two or three ordinary electrical heating pads embedded in the mattress are sometimes used to prevent a possible heat loss in this direction. In practice their influence is slight, since the box and mattress are preheated by the lights and the mattress is a rather poor heat conductor. Humidity control of the air in the radiant energy cabinet was investigated and was found to be of little benefit in the set-up described, especially in view of the complications that it imposed.

The use of radiant energy has also made it possible to extend the period of fever greatly at any given height (from twenty-one to twenty-four hours) (fig 6). Any rise or fall in rectal temperature may be compensated for very simply and quickly by use of the rheostat. The simplicity of the equipment enables one to administer to the comfort of the patient somewhat, such as by changes in position, pillows and rubber rings, and to foresee and handle sudden changes in condition. It is possible to direct a small electric fan at the patient's head and let him have cracked ice at intervals, since the heat loss from this cause can be made up easily. The cost (\$150) entails the building of a suitable cabinet wired for the lamps and the purchase of a rheostat. The usual thermometers, blood pressure equipment, oxygen tank and records complete the equipment. A standard indicating or registering resistance thermometer may be purchased for from \$150 to \$300 from several instrument makers. A constant indication of the rectal temperature aids greatly in manipulating the heat input to maintain the rectal temperature at a desired level (fig 6).

SUMMARY

1 While any of the electrical methods proposed can be made to work efficiently and safely in artificial hyperthermia, the radiant energy (infra-red) method described seems to be the most convenient and economical method in our experience.

2 There does not appear to be any difference in the clinical effects and results from the various methods used.

3 All these methods rely on the circulation of the blood for the redistribution of heat in the body from the site of application of the energy.

260 Crittenden Boulevard

Clinical Notes, Suggestions and New Instruments

CASE OF DINITROPHENOL POISONING WITH RECOVERY

J C GEIGER M D SAN FRANCISCO
Director of the Department of Public Health

B L., a girl, aged 18 years, admitted to the Central Emergency Hospital, Department of Public Health, Dec 6, 1934, at 6 30 p m, had taken twenty-four reducing capsules with suicidal intent.

On physical examination the patient's face was flushed, the respiration rate was rapid and short, from 38 to 40 per minute, the pulse was 144, and the temperature was 103.4 F.

Routine gastric lavage was done with a 5 per cent solution of sodium bicarbonate. The symptoms being those associated with an overdose of alpha-dinitrophenol, the patient was placed in an ice pack in order to bring down the temperature. This was repeated whenever the temperature went over 101 F. Oxygen was administered at intervals that evening, and 500 cc of dextrose was administered intravenously.

The patient slept at intervals the first night, and the next night she complained of being hungry but vomited after taking some food. The patient's condition was much improved the second day. She took fluids freely retained them, and felt very much better. Recovery continued uneventfully and the patient was discharged at 4 p m, December 8.

The patient, in describing symptoms afterward, stated that during the entire time she felt as if she were on fire.

At no time was consciousness lost, and there was little or no pain evident during the stay in the hospital.

Dinitrophenol was found in the gastric contents on laboratory examination.

Civic Center

A CLINICAL STUDY OF BILIARY SECRETION IN A CASE PRESENTING A COMPLETELY OBSTRUCTED COMMON DUCT

LAWRENCE B. SHELDON M D DALLAS, TEXAS

This case is of interest because it enabled me to study accurately the biliary secretion for a period of three months.

REPORT OF CASE

A white woman aged 65, had had a cholecystectomy five years before, at which the gallbladder with several hundred small stones was removed. Following the operation she was symptom free for about three and one-half years. Then for the next eighteen months she suffered from intermittent attacks of severe pains in the upper part of the abdomen. A marked jaundice and septic-like temperature as high as 104 F was associated with these attacks. It was at this stage that the patient came under observation. A diagnosis of common duct obstruction was made. The patient was prepared for surgical intervention by the administration of calcium salts, intravenous dextrose and hypodermoclysis of saline solution. At operation a markedly dilated common duct was found with complete obstruction at the point of entrance into the duodenum. The surgeon was unable to pass a probe through the stricture. A T tube was inserted into the common duct and large amounts of purulent bile were drained freely. Following the operation the patient improved rapidly and each day the bile became less purulent. The T tube was left in for a period of three months, and it was during this interval that the clinical studies were made.

The following conditions were present which made this an unusual case for the study of biliary secretion.

1 The gallbladder had been removed five years previously. The hepatic ducts had had sufficient time to dilate and if possible to assume partially the functions of the gallbladder. The hepatic ducts were demonstrated to be dilated by an x-ray study in which skiodan had been injected into the common duct by the T tube. (It was interesting to note the precordial type of pain, anginoid in character, that was experienced by

the patient when too great pressure was used in filling the duct.)

2 A complete occlusion of the common duct had occurred just proximal to its opening into the duodenum. Thus, none of the bile secreted by the liver could pass into the duodenum. This complete obstruction was demonstrated at the time of operation by the x-ray study with opaque mediums injected into the ducts and by clinical observation over a period of three months. During this time the stools were always colorless and several chemical tests for bile were negative.

3 The T tube inserted into the common duct made it possible to collect and measure all the bile secreted by the liver, thus overcoming the inaccuracy of collecting bile specimens through the duodenal tube. I was aware of the fact that this liver was not a normal one and that impaired function

TABLE 1—Hourly Variations and Relationship to Meals

Breakfast	8 a m		
	9	45 cc	45 cc
	10	30 cc	30 cc
	11	30 cc	38 cc
	12 m	45 cc	30 cc
	1 p m	15 cc	33 cc
Dinner	1 30 p m		
	2	38 cc	70 cc
	3	30 cc	45 cc
	4	30 cc	45 cc
	5	38 cc	24 cc
	6	30 cc	45 cc
Supper	7 p m	34 cc	30 cc
	8	30 cc	30 cc

with a hepatitis was present, the result of a long standing infection within the biliary system. If cholagogues have a place in therapy, such a condition should be one of the indications for use.

STUDIES

1 The hourly variations and relationship to meals are given in table 1. A general diet was given with no restrictions of ordinary fats such as butter and cream. Fried and greasy foods were avoided. There seemed to be little change in the rate of flow when measured hour by hour. Foods ingested caused no appreciable variation.

2 A comparison of the day and night volume of bile is given in table 2. The volume was slightly larger during the night period between 8 p m and 8 a m, the amount not being great enough to be of any significance. There seemed to be a little

TABLE 2—Comparison of Day and Night Volume of Bile

	Day				Night			
	8 A	M	8 P	M	8 P	M	8 A	M
Monday	315				255			
Tuesday	300				345			
Wednesday	270				300			
Thursday	355	Average 293				255	Average 330	
Friday	300				360			
Saturday	255				300			
Sunday	257				315			

relationship in the total twenty-four volume in that a lower day output seemed to be offset by a greater night and a greater day volume by a lower night volume.

3 The daily twenty-four hour volume variations with the patient ambulatory and on a general diet were 632, 871, 665, 677, 721, 690, 542, 633, 521 and 608, an average of 656 cc. The average bile flow during this trial period of ten days with no medication was a little higher than the average daily flow of the whole experimental period which was 624 cc. daily.

4 Stimulation with bile salts plain 30 grains (2 Gm) daily, resulted in the following volumes: 592, 577, 682, 617, 675, 652 and 622, an average of 631 cc. No appreciable change was noted during this period.

5 Stimulation with a compound consisting of bile salts 2½ grains (0.16 Gm), cascara extract one-half grain (0.03 Gm), and phenolphthalein one-half grain given three times a day, resulted in daily volumes of 660 and 602, an average of 631 cc.

Because of general discomfort abdominal pains and cramping I was unable to carry the study for a longer period.

6 Tincture of belladonna was administered to the patient until tolerance was determined, and then the twenty-four volume was measured, giving the following results: 615, 604, 691, 633 and 608, an average of 626 cc. This compared favorably with the average volume during the control period.

7 Sodium salicylate, 38 grains (2.5 Gm) daily, resulted in 570, 585, 542, 570, 683 and 541, an average of 598 cc. of bile.

CONCLUSION

From the studies made in this case there is no evidence that the dilated hepatic ducts had assumed any of the functions of the gallbladder. The rate of bile flow was almost constant, whether measured hourly or daily. No appreciable change was noted following meals, nor was increased flow noted after the administration of bile salts plain, bile salts compound, sodium salicylate or tincture of belladonna.

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Special Article

GLANDULAR PHYSIOLOGY AND THERAPY

DIABETOGENIC, THYROTROPIC, ADRENOTROPIC AND PARATHYROTROPIC FACTORS OF THE PITUITARY

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MONTREAL

(Concluded from page 857)

NOTE.—This article and the articles in the previous issues of THE JOURNAL are part of a series published under the auspices of the Council on Pharmacy and Chemistry. Other articles will appear in succeeding issues of THE JOURNAL. When completed, this series will be published in book form—Ed.

THE PANCREATROPIC HORMONE OF THE PITUITARY

Although Koster⁹² states that the pancreas of hypophysectomized dogs is usually atrophic, no specific changes have been observed in the islands of Langerhans that would prove a regulatory influence of the hypophysis on the endocrine activities of the pancreas.

Anselmino and Hoffmann⁹³ have recently stated that administration of anterior pituitary extracts increases the size and number of the islands of Langerhans in the pancreas of the rat. They believe that this effect is due to a specific pituitary hormone, for which the name "pankreatrope Substanz" (pancreatropic substance) has been suggested. Further experiments by the same authors⁹⁴ indicate that this principle leads to a (very slight) decrease in the blood sugar of dogs and rabbits. In the rat the liver glycogen disappears almost completely after an amount of pancreatic substance equivalent to 10 mg of anterior lobe tissue. The authors conclude that this hormone stimulates the insulin production of the islands of Langerhans.

92 Koster S. Experimentelle Untersuchung der Hypophysenfunktion beim Hunde Arch f d ges Physiol 224 212 216 1930

93 (a) Anselmino K J Herold L and Hoffmann F Ueber die pankreatrope Wirkung von Hypophysenvorderlappensextrakten Klin Wchnschr 12 1245 1247 (Aug 12) 1933 (b) Anselmino K J and Hoffmann F Die pankreatrope Substanz aus dem Hypophysenvorderlappen uber die Darstellung und die Eigenschaften der pankreatropen Substanz ibid 12 1435 1436 (Sept 16) 1933

94 Hoffmann F and Anselmino K J Die pankreatrope Substanz aus dem Hypophysenvorderlappen uber die Stoffwechselwirkung der pankreatropen Substanz Klin Wchnschr 12 1436 1438 (Sept. 16) 1933

It is interesting in this connection that Aron⁹⁵ found that in guinea-pigs the intra-uterine injections of thyrotropic hormone during pregnancy will increase the number of the islands of Langerhans in the fetal pancreas. According to Anselmino and Hoffmann,^{95b} however, it is not likely that their own results were due to the thyrotropic hormone, since their extracts were free of the latter.

NATURE OF THE DIABETOGENIC PRINCIPLE

Practically all workers in this field have noted that anterior pituitary extracts purified to a greater or less degree, which have a diabetogenic effect on Houssay dogs, also produce an acetonuria in fasted normal or in fat-fed normal animals. The question arises, therefore, as to whether the ketogenic principle of the pituitary is the diabetogenic substance. We have had considerable experience in our laboratory in the fractionation of anterior pituitary extracts, and our own results have shown that the diabetogenic effect is retained by our purified growth hormone extracts and that our best thyrotropic hormone extracts contain varying amounts of ketogenic activity. We feel that our experiments on the ketogenic effects of anterior lobe extracts have established quite conclusively that the ketogenic effect is due to a substance separate and distinct from the thyrotropic principle. The fact that a purified extract rich in the thyrotropic and ketogenic principles, but free of growth principle, failed to cause an increase in the blood sugar or the excretion of sugar in the urine of a Houssay dog, whereas a purified growth extract containing only traces of the latter principles caused a marked increase in the fasting blood sugar level and in glycosuria, is, we think, absolute proof that the substance acting on blood sugar is different from the ketogenic hormone. Also this growth extract has been shown to antagonize insulin in the normal rabbit, whereas no such effect was obtained with the thyrotropic ketogenic extract.

We may conclude that the diabetogenic effect of the anterior pituitary is due to the combined action of two substances, one acting on the blood sugar level and the other producing ketosis.

The work of our laboratory on antihormones has helped greatly in the solution of the problem of the nature of the diabetogenic action of the pituitary. We have shown that the ketogenic substance must be distinct from the thyrotropic principle.⁹⁶ Animals injected over long periods with ketogenic extracts have become resistant to it, and the serum of these resistant animals has been shown to antagonize the effect of ketogenic extracts in other animals. Such serums have also antagonized the thyrotropic hormone but this has been due to the presence of both principles in the extracts used to produce the resistant state.

Recently we treated a pancreatectomized dog with an anterior pituitary extract rich in both the growth and the ketogenic principle for a period of four months. Insulin was then withdrawn. For a period of one month thereafter the animal showed no increase in acetonuria. Marked hyperglycemia and glycosuria were present. The animal was in good health and in fact resembled the typical Houssay animal. The animal was

killed thirty-seven days after the withdrawal of insulin and the completeness of the pancreatectomy established. The liver glycogen was 1.8 per cent.

II THE THYROTROPIC PRINCIPLE

The interrelationship between the pituitary and the thyroid, which recent work has established so definitely, was suggested first by Rogowitsch,⁹⁷ who noted enlargement of the pituitary of dogs and rabbits following thyroidectomy. Rogowitsch's observation has been confirmed repeatedly. A significant increase in the size of the pituitary has been observed in cases of cretinism, myxedema and cachexia thyreopriva (Boyce and Beadles,⁹⁸ MacCallum and Fabian,⁹⁹ Wegelin¹⁰⁰). Adler¹⁰¹ discovered that cauterization of the hypophyseal anlage in larval amphibia prolonged the larval state. Coincident with this, Gudernatsch¹⁰² found that precocious metamorphosis was induced in tadpoles by thyroid feeding. Allen,¹⁰³ using the Adler technic for removal of the pituitary, showed that the delayed metamorphosis of hypophysectomized tadpoles was associated with scanty deposition of colloid in the thyroid. The Smiths¹⁰⁴ reported that the thyroid of hypophysectomized tadpoles became extremely atrophic and that repair of the thyroid could be brought about by homotransplants of pituitary or by intraperitoneal injections of extracts of bovine anterior pituitary. Spaul¹⁰⁵ produced hypertrophy of the thyroid and acceleration of metamorphosis by injections of anterior pituitary substance. Uhlenhuth and Schwartzbach¹⁰⁶ showed that salamander larvae injected with anterior pituitary extracts consumed 40 per cent more oxygen than normal larvae. The classic work of P. E. Smith¹⁰⁷ on hypophysectomy of the rat established quite conclusively that the thyroid is dependent on the stimulating action of the pituitary, associated with the atrophy of the thyroid of the hypophysectomized rat. Foster and Smith¹⁰⁸ found that the metabolic rate was decreased as much as 35 per cent.

A close relationship between the pituitary and the thyroid has been demonstrated clinically. Cushing¹⁰⁹

97 Rogowitsch N. Die Veränderungen der Hypophyse nach Entfernung der Schilddrüse. Beitr. f. path. Anat. u. z. allg. Path. (Ziegler's) 4: 453-470, 1888-1889.

98 Boyce R. and Beadles C. F. Enlargement of Hypophysis Cerebri in Myxedema with Remarks upon Hypertrophy of the Hypophysis Associated with Changes in the Thyroid Body. J. Path. & Bact. 1: 223-239, 1892.

99 MacCallum W. G. and Fabian M. On the Anatomy of a Myxedematous Idiot. Bull. Johns Hopkins Hosp. 18: 341-345 (Sept.) 1907.

100 Wegelin C. Zur Kenntnis der Cachexia thyreopriva. Arch. f. Klin. Med. 25: 4: 689-709, 1925.

101 Adler L. Metamorphosestudien an Batrachierlarven. I. Exstirpation endokriner Drüsen. A. Exstirpation der Hypophyse. Arch. f. Entwicklungsmech. d. Organ. (Roux's) 39: 21-45, 1914.

102 Gudernatsch J. F. Feeding Experiments on Tadpoles. I. Influence of Specific Organs Given as Food on Growth and Differentiation. A. Contribution to the Knowledge of Organs with Internal Secretion. Arch. f. Entwicklungsmech. d. Organ. (Roux's) 35: 457-483, 1912. Feeding Experiments on Tadpoles. II. A Further Contribution to the Knowledge of Organs with Internal Secretion. Am. J. Anat. 15: 431-480, 1914.

103 Allen B. M. The Relation of the Pituitary and Thyroid Glands of Bufo and Rana to Iodine and Metamorphosis. Biol. Bull. 36: 405-417, 1919.

104 Smith P. E. and Smith I. P. Repair and Activation of Thyroid in Hypophysectomized Tadpole by Parenteral Administration of Fresh Anterior Lobe of the Bovine Hypophysis. J. M. Research 43: 267-283 (June-July) 1922.

105 Spaul E. A. On the Activity of the Anterior Lobe of the Pituitary. J. Exper. Biol. 7: 49-87 (Jan.) 1930. Accelerated Metamorphosis of Frog Tadpoles by Injection of Extract of Anterior Lobe Pituitary Gland and the Administration of Iodine. Ibid. 1: 313-321 (April) 1923.

106 Uhlenhuth E. and Schwartzbach S. Control of the Thyroid Function by the Anterior Lobe of the Hypophysis. Anat. Rec. 34: 119, 1926.

107 Smith P. E. The Disabilities Caused by Hypophysectomy and Their Repair. J. A. M. A. 88: 158-161 (Jan. 15) 1927.

108 Foster G. L. and Smith P. E. Hypophysectomy and Replacement Therapy. J. A. M. A. 87: 2151-2153 (Dec. 25) 1926.

109 Cushing Harvey. Acromegaly from Surgical Standpoint. Brit. M. J. 2: 19 (July 2) 1927. 2: 48-55 (July 9) 1927.

95 Aron M. Injections d'extrait préhypophysaire au foetus de cobaye in vitro. Action sur les îlots endocrines du pancréas. Compt. rend. Soc. de biol. 113: 1071-1073, 1933.

96 Black, P. T., Collip J. B. and Thomson D. L. The Effect of Anterior Pituitary Extracts on Acetone Body Excretion in the Rat. J. Physiol. 82: 385-391 (Oct. 17) 1934.

stated that patients with hypopituitary conditions tend to have a subnormal metabolism. Graubner,¹¹⁰ reviewing the reports of thirty-three cases of pituitary cachexia (Simmonds' disease) found that in each instance the thyroid was small and atrophic and frequently sclerotic.

Loeb¹¹¹ and Aron,¹¹² quite independently of each other, produced hyperplasia of the thyroid of the guinea-pig by means of anterior pituitary extracts. Numerous workers have reported since on the production of hyperplasia of the thyroid in a variety of laboratory animals. Janssen and Loeser,¹¹³ Watrin and Florentin,¹¹⁴ Grab,¹¹⁵ and Junkmann and Schoeller,¹¹⁶ in the guinea-pig; Benedict, Putnam and Teel,¹¹⁷ Houssay, Biasotti and Magdalena,¹¹⁸ and Schuttenhelm and Eisler¹¹⁹ in the dog; Baumann and Marine⁷ in the rabbit; Riddle and Polhemus¹²⁰ in the pigeon; Noether¹²¹ in the hen; Schockaert¹²² in the duck; Anderson and Collip¹²³ in the rat.

Hyperplasia of the thyroid of the guinea-pig has been demonstrated in vitro with the thyrotropic hormone by Eitel, Krebs and Loeser,¹²⁴ while Houssay, Biasotti and Magdalena¹¹⁸ and Marine and Rosen¹²⁵ produced hyperplasia in homotransplants and autotransplants of thyroid tissue in animals injected with anterior lobe extracts.

It has been stated by some that thyrotropic hormone is present in urine (Aron and Klein¹²⁶), while others have failed to substantiate this (Smith and Moore,¹²⁷ del Castillo and Magdalena,¹²⁸ Krogh and Okkels¹²⁹).

110 Graubner, Walther. Die hypophysäre Kachexie (Simmonds'sche Krankheit). *Ztschr f klin Med* 101: 249-277 1925.

111 Loeb Leo and Bassett R B. Effect of Hormones of Anterior Pituitary on Thyroid Gland in the Guinea Pig. *Proc Soc. Exper Biol & Med* 26: 860-862 (June) 1929.

112 Aron, M. Action de la préhypophyse sur la thyroïde chez le cobaye. *Compt rend Soc de biol* 102: 682-684 (Nov. 29) 1929.

113 Janssen S and Loeser A. Die Wirkung des Hypophysenvorderlappens auf die Schilddrüse. *Arch f exper Path u Pharmacol* 163: 517-529, 1931.

114 Watrin J and Florentin P. Etudes des glandes endocrines après implantations de lobe antérieur d'hypophyse chez la femelle impubère. *Compt rend Soc de biol* 110: 1161-1163 (July 29) 1932.

115 Grab W. Hypophysenvorderlappen und Schilddrüse. Die Wirkung des Hypophysenvorderlappens auf die Tätigkeit des Schilddrüse. *Arch f exper Path u Pharmacol* 167: 313-333 1932.

116 Junkmann K and Schoeller, W. Ueber das thyreotropische Hormon des Hypophysenvorderlappens. *Klin Wchnschr* 11: 1176-1177 (July 9) 1932.

117 Benedict E B, Putnam T J and Teel H M. Early Changes Produced in Dogs by Injection of Sterile Active Extract from Anterior Lobe of the Hypophysis. *Am J M Sc* 179: 489-497 (April) 1930.

118 Houssay B A, Biasotti A and Magdalena A. Hipófisis y tiroides, acción del extracto del lóbulo anterior de la hipófisis sobre la histología de la tiroidea del perro. *Rev Soc argent de biol* 8: 130-143 (May-June) 1932.

119 Schuttenhelm A and Eisler B. Der Blutjodspiegel in seiner pathologischen physiologischen und klinischen Bedeutung. *Klin Wchnschr* 11: 6-9 (Jan. 2) 1932.

120 Riddle Oscar and Polhemus I. Studies on the Physiology of Reproduction in Birds. Effects of Anterior Pituitary Hormones on Gonads and Other Organ Weights in the Pigeon. *Am J Physiol* 98: 121-130 (April) 1931.

121 Noether P. Ueber die Wirkung des thyreotropen Hormons des Hypophysenvorderlappens auf das Leghuhn. *Klin Wchnschr* 11: 1072-1073 (Oct. 8) 1932.

122 Schockaert J A. Enlargement and Hyperplasia of the Thyroids in Young Duck from Injection of Anterior Pituitary. *Am J Anat* 40: 379-408 (Jan.) 1932.

123 Anderson Evelyn and Collip J B. Thyreotropic Hormone of Anterior Pituitary. *Proc Soc. Exper Biol & Med* 30: 680-683 (Feb.) 1933.

124 Eitel H, Krebs H A and Loeser A. Hypophysenvorderlappen und Schilddrüse. Die Wirkung der thyreotropen Substanz des Hypophysenvorderlappens auf die Schilddrüse in Vitro. *Klin Wchnschr* 12: 615-617 (April 22) 1933.

125 Marine David, and Rosen S H. The Effect of the Thyrotropic Hormone on Auto- and Homotransplants of the Thyroid and Its Bearing on the Question of Secretory Nerves. *Am J Physiol* 107: 677-680 (March) 1934.

126 Aron M and Klein M. Sur la présence dans l'urine humaine d'une substance douée de la même action sur la thyroïde que l'extrait préhypophysaire et sur l'interprétation de la réaction de diagnostic de la grossesse. *Compt rend Soc. de biol* 103: 702-704 (March 7) 1930.

127 Smith M G and Moore, E. Is Anterior Pituitary Hormone Demonstrable in Urine of Graves' Disease in Urine of Guinea Pigs Injected with Anterior Pituitary Extract? *Proc. Soc. Exper Biol & Med* 30: 735-739 (March) 1933.

128 del Castillo E B and Magdalena A. Hipófisis y tiroides, poder excitotiroideo del suero sanguíneo. *Rev Soc. argent de biol* 7: 458-466, 1931.

129 Krogh M and Okkels H. Studies on the Thyroid Gland. Thyroid Stimulating Hormone from Anterior Pituitary. Some Chemical Properties. *Acta path et microbiol Scandinav* 10: 126-130 1933.

The thyrotropic principle is not active by mouth and it is destroyed by boiling. Active extracts have been prepared in a variety of ways (Loeser,¹³⁰ Junkmann and Schoeller,¹¹⁶ Anderson and Collip¹³¹).

It can be shown to be distinct from the maturity factor, which is usually present in greater or less amount in active extracts and by the fact that boiling destroys the physiologic action of the former but not of the latter principle.

It is different from the growth hormone, because the most sensitive test object, the recently hypophysectomized rat, fails to grow when injected even for long periods with the purified thyrotropic hormone extracts.

According to Loeser¹³² the thyrotropic hormone leads to an increase in size of the adrenal cortex, but only in the presence of the thyroid.

THE PHYSIOLOGY OF THE THYROTROPIC HORMONE

The administration of adequate amounts of the thyrotropic hormone to normal animals results in the course of a few days in enlargement and hyperplasia of the thyroid. There is an increase in the metabolic rate (Siebert and Smith,¹³³ Verzar and Wahl¹³⁴), increase in heart rate (Schuttenhelm and Eisler¹³⁵), exophthalmos (Schockaert,¹²² Loeb and Friedman¹³⁶), a reduction of the iodine content of the gland (Loeser,¹³⁰ Schockaert and Foster¹³⁷), an increase in the alcohol-insoluble iodine of the blood (Closs, Loeb and MacKay¹³⁸ Grab,¹³⁹ Schuttenhelm and Eisler¹³⁵), a depletion of liver glycogen and an increase in the acetone bodies in the blood (Eitel and Loeser,¹⁴⁰ Eitel, Löhr and Loeser¹⁴¹). The latter effect, as has already been shown, is due to the ketogenic and not to the thyrotropic principle. Verzar and Wahl¹³⁴ and others have shown that none of the signs of hyperthyroidism can be produced in thyroidectomized animals by injections of thyrotropic hormone extracts.

The average increase in metabolic rate that we have seen in normal rats of our colony, treated with the thyrotropic hormone, has been +26 per cent. The administration of even massive doses of the hormone

130 Loeser Arnold. Hypophysenvorderlappen und Jodgehalt der Schilddrüse. *Arch f exper Path u Pharmacol* 163: 530-533 1931.

131 Anderson Evelyn M and Collip J B. Studies on the Physiology of the Thyreotropic Hormone of the Anterior Pituitary. *J Physiol* 82: 11-25 (Aug. 24) 1934.

132 Loeser Arnold. Hypophysenvorderlappen und Schilddrüse. Die Wirkung der thyreotropen Substanz des Hypophysenvorderlappens auf die Nebennieren. *Arch f exper Path u Pharmacol* 173: 62-71 1933.

133 Siebert W J and Smith R S. The Effect of Various Anterior Pituitary Preparations on Basal Metabolism in Partially Thyroidectomized and in Completely Thyroidectomized Guinea Pigs. *Am J Physiol* 95: 396-402 (Nov.) 1930. Effect of Various Anterior Pituitary Preparations on Basal Metabolism in Guinea Pigs. *Proc. Soc. Exper Biol & Med* 27: 622-624 (April) 1930.

134 Verzar, F and Wahl, V. Wirkung des hypophysenvorderlappenhormons auf den O₂-Verbrauch von Meerschweinchen. *Biochem Ztschr* 240: 37-49 1931.

135 Schuttenhelm A and Eisler B. Untersuchungen der Wirkung des thyreotropen Hormons auf die Tätigkeit der Schilddrüse. *Klin Wchnschr* 11: 1092-1096 (June 25) 1932.

136 Loeb Leo and Friedman H. Exophthalmos Produced by Injections of Acid Extract of Anterior Pituitary Gland of Cattle. *Proc Soc Exper Biol & Med* 29: 648-650 (Feb.) 1932.

137 Schockaert, J A and Foster G L. Influence of Anterior Pituitary Substances on Total Iodine Content of Thyroid Gland in Young Duck. *J Biol Chem* 95: 89-94 (Feb.) 1932.

138 Closs, K, Loeb L and MacKay E M. The Effect of an Acid Extract of the Anterior Pituitary on the Iodine Concentration of the Blood and Thyroid Gland. *J Biol Chem* 98: 585-592 (June) 1932.

139 Grab W. Hypophysenvorderlappen und Schilddrüse. Der Jodgehalt des Blutes und der Schilddrüse nach Zufuhr von Hypophysenvorderlappenhormon. *Arch f exper Path u Pharmacol* 167: 413-441 1932.

140 Eitel W and Loeser Arnold. Hypophysenvorderlappen, Schilddrüse und Kohlehydratstoffwechsel der Leber. *Arch f exper Path u Pharmacol* 167: 381-403 1932.

141 Eitel W, Löhr G and Loeser Arnold. Hypophysenvorderlappen und Schilddrüse. Der Einfluss der thyreotropen Substanz auf Leberglykogen und Blutketonkörper. *Arch. f exper Path u Pharmacol* 173: 205-220 (Nov.) 1933.

does not result in higher values. We obtained quite different results, however, with a small series of gonitrous rats. A control animal in this group had a thyroid gland weighing 142 mg as compared with a normal rat's gland of 20 mg. The gland proved, on microscopic examination, to be extremely hyperplastic. The control metabolic rates of these animals were slightly subnormal. Immediately following treatment with thyrotropic hormone the metabolic rate rose rapidly. One animal showed a 95 per cent increase within twenty-four hours. The highest rate observed in the group was 162 per cent of the normal. This was on the ninth day of injections. All the rats showed definite symptoms of hyperthyroidism, irritability, weakness, exophthalmos and excessive sweating, and there was a 20 per cent loss of weight in the course of nine days.

Our hypophysectomized rats show a decline in the metabolic rate to an average of 74 per cent of normal as determined on a series of 118 of our experimental animals. The thyroid gland decreases in weight and the microscopic picture is one of marked involution of the cellular elements. We have found that these animals are much more sensitive to injections of the thyrotropic hormone than are normal animals. They compare very favorably in this respect with the guinea-pig. The metabolic rate has frequently been restored to normal within a week with doses twice a day of as little as 0.005 cc of a purified thyrotropic extract. (The normal rat has required at least 0.08 cc twice a day to show a significant rise in metabolic rate.) We have chosen as an arbitrary unit of the thyrotropic hormone the minimum amount, administered daily in two injections, which will cause a rise of 20 per cent in the metabolism of the hypophysectomized rat by the fourth day. We believe that this unit compares fairly well with the Junkmann-Schoeller unit as determined by the use of the normal guinea-pig, but it has this advantage that the metabolism of the hypophysectomized animal, both before and during treatment, is far less variable than the histologic picture of the guinea-pig's thyroid. The normal guinea-pig thyroid is extremely sensitive to the thyrotropic hormone stimulus, but unfortunately control animals all too frequently, in our experience, have shown mild thyroid hyperplasia.

The thyrotropic principle causes an increase in the excretion of creatine in both the normal and the hypophysectomized rat (Pugsley, Anderson and Collip¹⁴²).

The thyrotropic hormone, like thyroxine, causes an increase in the excretion of calcium by the intestine (Pugsley and Anderson¹⁴³).

Marine and Rosen¹⁴⁵ produced exophthalmos in the thyroidectomized guinea-pig with acetic acid extracts of anterior pituitary powder. They were of the opinion that the anterior pituitary product stimulated centers in the midbrain controlling the sympathetic innervation of the eye.

A number of workers who have made injections over long periods of anterior pituitary extracts containing the thyrotropic hormone have noted a decrease in the size of the thyroid and a decrease in the metabolic rate of the treated animals (Korenchevsky,¹⁴⁴ Siebert and

Smith,¹⁴⁵ Lee and Gagnon,¹⁴⁶ Verzar and Wahl,¹⁴⁶ Evans and Sarka¹⁴⁶).

Retrogressive changes in the thyroid of guinea-pigs and ducks treated with anterior pituitary extracts over a long period have been described by Aron,¹⁴⁷ Loeb and Friedman,¹⁴⁸ Schockaert,¹²² Thurston,¹⁴⁹ Friedgood,¹⁵⁰ and Collip and Anderson.¹⁵¹ The latter found by the thirty-seventh day after daily injections of purified thyrotropic extracts that the metabolism of a group of normal rats had fallen 29 per cent below normal, which was approximately the level of metabolism for the hypophysectomized rats of the same colony.

It was shown that the loss of response to the thyrotropic hormone by the rats that had been injected for some weeks was due to the presence in their blood of a specific inhibitory substance. Proof of this was obtained by injecting both normal and hypophysectomized rats with blood serum obtained from the thyrotropic hormone resistant animals. These animals were then shown to be resistant to the injections of known potent hormone extracts.¹⁵²

Blum¹⁵³ described an antithyroid effect of a blood constituent, which he called "catechin." Anselmino and Hoffmann¹⁵⁴ have prepared a lipid fraction from normal blood and tissue which they assert has the physiologic properties of the Blum substance. They report that their blood extract inhibits the thyrotropic hormone as well as thyroxine, and they have also seen an inhibition of the histologic reaction of thyroid hyperplasia in animals injected with thyrotropic hormone and fed the antithyroidin extract. Abelin and Wegelin¹⁵⁵ found that simultaneous injections of diiodotyrosine with anterior lobe extract prevented the marked hyperplasia of the thyroid seen when the latter alone was injected.

The relationship, if any, of this substance of Blum to the thyroid stimulating principle of the anterior pituitary is not clear, but it is obviously a different substance from the antagonist principle found in the blood of thyrotropic hormone resistant animals.

It may be concluded that the thyrotropic principle found in anterior pituitary extracts is an entity having physiologic properties that distinguish it from the

145 Lee M O and Gagnon J. Effects of Growth Promoting and Gonad Stimulating Principles of the Anterior Lobe of the Pituitary on Basal Gaseous Metabolism in the Rat. *Endocrinology* 14: 233-242 1930.

146 Evans H M and Sarka A. cited by Evans Meyer and Simpson. The Growth and Gonad Stimulating Hormones of the Anterior Hypophysis. II. Sect. 11 1933.

147 Aron M. Particularités histologiques de la réaction de la thyroïde aux extraits de lobe antérieur d'hypophyse. *Compt rend Soc. de biol.* 103: 145-147 (Jan. 24) 1930.

148 Loeb Leo and Friedman H. Changes in Weight of Thyroid Gland of Guinea Pigs Under the Influence of Acid Extract of Anterior Pituitary. *Proc Soc Exper Biol & Med.* 29: 14-16 (Oct.) 1931.

149 Thurston E W. Comparison of Hypertrophic Changes in Thyroid Caused in Different Species by Acid Extract of Anterior Lobe of Bovine Pituitary Gland. *Arch Pathol* 15: 67-77 (Jan.) 1933.

150 Friedgood H B. Experimental Exophthalmos and Hyperthyroidism in Guinea Pigs. *Clinical Course and Pathology*. Bull Johns Hopkins Hosp 54: 48-73 (Jan.) 1934.

151 Collip J B and Anderson Evelyn M. The Production of Serum Inhibitory to the Thyrotropic Hormone. *Lancet* 1: 76-78 (Jan. 13) 1934. Anderson Evelyn M and Collip J B. Preparation and Properties of an Antithyrotropic Substance. *ibid* 1: 784-786 (April 14) 1934.

152 (a) Collip J B. Some Recent Advances in the Physiology of the Anterior Pituitary. *J Mount Sinai Hosp* 1: 28-71 (May-June) 1934. (b) Inhibitory Hormones and the Principle of Inverse Response. *Ann Int Med* 8: 10-13 (July) 1934. (c) Pugsley Anderson and Collip¹⁴². Anderson and Collip¹⁵¹. Collip J B and Anderson Evelyn M. Studies on the Thyrotropic Hormone of the Anterior Pituitary. *J A M A* to be published.

153 Blum F. Ueber die antithyreoidalen Eigenschaften des Blutes und das zugrundeliegende Catechin. *Schweiz med Wchnschr* 63: 777-781 (Aug. 12) 1933.

154 Anselmino K J and Hoffmann F. Darstellung Eigenschaften und Vorkommen einer antithyreoidalen Schutzsubstanz aus Blut und Geweben. *Klin Wchnschr* 12: 99-102 (Jan. 21) 1933.

155 Abelin I and Wegelin C. Ueber den Einfluss des Diiodotyrosins auf die Schilddrüsenaktivität. *Klin Wchnschr* 11: 2103-2106 (Dec. 17) 1932.

142 Pugsley L I, Anderson Evelyn M and Collip J B. Effect of Thyrotropic Hormone and of Desiccated Thyroid on Creatine and Creatinine Excretion. *Biochem J* 28: 1135-1140 1934.

143 Pugsley L I and Anderson Evelyn M. The Effect of Desiccated Thyroid Irradiated Ergosterol and Ammonium Chloride on the Excretion of Calcium in Rats. *Biochem J* 28: 754-758 1934.

144 Korenchevsky V. Influence of Hypophysis on Metabolism, Growth and Sexual Organs of Male Rats and Rabbits. II. Influence of Extracts of Hypophysis on the Body Weight of Fat of Sexual Organs and of Endocrine Organs of Rats. *Biochem J* 24: 383-393 1930.

growth factor, the ketogenic principle, the maturity principle, and—as will be seen later—from the adrenotropic hormone

III THE ADRENOTROPIC (INTERRENOTROPIC) PRINCIPLE¹⁵⁰

P. E. Smith^{150a} showed that marked atrophy of the adrenal cortex took place following hypophysectomy in rats and that this degenerative change could be prevented or the normal condition restored by intramuscular implantations of fresh rat hypophyses. Evans¹⁵¹ confirmed Smith's work and reported adrenal cortical repair by the use of purified growth extracts.

In this connection one might call attention to the marked atrophy that follows the destruction of the hypophysis in patients (Fahr,¹⁵² Jaffe and Tannenbergs¹⁵³), and to the frequent occurrence of cortical hypertrophy associated with pituitary tumors (Wieth-Pedersen¹⁵⁴), particularly with acromegaly (Salmon¹⁵¹).

In our work it was noted that the adrenotropic effect tended to be associated with thyrotropic effect but that with further purification of the thyrotropic principle the adrenotropic action became less. This led us to attempt to obtain the adrenotropic principle in greater amount and the thyrotropic in less amount by working up the tailings from the thyrotropic extracts. We were in this way successful in obtaining a fraction that was strong in adrenotropic activity and in the doses used was free of thyrotropic effect (Collip, Anderson and Thomson¹⁵²).

There is as yet no satisfactory physiologic test for the adrenotropic principle, for, since the adrenal cortex reacts with hypertrophy after the administration of numerous nonspecific toxins, the results obtained on normal animals (Houssay and his co-workers,¹⁵³ Anselmino and his associates,¹⁵⁴ Emery,¹⁵⁵ Robson and Taylor¹⁵⁶) are not conclusive, and the hormone must always be tested on hypophysectomized animals. However, the observations of Putnam and his associates,¹⁵⁷ who observed real cortical adenomas after the chronic administration of alkaline pituitary extracts, were very suggestive. I also have to mention in this connection the important recent observations of Houssay and his associates,¹⁵⁸ who were able to stimulate the adrenal

cortex of hypophysectomized dogs with pituitary extracts.

No marked effect on the medulla has been described, nor is there any definite evidence of atrophy of the medulla after hypophysectomy, but Houssay and his associates¹⁵³ found a depletion of its epinephrine content after pituitary extract administration in dogs. Two possible effects of the adrenotropic principle, apart from the cortical repair induced in hypophysectomized rats, are (1) a slight decrease in the positive potassium balance of normal animals (Pugsley¹⁵⁹) and (2) an effect on the hemogram. Miss Margaret Hill, who has been making a study of the blood picture as influenced by pituitary extracts, has observed a very definite increase in the reticulocytes when large doses of adrenotropic extracts have been injected daily over a period of weeks. The reticulocyte response appears to follow a definite curve. The significance of this response is not clear as yet.

On theoretical grounds it is conceivable that certain cases of Addison's disease may be due to primary pituitary failure. In this connection it is of interest to mention that in two cases of Addison's disease very marked improvement has occurred when adrenotropic extract was administered. It is, of course, not to be expected that cortical tissue that has been damaged by tuberculosis can be activated by pituitary adrenotropic hormone.

IV THE PARATHYROTROPIC PRINCIPLE

Clinical evidence for an interrelationship between pituitary and parathyroids has been reported by various investigators. The association of parathyroid adenomas with tumors of the pituitary glands was particularly suggestive of such a relationship (Hertz and Krane¹⁶⁰). More recently, several authors have assumed the existence of a special parathyrotropic hormone, the administration of which to normal animals leads to proliferation of the parathyroid cells (Hertz and Krane,¹⁶⁰ Hoffmann and Anselmino,¹⁶¹ Anselmino, Hoffmann and Herold¹⁶²). The recent report by Hertz and Albright¹⁶³ that the urine of patients with hyperplasia of the parathyroids, but not of those with parathyroid adenoma, contains a substance that will produce hyperplasia in the parathyroids of normal rabbits, is of special significance.

EFFECT OF HYPOPHYSECTOMY ON THE PARATHYROID GLANDS

Aschner¹⁶⁴ found no changes in the parathyroids of his hypophysectomized dogs, but Koster¹⁶⁵ states that the parathyroids of hypophysectomized dogs are usually smaller than those of control animals. Houssay and Sammartino¹⁶⁴ frequently found degenerative changes in these glands after removal of the hypophysis, they emphasize, however, that similar changes may also be

150 A. S. Evans (J. A. M. A. 104: 464 [Feb. 9] 1935) has pointed out the principle commonly known in the literature as the adrenotropic is more accurately designated interrenotropic; the present evidence indicates that it stimulates only the adrenal cortex (interrenal gland).—Ed.

150a Smith P. E. Hypophysectomy and a Replacement Therapy in the Rat. *Am. J. Anat.* 45: 205-274 (March) 1930.

151 Evans H. M., Meyer K. and Simpson M. E. Relation of Proplan to the Anterior Hypophyseal Hormones. *Am. J. Physiol.* 100: 141-156 (March) 1932.

152 Fahr T. Beiträge zur Pathologie der Hypophyse. *Deutsche med. Wchnschr.* 44: 206-208, 1918.

153 Jaffe R. and Tannenbergs J. Nebennieren, in Hirsch Max. *Handbuch der inneren Sekretion* pp. 473-661, 1928.

154 Wieth-Pedersen G. A Case of Suprarenal Tumor and of Hypophyseal Tumor Both with Striae Distensae Cutis. *Hospitalstid.* 74: 1231-1244 (Dec. 24) 1931.

155 Salmon U. J. Le facteur surrénal dans la mécanisme des syndromes hypophysaires. *Vol. jubilaire Marinnesco*, 1933, pp. 605-618.

156 Collip J. B., Anderson Evelyn M. and Thomson D. L. The Adrenotropic Hormone of the Anterior Pituitary Lobe. *Lancet* 2: 347 (Aug. 12) 1933.

157 Houssay B. A., Biasotti A., Mazzocco P. and Sammartino R. Acción del extracto antero-hipofisario sobre las glándulas adrenales. *Rev. Soc. argent. de biol.* 9: 262-268 (Aug.) 1933.

158 Anselmino K. J., Hoffmann F. and Herold L. Ueber das corticotrope Hormon des Hypophysenvorderlappens. *Klin. Wchnschr.* 13: 209-211 (Feb. 10) 1934.

159 Emery F. E. Some Chronic Effects of Anterior Pituitary Sex Hormone on Weights of Body Ovaries Uterus Pituitary and Adrenal Glands. *Endocrinol.* 17: 64-72 (Jan. Feb.) 1933.

160 Robson J. M. and Taylor, H. Some Factors Affecting the Development of the Testis. *J. Physiol.* 75: 377 (Aug. 10) 1932.

161 Putnam T. J., Benedict E. B. and Teel H. M. Studies in Acromegaly. Experimental Canine Acromegaly Produced by Injection of Anterior Lobe Pituitary Extract. *Arch. Surg.* 18: 1708-1736 (April) 1929.

162 Houssay B. A., Biasotti A., Mazzocco P. and Sammartino R.

159 Pugsley L. I. cited by Collip^{152a}.

160 Hertz S. and Krane A. Parathyrotropic Action of the Anterior Pituitary. Histologic Evidence in the Rabbit. *Endocrinol.* 18: 350-360, 1934.

161 Hoffmann F. and Anselmino K. J. Ueber die Wirkung von Hypophysenvorderlappenextrakten auf den Blutkalkspiegel. *Klin. Wchnschr.* 13: 44-45 (Jan. 13) 1934.

162 Anselmino K. J., Hoffmann F. and Herold L. Ueber die parathyrotrope Wirkung von Hypophysenvorderlappenextrakten. *Klin. Wchnschr.* 13: 45 (Jan. 13) 1934.

163 Hertz S. and Albright F. The Demonstration of a Parathyrotropic Substance in Increased Amounts in the Urine of Patients with Hyperparathyroidism Due to Diffuse Hyperplasia of All Parathyroid Glands. *Proc. A. M. Physicians*, May 1934.

164 Houssay B. A. and Sammartino R. Les parathyroïdes dans l'insuffisance hypophysaire et pancréatique. *Compt. rend. Soc. de biol.* 114: 729-732, 1933.

observed in the parathyroids of normal dogs. Similarly, P. E. Smith¹⁵ reports parathyroid atrophy after hypophysectomy in the rat.

In our experience, the parathyroids of hypophysectomized rats and dogs show no consistent degenerative changes, even several months after removal of the pituitary. I must say, however, that we made no exact counts of the number of degenerated cells in the glands. The occasional finding of cell groups with pyknotic nuclei in the parathyroids is a physiologic occurrence both in the rat and in the dog and may easily be misleading.

It is of particular interest in this connection that the simultaneous removal of the hypophysis and the pancreas frequently leads to very marked degenerative changes in the parathyroids of the dog, according to Houssay and Biasotti.^{16b} Similar observations have been made in our laboratory. In some cases large areas of the parathyroids became completely necrotic.

EFFECT OF HYPOPHYSECTOMY ON BLOOD CALCIUM

While Gerschman^{17a} found the blood calcium to be normal in hypophysectomized dogs, Geesink and Koster¹⁷ found subnormal values. It should be noted, however, that the latter authors performed their experiments on very young animals, in which the calcium metabolism is always more easily disturbed. In amphibia the blood calcium decreasing effect of hypophysectomy seems to be much more marked than in the higher forms of vertebrates, as judged by the observations of Hogben and his co-workers^{17c} and of Shapiro and Zwarenstein.¹⁸

EFFECT OF HYPOPHYSEAL EXTRACTS ON THE PARATHYROID GLANDS

Hertz and Kranes¹⁹ have obtained a fraction, by acid extraction of beef pituitary, that leads to active mitotic cell division and vacuolization of the parathyroid cells in the rabbit. Almost at the same time, Anselmino, Hoffmann and Herold¹⁷² published their results, showing that parathyroid enlargement may be produced in the rat by the administration of a pituitary extract. They attributed this effect to a parathyrotropic hormone (parathyreotropes hormon).

EFFECT OF HYPOPHYSEAL EXTRACTS ON BLOOD CALCIUM

Teel and Watkins^{17c} reported a fall in the blood calcium of the dog after treatment with pituitary fractions containing the growth hormone. Similar

results have been obtained with hypophyseal extracts in rabbits by Hogben and Charles.¹⁸⁰ More recently, Hoffmann and Anselmino¹⁷¹ reported an increase in blood calcium after the administration of their parathyrotropic extract. They concluded that the effect is due to the stimulation of the parathyroids, since their extracts had no effect after parathyroidectomy.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
HOWARD A. CARTER, Secretary

GUIBOR STEREOSCOPIC CHARTS FOR ADULTS AND CHILDREN ACCEPTABLE

The Guibor Stereoscopic Charts, designed for diagnosis and treatment in eye-muscle training, are distributed by Belgard-Spero, Inc., Chicago.

The set consists of fourteen test charts for diagnosis of monocular and binocular vision, fusion amplitude and stereopsis,



The Guibor Stereoscopic Charts

of sixty-six split charts for training of fusion amplitude and stereopsis, and of a holder for the split charts. These charts are made for use with both literate and illiterate patients.

The charts may be used with the ordinary stereoscope which has a 5 prism diopter lens before each eye, the stereocampimeter, the correctescop, the kratometer, the synoptophore and similar instruments.

These charts provide a means for an intelligent and adequate orthoptic training technique, and objective and subjective examinations. The former is not discussed in the outline accompanying the charts, except to say that the motility, the angle gamma, and the angle of anomaly should be measured. The subjective examination, however, which the designer believes is very important, especially in the latent muscle anomalies, is discussed in detail.

These charts were tested in a clinic acceptable to the Council. The series were reported satisfactory, and the claims made for them conformed with the Official Rules of the Council. The Council on Physical Therapy voted therefore, to include the Guibor Stereoscopic Charts for Adults and Children in the Council's list of acceptable devices.

175 Smith P. E. Disabilities Caused by Hypophysectomy and Their Repair. Tuberal (Hypothalamic) Syndrome in the Rat. *J. A. M. A.* 88: 158-161 (Jan. 15) 1927.

176 Gerschman R. Calcium et phosphore du plasma sanguin des chiens hypophysoprives. *Compt. rend. Soc. de Biol.* 108: 494 (Oct. 30) 1931. Calcio y fósforo del plasma sanguíneo de los perros hipofisoprivos. *Rev. Soc. argent. de Biol.* 7: 302 (1931).

177 Hogben L., Charles E. and Slome D. Studies on the Pituitary VIII. The Relation of the Pituitary Gland to Calcium Metabolism and Ovarian Function in *Xenopus*. *J. Exper. Biol.* 8: 345-354 (Oct.) 1931. Charles E. Metabolic Changes Associated With Pigmentary Effector Activity and Pituitary Removal in *Xenopus Laevis*. Part II. Calcium and Magnesium Content of the Serum. *Proc. Roy. Soc. (Lond.) B.* 107: 504 (1931).

178 Shapiro H. A. and Zwarenstein H. Metabolic Changes Associated with Endocrine Activity and the Reproductive Cycle in *Xenopus Laevis*. I. Effects of Gonadectomy and Hypophysectomy on the Calcium Content of the Serum. *J. Exper. Biol.* 10: 186-195 (April) 1933.

179 Teel H. M. and Watkins O. Effect of Extracts Containing the Growth Principle of the Anterior Hypophysis on the Blood Chemistry of Dogs. *Am. J. Physiol.* 80: 662-685 (Aug.) 1929.

180 Hogben L. and Charles E. Studies on the Pituitary IX. Changes in Blood Calcium Following Injections of Anterior Lobe Extracts and Sexual Excitement in Female Rabbits. *J. Exper. Biol.* 9: 139-148 (April) 1932.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING
REPORTS
PAUL NICHOLAS LEECH, Secretary

CALOMELOL AND CALOMELOL OINTMENT OMITTED FROM N N R

Calomelol, manufactured by the Heyden Chemical Corporation, with its dosage form, Calomelol Ointment, was accepted by the Council for inclusion in New and Nonofficial Remedies in 1909.

As long ago as 1919 the efficacy of calomel ointments for treating syphilis was questioned (Cole, H N, and Littman, Sidney THE JOURNAL, Nov 8 1919, p 1409). This chemical evidence was opposed by Schamberg and some of his co-workers. At a later date, studies on the excretion of mercury following calomel ointments were made (Cole, H N DeWolf H F, Schreiber N E Sollmann, Torald and Van Cleve, Joseph Arch Dermat & Syph 27 1 [Jan] 1933), showing that after 50 per cent calomel ointments the urinary mercury excretion could be best compared to that which occurs after 5 per cent metallic mercury ointments. At the end of four weeks there was a median mercury excretion of but 0.09 mg. The low urinary mercury excretion was explained as due to the difficulty of rubbing the hard particles of mild mercurous chloride into the hair follicles. Calomel ointments are not suitable for treating syphilis.

In view of the foregoing, the Council in its reconsideration of the product at the expiration of the last acceptance period in 1934 voted to omit these products from New and Nonofficial Remedies unless the firm should be able to supply evidence to justify their continued inclusion. The firm replied that it was not in position to supply new and convincing evidence as to the efficacy of Calomelol.

The Council therefore voted to omit Calomelol and its accepted dosage form from New and Nonofficial Remedies.

SHADOCOL NOT ACCEPTABLE FOR N N R

"Shadocol" has been promoted extensively for oral administration in cholecystography by Davies, Rose and Co Ltd Boston. No formula is given on the package nor has any been found in that advertising which forms the basis of this report. However, the labels and advertising do divulge the fact that the preparation contains tetraiodophenolphthalein sodium, the substance for which the Council coined the shorter nonproprietary name tetiothalein sodium. The Connecticut Agricultural Experiment Station in Bulletin 363 (July 1934) reports the following composition (calculated from its analysis):

	per cent
Moisture	16
Sodium tetraiodophenolphthalein	16.7
Lactose	74.2
Anhydrous citric acid	5.3
Undetermined	2.2

It is claimed that this unoriginal mixture is "An improved form of orally administering sodium tetraiodophenolphthalein that 'It is an original product,' that it is 'the result of extensive research' and that it is 'Imitated by others but equaled by none'."

No evidence is presented to substantiate the view that dilution of the essential substance with milk sugar and citric acid gives 'An improved form' of tetiothalein sodium for oral administration, nor is it evident how the product resulting from such dilution can justly be said to represent the result of extensive research.

To avoid the confusion that is caused by the application of different names to the same substance the Council does not recognize proprietary names unless they are applied by the discoverer of an article or by the one who discovers its therapeutic use, or with his consent. When the marketing of a product becomes open to general competition, the Council attempts to coin a convenient title for it adopts this as the

N N R name, and then accepts the marketed brands only if they are offered under the N N R. name or the descriptive chemical name. In the case of tetraiodophenolphthalein sodium the Council adopted the contracted name tetiothalein sodium and adopted tests and standards for the control of products admitted to New and Nonofficial Remedies.

Davies, Rose and Co, Ltd, is not the discoverer of tetraiodophenolphthalein sodium and was not the first firm to make it available for therapeutic use. The marketing of this chemical in admixture with milk sugar and citric acid may not be claimed as a "discovery," nor of such fundamental importance as to justify the application of a special name. The Council is unable to recognize the name "Shadocol."

The addition of lactose and citric acid represents an unessential modification which is probably useless except as a commonplace flavor. It is fallacious to consider a modification of this sort as representing "an original product" the result of extensive research, and to claim that it is unequaled by other preparations.

The Council declared Shadocol not acceptable for New and Nonofficial Remedies because it is an unoriginal and unnecessarily complex mixture, marketed with exaggerated claims, under a proprietary, noninformative name, which is also misleading because it implies that the preparation is useful for casting x-ray shadows in general, when in fact the use of its principal ingredient, tetiothalein sodium, is restricted to the biliary tract.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING
REPORTS
RAYMOND HERTWIG Secretary

ACCEPTANCE WITHDRAWN RALSTON WHEAT CEREAL

Manufacturer—Ralston Purina Company St Louis

Description—Essentially whole wheat with coarsest bran removed and added wheat embryo. The wheat embryo content is approximately twice that of whole wheat.

Manufacture, Analysis, and Vitamins—See announcement, THE JOURNAL, July 9, 1932, page 135.

Isolation of Agreement of Acceptance—The company signed an agreement on Feb 2, 1934, to observe the rule of the Committee on Foods to furnish regularly copy of all advertising for review. This rule is essential in order that the Committee may be assured that advertising for accepted foods is maintained in accord with its requirements as published in the Committee's Rules and Regulations and General Decisions. The submission of advertising in this manner involves little expense and does not interfere with the prompt release of advertising. There is no apparent reason why a company using truthful advertising should object to this requirement, and the Ralston Purina Company raised no objection to the rule in order that acceptance of its products might continue. Subsequent to the agreement however, the advertising was not furnished, although the violation of the Committee rule and of the signed agreement was called to the attention of the company.

Discussion of Advertising—Nonsubmitted advertising for Ralston Wheat Cereal in addition, was found to conflict with Committee requirements for good advertising. Some typical false or misleading statements and claims are quoted.

The children are so well since you started them eating Ralston.

It's wonderful to have them glad to eat the cereal child authorities prefer—the one I know is best for them.

In making boys and girls want to eat Ralston Wheat Cereal regularly he has had a splendid influence upon the health and well being of millions of young Americans.

Turning Hero Worship into Health To be like Tom Mix a million more boys and girls began to eat Ralston Wheat Cereal last year. Now they eat this double-rich hot cereal regularly.

Tom Mix has made children everywhere anxious to eat the hot whole wheat cereal which mothers, doctors, dietitians and teachers prefer for growing boys and girls! NOW grateful mothers by the thousands write to say, 'It's wonderful what Ralston has done for my children! RALSTON double rich in vitamin B Does More than Any Ordinary Cereal to Build Strong Bodies.'

Keep Appetites Eager Make Cheeks Rosy Provide Abundant Energy Build Resistance to Colds

and Disease

Remember that—Mother! It's the reason why doctors dietitians and school teachers in such overwhelming majority prefer this type of cereal—

Ralston Tastes So Good! You'll be delighted too and genuinely amazed to watch the difference in your child when he has the full value of finest whole wheat to build his body—the double richness in vitamin B to step up his appetite until he's really hungry for the nourishing foods he needs.

Every bowlful of Ralston gives your child the full benefit of all the abundant body-building energy producing qualities which make wheat our most important cereal food!

And now Ralston does even more for your child! Now it also provides a double quantity of vitamin B—which science tells us has exactly the same effect as sparking western air upon appetites and health. Vitamin B keeps appetites normally eager—makes children want to eat wholesome, necessary foods more satisfying a richer source of quick energy.

Do you wonder that children improve when they eat 'double rich' Ralston regularly? Because cereal is one of the most important foods for growing children an impartial nationwide survey has just been conducted. The sole purpose of the survey was to determine what type of cereal is preferred by authorities on child care. Read the startling results which reveal that 84 out of 100 Child Specialists 94 out of 100 Hospital Dietitians 92 out of 100 School Teachers prefer a hot whole wheat cereal enriched with extra vitamin B.

Doesn't this overwhelming preference answer any questions you may have about cereals? It proves that double-rich Ralston Wheat Cereal can do far more for your child than any ordinary cereal. How Ralston is Building Better Health and High Ideals among the children of America.

Ralston Wheat Cereal differs from whole wheat in containing less bran but more embryo, it is a good source of food-energy, vitamin B and iron, and a fair source of indigestible bulk. These contributions to the diet warrant emphasis and interpretation in advertising. Instead, the advertising misrepresents the food by presenting it as a special health-food for making children "well" or like Tom Mix (an athletic stalwart hero of the screen) for having "a splendid influence upon the health and well-being of millions of young Americans and about which mothers exclaim 'it's wonderful what Ralston has done for [our] children' for 'build[ing] strong bodies more than any ordinary cereal' for 'keep[ing] appetites eager mak[ing] cheeks rosy, provid[ing] abundant energy build[ing] resistance to colds and disease. Neither Ralston itself any other single food nor the entire well balanced diet possesses these potencies. Ralston cannot do these things claimed for it.

It is alleged that child authorities, doctors dietitians teachers "prefer Ralston," "prefer this cereal for growing boys and girls" or "in such overwhelming majority prefer this type of cereal." There are no authentic data showing that these professions prefer this food. The vagueness of such claims permits false interpretations that the product has been officially selected by the professions as superior to other cereals.

It is alleged Ralston is "double-rich," another type of claim which is misleading because of vagueness. The manner in which it is 'double-rich' should be explicitly stated. The vitamin B content will not in any general sense step up the appetite, "have the same effect as sparking western air upon appetites and health," 'keep appetites normally eager or make children want to eat wholesome necessary foods.' It has not been shown that 'Ralston can do far more for your child than any ordinary cereal. Lag in appetite may be due to many other causes than just insufficiency of vitamin B in the diet.

The advertising is false and misleading a discredit to the product and to the company. Advertising standards in general are disrupted and lowered by advertising of this character. Ralston Wheat Cereal will therefore no longer be listed among the products accepted by the Committee on Foods.

ACCEPTANCE WITHDRAWN

WHEATENA

Manufacturer—The Wheatena Corporation, Wheatonville, Rahway N J

Description—Toasted granular wheat cereal composed essentially of the endosperm, the major portion of the bran and the embryo of red winter wheat. See announcement of acceptance, THE JOURNAL, May 2, 1931 page 1478.

Acceptance Withdrawn—The manufacturer is not willing to furnish the Committee with copy of all pieces of new advertising in accordance with the requirement of its Rules and Regulations. Regular submission of advertising is necessary to assure the Committee that its requirements are being fulfilled. There is no apparent justifiable reason why the manufacturer of an accepted food who is using truthful and proper advertising should not be willing to furnish copy of all pieces of

advertising, involving only nominal expense and time, for review by the Committee.

Since the manufacturer of this accepted food is not willing to comply with this simple requirement to assure that the advertising is being maintained acceptable, acceptance has been withdrawn.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION. **RAYMOND HERTWIG** Secretary



IRRADIATED VITAMIN D PASTEURIZED MILK

Distributors—

Beatrice Creamery Company, Denver (Meadow-Gold)
Beatrice-Meadow Gold Dairies, Inc. (Champaign Sanitary Milk Division) Champaign, Ill (Meadow-Gold)
Dixie Dairy Company Gary, Ind
Grisham Ice Cream Company, Corpus Christi, Texas
W D F Hayden Dairy Company, Dover, N H
Hutt's Dairy, Buffalo Tonawanda, North Tonawanda and Amhurst, N Y (Bottler—Wm Weckerle & Sons, Buffalo)
Iowana Farms Milk Company, Davenport, Iowa
Kleinheinz Dairy Company, Wausau, Wis
Modern Dairy Company, La Crosse, Wis
Prairie View Dairy Company, East Chicago, Ind
Richmond Dairy Company, Richmond, Va
The Supreme Dairy Company, Denver (Superb Quality and Supreme Quality Guernsey)
Thompson's Dairy Washington, D C
Urbana Pure Milk Co, Urbana, Ill
Virginia Dairy Company, Richmond, Va

Description—Bottled pasteurized vitamin D milk irradiated with ultraviolet rays.

Preparation—The milk complies with legal requirements and is pasteurized by the standard holding method. For description of irradiation, see THE JOURNAL, Oct 7, 1933, page 1155.

Vitamins—Clinical investigation shows this milk to be a reliable antirachitic agent if the proper amount is used. Contains 135 U S P X (Revised, 1934) vitamin D units per quart.

Claims of Distributors—Irradiated antirachitic pasteurized milk having otherwise the flavor and food values of usual pasteurized milk.

WARRANTY SIEVED CARROTS

Manufacturer—The Nielsen Corporation Ltd, Oakland, Calif

Description—Sieved carrots prepared by efficient methods for retention in high degree of the natural mineral and vitamin values. No added sugar or salt.

Manufacture—The carrots as received from the field are sorted trimmed, thoroughly soaked, washed with a brush washer, and subsequently processed and canned by essentially the same procedure as described for Warranty Sieved Spinach (THE JOURNAL, Feb 2, 1935, p 399).

Analysis (submitted by manufacturer) —

	per cent
Moisture	88.9
Total solids	11.1
Ash	0.8
Sodium chloride	0.06
Fat (ether extract)	0.1
Protein (N x 6.25)	1.0
Reducing sugars as invert sugar	3.3
Sucrose	
Crude fiber	0.7
Carbohydrates other than crude fiber (by difference)	8.5

Calories—0.4 per gram 11 per ounce.

Vitamins—The method of preparation and processing insures the retention in high degree of the natural vitamin values.

Claims of Manufacturer—Specially intended for infants, children and convalescents, and for special smooth diets. Only warming is required for serving.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MARCH 16, 1935

COMPARISON OF MATERNAL DEATHS

Statistical inquiries perhaps are frequently viewed with more respect than may actually be warranted. When applied to medical subjects, statistics have the same significance as the x-rays—they are a means to an end, not an end in themselves. Thus the now numerous statistical studies dealing with maternal mortality must be analyzed as a laboratory test would be rather than serving merely as a basis for recriminations. The lesson of essential importance is not that the maternal mortality rate is higher in one country or district than another but that certain factors influence the death rate from this cause and that some of them may be favorably affected by the knowledge gained from statistical analysis.

In order to serve a useful purpose therefore statistics, like laboratory tests, must be both accurate and understood. The factors influencing the accuracy of vital statistics are twofold. The first of these is the clinical ground work. Without exact and uniform clinical diagnoses, statistical analysis is without value. This factor is well known, and exhaustive efforts to establish a firm clinical foundation¹ have been made in most studies. The other important element is the manipulation and interpretation of the statistical data obtained. This work is highly technical and requires special training in biometrical methods. Even when so applied, the modifying factors are so numerous and complicated that the apparent conclusions may not be real in fact.

One of the criticisms that have been applied to maternal mortality statistics is that the methods of assigning the cause of deaths associated with pregnancy and childbirth are different in different countries. The statistical comparability would naturally be greatly impaired by any differences of this character. This problem of classification of maternal deaths, however,

has been recently investigated.² In order to obtain data that would throw light on the effect of differences in assignment procedure on the comparability of maternal mortality rates, it was planned to send to the bureaus of vital statistics in the principal foreign countries the pertinent information from 1,073 United States death certificates for 1927 on which pregnancy or childbirth was mentioned. It was to be requested that each office mark each death as puerperal or nonpuerperal according to its own method of assignment of cause. Actually, because of duplications, 477 certificates, selected to include at least one death of every type in the sample, were transmitted to twenty-four foreign countries. The information from these certificates, set up in list form with each line representing one death, consisted of the case number, age of the mother, primary and contributory cause of death, and performance or nonperformance of an operation and of a necropsy. It was asked that the first of these columns be checked if the death would be classed as puerperal and the second if it would be classed as nonpuerperal by the statistical bureau in charge of coding cause of death in each country. No information was given with regard to the cause assigned in the United States. On the return of the lists from sixteen countries the 596 deaths in the original group not sent abroad were reclassified as puerperal or nonpuerperal in accordance with the assignments made by the foreign countries for those which had been transmitted. The groups of deaths were then thrown together and a tabulation of the 1,073 certificates was prepared showing the assignment as made by the United States Bureau of Census and as puerperal or nonpuerperal by each foreign bureau that complied with the request. The proportions assigned to puerperal and nonpuerperal causes in the United States were not significantly different from those for Australia, the Netherlands, New Zealand and Scotland. Italy, Canada, Chile, Czechoslovakia, Northern Ireland, France, Irish Free State, Sweden, Estonia, England and Wales, and Norway assigned significantly more to nonpuerperal and significantly less to puerperal causes than the United States. Denmark was the only country that assigned more of the deaths to puerperal causes than the United States.

The rates for the United States were reclassified on the same basis of assignment of cause as that made in each of the foreign countries. When this was done and a comparison made, the United States rate was still in excess of the official rates of the respective countries with one exception (Scotland). After adjustment of assignment procedures the United States rate exceeded the official rates of five countries (Norway, Sweden, France, Italy and the Netherlands) by at least 100 per cent. The best position which the United

¹ New York Academy of Medicine. Hooker, R. S., Director. Maternal Mortality in New York City. New York, the Commonwealth Fund, 1933. Philadelphia County Medical Society. Williams, P. F., Chairman. Maternal Mortality in Philadelphia. Philadelphia County Medical Society, 1934.

² Tandy, Elizabeth C. Comparability of Maternal Mortality Rates in the United States and Certain Foreign Countries, Children's Bureau U. S. Department of Labor Publication 229, 1935.

States could have achieved was fifth from the highest when its rate was determined under the system of Norway and of England and Wales.

As pointed out in the report, the number of death certificates in the group sent abroad was too small to warrant final conclusions regarding the assignment procedure of the countries from which returns were received. The study does indicate, however, an effort to refine and make comparable the maternal mortality statistics of different countries. As pointed out previously, however, only a few of the factors involved are corrected by this comparison.

THE GAPS IN SICKNESS INSURANCE PROPAGANDA

The writings on sickness insurance that have appeared in the United States during the last twenty years are marked by a monotonous sameness. While they purport to be based on scientific analyses and accurate descriptions of existing systems, the sources from which they draw their information lead to this impression of similitude. Practically all the references concern the publications of insurance carriers or reports by government employees in nations having sickness insurance or to other writers who have used these sources. In every country, at the same time, there has been an almost equally extensive literature, consisting of books and pamphlets by physicians practicing under insurance. The medical journals in these countries contain frequent discussions of the workings of sickness insurance, yet it is hard to find reference to any of these medical writings in any of the books or articles published by propagandists in the United States. They seem to avoid studiously any references to the literature of the opposition.

Advocates of insurance give but slight mention to the characteristics of the medical service furnished under insurance, yet the expressed objective of service systems of insurance is to provide a medical service for the insured.

Discussions of movements in morbidity rates, under insurance, are avoided. Yet again sickness insurance is offered primarily as a means of reducing the suffering from illness. The question is seldom raised in such writings as to whether the actual effect of insurance is to reduce the amount of illness and the consequent suffering and rate of mortality.

A strange silence prevails on the relation of insurance to preventive medicine, although there is much theorizing on the possibility of preventive care under insurance. When the actual works of insurance systems are being discussed, however, there is complete absence of data indicating the extent to which preventive medicine is practiced. For example, advocates of sickness insurance do not discuss the extent of immunization against diphtheria under insurance or the mortality rate from this disease as compared with non-

insurance countries. Neither do they speak of the number of periodic health examinations under insurance. They are, in fact, ominously silent on comparisons of the percentage of tuberculous, cancerous or diabetic diseases that are detected at an early stage as contrasted with similar figures in the United States in private practice.

It is useless to search the propaganda of sickness insurance for information on the progress of medical science, medical education and graduate training under insurance systems, nor will any explanation be found of why the nations that led the world in these fields at the time insurance was introduced have been outdistanced, in little more than a generation, by nations in which private practice has been retained.

Although the most important function of medical care and medical science is to extend the period of human life, no exponent of sickness insurance has ever compiled, or at least published any comparative mortality tables showing the relation of insurance to the duration of human life.

Moreover, the propagandists overlook the fact that, in nearly every country with a system of sickness insurance, numerous critics demand a transformation. In Germany, the home of the oldest sickness insurance system, a movement has been growing for many years to abolish the insurance system in favor of some compulsory saving.

In reciting the history of sickness insurance the propagandists are inclined to suppress the fact that it was introduced in most instances against the opposition of the workers who were to receive the services and at least the sharp criticism of the physicians who were to give the service. In some sections of Germany, England and France, workers' opposition led to almost violent resistance.

Today there are numerous extensive experiments in forms of sickness insurance in the United States. Although the propagandists of sickness insurance claim credit for the introduction of workmen's compensation, which now provides an insurance medical service as large as that of many European systems, little or no reference is made by sickness insurance advocates to the character of the medical service supplied under compensation laws. They seldom quote from legislative and other investigations of that service. They are strangely still on the operations of the "compensation clinics" in New York City or the conditions that have arisen in such states as Washington and West Virginia. They never mention the fact that, wherever medical service under compensation is satisfactory, this result is due to the strenuous efforts of the state medical societies.

These are not mere oversights or casual omissions. They are vital points in the discussion of sickness insurance. Some propagandists avoid them, and thus the propaganda misleads and misinforms the reader.

THE PHYSIOLOGY OF THE PHOSPHOLIPIDS

The fact that the phospholipids are constituents of all living material has given rise to the belief that these substances play some fundamental part in the structural make up and in the vital activity of the cell. Several theories of the physiologic function of the phospholipids have been proposed, however, modern students¹ of the problem appear to endorse only three of these, the metabolic theory, the oxygen transport theory and the structural theory. According to the metabolic theory the phospholipids, particularly the lecithins, are important intermediary products in the metabolism of fats and fatty acids, serving as a means for the transport and oxidation of otherwise water-insoluble, stable fatty acids. Neutral fat from the various depots or from the gastro-intestinal tract is carried to the liver, where desaturation of a portion of the fatty acids occurs and phospholipids are formed. The phospholipids are then transported by the blood to the tissues, where the fatty acids are released and oxidized. Not all of the available evidence, however, supports such a hypothesis. The striking constancy of the phospholipid content of certain organs, even in the face of sudden and extreme changes in metabolism, and the fact that each organ of the body possesses a characteristic phospholipid content which has no apparent relationship to the intensity of fat metabolism, are examples of well established facts that do not fall in line with the metabolic theory. The view is held by some investigators that the phospholipids may be concerned in the transport of oxygen by virtue of the double bond linkages within the molecule, which may act as oxygen accepters as well as potential hydrogen accepters. Although there is some *in vitro* evidence supporting this hypothesis, such a function of phospholipids has not been demonstrated under physiologic conditions. The third hypothesis, the structural theory, proposes that the phospholipids, because of peculiar physicochemical properties, are important elements in the constitution of protoplasm and in the construction of the membrane enveloping the cell. Experimental evidence in support of this theory is still scanty. Thus, at present definite conclusions regarding the physiologic function of the phospholipids cannot be drawn.

Apparently, phospholipids are readily synthesized by the animal organism. They are present in the bodies of rats, for example, which have been maintained on diets containing only neutral fat as the source of lipid. Also the eggs of ducks or hens fed a ration deficient in phospholipids are known to contain the usual amounts of these substances.

The phospholipid content of different organs is rather characteristic of the organ, within limits, of the species concerned. Brain and liver contain the largest amount, the pancreas, kidneys and muscle containing

somewhat less. According to a recent report² the phospholipid content of various muscles varies directly with activity and resistance to fatigue. Rabbit heart muscle, for example, contains nearly four times as much phospholipid as the gastrocnemius muscle.

Physiologic factors such as diet, activity, age and certain hormones are known to affect the phospholipid content of tissues, although in general the variations are not large. Fasting appears to decrease muscle phospholipid, to increase liver phospholipid and to have no effect on brain phospholipid. Diets containing relatively large amounts of fat or carbohydrate increase the phospholipid content of the liver and of the blood. Physiologic activity itself affects the phospholipid content of the tissue concerned, an increase in activity eliciting an increase in this substance. The phospholipid content of tissues, particularly of the blood, may show decided changes in certain diseases. Increased blood phospholipid is encountered in diabetes, nephrosis, chronic hemorrhage, Niemann-Pick's disease, epilepsy, hypertension, syphilis, hypothyroidism, liver injury by phosphorus and by chloroform, hydrophobia and B-avitaminosis. Decreases in the phospholipid content of the blood are usually found in infectious fevers, cancer, epilepsy and pernicious anemia. In contrast to the content in the blood in diabetes, the phospholipid content of portions of the femoral nerves of diabetic patients, according to recent analyses,³ is much lower than that of similar specimens from normal subjects. Furthermore, as the clinical signs of neuropathy progressed the degree of lipid deficiency increased. The relation appears to be quite the opposite in cases of cancer, the blood phospholipid being less than normal whereas the phospholipid content of the malignant tumor is high. The elucidation of the significance of these interesting observations may well yield information of value not only in determining the nature of the changes occurring in these diseases but also in the ultimate solution of the important question of the physiologic function of the phospholipids.

Current Comment

COD LIVER OIL

Cod liver oil has long held a prominent place among therapeutic agents. Despite studies that have revealed the enormously greater antirachitic potency of viosterol as gaged by the conventional bio-assay methods, cod liver oil is still highly regarded. There is evidence that, based on units of vitamin D as determined by assay on rats, cod liver oil is superior to viosterol in the cure and prevention of rickets in human infants. There has accumulated a considerable mass of experimental proof

² Bloor W. R. and Snider R. H. Phospholipid Content and Activity in Muscle. *J. Biol. Chem.* **107**: 459 (Nov.) 1934.

³ Jordan W. R., Randall L. O. and Bloor W. R. Neuropathy in Diabetes Mellitus. Lipid Constituents of the Nerves Correlated with Clinical Data. *Arch. Int. Med.* **55**: 26 (Jan.) 1935.

¹ Sinclair R. G. The Physiology of the Phospholipids. *Physiol. Rev.* **14**: 351 (July) 1934.

that leg weakness in chickens is far more susceptible to cure and prevention by cod liver oil than by viosterol in oil in amounts of each equally efficacious in the cure of rickets in rats. Despite the fact that nearly all fish oils contain vitamin D, perhaps the most striking support for the peculiar efficacy of cod liver oil has been recently brought forward by Bills, Massengale and Imboden,¹ who found that blue fin tuna liver oil with 40 000 units of vitamin D per gram was only one sixth as effective when assayed with chicks as was cod liver oil with only 100 units of vitamin D per gram. These and other observations have suggested that there are several forms of vitamin D. However, apart from the vitamin content, cod liver oil has other chemical attributes, as has been emphasized by Holmes and Remington.² These investigators have shown that American cod liver oil contains more iodine than do most ordinary foods (calculated to the dry basis). The content of iodine varies with the place where the fish are caught, the average of the values being nearly 9 parts per million. It is further pointed out that, accepting the daily iodine requirement for man as between 50 and 100 micrograms, 10 cc of high grade medicinal cod liver oil would, if thoroughly assimilated, contribute to the daily iodine requirement. From this analysis it is not to be concluded that cod liver oil should be administered for its iodine content.

CONTINUOUS CAMPAIGN FOR IMMUNIZATION AGAINST DIPHTHERIA NECESSARY

A movement of interest to physicians will be announced during the month of April by the May Day Committee of the State and Provincial Health Authorities of North America, together with the American Child Health Association, as the May Day-Child Health Day Project for 1935. A determined effort will be launched to promote diphtheria immunization. According to notifications sent to national health organizations and to the press, the objective was chosen because there has been no reduction since 1930 in the number of deaths from diphtheria throughout the United States. Some states have accomplished a notable reduction in the number of deaths, therefore it must follow that others have suffered increases. This means that diphtheria immunization in the United States has not been uniformly and consistently applied. The committee announces its belief that immunization should be the work of the private physician. State health officers will be asked to send a communication to each physician in the state urging (1) that he remind his patients who have children under school age of the need for immunization, (2) that he ask his patients to bring their children to be immunized, and (3) that he make it a routine of his practice in the future to immunize during the first year of life all babies under his care. The medical profession, which has never been enthusiastic about sporadic health drives, may well support this effort, which uses May Day merely as a taking off

place and a means of attracting the attention of the public. The objective of the plan is to immunize all children between the ages of 6 months and 6 years and to maintain this as a continuing service. It is hoped that cooperation will be developed in the states between the departments of public health and the medical profession, since both agencies are necessary for the success of any community plan for diphtheria control. The Board of Trustees of the American Medical Association, on request of the American Child Health Association, urges physicians to assist and cooperate in this plan.

Medical Economics

MEDICAL CARE OF THE INDIGENT IN THE DISTRICT OF COLUMBIA

The Medical Society of the District of Columbia, June 2, 1934, adopted a set of principles indicating policies to be pursued in any plan for providing medical care for the indigent sick. This statement has been forwarded to all agencies concerned with the furnishing of such medical care and is to form the basis of future actions by that society.

As examples of previous and present cooperation in general health activities, the statement instances the work of the medical society in health education, tuberculosis care, restricting the practice of medicine by hospitals, and guiding the movement for group hospitalization so as to safeguard against any harmful features. At the present time the society is studying, through appropriate committees, methods of setting up an agency to secure medical service by affording an opportunity to budget the cost of medical care. It is also working on a plan to safeguard the right of an employee under workmen's compensation to be treated by a physician of his own choice.

Those needing medical care may be divided into three groups.

(a) Those able to pay for such care out of their own resources.

(b) Those who might be able to pay for care themselves if means should be provided to spread the payment over a sufficient length of time.

(c) The group whose members are without resources to meet the needs of medical care.

Special provisions are required for only the last two groups. The first step is to insure that funds available are used economically and appropriately for the benefit of the truly indigent. The executive committee of the Community Chest has established a central admitting bureau, which is endorsed by the medical society as an effective and forward step in preventing the abuse of medical charity.

In considering the problem of the indigent, it is noted that the physicians of the United States contribute to the sick poor services valued at a million dollars daily. The present government contribution for this purpose is largely represented by ten physicians to the poor at a salary of \$1 a day, less 10 per cent. It is obvious that such a plan leaves medical care of the indigent almost entirely to the charity of the local profession.

This is a situation in which any agency planning medical care for the indigent is preparing to give away medical services which it does not possess and for which it does not, and apparently cannot, pay. Until such time as such agencies are in a position to pay for the services of physicians at mutually agreeable rates the medical profession is entitled to determine the conditions under which it is willing to furnish medical care to the indigent.

The medical society, therefore, as one of the representative organizations of the local profession, by the adoption of this resolution and statement gives notice that any commitments for the disposal of free medical services arrived at by individuals, groups, committees or any agencies, official or unofficial, to whose deliberations it has not been a party, are without binding effect upon it or its members and, in any event, remain entirely subject to its approval or disapproval."

¹ Bills, C. E., Massengale, O. N. and Imboden. *Science* 80: 596 (Dec. 21) 1934.
² Holmes, A. D. and Remington, R. E. *Iodine Content of American Cod Liver Oil* *Am J Dis Child* 49: 94 (Jan.) 1935.

The only object of the medical society in making this statement is to promote an accord between all the agencies responsible for furnishing medical care to the indigent and to secure cooperation and understanding rather than friction and discord in order that no deserving individual in need of care shall go without it

Association News

MEDICAL BROADCASTS Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4 30 to 4 45 central standard time. The next three broadcasts will be delivered by Dr W W Bauer. The titles will be as follows:

March 21 Rickets
March 28 This Is No April Fool
April 4 Negro Health Week.

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4 15 central standard time. The next three broadcasts will be as follows:

March 19 White Collar Hazards W W Bauer M D
March 26 Tonics and Sedatives Morris Fishbein M D
April 2 Sickness Insurance R G Leland M D

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Bill Introduced—S 167, to amend the medical practice act, proposes (1) to eliminate the provision that of the members of the board of medical examiners two shall be allopaths, one homeopath, one eclectic and one osteopath by requiring four members of the board to be graduates of schools recognized by the American Association of Medical Colleges and one member to be a graduate of a recognized school of osteopathy (2) to provide staggered six year terms for members of the board (3) to make it a felony for any one to practice or attempt to practice without being licensed and (4) to require licensed physicians and osteopaths to register annually on or before the first day of January with the secretary of the board and at that time to pay a fee of \$3.

ARKANSAS

Bills Introduced—S 442 to amend the medical practice act, proposes to authorize the boards of medical examiners to license without examination applicants who are diplomates of the National Board of Medical Examiners. H 486 to amend the osteopathic practice act, proposes to prohibit osteopaths from performing major surgical operations but to permit them to practice osteopathy in all the subjects or branches on which they were examined when they applied for licenses. The bill further proposes to permit osteopaths to make and sign birth certificates, death certificates and/or all other certificates pertaining to public health.

COLORADO

Personal—Dr Charles J Kaufman formerly of New York, was recently appointed medical director of the National Jewish Hospital, Denver and assistant professor of medicine at the University of Colorado School of Medicine.

Society News—The Boulder County Medical Society was addressed in Boulder February 14 by Drs Robert K. Dixon and Louis S. Faust, Denver on "Diagnosis and Management of Upper Abdominal Complaints" and "Diarrhea in Adults" respectively—A symposium on cancer of the gastro-intestinal

tract was presented before the Northeast Colorado Medical Society in Sterling, January 10, by Drs Kenneth D A Allen, Constantine F Kemper, George B Kent and George Z Williams, all members of the cancer team of the state medical society—Dr William Senger, Pueblo, addressed the Pueblo County Medical Society, January 22, on "Tumors of the Breast."

Bills Passed—The following bills have passed the house and the senate. H 138, proposing to repeal the laws regulating the sale, distribution or possession of narcotic drugs and to enact what appears to be the uniform narcotic drug act and H 557, proposing to prohibit the retail sale or distribution of barbitol or other hypnotic or somnifacient drugs except on the prescription of a duly licensed physician, dentist or veterinarian. S 228 has passed the senate proposing to make it the duty of any physician, nurse or midwife, assisting in or in charge of the birth of any infant or having its care after birth to treat its eyes as soon as possible after birth with a prophylaxis approved by the state board of health.

CONNECTICUT

Dr Greenburg Appointed Health Officer—Dr Leonard Greenburg, acting health officer of New Haven has been placed in full charge of the department of health. He succeeds Dr John L. Rice, who left New Haven to become health officer of New York City. Dr Greenburg, assistant clinical professor of public health at Yale University School of Medicine succeeded Dr Herbert R. Edwards as acting health officer when the latter resigned to direct the tuberculosis program in New York under Dr Rice. In 1923 Dr Greenburg received the degree of doctor of philosophy from Yale University and in 1930 the degree of doctor of medicine. He was a member of the staff of the U S Public Health Service from 1918 to 1922.

DELAWARE

Bill Introduced—S 155 proposes to prohibit any child from attending either a public or a private school unless it has been successfully vaccinated against smallpox or produces a certificate from a practicing physician that vaccination is inadvisable by reason of some physical disability.

Society News—Dr Joseph B. Wolfe, associate professor in medicine and director of the cardiovascular department, Temple University School of Medicine Philadelphia, addressed the New Castle County Medical Society February 19 Wilmington on "New Concepts in the Treatment of Angina Pectoris and Intermittent Claudication."

DISTRICT OF COLUMBIA

Medical Bills in Congress—S 2153, introduced by Senator Copeland New York, proposes to provide for the prevention of blindness in infants born in the District of Columbia.

Graduate Clinic—The third annual graduate clinic of George Washington University School of Medicine Washington was held, February 23. Sessions were held at the Garfield Memorial Hospital and the school of medicine. The following subjects were presented:

Uterine Cervical Stump Pathology Dr Henry L. Darner associate in obstetrics and gynecology.

Head Injuries Dr Harry H. Kerr clinical professor of surgery.

Some Unusual Nephropathies Dr Henry C. Macatee clinical professor of pediatrics.

Cancer of the Prostate Dr Francis R. Hagner professor of urology.

Management of Unusual Fractures of the Femur Dr Custis L. Hall assistant professor of surgery.

Cystoscopic Demonstrations Drs Homer G. Fuller clinical professor of urology, Alan J. Cheney associate in urology and Charles P. Howze associate in urology.

The Routine Treatment of Gonorrhea in Women (The Nonantiseptic Method) Dr Bernard Notes clinical instructor in obstetrics and gynecology.

Methods of Immunization Against Poliomyelitis Dr Earl B. McKinley dean of the medical school.

Surgical Edema Dr Charles S. White professor of surgery.

Endocrinology in the Treatment of Functional Disorders of the Female Dr Jacob Kotz clinical professor of obstetrics and gynecology.

In the afternoon the guests inspected the laboratories and demonstrations at the school of medicine.

Society News—At a joint meeting of the ophthalmologic and otolaryngologic sections of the Baltimore City Medical Society with the Medical Society of the District of Columbia, February 15 in Washington speakers were Drs William H. Wilmer on "Pits or Holes in the Optic Disk," Walter A. Wells "Something About the External Nose," Oscar Wilkins "Treatment of Ocular Injuries" and Frederick C. Schreiber "Septic Meningitis." Dr Douglas Quick New York addressed the district society, March 13, on "Treatment of Cancer of the Breast." The George M. Kober Medical Society was addressed January 21, by Dr Russell J. Fields on "Incidence of Syphilis in Washington" and Otto

Wendt, D.D.S., "Retention of Teeth Following Fracture"
—Speakers before the Osler Medical Society, January 21, were Drs Eugene Clarence Rice Jr., on "Meningitis in Children," and James M Tadeley, "Urethral Calculus"

FLORIDA

Personal—Dr William J Lancaster, Tampa has been appointed superintendent and medical director of the Atlantic Coast Line Railroad. He took over his new position, January 1 with headquarters at Wilmington, N. C. The Hillsborough County Medical Society gave a dinner in honor of Dr Lancaster, January 3, and presented him with an engraved watch.—Dr and Mrs Thomas S Anderson Live Oak, celebrated their golden wedding anniversary, Dec. 17, 1934.—Louva G Lennert, chief engineer of the state board of health since 1932 has been named assistant state director of malaria control and sanitation. Mr Lennert has served with the board of health of Texas and California, the Rockefeller Foundation, and the public health service in Texas and Louisiana, newspapers reported

GEORGIA

Society News—Dr Jack C Norris, Atlanta, presented a paper on 'The Pathology of Agranulocytosis—A Survey of Seventy-Three Cases' before the Fulton County Medical Society, February 7. Dr Emmett D Highsmith, Atlanta presented a paper on "The Possibilities of Plastic Surgery," before the society, February 21.—The Fulton County Medical Relief Association recently changed its name to the Atlanta Medical Service Bureau.—Speakers before the Fourth District Medical Society in Griffin February 6, included Drs Charles E Irwin, Warm Springs, on 'After Care of Polomyelitis', George L. Walker, 'Practical Management of Congestive Heart Failure', James E Paullin, 'Medical Economics,' and Allen H Bunce, 'Transfusion in the Treatment of Infectious Arthritis,' all from Atlanta.—Dr Job C Patterson, Cuthbert, read a paper on 'Duodenal Stasis' before the Randolph County Medical Society in Cuthbert February 7.—Dr Hyland F Bent, Midville discussed 'Uterine Hemorrhage at the Menopause' before the Burke-Jenkins-Screven Counties Medical Society at Millen, February 7.

Bills Introduced—H 752, to amend the chiropractic practice act, proposes to require chiropractors to register annually, on or before April 1 with the joint secretary of the examining boards and at that time to pay a fee of \$5. Failure on the part of a chiropractor to register annually is automatically to revoke his license. S 197 proposes to permit any hospital not solely maintained by public funds, which is approved by the American Medical Association, the American Hospital Association, the American College of Surgeons, the Medical Association of Georgia, or the Georgia Hospital Association to enter into contracts to provide hospitalization in consideration of a stipulated amount of money to be collected weekly, monthly or yearly in advance. Substitute for H 365 proposes to prohibit the retail sale or distribution of barbituric acid, amylal alonal, luminal, veronal or sodium amylal except on the prescription of a licensed physician, dentist or veterinarian. H 695 proposes to make it unlawful for any person other than a registered pharmacist to sell or offer for sale any prophylactic, contraceptive or chemical or mechanical instrumentality or agency for the prevention of conception or of venereal diseases.

ILLINOIS

Bills Introduced—H 411 and S 210 propose to impose on physicians, osteopaths, dentists, chiropractors, chiropodists and optometrists an annual occupational tax equal to 3 per cent of their gross receipts from practice. H 425, to amend the medical practice act, proposes to permit corporations to practice medicine.

Chicago

Hospital News—A new \$500,000 addition to the U. S. Marine Hospital Chicago, was dedicated, February 18 with Surg Gen Hugh S Cumming presiding at the ceremonies. The new wing which contains 109 beds increases the institution's capacity to 264 beds. The hospital was founded in 1873.

Course in Tumor Pathology—It is announced that the membership quota for the course in tumor pathology that is being given at the Cook County Graduate School of Medicine has been reached, and no further applications will be accepted. The course which is under the direction of Dr Richard H Jaffe will be repeated in the fall.

Focal Infections—"The Present Concept of Focal Infection" will be discussed by Drs Isidor Pilot and Joseph L Miller

before a joint meeting of the Chicago Medical Society and the Chicago Society for the Study of Rheumatic Diseases, March 20. Dr Edward H Ochsmier will present a paper on "The Value of Colloidal Gold in Inoperable Cancer."

Reference Bureau—The Chicago Medical Society has placed in operation a reference bureau for the public. General practitioners and specialists are classified and indexed according to the branch society of which they are members. Physicians belonging to the bureau will be called in rotation. Formerly when calls for a physician came to the society they were denied, but now under the new service an inquirer will be referred to a physician in his own residential district. No charge will be made for the service, only the attending physician receiving a fee.

Society News—The Chicago Orthopedic Society was addressed, March 8, by Drs Max Cutler on 'Treatment of Bone Tumors' and Charles W Peabody, Detroit, "Tendon Transplants Judged by Late Results".—At a meeting of the Chicago Urological Society, February 28, Drs Tyrrell G McDougal and Julius M Glasser discussed "Conservative Treatment of Hydronephrosis" and 'Calculi Formation Following Prostatectomy,' respectively.—Speakers before the Chicago Council of Medical Women March 1, were Drs Ethel M Davis, "Rheumatic Endocarditis in Children," and Alice K. Hall, "Popular Fallacies in Otolaryngology".—Among others, Dr Owen H Wangersteen, Minneapolis, addressed the Chicago Surgical Society, March 1, on "Practical Aspects of the Therapeutic Problems in Bowel Obstruction".—The Chicago Laryngological and Otolological Society was addressed, March 4 by Dr William F Petersen, on 'Meteorological Factors in Otolaryngologic Practice'.

INDIANA

Reciprocity with New York—Reciprocity relations for licenses to practice medicine have been established between Indiana and New York, according to the *Journal of the Indiana State Medical Association*.

Society News—Dr George Gilbert Smith, Boston, spoke before the Indianapolis Medical Society, February 19, on 'Renal Infections', he also conducted a clinic. A symposium on coronary disease was presented before the society, February 26, by Drs George S Bond, Robert M Moore and Cyrus J Clark, Indianapolis.—Speakers before the Northeastern Indiana Academy of Medicine at Kendallville, February 21, were Drs John W Thomson, Garrett and Abraham J Sparks, Fort Wayne, on 'Rupture of the Liver' and 'Transurethral Prostatectomy,' respectively.

Bill Introduced—S 229 proposes to create an independent board of chiropractic examiners and to regulate the practice of chiropractic. 'Chiropractic,' states the bill, 'is a Philosophy, Science and Art of things natural, a system of locating and removing interference with nerve transmission and expression and its effects by adjustment of the articulations of the spinal column and adjacent tissues for the correction of the cause of disease and includes physical, hygienic and sanitary measures incident thereto. A license to practice Chiropractic shall not confer upon the licensee the right to prescribe drugs, practice surgery or obstetrics, or to administer anaesthetics.'

IOWA

Baker Loses by Default—Norman Baker did not appear at a hearing before the Federal Communications Commission at Washington D. C., February 14, and his application for a permit to open a new broadcasting station in Muscatine was denied. Baker formerly operated Station KTNT at Muscatine, but his permit was canceled because of charges made by the Muscatine County Medical Society. These charges were based on his radio preachments against health measures and all rational treatment of disease, and his insulting accusations against the medical profession. Following his trial, Baker established Station XENT in Nuevo Laredo, Mexico. This station was still operating, February 15.

KANSAS

Bill Introduced—S 454 proposes to exempt from the provisions of the state insurance laws church hospitals which have been in operation ten years or more.

Immunization Campaign—Seventy-seven school districts were visited and 1,400 children were immunized in a campaign against diphtheria recently conducted by the Brown County Medical Society under the auspices of the state board of health. Blanks were sent to parents, and newspapers cooperated in urging all to take advantage of the plan. Completed blanks were plotted on a map according to school districts, in attempt

was made to divide applicants evenly among physicians, and central points were selected for twelve districts with each physician as far as possible in charge of a district within his locality. Toxoid was furnished without cost by the state board of health.

MAINE

Society News—Dr Carl W. Ruhlman addressed the Portland Medical Club, January 2, on "Orthopedic Aspect of Arthritis." Dr Harold V. Bickmore discussed diseases of the gallbladder before the club recently. A paper on tachycardia was presented before the York County Medical Society in Kennebunk, January 9, by Dr Eugene H. Drake, Portland.

MARYLAND

Bill Passed—S 211 has passed the senate, proposing to authorize corporations to organize under the corporation laws of the state for the purpose of operating a nonprofit hospital service plan.

Bill Introduced—H 321 proposes to authorize the sexual sterilization of any inmate of a state institution whenever the superintendent or managing director of the institution is of the opinion that "it is for the best interest of the patients and of society" that he be sexually sterilized.

Anniversary Meeting—The Mental Hygiene Society of Maryland observed its twentieth anniversary at a dinner meeting, February 14. The twenty-fifth anniversary of the mental hygiene movement was also commemorated by the society on this occasion, as it has been by several societies throughout the country in the past several months. The national organization held its celebration, Nov 14, 1934, in New York. Guest speakers on the Baltimore program included Mr Clifford W. Beers, founder of the national movement, and Dr Clarence M. Hincks, general director of the National Committee for Mental Hygiene, both of New York.

MASSACHUSETTS

Shattuck Lecture—Dr William E. Gallie, professor of surgery, University of Toronto Faculty of Medicine, Toronto, Canada, will deliver the Shattuck Lecture at the annual meeting of the Massachusetts Medical Society, June 3, on "Sprains and Dislocations."

Lectures on Mental Hygiene—The state division of university extension and the Massachusetts Society for Mental Hygiene are sponsoring a course of eight lectures on "The Mental Hygiene of Adolescence" at the Calvin Coolidge School, Melrose. The following speakers are participating in the series, which began February 6: Dr Clarence A. Bonner, superintendent of the Danvers State Hospital, Hathorne, Dr Henry B. Elkind, medical director, Massachusetts Society for Mental Hygiene, and Miss Bernice M. Henderson.

Society News—Dr John A. Hartwell, New York, spoke before the Harvard Medical Society February 26, in Boston, his subject was "Your Profession and Society."—Dr James W. White, New York, presented a paper before the New England Ophthalmological Society in Boston, February 19, on "Diagnosis and Treatment of Vertical Strabismus."—At a meeting of the New England Physical Therapy Society, February 20, Dr Frederick W. O'Brien, Boston, discussed "The Present Status of Radium and X-Rays in the Treatment of Malignant Disease."—Speakers before the Massachusetts Psychiatric Society in Boston, February 27, were Drs Salomon Gagnon, Danvers, on "Review of the Problems of Bacillary Dysentery," Leo Maletz, Danvers, "Sodium Fluoride Poisoning," and Paul E. Tivnan, Salem, "Paget's Disease."—Dr Herbert L. C. Johnson, Boston, discussed "The Use of Amniotic Fluid in Abdominal Surgery" before the Norfolk District Medical Society, February 26.

MICHIGAN

Dr Stoddard Celebrates One Hundredth Birthday—Dr John Parker Stoddard, Muskegon, was entertained at dinner by the Muskegon County Medical Society, February 22, in celebration of his one hundredth birthday. Dr Stoddard is the oldest living alumnus of the University of Michigan and is said to be the oldest living graduate of Bellevue Hospital Medical College. Speakers included representatives of the University of Michigan and Albion College. Dr Stoddard received a congratulatory telegram from President Roosevelt. About 200 persons attended the dinner. Dr Harold F. Closs, president of the medical society, presided.

Society News—Dr William D. Fullerton, Cleveland, addressed the Wayne County Medical Society and the Detroit Obstetrical and Gynecological Society, February 4, on "Carcinoma of the Uterus, Its Early Diagnosis and Treatment."—The Detroit branch of the American Urological Association presented a symposium on hematuria before the Wayne County Medical Society, January 21, speakers, all from Detroit, were Drs Robert A. MacArthur, George C. Burr, Robert M. Cothran, Edward George Olsen, Harold L. Morris and Charles Stuart Wilson.—The Oakland County Medical Society met at the Oakland County Tuberculosis Sanatorium, Pontiac, February 20, a clinical demonstration in epidemiology constituted the afternoon program, and Dr George A. Sherman and the staff discussed "Factors in Diagnosis and Treatment of Tuberculosis" in the evening.—Dr George W. Hall, Chicago, discussed the "Newer Things in Neurology" before the Calhoun County Medical Society, February 5.

MINNESOTA

Society News—At a meeting of the Minneapolis Surgical Society, February 7, Dr Emil Goetsch, Brooklyn, spoke on "Criteria of Operability for Thyroidectomy."

Bills Introduced—H 579 proposes to amend the law relating to the care, treatment and hospitalization of indigents by permitting the county board of any county in which there is located a hospital designated as a class A hospital by the American College of Surgeons to contract with such hospital to care for and treat indigent residents of the county. H 865 proposes to prohibit the employment of public school teachers, clerks or janitors unless they present certificates from licensed physicians that they are free from tuberculosis in an active form. S 671 proposes to prohibit any public health nurse, public school nurse or employee of a public school or public school board from using his position (1) to promote the business of any particular physician or other practitioner of the healing art or (2) in discrimination for or against any particular school of the healing art.

MISSOURI

Personal—Dr James R. Bunch has been appointed acting superintendent of state hospital number 2, St. Joseph.—Dr John O'Connell, Overland, was presented with a loving cup by the St. Louis County Medical Society on his retirement as president, January 9.—Dr Fred W. Bailey, St. Louis, has been appointed a member of the Missouri State Board of Health to succeed Dr Emmett P. North, St. Louis.—Dr Hyman I. Spector, St. Louis, tuberculosis controller of St. Louis, has been named assistant health commissioner, and Dr James L. Mudd has been appointed to succeed him in the former office.—Dr Edwin L. Sheahan, Clayton, has been appointed superintendent of the St. Louis County Hospital, Clayton.

MONTANA

Bill Enacted—H 66 has become a law, requiring both parties to a prospective marriage as a condition precedent to their right to receive a license to wed, to present a physician's certificate that they are free from venereal disease and from tuberculosis in an infectious stage, and that neither of them has been adjudged in a court of competent jurisdiction to be an idiot, an imbecile or of unsound mind.

NEBRASKA

Society News—Speakers at a meeting of the Southwestern Nebraska Medical Society, McCook, January 10, were the following Lincoln physicians: Drs Earl V. Wiedman, on acute conditions in the abdomen in children, Roy H. Whitman, peritonitis and Miles J. Breuer, treatment of arthritis.—Dr Nymphus F. Hicken, Omaha, discussed goiter before the Otoe County Medical Society, Nebraska City, January 7.—Drs George E. Robertson and Leon S. McGoogan, Omaha, addressed the Madison-Six Counties Medical Society, Norfolk, January 22, on vitamins and minerals in pregnancy.

NEW HAMPSHIRE

Meeting on Economic Problems—A special meeting of physicians, state officials and members of the legislature, sponsored by the New Hampshire Medical Society, was held in Concord, Dec. 13, 1934, to discuss administration of medical relief and sickness insurance. A report on sickness and hospital insurance was presented by Dr Carleton R. Metcalf, Concord, secretary of the state society, and James A. Hamilton, Hanover, chairman of the State Hospital Superintendents' Club.

NEW YORK

Personal—Dr John A Carswell, Scarsdale, tuberculosis clinician on the staff of the Westchester County department of health, has been provisionally appointed to the staff of the division of tuberculosis in the state department of health, Albany. He has been stationed at the New York State Hospital for Incipient Tuberculosis, Ray Brook, to organize a chest clinic service in the Adirondack district as an outpatient activity. The area to be served includes Franklin, Clinton, Essex and Hamilton counties.—Albert F. Blakeslee, D.Sc., acting director of the department of genetics of the Carnegie Institution of Washington at Cold Spring Harbor, has been made a corresponding member of the Academy of Sciences of the Institute of France, *Science* reports.

Bills Introduced—S 1414 and A 1861, to amend the laws relating to the practice of chiropody propose to designate the practice of chiropody as the practice of podiatry and to create an independent board of podiatry examiners. Under the present law, apparently, chiropodists are licensed by the board of medical examiners. A 1883 to supplement the workmen's compensation act proposes to make compensable any disease of the lungs or respiratory tract resulting from the inhalation of dust in any form of (1) mining quarrying and/or dressing of stone, (2) manufacture of refractory materials and abrasives, (3) rock-drilling, sand and/or steel grit blasting, (4) porcelain-enameling, (5) metal grinding and/or polishing (6) lens grinding and/or polishing, (7) pottery manufacture (8) glass-making, (9) foundry work or (10) any occupation involving the preparation or manufacture of asbestos or of articles containing asbestos. A 1863 proposes to prohibit any experiment or investigation to be made on a living dog.

New York City

Sixth Harvey Lecture—The sixth of the present series of lectures presented by the Harvey Society will be given by Dr. Gleb V. Anrep, professor of physiology, Egyptian University Faculty of Medicine, Cairo, at the New York Academy of Medicine, March 21. His subject will be "The Relation of the Circulation in Voluntary and Plain Muscle to Activity."

Skin and Cancer Unit Opened—Consolidation of the Stuyvesant Square Hospital with New York Post-Graduate Medical School and Hospital was effected with the opening, January 21, of a new skin and cancer unit representing the combined outpatient services of the departments of dermatology and syphilology of the affiliated institutions. The building of the Stuyvesant Square Hospital, formerly known as the New York Skin and Cancer Hospital, has been completely remodeled for the outpatient service all bed patients having been transferred to the Post-Graduate Hospital. It has its own administrative offices, social service, pharmacy laboratories, physical therapy equipment and other facilities. Approximately 1,200 mg of radium owned by the unit has been transferred to the department of radiology of Post-Graduate Hospital. Radium work in the new clinic being limited to cancer and other lesions of the skin. Dr. George Miller MacKee, professor of dermatology and syphilology, Columbia University College of Physicians and Surgeons, and head of the department of dermatology at New York Post-Graduate Medical School, is director of the new clinic. Dr. Carl Eggers is in charge of cancer surgery in the new unit and has been appointed professor of clinical surgery at Columbia. Chiefs of clinics are Drs. Charles Mallory Williams, Isadore Rosen, John Frank Fraser and Fred Wise.

NORTH CAROLINA

Physicians in Legislature—Three physicians are serving in the present state legislature. Dr. John T. Burrus, High Point, is chairman of the senate committee on health. Dr. Ransom L. Carr, Rosehill, chairman of the house of representatives committee on health, and Dr. Charles A. Peterson, Spruce Pine, member of the house committee.

Bills Introduced—S 231 proposes to exempt from taxation all general hospitals operating approved training schools for nurses. S 258, to amend the laws authorizing the sexual sterilization of certain socially inadequate persons, whether inmates of state institutions or not, proposes that the sterilization operation authorized by the law shall be vasectomy in the case of males and salpingectomy in the case of females, or any medical or surgical method of sterilization which does not include the removal of any sound organ of the body. H 539 proposes to repeal the law requiring a male applicant for a marriage license either to sign an affidavit that he is free from venereal disease and active tuberculosis or to present a certificate from a licensed physician to that effect.

OHIO

Personal—Dr. Milton R. Kukuk, Toledo, has been appointed health commissioner of Lucas County to succeed the late Dr. Fred F. Devore.—Dr. Richard S. Austin was recently elected president of the Public Health Federation of Cincinnati.—Dr. Clarence E. Northrup, McConnelssville, has been appointed health officer of Morgan County, succeeding Dr. Arnold O. Abraham, who removed to Niles, Mich.—Dr. Harry G. Southard, Marysville, retiring state health officer, has been appointed a member of the state public health council succeeding the late Dr. Charles O. Probst.—Dr. William H. Hawley, College Corner, was guest of honor at a dinner given by members of the Union Medical Association January 10, in celebration of his fiftieth anniversary in the practice of medicine, at the Hotel Anthony Wayne, Hamilton. Dr. William L. Porter, College Corner, was toastmaster.—Dr. Wade MacMillan, for seventeen years medical director at Miami University Oxford, has announced his retirement, effective at the end of the year.

Bills Introduced—S 137, to amend the medical practice act proposes to require an applicant for a license to practice medicine to have received prior to his admission to medical school either a degree from a reputable college or to have completed satisfactorily at least two full college years in an approved college in premedical subjects. S 145 proposes to create an independent board of chiropractic examiners and to regulate the practice of chiropractic. Chiropractic is defined as "the art and science of locating and the procedure preparatory to adjusting by hand of the subluxations of the articulations of the human spinal column which is deemed to be the twenty-four movable vertebrae including the sacrum and coccyx, and adjacent tissues for the purpose of removing any interference with nerve transmission but it shall not include major surgery nor the administration or prescription of any drug or medicine included in materia medica." H 221 proposes that the provisions of the medical practice act shall not apply to any persons who in the practice of the religious tenets of their church confine their ministrations to the sick or afflicted to prayer and spiritual means and without the use of material medicine or material means or manipulations.

OKLAHOMA

Bill Introduced—S 62 proposes to accord to physicians nurses and hospitals treating persons injured through the negligence of others liens on all rights of action claims, judgments, compromises or settlements accruing to the injured persons by reason of their injuries.

New State Health Officer—Dr. Charles M. Pearce, health officer of McAlester, has been appointed state health officer to succeed Dr. George N. Bilby. Dr. Pearce is a native of Alabama and a graduate of Birmingham Medical College 1915. He was one of four candidates for the position recommended by the Oklahoma State Medical Association newspapers reported.

OREGON

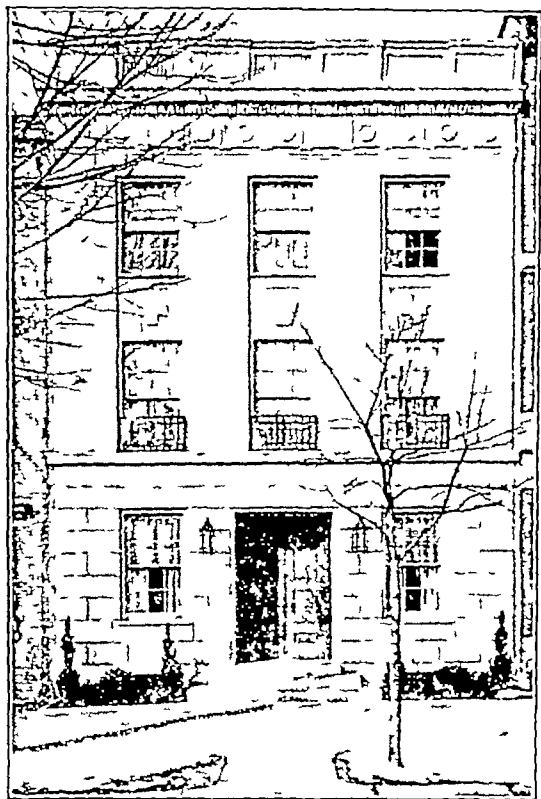
Bills Enacted—The following bills have become laws. H 180 limiting the distribution of appliances, drugs and medicinal preparations intended or having special utility for the prevention of conception and/or venereal diseases, to licensed physicians and to persons licensed to do so by the state board of pharmacy, H 107 repealing the laws regulating the possession and distribution of narcotic drugs and enacting a bill which, although denominated as the "uniform narcotic drug act," deviates from the model act in that it omits provisions intended to limit the gross quantity of a habit-forming drug a person can buy in exempt preparations within a period of forty-eight hours. H 208, prohibiting the distribution of amylal, luminal, veronal, barbital, acid diethylbarbituric, or any preparation or compound containing any of the foregoing substances, except on the prescription of a licensed physician, dentist or veterinary surgeon.

PENNSYLVANIA

Bills Introduced—S 393, to supplement the workmen's compensation act proposes to permit the department of labor and industry, the employer, or the claimant to require an autopsy on the body of a workman dying following industrial injuries. H 1136, to amend the medical practice act, proposes to authorize the bureau of medical education and licensure to revoke or suspend the license of any practitioner who has acted as an adjuster of claim or claims arising out of personal injuries or who has negotiated for the settlement of such claim or claims where such claims do not involve injuries to himself or his or her family. S 417 proposes to create a board of naturopathic education and licensure and to regulate the

practice of naturopathy, which the bill defines as "a philosophy of healing embodying within itself a complete system of therapeutics, basing its treatment of all physiological dysfunctions and abnormal conditions of the body on the Natural Laws governing the body and maintaining life. This system includes the correlation of part with part anatomically, physiologically, psychologically and chemically and does not use drugs or surgery in any manner or form." H 1081 proposes to authorize a licensed optometrist to issue any certificate of ocular or visual efficiency required by any law.

State Society Dedicates New Headquarters—A new building for the headquarters and offices of the Medical Society of the State of Pennsylvania was recently dedicated in Harrisburg. Dr. Edgar S. Buyers, Norristown, chairman of the board of trustees, presided. Mr. Edwin Greene, representing the architects, presented the keys to Dr. Augustus S. Kech, Altoona, chairman of the building committee, who told the history of the movement that culminated in the remodeling of a building bought in 1923. Dr. Kech in turn presented the building and Dr. Moses Behrend, Philadelphia, president, accepted it for the state society. The front of the three story



New Home of the Medical Society of the
State of Pennsylvania

building has been reconstructed of Indiana limestone to conform with public buildings of the state capital and decorated with carved stone and bronze. The first floor has the society's offices and a lobby, on the second and third are apartments from which the society derives an income. A new two story annex has been built providing one large and two small committee rooms, a library and a modern vault for archives. Other speakers were Governor Pinchot, Drs. Arthur W. Booth, Elmira, N. Y., for the Board of Trustees of the American Medical Association, Theodore B. Appel, Harrisburg, for the state department of health, Edward B. Heckel, Pittsburgh, former chairman, Board of Trustees, American Medical Association, and Mr. William M. Demison for the state department of education. A portrait of Dr. Cyrus Lee Stevens, Athens, secretary of the state medical society from 1896 to 1918, editor of the *Pennsylvania Medical Journal* from 1904 to 1920, and president of the society in 1919 was presented to the society by the Bradford County Medical Society. Dr. Stanley D. Conklin, Sayre, made the presentation address. At present the society plans to establish a package library service similar to that of the American Medical Association, rather than to accumulate bound volumes. Three state societies now have this service: Texas, Indiana and Wisconsin.

SOUTH CAROLINA

Bill Introduced—H 422 proposes to accord to hospitals, nurses and physicians, treating persons injured through the negligence of other persons, liens on all settlements or compromises accruing to the injured persons by reason of their injuries.

TENNESSEE

Bill Introduced—H 458, to amend the medical practice act, proposes (1) to provide that members of the board of medical examiners shall be appointed by the governor from a list of names submitted by the Tennessee State Medical Association, and (2) that no license shall be revoked until the licensee has been notified in writing of the charges against him and has been given an opportunity for a full and complete hearing, with the right to be represented by counsel.

University News—Dr. Gunnar Nystrom, professor of surgery, University of Upsala, Sweden, is in residence at Vanderbilt University School of Medicine as Flexner lecturer during February and March. Dr. Morris Fishbein, Chicago, editor of *THE JOURNAL*, gave a public address at the university, February 12, on "Social Aspects of Medicine," and Dr. Maurice Brodie, New York, addressed medical students on poliomyelitis immunization—Kenneth S. Rice, Ph.D., formerly acting head of the department of physiology at the University of Maine, has been appointed to the staff of the department of physiology at the University of Tennessee College of Medicine, Memphis.

TEXAS

Dallas Clinical Conference—The Dallas Southern Clinical Society will present its seventh annual spring conference, March 18-22, with headquarters at the Baker Hotel. Each morning up to Friday there will be a general assembly with addresses by guest speakers, followed by lecture courses given by Dallas physicians. Conferences will be held at luncheons, and afternoons will be given over to clinics at the Baker Hotel, conducted by the guests. Wednesday afternoon there will also be operative clinics at Baylor, St. Paul's and Medical Arts hospitals and all day Friday will be devoted to hospital clinics. Guest speakers and their subjects for the general assemblies will be as follows:

Dr. Elexious T. Bell, Minneapolis Minn. Relation of Hypertension to Kidney Disease
Dr. Harry L. Brum, Denver Recent Studies in the Treatment of Streptococcal Infection by Means of Specific Immune Serums
Dr. Henry L. Bockus, Philadelphia So Called Chronic Nonspecific Ulcerative Colitis
Meyer Bodansky, Ph.D. Galveston Applications of Chemical Pathology to Clinical Medicine
Dr. Franklin G. Ebaugh, Denver, Psychotherapy in General Practice of Medicine
Dr. Harry S. Gradle, Chicago Systemic Causes of Ocular Diseases
Dr. Alexis F. Hartmann, St. Louis Diabetes Mellitus in Infants and Children
Dr. Jennings C. Lutzenberg, Minneapolis Ectopic Pregnancy
Dr. William E. Lower, Cleveland Problems of Kidney and Ureteral Calculi
Dr. Douglas Quick, New York Radiation and Surgery in Cancer Therapy
Dr. Waltman Walters, Rochester Minn. Surgical Treatment of Obstructing Lesions of the Biliary Tract
Dr. Fred Wise, New York Dermatophytosis of the Feet and Dermatophytids.

In addition, Dr. H. Earle Conwell, Birmingham, Ala., will conduct two clinics on fractures and Dr. Louis Hamman, Baltimore will conduct clinics on tuberculosis, leukemia and Hodgkin's disease and will participate in a symposium on heart failure. Monday evening, March 18, there will be a meeting open to the public, Tuesday, symposiums on malignant disease of the head and neck and acute intestinal obstruction. Wednesday the symposium on heart failure. Thursday the annual dinner and Friday, a clinic on syphilis at Baylor Hospital. Dr. Curtice Rosser is president of the society, and Dr. David W. Carter, Jr., director of clinics.

UTAH

Bills Introduced—H 217 and H 220 propose to repeal the laws regulating the possession, sale or distribution of narcotic drugs. H 211 proposes to repeal the laws regulating the sale, distribution and possession of narcotic drugs and to enact what apparently is the uniform narcotic drug act.

Annual Registration Due April 1—All practitioners of medicine and surgery licensed to practice in Utah are required to register annually on or before April 1, with the department of registration, and to pay a fee of \$3. If a licensee fails to reregister within from ninety days to six months after April 1, his license can be revoked and will be reinstated thereafter only on his paying the delinquent registration fees and an additional year's fee as a penalty.

VERMONT

Bills Introduced—S 61 proposes to prohibit the sale, distribution or possession of cigarettes, cigars or tobacco or other commodities intended for smoking, containing cannabis indica. H 254 proposes to prohibit any person, other than a licensed physician or a licensed dentist, to use the title "doctor" or the abbreviation "Dr" in connection with his name on any sign, advertisement or "professional card, unless the type of service rendered by him is also designated on such advertisement or "professional" card.

WASHINGTON

Bills Introduced—S 290 proposes to permit "any professional or vocational group of persons required by law to pay a license fee or pass examination tests to form an association with quasi governmental powers. Such association, when organized, is to exercise the powers now exercised by the director of licenses with respect to examining applicants for licenses, hearing grievances against any member and enforcing the law. H Joint Memorial No 30 proposes to petition the United States Congress to pass a law authorizing the deportation of aliens convicted of violating any state narcotic drug act. H 640 proposes to make it unlawful for any person firm or corporation to operate a dental office unless said person shall be a duly licensed dentist within the state of Washington." It shall be unlawful for any person, firm or corporation operating or managing a dental office in the state of Washington to employ any person as a dentist or a dental assistant unless said person is a duly licensed dentist."

WEST VIRGINIA

Society News—Dr Russell C Bond Wheeling addressed the Marshall County Medical Society, Moundsville, January 15 on "Scarlet Fever, Measles and Whooping Cough."—Dr Hugh G Thompson, Charleston addressed the Fayette County Medical Society Oak Hill, January 7, on "Surgical Consideration of Diabetes."—Mr James W Harris Jr, former secretary to Governor Kump, has been appointed executive secretary of the Hospital Association of West Virginia, with headquarters in Charleston.

WISCONSIN

Society News—Drs Richard H Jaffe Chicago, and Francis D Murphy addressed the Medical Society of Milwaukee County, January 11, on "Kidney and Cardiovascular Diseases and "Nephritis," respectively. The first graduate course of 1935 began January 21, with Dr Joseph L Miller Chicago as the speaker. At the annual meeting of the society Dec 14 1934, Dr Austin A Hayden, Chicago, spoke on "The Institution of American Medicine" and Mr J George Crownhart, executive secretary, State Medical Society of Wisconsin, on "Medical Legislation."

Children Barred from Public Places in Scarlet Fever Fight—Dr John P Koehler, health commissioner of Milwaukee, has ordered schools, theaters, churches and other public places to bar all children under 7 years old. The commissioner's action, which was taken February 19 with the approval of the city council, is an effort to curb the epidemic of scarlet fever that has been prevalent since September. There were more than 1,500 cases in the city on that date. Plans have been made by the health department to collect blood from convalescent and recovered patients and to prepare a supply of serum for use in the epidemic. A special laboratory has been arranged at the Columbia Hospital for preparation of the serum, the gift of a Milwaukee citizen whose child was benefited by the use of serum. The order isolating young children meant the exclusion from schools of 20,000, closing of kindergartens and almost total closing of first grades.

Bills Introduced—S 190 proposes to amend the law requiring all male applicants for licenses to marry to present a physician's certificate showing that they are free from venereal disease by requiring such certificates of both parties to proposed marriages. A 297 proposes to create an interim committee on the cost of medical care, to consist of two senators and three assemblymen. The committee is to investigate the general subject of the cost of medical care and the ways and means of lightening the burden thereof. A 403, to amend the workmen's compensation act, apparently proposes to permit an injured employee to elect to receive chiropractic treatment for his industrial injuries. The bill proposes, however, that the exercise by the injured workman of his right to receive Christian science or chiropractic treatments is not to relieve him from the requirement of submitting to and following such competent and reasonable surgical treatment as may be required.

WYOMING

Annual Registration Due April 1—All practitioners of medicine and surgery licensed to practice in Wyoming are required by law to register on or before April 1, with the secretary of the board of medical examiners, and to pay a fee of \$2.50. If a licensee fails to pay the fee within three months after April 1, his license can be annulled, and if annulled it will be restored to him only on his paying the stated fee, plus \$5 as a penalty.

GENERAL

Examining Boards—The Advisory Board for Medical Specialties is now receiving applications from special examining boards in the process of organization for official approval and representation in this board. Information on the form for these applications may be obtained from the secretary, Dr Paul Titus, 1015 Highland Building, Pittsburgh, Pa. Action on the applications will be taken at the annual meeting of the advisory board at the Hotel Traymore, Atlantic City, June 9.

Dr Atwater Named Executive Secretary of Public Health Association—Dr Reginald M Atwater for eight years health commissioner of Cattaraugus County, New York has been appointed executive secretary of the American Public Health Association, effective March 15. Dr Atwater graduated from Harvard Medical School in 1918 and took the degree of doctor of public health at Johns Hopkins University in 1921. Later he was appointed associate professor of hygiene in the Hunan-Yale College of Medicine in Changsha, China, from which position he returned in 1925 to teach in the Harvard School of Public Health.

Special Board Examination—An examination of candidates for the certificate of the American Board of Psychiatry and Neurology in neurology, psychiatry or both will be held in Philadelphia, June 7-8, preceding the annual session of the American Medical Association in Atlantic City. It will include examination of patients, with reports on and discussion of the observations, June 7, oral and written examinations in neuro-anatomy, neurophysiology, psychobiology, psychopathology, neuropathology and the interpretation of roentgenograms, June 8. Applications must be filed not later than April 8. Blanks and further information may be obtained from Dr Walter Freeman, 1726 Eye Street, Washington, D C.

Medical Bills in Congress—*Changes in Status*. S 1850 has been reported to the Senate, proposing to amend an act entitled "An Act to recognize the high public service rendered by Major Walter Reed and those associated with him in the discovery of the cause and means of transmission of yellow fever," by including Roger P Ames among those honored by the act. H R 2827, the Lundeen social insurance bill, has been voted on favorably by the House Committee on Labor and will be shortly reported to the House. The bill proposes, among other things, to direct the Secretary of Labor to establish social insurance "for the purpose of providing compensation for all workers and farmers who are unable to work because of sickness, old age, maternity, industrial injury, or any other disability." **Bills Introduced**. H R 6145, introduced by Representative Dempsey, New Mexico, proposes to prohibit the shipment and transportation in interstate or foreign commerce of cannabis and its derivatives and compounds, except when shipped or transported for medical and legitimate uses by the producer or manufacturer thereof or dealer therein to licensed physicians, surgeons, dentists, pharmacists, druggists and veterinarians, under such rules and regulations as shall be prescribed by the Commissioner of Narcotics.

CANADA

Cancer Program in Ontario—Dr James A Faulkner, newly appointed minister of health for Ontario, has appointed a new cancer commission for the province to continue a cancer program begun several years ago. Three clinics have already been established in Toronto, Kingston and London, with an expenditure of \$300,000 on radium. A subcommittee of the commission will make a study of the distribution of radium with regard to population, technics in vogue and methods of application under the chairmanship of Dr Oskar Klotz, Toronto. Besides Drs Faulkner and Klotz, members of the new commission are Drs William J Bell, John W S McCullough, John D Leith, Gordon E Richards, John G Fitzgerald, William E Gallie, George E Wilson and Duncan A L Graham, all of Toronto, Prof E F Burton, professor of physics at the University of Toronto. Drs William A Jones, Frederick Etherington and Walter T Connell, all of Kingston. Robert K. Paterson, Ottawa. William J Cook, Sudbury and Frederick J H Campbell, London.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb 16, 1935

Serious Criticism of the Treatment of Fractures The Teaching of Sir Robert Jones Already Forgotten

In July 1933 the British Medical Association appointed a committee, consisting largely of orthopedic surgeons, to report on the treatment of fractures and associated injuries of the limbs. The report, which has just been published, is a serious criticism of the current treatment, both in private and in hospital practice. There has been a growing feeling among those who have studied the late results that these injuries do not receive the attention they deserve and that great improvement could be brought about by better organization. Comparison of the statistics of the results obtained in organized clinics and of those obtained outside them show a glaring contrast. Thus in 432 adult cases of Colles's fracture treated in organized clinics the average disability period was seven weeks and the number of cases of permanent incapacity was two, while for thirty-eight cases not treated in these clinics the average disability period was twenty-nine weeks and the number of cases of permanent incapacity nine. In forty-five cases of fracture of the shaft of the femur the corresponding figures were twenty-six weeks average disability and one permanent incapacity, against thirty-one cases with sixty weeks' average disability and nineteen permanent incapacities. When the figures for the common fractures (the two mentioned, scaphoid of wrist, clavicle, patella, tibia and fibula, and ankle) were taken together it was found that whereas permanent incapacity occurred in only 1 per cent of cases treated in organized clinics it occurred in no less than 37 per cent of cases not so treated. Moreover, the duration of incapacity was thrice as great in the latter group. During the war, great advances were made in the treatment of fractures under the inspiring leadership of Sir Robert Jones. His recognition of the importance of segregation under one control and of methodical and continuous treatment resulted in extension over a wide area of principles that had been successfully applied on only a small scale. Unfortunately, his fine organization has largely disappeared and the treatment in the majority of hospitals has not materially advanced. In only a few centers is there any organization superior to that which existed twenty years ago.

INADEQUATE ORGANIZATION OF FRACTURE SERVICES

The committee has investigated the fracture services of the large hospitals and found that in the majority there is no efficient organization. The care of the fractures often devolves on the house surgeon, who lacks the knowledge and experience necessary for adequate treatment. On leaving the ward the patient is referred to the massage department, in charge of an officer who has taken no part in the previous treatment. Union of the fracture thus means a complete break in the continuity of treatment.

IMPERFECT SURGICAL TREATMENT

In a high proportion of cases of delayed recovery the fracture was never completely reduced. This was due not simply to inadequate manipulation but to neglect to determine whether or not the manipulation was successful. Failure to use post-reduction x-ray control was frequently responsible. In other cases the important factor was absence of daily supervision of fractures in their early stages, and weeks elapsed before malposition was recognized, so that perfect manipulative reduction was no longer possible. In a smaller proportion of cases, dis-

ability was due to recurrence of deformity that had been corrected. Failure to use the best method of immobilization, to control and check progress by roentgen examination and to maintain immobilization sufficiently long, owing to fear of joint stiffness, were responsible for other cases. Neglect of early active mobilization of uninjured joints accounted for prolonged disability in a large number of cases. Joints were allowed to stiffen unnecessarily, and massage and passive movements were relied on to cure what should have been prevented by active exercise. Even when joint stiffness was inevitable, recovery was frequently delayed by adoption of passive methods to the exclusion of active exercise. Stiff joints became stiffer as the result of injudicious stretching and the belief that massage alone will cure muscle wasting, and recurring edema was responsible for many months of delay.

RECOMMENDATIONS

In the opinion of the committee, the essential conditions of an organized fracture service are segregation of cases, continuity of treatment, after-care, and unity of control. Every hospital should segregate its fracture cases and establish one and only one, organization. Only thus can the staff become sufficiently highly trained and experienced in the technic of modern methods. But such segregation should not exclude any member of the hospital staff interested in fracture treatment. Coordination of the successive stages of treatment is also essential. The patient should not be transferred at a critical stage of treatment from one department to another, or from the care of the surgeon responsible for the initial treatment to one who has no knowledge of or responsibility for it. After care in the form of active exercises directed to complete restoration of function is essential and is often neglected. It should be directed to the performance of tasks and not consist of massage and electrical stimulation, which have been largely misapplied in the treatment of fractures, and injudicious stretching of joints has actually been done. Massage staffs should concentrate on securing the active cooperation of the patient and teaching him to undertake his own remedial exercises. Finally, these measures achieve their greatest success only under unity of control. All stages must be supervised by one expert. In the smaller hospitals one member of the staff should be selected to do the whole of this work.

Memorial to Florence Nightingale

The National Florence Nightingale Memorial Committee of Great Britain is appealing for funds to raise a living memorial to Florence Nightingale to carry on and extend her great work. Already twenty countries have formed or are forming national committees for this purpose. The memorial, by the enthusiastic agreement of the nurses of all nations, will take the form of endowment in London of postgraduate training in public health nursing and of teaching and administration in schools of nursing. Such courses are already in operation, having been established after the war by the League of Red Cross Societies, with the collaboration of Bedford College for Women and the College of Nursing. Scholarships have been financed by the league, which has now exhausted the money available, and by the efforts of nurses federated in the International Council of Nurses. Some 220 nurses from forty-three countries have completed their training and returned to their home countries to fill positions of importance. The Memorial Committee considers that the standardization of nursing throughout the world is of supreme importance, and hardly less the opportunity given to representative women of all nations to meet in social intercourse and study. It is apt to be forgotten that Florence Nightingale reformed nursing in all its branches, whether civil or military. She revolutionized hospitals and hospital administration, so that, from being in

many cases pesthouses of disease, they became the hygienic and sanitary places known today. The sum required to be raised in Great Britain is \$1,000,000.

The Ill Effects of the Smoke Pall of Manchester

In his report for 1933, Dr D P Sutherland, health officer of Manchester, says that the smoke pall, which is constantly present to a greater or less degree over this district, has several adverse effects. Its presence is recorded in the rapid blackening and deterioration of buildings, it reduces by 50 per cent the actinic value of the sunlight and in winter leads to the formation of fog. Sufferers from tuberculosis have their respiration, already impaired by disease made more difficult by the acute irritation of the impurities in the air. Further inflammation results, resistance is broken down, toxemia increases, and heart failure follows. A correlation between fog and the death rate is shown by statistics. During the fogless period April-September 1933, the average weekly deaths amounted to 127. During the fogless winter weeks the average was 144 but in the winter foggy weeks it was 165. Fogs are associated with an increased death rate from tuberculosis.

PARIS

(From Our Regular Correspondent)

Feb 8, 1935

"Deformed" Types of Syphilis

A leading authority on syphilis, Professor Gougerot of Paris, contributed an important article in the *Revue générale de clinique et de thérapeutique*, October 20. The classic dogma that syphilis develops in three periods, beginning with the chancre and invading the body slowly by way of the lymphatics and becoming a systemic infection (by way of the blood vessels) at the time of the secondary manifestations, has been rendered obsolete as the result of modern research. Numerous new conceptions of syphilis have completely changed former teachings. The efficient therapeutic agents of the present day, even though they do not always cure syphilis, modify it greatly and the result is that one finds a disease quite different from the schematic notions of preceding generations. If one is not familiar with the forms of syphilis as modified by modern methods of treatment, there is a great risk of errors in diagnosis with resultant serious danger from the social and familial standpoint. Gougerot groups these altered or, as he terms them, 'deformed' types of syphilis, as follows:

1 Primary syphilis retarded in its development by inadequate prophylaxis, that is, before appearance of the chancre. Every method of prophylaxis is liable to be unsuccessful in certain cases. In thirteen cases treated with ointment of mild mercurous chloride the chancre developed in five cases in milder form and at periods varying from thirty-nine to sixty-three days after infection. These failures are seen also following the use of other methods of prophylaxis, even after intravenous use of neoarsphenamine. One should be careful not to assure the patient that syphilis in an attenuated form might not appear at a later period, as if no preventive treatment had been given. If one wishes to avoid failure in prophylaxis, arsenical preparations must be given in as strong doses and over as long a period as though the chancre were already present. The patient must be followed clinically and serologic reactions carried out over a period of from two to four years.

2 Syphilis deformed or retarded by inadequate abortive treatment. In these cases the classic secondary manifestations instead of appearing forty days after the chancre, are not observed until after ninety days or even as late as 190 days, as in one of Gougerot's cases, at a period when one felt that the syphilis had been aborted by the treatment given at the time of appearance of the chancre. In some of these 'retarded'

cases only a single secondary manifestation may be observed, in the form of a few mucous patches or of a generalized adenopathy. Some spirochetes persist in the vicinity of the chancre and remain latent, only to develop suddenly at some later period and become disseminated in the body.

3 Early tertiary syphilis because of inadequate treatment. As early as 1910 Gougerot called attention to the fact that, when arsenical preparations had been given for an insufficient length of time, tertiary signs in the form of gummas on the skin and mucous membranes, or serious localized destructive lesions of the viscera or along the course of the cranial nerves, would appear at a comparatively early date. There has been much discussion as to whether these were the result of the syphilitic infection or of the toxic action of the arsenic or both. Gougerot is of the latter opinion, especially in regard to nerve lesions, and hence, instead of arsenical preparations which may increase the toxic element, he prefers to use mercuric cyanide or, better still, a bismuth compound. To avoid such early tertiary manifestations, the treatments should not be given over too short a period or in too small doses, and the intervals should not be over a month in duration.

4 Cases that are either resistant to or show recurrences even after arsenic. These patients often present a papulosquamous psoriasis-like eruption, and even though the disease is active the Wassermann reaction is negative.

PERSISTENCE OF POSITIVE WASSERMANN REACTIONS

In connection with the fourth group of Gougerot's deformed syphilis, a recent paper by Tzanck and his associates, read at the Oct 19, 1934, meeting of the Medical Society of the Paris public hospitals is of great interest. These observers base their opinions on the observation of more than 10,000 cases of syphilis at St Anthony's Hospital. They reported fifty-seven cases in which the Wassermann, Hecht and Kahn reactions, made simultaneously, remained positive in spite of treatment given over a period of a minimum of three years. These resistant positive reactions are most frequently observed in cases of visceral syphilis or when there is a complete absence of any manifestation of the disease. There were thirty-two cases treated at regular intervals for at least four years and fifteen others over a period of three years. In none of these resistant seroreaction cases was the patient treated at regular intervals, with multiple preparations and intensively. In the majority the diagnosis of syphilis had been made at the period when a cutaneous eruption or a visceral lesion appeared. In twenty-four of the thirty cases treated for four years, and in eleven of fifteen treated for three years, the positive reactions were discovered during the course of treatment. In the other cases the diagnosis had been made in the primary or secondary period but the treatment had been inadequate. In four persistently positive cases, congenital syphilis had been treated for a long period. After four years of treatment, examination of these persistently positive cases revealed the presence of a visceral syphilis (nervous or aortic) in eleven, mucocutaneous manifestations in five, and nothing in fifteen cases. In all of the forty-seven persistently positive cases, the disease had been inadequately treated in its early stages, no treatment had been given or it was given too late. In not a single case have Tzanck and his associates ever observed a persistence of a positive seroreaction when the treatment had been given early enough and regularly over a sufficiently long period.

Treatment of Migraine

Dr Pagniez, who is well qualified through intensive study, directs attention to the progress that has been made during the last twenty years in the etiology and treatment of migraine. In the *Presse médicale* January 2, he stated that the treatment varies according to the type, he mentions five types:

1 Migraines apparently of digestive origin. A diet that can be easily followed should be given. The only fat allowed is fresh butter. Very good results are obtained in prescribing peptone 0.5 Gm. three quarters of an hour before meals.

2 Migraines of hepatic origin. Here a diet in which all fatty foods are excluded is essential. Regular evacuation of the biliary tract is best attained by ten day treatments with magnesium sulphate and peptone taken before breakfast, followed by the patient lying on his right side for three quarters of an hour, and by the use of the duodenal tube and a 33 per cent magnesium sulphate solution.

3 Migraines of anaphylactic origin. Here the particular food should be looked for the ingestion of which is followed by attacks. Chocolate may be placed at the top of such a list. One should try the well known skin reactions and various diets in which certain foods are omitted, for example milk and eggs or meats or starchy foods. Anaphylaxis due to other causes than foods are rare, but occasionally certain odors, such as tar, will be followed by an attack. The peptones given before meals are especially useful in this type.

4 Migraines of endocrine origin. Here are recognized a thyroid, an ovarian and a hypophyseal type. In the first named in which there is hypothyroidism, the gland extract helps. In cases of ovarian origin there is usually a hypofunction and hence estrogenic preparations or anterior pituitary extract are indicated. In those of hypophyseal origin the posterior lobe preparations are efficacious.

5 Migraines of vascular and sympathetic origin. Small doses of glyceryl trinitrate or the nitrites are best here.

Quite often, migraine presents itself in a less characteristic manner than these types would indicate. These are the so called mixed cases, for which there are a number of causes. For the latter, one must have a number of preparations in mind. These are the barbiturates, the ergotamine tartrate used first by Tzanck and Trautmann several years ago, bromides and the boropotassic or sodium tartrates. Cases of digestive origin are helped by treatment at Vichy, Vittel or Chatel-Guyon. The remainder of the paper takes up in detail the treatment of the attack itself.

BERLIN

(From Our Regular Correspondent)

Jan. 21 1935

New Regulations Affecting Medical Practice

The executive committee of the Prussian *aerztekammern* (chambers of physicians) held a session at which some important matters were decided. As previously announced, it is planned to create an ethical council of federal physicians, but it is uncertain just when the plan will be consummated.

One question that came before the committee concerned the sale of a medical practice to a successor. According to the code of ethics of German physicians such a sale is absolutely inadmissible, for it is not a question of an actual business that, after the death of the owner, must be sold at as high a price as possible. Only material goods are subject to sale. In any event, it is impossible to make the number of patients the basis of intrinsic value. It has been observed also in many cases in which a sale of a practice was effected that the purchasing physician later sought to have the contract canceled because he felt that the practice had not turned out as represented. That is explained by the fact that a portion of the patients, after the death of the former owner of the practice, transfer their patronage elsewhere with the result that the practice shrinks. The executive committee decided that, before a contract concerning the transfer of a medical practice can be consummated, the consent of the competent chamber of physicians must be secured, whereby also the material possessions of the decedent will be appraised at their proper value.

In the matter of physicians' signs affixed to the house in which a medical practice is carried on, the report brought out that "great confusion prevails, particularly in the large cities," in spite of the fact that definite regulations have been in force for years. In some sections startling incongruities have arisen, while in other sections there is some semblance of order. In spite of former action on the part of medical organizations, the necessary reforms have not been carried out. The medical profession must never in its external manifestations, adopt the methods of industrial plants.

Contrary to former decisions, no medical specialist may in the future designate two branches of medicine in which he is specializing even though he has had special training in two specialties. Likewise, no specialty will be recognized that is not specifically mentioned in the "richtlinien" (medical standards) adopted by the medical profession. The same rules apply to public notices, letter heads and prescription blanks and patients' record cards, which have been issued of late to patients by some of the enterprising physicians and which the patients are expected to bring with them for later consultations, in order that their personal histories may be looked up. Also these record cards must be held strictly within the prescribed limits. Physicians' signs may not bear any statement as to their hospital activities, as to service as director or head of a department, or the like. It was further decided that there is no general need of having physicians' signs illuminated at night.

Another question concerned the seasonal changing of one's place of practice. For some time past, the physicians who are permanently located in watering places have complained that during the summer months a large portion of their practice is taken away from them by the physicians who accept service at health resorts for the summer season. The physicians who are permanently located in the place have but little practice other than during the season, so that they are to a great extent dependent on the summer guests. In view of this fact the seasonal change of one's place of practice has been prohibited.

For the prevention of illegal interruptions of pregnancy, the minister of justice has been requested to establish a special department in the state's attorney's office for the handling of such cases or to declare illegal interruption of pregnancy to be a treasonable act and hence subject to a severe penalty.

For the early recognition of cancerous disease, the possible value of establishing special consultation hours in the polyclinics was discussed. It was decided that, during the coming year every physician must take a course in the diagnosis of cancer, the time and place to be designated by the chamber of physicians having jurisdiction. Great care must however, be taken not to awaken undue fear of cancer among the people.

The Students' Health Service

The goal of the Studentischer Gesundheitsdienst is to aid students in the acquisition of health free from hereditary taint and the ability to think and act in keeping with the best traditions of their race. Application of economic measures for the aid of the sick (which were available to a wide extent also under the old régime), prophylactic measures, and elimination of the unfit. Hence, since the beginning of the summer semester of 1934, all students must submit to a physical examination, in which work the bureau of public health of the national-socialist party cooperates. This arrangement, it is asserted, furnishes a guaranty that the examinations will take into account all the questions that are considered important for the selection of future academic leaders. A card index preserves a record of all noteworthy observations. In the future the question of admitting the questionably fit to academic studies will be decided by the results of the compulsory examination. In order that no one may escape being examined, the penalty for such

evasion is exclusion from university studies. The sanitary record card accompanies the student as a "health passport" throughout his whole university career. The last great task, the biologic selection, has not yet been begun. This is regarded, however, as the most important control feature. "The elimination of the unfit is designed to protect the biologically valuable progeny at the universities from the damaging competition of the undesirables." When these important tasks have been more generally applied, it will be necessary to afford this biologically valuable progeny an opportunity to marry and receive an adequate beginning salary. This will necessitate a shortening of professional training in the interest of the people as a whole.

MOSCOW

(From Our Regular Correspondent)

Jan 29 1935

The Histologic Conference

The first All-Russian Histologic Conference was held in Moscow in 1934, with 362 delegates from thirty nine towns. Among them were eighty-eight professors, eighty private assistant tutors, 134 assistants and forty-eight aspirants. Prof. A. V. Nemilov read a paper on the present state of the cellular theory. He considers the cell a certain stage in the development of the organism and thinks that the only true cell in the real sense of the word is the ovum at the moment of impregnation. Roumantzev spoke about tissue cultures. He analyzed the evolution process in vitro and in vivo and compared the process of growth and differentiation of various tissues.

The report of G. J. Roskin on growth and fission of cells and tissues attracted special attention. He studied the influence of light and medicaments on cells and proposed a theory on the influence of quinine on cells. He finds that after penetrating the cell, quinine accumulates in the granular elements, after which occurrence the granulations do not take a stain. In connection with this phenomenon a disturbance of digestion and of other functions of the organism takes place.

F. M. Makarenko spoke of a new method of tissue transplantation by means of introducing small pieces of tissue with celloidin under muscular fascias. The growth of cells around the celloidin and a further differentiation of the tissues may be observed.

Treatment of Diseases of the Vegetative Nervous System

Dr. R. A. Grot three years ago began treating diseases of the vegetative nervous system by means of diathermy of different regions of the vagus nerve by which method he has healed skin, stomach and leg ulcers. The best results were obtained in the treatment of tabes dorsalis by diathermy of the neck and ischiolumbar regions of the vegetative nervous system. Chronic patients show a reestablishment of the pupillary reaction to light, and the atrophic process in the ocular nerve stops. The observations of Dr. Grot were verified in the institute of Setchenov on 200 patients. This makes it possible to expect that the treatment of trophic disturbances by means of diathermy of corresponding regions of the vagus nerve will permit the treatment of diseases at present considered incurable.

The Moscow State Scientific Medical Library

The Moscow State Scientific Medical Library was founded in 1929 and had then about 35,000 volumes. At present it has more than half a million volumes and 32,000 readers. It supplies with books all the physicians of the Soviet Union. The library selects literature on all medical questions and sends it on request to China, Japan, Argentina, Australia and all the European countries. The "Great Soviet Medical Encyclopedia," which will be completed in a few years (the thirty-first volume

has already appeared), is published under the bibliographic supervision of this library. At present the library is situated in an old house in the center of Moscow, but in the near future there will be erected a special building.

MEXICO

(From Our Regular Correspondent)

Jan 28, 1935

A Method of Vascular Dissection

Dr. Quevedo reported, before a meeting of surgeons in Mexico City last November, the results of his observations on the distribution of the arteries in the kidney by washing the renal and polar arteries, followed by injection of stains of different color into those arteries by the posterior route and destruction of the renal parenchyma by a corrosive substance, which attacks the renal tissue but not the renal arteries. The anatomic specimens obtained by this technic are very clear. Even the most minute arterial ramifications are visible with greater clearness than they are in the best anatomic dissections. He thus found a polar artery in nineteen kidneys of his series of thirty. It was in the upper pole in thirteen kidneys and in the lower pole in six kidneys. He noticed also that the polar artery supplies a large area, sometimes a third or a fourth of the renal parenchyma. This area may become necrosed following an infarction during an operation on the kidney. Dr. Quevedo's study is important to renal surgery and also as a method for the study of the arterial distribution in other organs, for instance in the heart a similar study of the coronary arteries would clarify the picture of such conditions as cardiac infarction and angina pectoris.

Congress of Physicians of the Pan-American Railways

The first Congress of Physicians and Surgeons of the Pan-American Railways will meet, May 5, in Mexico City, as a part of the program of festivities for the opening of the Central Hospital which was built by the Mexican National Railways at a cost of 1,500,000 Mexican pesos (about \$405,000). Physicians and surgeons of all American railroads have been cordially invited to attend. The invitations have been sent both directly from Mexican physicians and through the secretariat of foreign affairs and the consular offices in the United States and the countries of South America, Central America and Canada. The head surgeon of the Mexican National Railways has invited certain physicians to present papers on occupational diseases of workers on railroads and has requested them to send at their earliest convenience a summary of their papers, in order to prepare the program, also a note stating the number of tickets they desire. After the congress the attendants will be taken to the most interesting places in Mexico City and its surroundings.

Marriages

SKOTTOWE BELLINGER FISHBURNE, Columbia, S. C. to Miss Bernice Robertson Pollok of Danville, Va. January 12.

LEON RAPHAEL STATON, Hendersonville, N. C. to Miss Nancy Terrell of Lynchburg, Va., January 12.

AMOS NEILL JOHNSON of Garland, N. C., to Miss Mary Allan of Fort Lauderdale, Fla., February 6.

JOSIAH EDGAR HAYNESWORTH, Buckingham, Va., to Miss Paula Irving of Farmville, January 19.

JOE GIDEON HUFSTEDLER, Knoxville, Tenn., to Miss Boatwright in Memphis, January 26.

WILLIAM T. BARRON, JR., Manning, S. C., to Miss Eve Gable of Sumter, Oct. 26, 1934.

FRANK SABISTON to Miss Ethel Anne Roberts, both of Kingston, N. C., January 15.

JOHN CHAMPLIN to Miss Frida Moehl, both of Westerly, R. I., January 30.

Deaths

Franklin H. Martin * died of coronary thrombosis while in Phoenix, Ariz., on Thursday, March 7, aged 77 years. His death culminated a career devoted to organizational efforts, particularly in the field of surgery, leading toward the advancement of that specialty in medical science and toward a better understanding by the public of the work of the physician. Only recently Dr. Martin had completed and published his autobiography under the significant title 'The Joy of Living' and also a record of the work of the Council of National Defense—Medical Section—during the World War.

Dr. Martin was born in Lonia, Wis., July 13, 1857. Following his education in the public schools and academies of Wisconsin, he received his medical education in Northwestern University Medical School, Chicago, graduating in 1880, and filled an internship in Mercy Hospital until 1881. In 1886 he married Isabelle Hollister, daughter of John Hollister, founder of Northwestern University Medical School. During the same year he became professor of gynecology in the Chicago Polyclinic. In 1880 he undertook organization of the Post-graduate Hospital School of Chicago and from that time continued to devote himself to educational work and to his practice in gynecology. He published a number of monographs in that field, including one on 'Treatment of Fibroid Tumors of the Uterus' in 1897 and 'Treatise on Gynecology' in 1903.

However, his most significant work began with the establishment of *Surgery, Gynecology and Obstetrics* in 1905, to which, in 1913, was added the *International Abstracts of Surgery*. The development of this publication and its relationship to surgical practice led to the formation of the Clinical Congress of Surgeons of North America in 1910 and thereafter the American College of Surgeons in 1913. In this work were associated such leaders in American surgery as Drs. William J. Mayo, A. J. Ochsner, John B. Murphy and George W. Crile. Many of the accomplishments of Dr. Martin for the advancement of surgery depended on the manner in which he was able to secure the whole-hearted cooperation many times at great self-sacrifice, of distinguished leaders in the field of surgery in this country.

During the great war, Dr. Martin was asked by President Woodrow Wilson in October 1916, to head the development of medical participation. He was chairman of the general medical board of the Council of National Defense and a member of the executive committee under which state and county committees of medical men were organized. He was also responsible for the development of the Volunteer Medical Service Corps, in which numbers of American physicians enrolled. During his participation in military activities he was Colonel in the Medical Corps of the United States Army, and with the American Expeditionary Forces for three months.

His position of leadership and the success of his efforts brought to him honors and recognition from many places. Among other decorations were the Companion of the Order of St. Michael and St. George bestowed by King George V of Great Britain, Nov. 13, 1919; the Distinguished Service Medal of the United States Government and the Order of Commander of the Crown of Italy. He received also the LL.D. of Queen's University, Belfast, Ireland of the University of Wales, Cardiff, and the University of Pittsburgh. There was given to him the honorary D.Sc. of Northwestern University and D.P.H. of the Detroit College of Medicine and Surgery.

Not only as a leader in the field of medicine, however, did Dr. Martin serve his fellowmen. He edited *Surgery, Gynecology and Obstetrics* continuously from its foundation to the day of his death. He was director general of the American College of Surgeons from its organization in 1913 to the day of his death. He was president of the American College of Surgeons in 1929, president of the International Association of Gynecologists and Obstetricians in 1919, Trustee of Northwestern University from 1921 to 1931, and a member of boards of trustees and adviser to many other educational, scientific organizations and institutions. He extended the influence of the American College of Surgeons to European and South American countries and, in association with this work, received the honorary fellowship and membership of many of them. He contributed liberally to civic organizations both in Chicago and elsewhere.

Among other activities was the founding and leadership of the Gorgas Memorial Institute of Tropical and Preventive Medicine, a plan of considerable scope proposed with the idea of extending medical knowledge widely to the public and to enlist public support, which seems to have failed to fulfill the scope that its founder conceived for it.

In his leadership of the organizations that he founded and directed, Dr. Martin revealed an imaginative brain, a quick comprehension of public interest, and initiative that was highly alert almost to the day of his death. One found his organization continually creating new committees and new investigative bodies as rapidly as the changing conditions of our civilization indicated their desirability. The development of the motion picture, the rise of industrial medicine, the trend toward social security, and many similar developments were promptly recognized by his organization in the manner that has been mentioned. Dr. Martin was a genial man, a lover of music and of all the arts, and a widely traveled citizen of the world. His commanding appearance, his quick and humorous eye, his alert carriage and the brilliance of his personality brought him recognition and prestige which he more than merited.

Elmer Isaac McKesson * Toledo, Ohio, Rush Medical College, Chicago, 1906, past president of the Academy of Medicine of Toledo and Lucas County, the International Anesthesia Research Society, and the Interstate Association of Anesthetists, member of the Associated Anesthetists of the United States and Canada,

aged 53, member of the staff and anesthetist to the Toledo Hospital, St. Vincent's Hospital, Lucas County Hospital, Toledo State Hospital and the Flower Hospital, where he died, February 22.

Archibald Cecil Kane, Oak Park, Ill., Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1920, member of the Illinois State Medical Society, instructor in laryngology, otology and rhinology, University of Illinois College of Medicine, Chicago, served with the British Army during the World War, consulting surgeon to the Municipal Contagious Disease Hospital, Chicago, and formerly on the staff of the Illinois Eye and Ear Infirmary, Chicago, aged 42, died, February 10, of coronary thrombosis.

Daniel Roe Ayres, New York, Columbia University College of Physicians and Surgeons, New York, 1909, assistant professor of gynecology, New York Post-Graduate Medical School of Columbia University, fellow of the American College of Surgeons, at various times on the staffs of the Southside Hospital, Bay Shore, New York, City Hospital and the Post-Graduate Medical School and Hospital, aged 51, died, February 21, of pulmonary and laryngeal tuberculosis.



FRANKLIN H. MARTIN, M.D., 1857-1935

Arthur Hartley, Philadelphia, Hahnemann Medical College and Hospital of Philadelphia, 1898, professor of applied anatomy at his alma mater, fellow of the American College of Surgeons, served during the World War, aged 62, on the staffs of the Delaware County Hospital, Drexel Hill, the Women's Homeopathic Hospital, St. Luke's and Children's Hospital and the Hahnemann Hospital, where he died, February 10

Joseph Raymond Burns, Syracuse, N. Y., Syracuse University College of Medicine, 1907, member of the Medical Society of the State of New York, associate professor of clinical obstetrics at his alma mater, on the staffs of the University Hospital, Hospital of the Good Shepherd, St. Joseph Hospital and the Syracuse General Hospital, aged 48, died January 29, of chronic arteriosclerotic nephritis and myocarditis

Caroline Carle Lawrence, Long Beach, Calif., Woman's Medical College of Pennsylvania, Philadelphia 1894, for many years medical inspector in the public schools of Gary, Ind. formerly a medical missionary, at one time college physician and professor of hygiene at the Clnura (N. Y.) College, aged 65, died, January 30, of a hip fracture received in a fall and of acute nephritis.

Frank M. Durham, Columbia, S. C., Medical College of the State of South Carolina, Charleston, 1903, member of the South Carolina Medical Association, veteran of the Spanish-American War, aged 59, died, February 1, in the South Carolina Baptist Hospital, of injuries received when struck by an automobile

Thomas Milton De Arman, Miami, Okla., University of Oklahoma School of Medicine, Oklahoma City, 1928, member of the Oklahoma State Medical Association, aged 33, died, January 28, in the Oklahoma General Hospital, Oklahoma City, of complications following pneumonia

Jacob Ziegler Hoffman, Wichita, Kan., University of Pennsylvania Department of Medicine, Philadelphia 1886, past president of the Sedgwick County Medical Society, chief of the medical staff of the Wichita Hospital, aged 72, died, January 28, of coronary thrombosis

Oscar Franklin Blank, Los Angeles, Bellevue Hospital Medical College, New York, 1889, member of the board of St. Luke's Hospital, Bethlehem, Pa., aged 67, died, January 25, in the California Hospital, of bronchopneumonia, following an abdominal operation.

Philip Elwood Stigers, Hancock, Md., Jefferson Medical College of Philadelphia 1887, member of the Medical and Surgical Faculty of Maryland and the West Virginia State Medical Association, aged 70, died suddenly, January 29, of heart disease

Charles A. Bevan, West Haven, Conn., Medical-Chirurgical College of Philadelphia, 1887, health officer of West Haven for many years, at one time member of the school board, aged 85, died, January 29, of cerebral hemorrhage

Ernest Lacy Smith, Eastman, Ga., University of Georgia Medical Department, Augusta 1899, member of the Medical Association of Georgia, aged 59, died, January 28, of cerebral hemorrhage while visiting at the State Hospital, Milledgeville

Charles McIlroy Brown, Kansas City, Kan., University Medical College of Kansas City, Mo., 1913, on the staffs of the Bethany and Providence hospitals, aged 46, died, January 13, of acute dilatation of the heart and pulmonary edema

Charles H. Teasdale, Crystal Springs, Miss., University of Louisville (Ky.) Medical Department, 1884, Civil War veteran, aged 90, was found dead, January 21, as the result of his clothing being ignited from an open fireplace.

Andrew Jackson Hesser, Hollis, N. Y., Western Pennsylvania Medical College, Pittsburgh, 1896, veteran of the Spanish-American and World wars, formerly a missionary, aged 67, died, January 22, of heart disease

Edward Tanner, Battle Creek, Neb., University of the City of New York Medical Department, 1879, past president of the Madison County Medical Society, aged 79, died, January 29, of arteriosclerosis and pneumonia

John H. Hendrix, Hawkinsville, Ga., Atlanta College of Physicians and Surgeons 1902, formerly mayor of Jasper and member of the board of education, aged 57, died, January 24, of influenza and heart disease

Michael Dugan Spurck, Los Angeles, University of Pennsylvania Department of Medicine, Philadelphia 1904, aged 52, died January 29, in the Queen of the Angels Hospital, of cerebral hemorrhage

Arthur Leonard Jacobson, Seattle, Johns Hopkins University School of Medicine, Baltimore 1921, on the visiting staff of the King County Hospital, aged 39, died, January 28, of heart disease

Pasquale Conca, Providence, R. I., Regia Università di Napoli, Facoltà di Medicina e Chirurgia, Italy, 1899, on the staff of the Homeopathic Hospital, aged 62, died, January 28, of pneumonia

Lily Victoria Hampton, Portland, Ore., Willamette University Medical Department, Salem, 1889, aged 67, died, January 27, of myocarditis, arteriosclerosis and cerebral hemorrhage.

Philip Israel Levine, Brooklyn, New York, Homeopathic Medical College and Flower Hospital, 1927, aged 31, died, January 18, of a cranial lesion and acute encephalitis

George W. Eggleston, Hudson, N. Y., National Homeopathic Medical College, Washington, D. C., 1895, died, January 30, of hypertrophy of the prostate

George Ash Taylor, New York, University of Maryland School of Medicine, Baltimore, 1890, aged 67, was found dead in bed, Dec. 30, 1934, of heart disease

Paul Lawrence, Haughton, La., University of Louisiana Medical Department, New Orleans, 1867, aged 95, died suddenly Nov. 3, 1934, of angina pectoris

William Chase Bennett, Toledo, Ohio, Rush Medical College, Chicago, 1893, served during the World War, aged 67, died, January 31, of carcinoma

Joseph Etienne Telephore Dussault, St. David de Lévis, Que., Canada, Laval University Faculty of Medicine, Quebec, 1894, aged 63, died, January 1

Lorne De Corsia MacIntosh, Hartland, N. B., Canada, McGill University Faculty of Medicine, Montreal, Que., 1904, aged 58, died, Dec. 11, 1934

Fred L. Duckworth, Monticello, Ark., Chattanooga (Tenn.) Medical College, 1905, aged 52, died, January 24, as the result of a cerebral hemorrhage

Christopher Harfield West, Mayne, B. C., Canada (licensed in British Columbia in 1923), aged 74, died, January 13, of angina pectoris

Henry Perkins Stockwell, Stanstead, Que., Canada, McGill University Faculty of Medicine, Montreal, 1898, aged 59, died, Dec. 29, 1934

Joseph Rainford Warren, New York, McGill University Faculty of Medicine, Montreal, Que., Canada, 1918, aged 51, died, Dec. 28, 1934

Tecumseh D. S. McCall, Cahente, Nev., St. Louis College of Physicians and Surgeons, 1888, aged 68, died, January 5, of uremia

Florence John Halloran, Chatfield, Minn., Rush Medical College, Chicago, 1888, aged 76, died, January 23, in Jackson, of urinary calculi.

Lesco Albert Robinson, Spokane, Wash., Rush Medical College, Chicago, 1896, aged 63, died, January 19, of influenza and heart disease

John A. Thompson, McComb, Ohio, Homeopathic Hospital College, Cleveland, 1881, aged 86, died, Dec. 28, 1934, of arteriosclerosis

Thomas A. Lowery, Fort Worth, Texas, Physio-Medical College of Texas, Dallas, 1906, aged 66, died, January 18, of pneumonia

Thomas Winfield Tuggle, New York, Medical College of Ohio, Cincinnati, 1882, aged 73, died, Nov. 12, 1934, of coronary thrombosis

Wilbert A. Uhl, Baldwin City, Kan., Fort Wayne (Ind.) College of Medicine, 1882, aged 75, died, January 7, of myocarditis

Egbert A. D. Goldsmith, Seattle, Chicago Homeopathic Medical College, 1903, aged 58, died, January 18, of heart disease.

Laban Theodore Loar, Gary, Ind., Louisville (Ky.) Medical College, 1891, aged 74, died, January 16, of bronchopneumonia

Adam E. Vrooman, Lindsay, Ont., Canada, Faculty of Medicine of Trinity College, Toronto, 1872, died, January 27

CORRECTION

Dr. Garcelon Was Not Officer of American Medical Association—The statement in the obituary notice of Dr. Alonzo Marston Garcelon of Lewiston, Maine, in THE JOURNAL, March 2, that he was a Trustee of the American Medical Association, 1883-1901, and in 1901 was elected Vice President, was an error. Dr. Alonzo Garcelon of Lewiston, who died in 1906, was an officer of the Association.

Bureau of Investigation**G R BIGLER, QUACK****A Medical Mail-Order Prostate Treatment
Declared Fraudulent**

G R Bigler of Springfield, Ill., is not a physician, chemist or pharmacist, nor does he employ a physician, a chemist or a pharmacist, yet for some time prior to Nov. 21, 1934, this man was engaged in the sale through the mails of a preparation called "Bigler's Guaranteed Prostate Treatment" for the alleged relief and cure of "prostate trouble." On the date mentioned the United States mails were closed to Bigler under his own name as well as under the names "Bigler's Prostate Treatment," "Bigler's Guaranteed Prostate Treatment" and Bigler Company.

As is common in all such cases, Bigler secured business through advertisements placed in periodicals and magazines offering his alleged treatment for sale. A typical advertisement read as follows:

**'PROSTATE SUFFERERS
GET QUICK RELIEF**

and positive results with our inexpensive home treatment. Send for guaranteed trial offer and valuable information free.
BIGLER CO. SPRINGFIELD ILLINOIS

Those who answered such advertisements received a form letter from Bigler in which they were urged to "act at once and get Bigler's Guaranteed Prostate Treatment on our liberal money-back guarantee that you must get satisfactory results and relief." The treatment was said to be different from other "home treatments" and consisted in applying "a positive treatment directly to the prostate." It was said to be "a valuable ointment" that, if given by a physician, "would probably cost ten times as much." The "home treatment" consisted of the ointment and some tablets and three finger cots to be used in applying the ointment. The "treatment" cost \$4.85. When analyzed by the government chemists, the ointment was found to be a simple mixture of petrolatum and wax. The tablets were hexamethylenamine.

The postal authorities, under date of Oct. 18, 1934, notified Bigler and his various-named concerns to show cause by Nov. 12, 1934, why a fraud order should not be issued against them. No one representing Bigler or his companies appeared at Washington on the date set, but a written answer, together with certain documentary evidence, was submitted. The government was able to show, of course, that the so-called Bigler treatment did not "give immediate relief" to persons suffering from "prostate trouble" nor did it remove or assist nature to remove the cause or causes of such disorders. The government also showed that the daily massage of the prostate gland, as recommended by Bigler, might in many cases be harmful. Government experts pointed out, further, that although Bigler was recommending his treatment to all persons suffering from prostate trouble, regardless of their age or the cause of the condition, the treatment, which was the same in all instances, was neither rational nor scientific.

Bigler promised to refund all remittances to those who did not get "satisfactory results" after using the treatment for thirty days. It was shown that, as a matter of fact, he refused to make such refunds in many instances, due to the fact that purchasers had not written him every five days for the purpose of keeping him informed as to any alleged progress. Investigation also disclosed that in some instances, instead of affording relief, the Bigler treatment actually increased the symptoms and caused the user greater pain. In such cases, if the user discontinued the treatment, he was automatically deprived of any opportunity, under the terms of the guarantee, to obtain a refund.

In view of all the facts, Judge Karl A. Crowley, Solicitor for the Post Office Department, declared that, on the evidence, he found Bigler's scheme to be one for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises, and he recommended that the Postmaster General close the mails to Bigler and his various-named concerns. As already stated, the mails were so closed on Nov. 21, 1934.

Correspondence**CONSTITUTION AND HEART
DISEASE**

To the Editor—A recent editorial in THE JOURNAL (January 19, p. 221) deals with a publication on constitution and heart disease by Raymond Pearl and Antonio Ciocco, who examined a number of cases of heart disease regardless of type and etiology and found no relationship between heart disease and body build.

Permit me to point out what appears to me to be the basic error that underlies the study of these authors as well as the editorial opinion concurring with their conclusions.

It would be totally unreasonable to any student of medicine to search for a possible constitutional type in a group of cases of pulmonary disease comprising patients with pulmonary tuberculosis, chronic bronchitis, pulmonary neoplasms, lung abscess, pleurisy, pneumoconiosis, emphysema, and other diseases. Such a study would certainly fail to reveal any relationship between pulmonary disease and any single constitutional body type. Such a study would be a waste of time, because it would be expected from the outset to reveal nothing of importance. On the other hand, it is well known that there is a definite relationship between the asthenic body build and pulmonary tuberculosis.

It is just as unreasonable to base a similar study on a group of patients with cardiac disease of all kinds, as the authors did, disregarding the etiology and the anatomic type of the disease.

The principles of cardinal importance in the study of constitutional factors lead too far back into the fundamental sciences of embryology and endocrinology to be entered into here. I deem it important, however, to emphasize the fallacy of a statistical study such as the one referred to.

Another study, which illustrates the correct approach and which has demonstrated observations not at all in accord with those of Pearl and Ciocco, is that of Otto Willner (*Am J M Sc* 180:200 [Aug.] 1930). His observations, based on examinations of 150 Chinese adults, clearly showed the existence of a definite relationship between the asthenic build and mitral configuration of the heart and a large angle of the electrical axis on cardiographic examination.

Statistical studies just for the sake of statistics are one thing. Studies based on thoughtful regard for the type of disease concerned are another.

MARCUS BACKER, M.D., Bridgeport, Conn.

EXPERIMENTAL ACROMEGALY

To the Editor—Although it is a minor matter, I cannot forbear to protest concerning the statement that "one of Evans's students working in Cushing's laboratory at Harvard produced experimental acromegaly" in your answer in *Queries and Minor Notes* (Use of Pituitary Preparations for Increasing Growth, THE JOURNAL, February 9, p. 498). The article to which you refer (Studies in Acromegaly. VIII. Experimental Canine Acromegaly Produced by Injection of Anterior Lobe Pituitary Extract, *Arch Surg* 18:1708 [part 2] 1929) is by Tracy J. Putnam, Edward B. Benedict and Harold M. Teel. The long experimentation to produce an active extract (*Am J Physiol* 84:157 [Feb.] 1928) and the planning of the work was done by Dr. Putnam, with the fragmentary assistance of Dr. Benedict and (the then) Mr. Teel. Dr. Teel's contributions to endocrinology, and the splendid bulk of Dr. Evans's own work, are such that I know these men would be the first to deplore the inferred or solitary ascription to them of work

done by another, regardless of the rivalry of experimental laboratories. As a one time fellow in charge of the Cabot Laboratory of Surgical Research, where Dr. Putnam's work was done, I should like to ask that this correction appear in your columns.

A. J. McLEAN, M.D., Portland, Ore.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted, on request.

BLADDER PAIN

To the Editor—A woman aged 25 and unmarried has had a bladder ailment for many years. She has frequent spells, apparently of vesical spasm which give her severe cramplike pains. Cystoscopy on several occasions has revealed a normal bladder lining membrane and no pus or organisms are found in the urine. At the times when these pains are present she also has frequency of micturition. During the attacks she obtains some relief from camphorated tincture of opium but her greatest relief is obtained from simple bladder irrigations. About a year ago she had a simple appendectomy at which time a cyst was removed from the right ovary. There was no malposition of the uterus and the pelvic organs were otherwise normal. Since this operation the patient's menstrual symptoms have been somewhat more pronounced and she takes ovarian extract hypodermically at her menstrual time. If this is published please omit name.

M. D. Alabama

ANSWER—There are several possibilities to consider in determining the cause of the bladder pain.

First, it is important to rule out the possibility of chronic urethritis. The examination for the presence of infection in the urethra should include careful inspection of Skene's glands, stripping the urethra for pus, search for tenderness and, possibly, the exploration of the urethra with diagnostic bougies for the presence of strictures.

It is possible that the symptoms may be due to so-called elusive or Hunner's ulcer of the bladder. As is well known many of these patients have a clear urine, free from pus and organisms and yet, on careful cystoscopic examination areas of ulceration may be seen at one time and at other times the ulcers will be healed and one sees small areas of increased vascularity that bleed when the bladder is fully distended.

It is necessary in an obscure case of this kind to rule out the presence of stone in the ureter by means of a roentgen examination.

Lesions of the upper tract may be ruled out by an intravenous pyelogram.

If the complete survey of the urinary system is negative a complete physical examination should be done to rule out the presence of obscure disease in the central nervous system that might account for the bladder symptoms. This at times is a difficult task calling for the services of an expert neurologist.

Very rarely, bladder disturbance may be due to allergy.

Finally, in view of the fact that the patient has been operated on a careful examination should be made of the pelvis. Every once in a while bladder symptoms may be due to trivial lesions in the cervix as it is well known that symptoms of this kind have disappeared following cauterization of the cervix.

SPEECH TRAINING AFTER CLEFT PALATE OPERATION

To the Editor—My 22 months old baby boy was born with a right complete cleft of the soft hard palate the alveolar arch and the lip. He was immediately placed in the hands of an able surgeon who completed a splendid repair when the child was 14 months old. Now that he has begun to talk he has been unable to pronounce letters that depend on the soft palate. He pronounces m and n well but pronounces daddy as though it were spelled with n and says nang for bang and so on. Will you kindly advise what measures may help in speech training voice culture or phonetics to overcome this impediment?

D. K. MATTHEWS, M.D., Dresden, Ohio

ANSWER—Perhaps the most important single factor in correct speech is a freely movable muscular sphincter that includes the superior constrictor of the pharynx and a freely movable soft palate. If the soft palate does not completely close, there will be a leak of air into the nose and consequently nasal speech—and, unless corrected the inability to make the hard consonants understood. M and n normally go through the nose. However, trouble in making people understand hard consonants is apt to set up a vicious circle in a child's speech in that he says them rapidly to get it over with and may

become discouraged and even lazy in attempting to overcome the difficulty. This point is illustrated by the child's being able to say mama but not being able to say daddy. The first consideration in the repair is to decide whether further surgery in an effort to lengthen the palate would be of benefit. Whether or not operation is done or is necessary, it is almost always necessary for the child to have careful speech training to get good speech. This is best accomplished by one trained in the work, and most communities nowadays have such a trained worker available either in special institutions or in public schools. Where this is not available, it is probably worth while for the mother herself to arrange a consultation with a speech trainer and learn some of the fundamentals of the methods used. Then it is best to have classes at definite periods with the patient, encourage him, reward him and show him the benefits of clear speech rather than correct him each time he makes an error in speech. It is preferable, if possible, to have this help given by some one outside the family who is not accustomed to the child's speech. The Central Institute for the Deaf, 818 South Kingshighway, St. Louis, can probably supply more definite information.

EOSINOPHILIA IN TRICHINOSIS

To the Editor—In trichinosis as the patient improves there is an increase in eosinophilia. While I know that it is a good prognostic sign why should it occur? Please omit name.

M. D., New York

ANSWER—T. R. Brown (*J. Exper. Med.* 3:315, 1898) reports the eosinophil count in a case of trichinosis in which a blood count was made daily, beginning six or seven weeks after the patient reported the onset of symptoms. The count was continued for sixty-nine days. The percentage of eosinophils was 37 on admission, declined to 83 in eighteen days, rose again gradually to a maximum of 68.2 fifty days after admission, or from thirteen to fourteen weeks after the onset of symptoms and declined to 16.8 on discharge of the patient from the hospital nineteen days later.

In trichinosis the percentage of eosinophils increases and the neutrophils decrease as the trichinella larvae migrate from the intestine into the muscles. The increase may continue into the period of convalescence and remain above normal for months or even a year after the initial rise. There is considerable variation in the percentages of eosinophils reported in different cases of trichinosis and at different intervals in the same case. There is no conclusive evidence that the rise always occurs with the onset of convalescence. The migration of larval worms initiates the increase in eosinophils. The rate at which larvae are liberated and the number entering the muscles are both liable to adjustments as the result of environmental conditions in the bowel where the feeding adults occur. The percentages of eosinophils in the blood to some extent represent the cumulative effect of the migrations and the occurrence of a maximum in convalescence is probably a lag effect.

YEASTS IN STOOLS

To the Editor—Can you give me any references on the possible pathogenicity of (or associated pathologic changes with) abundant yeasts in feces that are otherwise normal? An arthritic woman aged 53 who has lived as a missionary in the tropics but who has never had sprue or intestinal parasites so far as known in the past had mucous colitis apparently mild. In a series of five stools examined for parasites (negative) abundant clumps of oval yeasts were found with a few associated pus cells. Eosinophilia (5 per cent) is present. Removal of abscessed teeth and tonsils has shown no marked effect. The basal metabolic rate is minus fifteen.

DELL T. LUNDQUIST, M.D., Palo Alto, Calif.

ANSWER—It is noted that the stools of the patient under consideration are described as containing abundant clumps of oval yeast with a few associated pus cells. Since no report on the cultures of the stools is given it cannot be determined whether the fungus mentioned is a true yeast or a Monilia. Relative to the latter, P. M. Keating (*Fungus Infection of Bone and Joint*, *South M. J.* 2:1072) reported twenty-five cases of Monilia infections of the bone and joint, of which eight cases were classed under chronic atrophic arthritis. These patients showed a heavy growth of Monilia in the intestine and throat. They also gave positive blood agglutinations and were sensitive to intradermal tests for Monilia. The treatment described was iodides, neoarsphenamine, specific vaccine and diet.

Nye Zervas and Cornwall (*The Pathogenicity of Yeastlike Fungi Isolated from the Human Gastro-Intestinal Tract*, *Am. J. M. Sc.* 178:515 [Oct.] 1929) investigated the pathogenicity of yeast isolated from the stools of normal individuals and with patients with various diseases. Many of the yeasts isolated were found to be pathogenic to laboratory animals.

SUCTION AND SIPHONAGE IN SINUS DISEASE

To the Editor—Regarding the popular practice of applying suction and siphonage (nasal) as a means of draining the various sinuses, am I correct when I maintain that it is mechanically impossible to obtain such desirable results in that way? My contention is that the developed negative pressure is equal opposite all the sinus openings and that therefore there can be no movement of the contained fluid and that the only way in which retained secretion can be removed requires the entrance of a tube into one of the openings, followed by suction or pressure. Am I correct in this? If printed in *THE JOURNAL*, kindly omit name.

M D, New York

ANSWER—It is in all likelihood true that the popular practice of applying suction and nasal siphonage as a means of draining the various sinuses is only partly, if at all, successful in accomplishing this purpose. The most rational and successful methods depend on the insertion of a trocar or blunt cannula into the cavity in question and then using suction, irrigation or, rarely, pressure. This is not to say, however, that the proper use of suction and siphonage is not a helpful procedure. Even though the secretions removed are those which have already left the sinuses and are present in the nasal cavity, there is some depletion of the tissues following the use of warm solutions, especially if these are hypotonic, and there is often a great deal of comfort to be obtained in the free breathing that follows the cleansing of the nasal passages. Some of the solution used may actually enter the sinuses, but not with any degree of force. After puncture and lavage of such a cavity as the antrum of Highmore, it is not uncommon to find a silver stained secretion when the patient has been using mild silver protein.

EFFECTS OF INHALING SULPHUR DIOXIDE

To the Editor—Can inhalation of sulphur dioxide or other gas used in electrical refrigeration, in sufficient quantity, result in anemia? Are there records of such cases being actually checked prior to such inhalation and following it?

M J STONE M D Bronx N Y

ANSWER—From the action of sulphur dioxide or other commonly used refrigerator gases, an anemia is not expectable. The effects of sulphur dioxide are essentially but not exclusively local and chiefly are represented by inflammation along the respiratory tract. However, some systemic effects are possible under conditions of either severe or moderate involvement, such for example as the consequences attending increased acidity of the body. Under two circumstances an anemia may arise after exposure to sulphur dioxide. The first of these is connected with direful poisoning. The hemoglobin quickly is changed through decomposition to hematin. Such a condition has been discussed in Peterson, Haime and Webster's "Legal Medicine and Toxicology." This, however, is more often associated with fatal cases and the brief time involved scarcely permits of the use of the term "anemia." The second possibility grows out of the fact that a respiratory infection may be associated with more moderate poisoning by sulphur dioxide and, as the result of infection rather than as a direct result, anemia may take place. In short, anemia is a possible but not a characteristic result from sulphur dioxide in particular or from any known much used household chemical refrigerant.

PREGNANCY AND ALLERGIC PHENOMENA

To the Editor—I have just delivered a quadripara of twins and would appreciate a scientific explanation of the following unusual condition. There is nothing unusual in the condition of the mother except for a hypertension of 160 systolic 84 diastolic. The Wassermann reaction is negative, and examination of the urine is negative. The unusual feature is the presence of an urticarial dermatitis, itching in character, with raised surfaces, occurring just after delivery of the placenta. This condition persists till the onset of a following pregnancy. The patient has had this condition following her first delivery up to the present date. As a matter of fact she realized that she was pregnant when the urticarial condition cleared up. Can it be possible that a placental or ovarian hormone deficiency after pregnancy causes this condition? The patient had no disturbance of the skin prior to her first pregnancy.

JACOB GOLDBERG M D Long Branch, N J

ANSWER—The history here related is not at all uncommon. Disappearance of urticaria and pruritus at the onset of pregnancy, with recurrence after the termination of labor. There are many possible explanations.

The correspondent says nothing about the menstrual history of the patient. This, together with investigations as to the hormone content (estrogenic and gonadotropic principles) of the blood and urine in different parts of the menstrual cycle may give some clue as to a hormone deficiency, if such exists. It may be that the patient has a normal hormone balance but that an intercurrent allergic condition exists, the cutaneous mani-

festations of which were relieved by the increased level of estrogenic and/or gonadotropic substances (or even some unknown factor) in the blood stream during pregnancy. It does not follow that therapy with either of these principles would be safe or effective in the interim between pregnancies and obviously, even if effective, it would have to be kept up indefinitely. The possible effects of such therapy on the menstrual cycle must also be considered. The usual efforts should be made to trace in the environment an inciting factor of the urticaria, such as a food to which the patient may be sensitive.

TRIBROMETHANOL ANESTHESIA NOT RECOMMENDED FOR TONSILLECTOMY

To the Editor—Will you kindly inform me whether it is safe to administer tribrom ethanol in the removal of tonsils and adenoids when this work is performed in the physician's office? May this drug be administered to children? If yes, are there any special precautions to be taken? Kindly omit name.

M D, Connecticut

ANSWER—It is not wise and frequently is actually unsafe to administer tribrom ethanol in the removal of tonsils and adenoids when this work is performed either in the physician's office or even in a hospital. There are other better and safer anesthetics for this purpose, ether, to mention one of them, being much preferable. Patients frequently do not awake from tribrom ethanol for hours. This is an undesirable situation when there is a good deal of secretion in the pharynx or vomitus, or when there may be bleeding such as follows from time to time after a tonsil and adenoid operation. The laryngeal cough reflex disappears late under tribrom ethanol anesthesia and returns late, and it is this laryngeal cough which is the "watch-dog" in Jackson's terminology, of the lungs. Blood and secretion in the pharynx, when the laryngeal cough reflex is absent for periods of time, may enter the lungs and produce serious complications.

The drug may be administered to children in proper doses as it is to adults. Here, too, the same restrictions as to the presence of secretion or blood in the pharynx hold.

LOCALIZED PERSPIRATION

To the Editor—A medical man aged 42 complains of continuous sweating on the left side of the forehead and left side of the nose only for the last month. The family history reveals nothing in particular. The patient has no outstanding habits. He was passing small quantities of sugar in the urine about a year ago for a short time, but there has been none since. The blood sugar is otherwise normal. The dextrose tolerance test reads 0.14 mg of sugar. Physical examination of the digestive, respiratory and circulatory systems was normal. The pulse was 82, the blood pressure 125 systolic, 80 diastolic. The urinary system normal without albumin or sugar. The nervous system normal, without subjective complaint, the eyes normal (fundus) no wasting of any muscles, no tremors, the reflexes all normal. Cutaneous sensations normal. Except for the present subjective complaint of constant perspiration on the left side of the forehead and on the left side of the nose the patient has no trouble. Please advise me of the probable cause of this condition and how to proceed with the case. Kindly omit name.

M D, India

ANSWER—The probable cause of the localized sweating in this case is an irritation of the sympathetic chain in the cervical or upper thoracic regions on the left side. A dilatation of the pupil of the eye on that side would be confirmatory. One of the commonest causes for this condition is an aneurysm of the arch of the aorta. However, any tumor in that region may be the etiologic agent.

HYPERHIDROSIS

To the Editor—What treatment is suggested in a case of generalized hyperhidrosis of ten years duration in a woman, aged 69 who has had a good health record? At present she is showing some myocardial changes with associated dyspnea, bronchitis and hypertension. Examination of the urine gives negative results. Sweating occurs winter and summer, day and night. It is not offensive but keeps the patient's underclothing saturated most of the time. Local applications are not effective. Please discuss etiology also. Kindly omit name.

M D, Maryland

ANSWER—Hyperhidrosis is a functional disturbance of the sweat secretion, which is regulated by the vegetative nervous system. According to some modern physiologists there are two mechanisms involved, one of parasympathetic origin produced by thermic stimulation, and the other of sympathetic origin associated with psychic disturbances. In an elderly woman in whom tuberculosis can be excluded, the etiology may not be an organic condition and it may be purely nervous in origin. Treatment will give only partial relief. Permanganate baths may be tried. Atropine internally is of temporary benefit. The dosage should not exceed 0.001 Gm.

KAHN TEST IN PSORIASIS

To the Editor—I should like to know whether a positive Kahn reaction exists in psoriasis?
N L. MISTACHUKIN M D, St Louis

ANSWER.—There is no indication in the literature that the Kahn test gives positive reactions in the absence of syphilis, in cases of psoriasis. Keim and Kahn (*J Lab & Clin Med* 10 1013 [Sept.] 1925), in a study of the specificity of the Kahn test in nonsyphilitic conditions, list thirty-three cases of psoriasis in which the Kahn reactions were negative. Among the cases of psoriasis included in the serologic conferences of the League of Nations Health Committee (Reports of Second Laboratory Conference and of the Montevideo Conference on Serodiagnosis of Syphilis, Geneva, League of Nations Health Organization 1928 and 1931) Kahn reported one doubtful (±) reaction in a patient free from syphilis. It would appear that the specificity of the Kahn test is not affected by psoriasis. It is well, however, to be duly guarded in interpreting positive serologic results in the presence of pathologic conditions other than syphilis. This applies to all methods.

TABES WITH OPTIC ATROPHY

To the Editor—A man in his early fifties has been sent to me for treatment because of unilateral optic atrophy. He presents all the classic signs and symptoms of tabes, his blood is 4 plus and he gives a history of an early lesion for which he states he received one injection of arphenamine about twenty five years ago. Would you kindly outline what is considered the latest method of proceeding with the treatment of such a case? What is the present thought about weekly spinal drainage in these cases? What is the place of the different metals here and what form of arsenic is indicated? Please omit name. M D Connecticut

ANSWER.—Neither the "latest" nor older methods can be expected to give any great improvement in such a case. An arrest of the process should be attempted with a return to a negative Wassermann reaction, but no hope of anything more than that should be offered. Mercury or bismuth compounds and potassium iodide in many such cases are as satisfactory as any arsenical. If trypanamide is used, great care in watching for fundus or field changes in the good eye by weekly tests should be exercised. Weekly spinal drainage is not of proved value.

RECURRENCE OF OSTEOMYELITIS

To the Editor—Please send me any information you may have regarding the possibility and probability of an osteomyelitis recurring fifteen years after the original infection in the femur. Could such a recurrence be spontaneous? Would a blow to the skin over the site of the original involvement cause a recurrence?
M D Florida

ANSWER.—Pyogenic infection in bone may remain latent for many years following an acute osteomyelitis. It is not infrequent that this infection becomes reactivated long after the original disease. The so called silent foci of osteomyelitis may remain in bone for as long as twenty to thirty years without causing active symptoms and are frequently discovered only by roentgen examination. Activation of such a latent infection is usually without obvious cause, but frequently a history of regional injury is obtained. Undoubtedly, in some cases, injury serves to activate the lesion.

WATER SOLUBLE JELLY INCORPORATING TANNIC ACID

To the Editor—Would you be kind enough to give me a suitable formula for a water soluble jelly to be used for incorporating tannic acid, also a suitable antiseptic. This preparation is to be used for scalp burns exclusively—for first aid treatment in beauty shops. A similar preparation is Ameritan prepared by Ely Lilly & Co. Would the tannic acid stain gray or blond hair? Please specify what antiseptics would be used that are stainless.
MEYER L. NIEDELMAN M D Philadelphia

ANSWER.—Five per cent tragacanth jelly preserved by the addition of 1 500 salicylic acid can be medicated with 5 per cent tannic acid. While the salicylic acid would be stainless, the tannic acid might darken the hair temporarily.

IPECAC IN COLITIS

To the Editor—One of my patients has requested that I give my opinion on the use of ipecac in the treatment of mucous colitis. I have never had any experience with the use of ipecac in this way and would much appreciate it if you can give me any light on the subject.
M D California.

ANSWER.—Probably the good results reported from the use of ipecac in some cases of mucous colitis have been in patients who had an unrecognized amebic infection. In nonamebic cases of colitis there is no indication for the use of ipecac.

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SAPHILOLOGY Written (Group B candidates) The examination will be held in various cities throughout the country, April 29 Oral (Group A and Group B candidates) New York June 10 Sec Dr C Guy Lane 416 Marlborough St Boston

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written (Group B candidates) The examination will be held in various cities of the United States and Canada March 23 Final oral and clinical examination (Group A and Group B candidates) Atlantic City N J June 10 11 Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh

AMERICAN BOARD OF OPHTHALMOLOGY Philadelphia June 8 and New York June 10 Applications must be filed before April 10 Sec Dr William H Wilder 122 S Michigan Blvd Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY New York June 8 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha

AMERICAN BOARD OF PEDIATRICS Atlantic City N J June 10 and St Louis Nov 19 Sec Dr C A Aldrich, 723 Elm St, Winnetka Ill

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY Philadelphia June 7-8 Sec Dr Walter Freeman 1726 Eye St N W Washington D C

AMERICAN BOARD OF RADIOLOGY San Francisco May 10 12 and Atlantic City N J, June 8 10 Sec, Dr Byrl R Kirklin Mayo Clinic, Rochester Minn

ARIZONA Basic Science Tucson March 19 Sec, Dr Robert L. Nugent Science Hall University of Arizona Tucson Medical Phoenix April 23 Sec Dr J H Patterson, 826 Security Bldg Phoenix

COLORADO Denver April 3 Sec Dr Wm Whitridge Williams 422 State Office Bldg Denver

CONNECTICUT Endorsement Hartford, March 26 Sec Dr Thomas P Murdock 147 W Main St Meriden

IDAHO Boise April 2 Commissioner of Law Enforcement Hon Emmitt Pfost, 203 State House Boise

ILLINOIS Chicago April 9 11 Superintendent of Registration Department of Registration and Education Mr Eugene R Schwartz, Springfield

MINNESOTA Basic Science Minneapolis April 23 Sec, Dr J Charney McKinley, 126 Millard Hall University of Minnesota Minneapolis Medical Minneapolis April 16 18 Sec Dr E J Engberg 350 St Peter St St Paul

MONTANA Helena April 2 Sec Dr S A Cooney 7 W 6th Ave Helena

NATIONAL BOARD OF MEDICAL EXAMINERS The examination will be held in all centers where there are Class A medical schools and five or more candidates desiring to take the examination June 24-26 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia

NEW MEXICO Santa Fe, April 8 9 Sec Dr P G Cornish Jr, 221 W Central Ave Albuquerque

RHODE ISLAND Providence April 4 5 Dir Public Health Commission Dr Lester A Round 319 State Office Bldg Providence

TENNESSEE Memphis March 25 26 Sec Dr H W Qualls, 130 Madison Ave Memphis

WEST VIRGINIA Charleston March 18 State Health Commissioner Dr Arthur E McClue Charleston

Idaho October Examination

Hon Emmitt Pfost, Commissioner of Law Enforcement, reports the oral and written examination held in Boise, Oct 2-3, 1934. The examination covered 13 subjects and included 130 questions. An average of 75 per cent was required to pass. Seven candidates were examined, all of whom passed. Fourteen physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists		(1934)	80
University of California Medical School		(1934)	92
Northwestern University Medical School		(1934)	80
State University of Iowa College of Medicine		(1933)	77
University of Nebraska College of Medicine		(1933)	77
University of Pennsylvania School of Medicine		(1933)	87
University of Alberta Faculty of Medicine		(1932)	83
School	LICENSED BY ENDORSEMENT	Year Endorsement Grad.	of
Northwestern University Medical School		(1934)	N B M Ex.
Washington Rush Medical College		(1933)	N B M Ex.
State University of Iowa College of Medicine		(1929)	Iowa
University of Louisville School of Medicine		(1932)	Kentucky
College of Physicians and Surgeons Boston		(1911)	Georgia
University of Michigan Medical School		(1932)	California
Washington University School of Medicine		(1932)	Missouri
Creighton University School of Medicine		(1929)	Nebraska
(1931) Louisiana			
University of Oregon Medical School		(1930)	Oregon
Jefferson Medical College of Philadelphia		(1930)	N B M Ex.
University of Wisconsin Medical School		(1931)	Wisconsin

Puerto Rico September Examination

Dr Ramon M Suarez acting secretary, Board of Medical Examiners of Puerto Rico, reports the written and practical examination held in San Juan, Sept 11-15, 1934. The examination covered 17 subjects and included 80 questions. An average of 75 per cent was required to pass. Ten candidates

were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
George Washington University School of Medicine		(1934)	84
University of Maryland School of Medicine and College of Physicians and Surgeons		(1933)	84.7, 85.1
St. Louis University School of Medicine		(1934)	80.8, 84.3
Jefferson Medical College of Philadelphia		(1934)	84.8
Medical College of Virginia		(1934)	83, 85.4
Université de Paris Faculté de Médecine		(1934)*	80.3
Universidad Central de España Facultad de Medicina, Madrid		(1933)*	78

Two physicians were licensed by reciprocity and 2 physicians were licensed by endorsement from September 5 to October 18. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Louisville School of Medicine		(1933)	New York
New York University University and Bellevue Hospital Medical College		(1928)	New York

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad of
Georgetown University School of Medicine		(1933) N B M Ex
Jefferson Medical College of Philadelphia		(1931) N B M Ex

* Verification of graduation in process

Book Notices

The Biology of the Individual. An investigation of the Most Recent Advances. The Proceedings of the Association New York December 28th and 29th 1932. Editorial Board: J. H. Hunt, M.D., Thomas K. Davis, M.D., and Angus V. Franks, M.D. Association for Research in Nervous and Mental Disease. Vol. XIV of a Series of Research Publications. Cloth. Price \$6. Pp. 323 with 49 illustrations. Baltimore: Williams & Wilkins Company 1934.

This volume is a compilation of the proceedings of the fourteenth annual meeting of the Association for Research in Nervous and Mental Disease. The papers have been published in full, together with questions and answers as submitted by the commission and members of the association. The first half of the book contains papers on the fundamental factors of heredity, growth, environment and various problems of constitution. This section is particularly instructive and includes such acknowledged masters in their respective fields as Smith Ely Jelliffe, on historical notes on constitution and individuality, C. R. Davenport, on body build and its inheritance, William James, on morphologic form and its relation to reflex action and behavior, T. Wingate Todd, on the progress of physical maturity and mental expansion in childhood, Arnold Gesell, on the ontogenetic patterning of infant behavior, Lewellys Barker, on constitution and internal medicine, Walter Timme, on endocrine aspects of constitution, Max Goldzieher, on biochemical aspects of constitution, and Eugene Kahn, on constitutional aspects of personality types. The second part is concerned with psychologic and sociological aspects of behavior. While these studies have a special appeal to neurologists and psychiatrists, they can be profitably read by every physician desiring to ground himself in those factors which go to make up the biologic totality of the individual. The association has made a distinct contribution to medical literature in making these papers available in book form.

Lungen- und Schwangerschaftskrankheiten. Von H. Bräunling, Chefarzt der Fürstlichen Lungenklinik in Stettin. Paper. Price 24 marks. Pp. 276, with 391 illustrations. Leipzig: Georg Thieme 1933.

The author sets down and draws conclusions from the histories of 215 women suffering from tuberculosis. They had 237 pregnancies (three twins), forty-one miscarriages, seven premature labors, sixty-one therapeutic abortions (of which one abdominal pregnancy and one defundectomy) and there were fourteen cases of pregnancy with tuberculosis before the end of the sixth month, a total of 360 pregnancies. After quoting numerous authorities on both sides of the controversy as to whether pregnancy does or does not aggravate tuberculosis and whether therefore the combination does or does not indicate therapeutic abortion, he enumerates the difficulties in collecting and evaluating such material. He describes a scheme for registering graphically conditions, roentgen observations (pencil sketches), history and result which helps to the understanding of the details of each case quickly. The histories

of the 215 women are given quite fully and his own conclusions are briefly stated at the end of each record. A careful perusal of many of his case reports permits different conclusions from those arrived at by the author but the reader suffers from the great disadvantage of not having seen and examined and followed the patient, wherefore his deductions are less valuable.

In answer to the question of the effect of pregnancy on the tuberculosis, he says that undoubtedly a bad effect is determinable but that it is not nearly so frequent as has been believed. In answer to the question Which forms of tuberculosis, inactive, active closed, open, are aggravated and in what age? he says that his figures are too few to decide, but it does seem that in young phthisical patients marked augmentation of the severity more often occurs. The answer to the query for the fate of advanced tuberculous patients seems to be more certain: they run less danger than the beginners, because in the latter a curable disease may be made incurable through pregnancy. In the former, pregnancy does not always aggravate the disease. His studies do not permit foretelling in a given case whether pregnancy will or will not act evilly.

The favorable results of treatment are stressed, and the routine roentgen examination of the chest of all pregnant women is advocated. The discussion of therapeutic abortion is clear, both sides being presented, the author admitting that the indication often rests on the doctor's world politics, his operative urgings or his sense of responsibility to either patient, the question at present being a live one in Germany, where increase of population is wanted on ethical and political grounds. Abortion is not done in inactive tuberculosis and in hopeless cases. In young women with active curable phthisis, abortion is done in the first three or four months. Sterilization, the fate of the child, its nursing and other aspects of the complicated situation are given clarifying consideration. This is a valuable addition to the library—already immense—on the subject of tuberculosis in pregnancy.

An Atlas of the Commoner Skin Diseases. By Henry C. O. Semon, M.D. M.B.C.P. Physician for Diseases of the Skin, Royal Northern Hospital. Photography under the direction of Arnold Moritz, B.A. M.B.C. Cloth. Price \$12. Pp. 221, with 103 illustrations. Baltimore: William Wood & Company 1934.

A new atlas comprising 103 plates reproduced by direct color photography from the living subject should prove of great interest to students of dermatology. The photography, under the direction of Arnold Moritz, has been beautifully done. The reproductions are vivid, lifelike portrayals and far superior to those found in most atlases, which have been reproduced from moulages. In a few pictures there has been some slight deviation from the natural colors. In most plates the color values have been faithfully recorded. The cases selected by Semon have been those seen in everyday routine office practice. The accompanying descriptions are brief but contain many valuable diagnostic and therapeutic hints. The author and publisher are to be congratulated on this valuable contribution to dermatologic literature.

Die Variabilität der Organismen und ihre Normengrenzen zugleich ein kurzer Leitfaden der Variationsstatistik. Von Dr. Hans Günther, Professor an der Universität Leipzig. Paper. Price 7 marks. Pp. 182 with 13 illustrations. Leipzig: Georg Thieme 1935.

Morphologic, physiologic and organismal differences are observable between individuals of a species and in a given individual at different times. Of these some are directly measurable, others as yet are not. Notwithstanding these differences, a uniformity prevails that permits the identification of the individual or species. The differences occur, therefore, within limits that it is necessary to recognize. Also a variation beyond certain limits leads to the concepts of normality and disease. The problem of determining the boundaries of normal variation thus becomes of importance from the standpoint of clinical medicine. The author has endeavored to deal with this interesting and significant problem. The causes and categories of variability are described. The statistical methods that permit an analysis of the measurable characters are expounded and their use is exemplified. The determination of 'normal' limits is especially emphasized. Disease as a problem of variability is given a chapter. The bearing of biologic

variables on the concept of "constitution" is discussed. The book is thus of interest to biologists as well as to clinicians. The extent and diversity of the appended bibliography reveal the wide scope of the views presented and their associations and implications.

Standard Classified Nomenclature of Disease Compiled by the National Conference on Nomenclature of Disease. Edited by H. B. Logie, M.D., C.M., Executive Secretary. Second edition. Fabrikoid. Price \$3.50. Pp. 870. New York: The Commonwealth Fund, 1935.

This nomenclature is now in use in some five hundred hospitals of the United States and Canada. In the preparation of the second edition, advice and suggestions have been received from numerous organizations and institutions that have aided in the development of the work and in its application. The standardization of language is a most useful step toward better study of morbidity and mortality. The volume is excellently printed on thin paper and should be made available to record clerks everywhere.

Veröffentlichungen aus der Gewerbe und Konstitutionspathologie Herausgegeben von L. Aschoff, M. B. Schmidt, M. Borst und L. Ilek. Geleitet von W. Koch. Heft 57. Band VIII—(Schluss). Heft 5. Kraftverkehr und Volksgesundheit. Gibt es chronische Autoabgaschäden? Experimentelle Untersuchungen am Benzinmotor. Von M. Schmidtmann. Paper. Price 4.50 marks. Pp. 44 with 5 illustrations. Jena: Gustav Fischer, 1934.

This study of motor traffic and public health and the question whether there are chronic ill effects from exhaust gas is based on observations chiefly on animals exposed to volatilized German motor fuel (benzene) and the exhaust from motors consuming that fuel. German motor fuel generally consists not merely of gasoline from petroleum but contains also considerable amounts of coal distillate, and coal distillate is rich in benzene and related substances. This study is accordingly concerned less with carbon monoxide asphyxia than with benzene poisoning. In the air of streets the author finds that no considerable hazard to health arises either from carbon monoxide or from benzene. Nor is exhaust gas responsible according to the author, for the increasing occurrence of cancer of the bronchi. Exhaust gas in such dilution as occurs outdoors causes no injury to the lungs. Experiments are, however, reported which afford evidence that the blood-forming organs may be affected and anemia induced by chronic exposure to appreciable amounts of exhaust gas from German motor fuel.

A College Textbook of Hygiene. By Dean Franklin Smiley, A.B., M.D., Medical Adviser and Professor of Hygiene in Cornell University; and Adrian Gordon Gould, Ph.B., M.D., Assistant Medical Adviser and Assistant Professor of Hygiene in Cornell University. Second edition. Cloth. Price \$2. Pp. 383 with 80 illustrations. New York: Macmillan Company, 1934.

This is a revised edition of a college book of hygiene that met a most favorable reception on its first appearance. Its authors are experienced in their field and have therefore written the book to the needs of the group for whom it is written. The book discusses the causes of disease, the influence of heredity, methods of prevention of disease, the functioning of various systems in the human body and the proper control of the human body for health.

The New Born Baby. A Manual for the Use of Midwives and Maternity Nurses. By Eric Pritchard, M.A., M.D., F.R.C.P., Medical Director, Infants Hospital, London. Cloth. Price 4/6. Pp. 272 with 9 illustrations. London: Henry Kimpton, 1934.

This little manual was intended to serve as a textbook for students of midwifery. It is a series of lectures on the subject of the care of the new-born baby. The author's style is distinctly informal and direct. Facts are concisely presented but correlated with enough interesting detail so that they engage the reader's interest. The management of clothing and feeding of the new-born baby are first considered. Next, prematurely born infants are considered in detail from the standpoint of care and feeding. The minor ailments and common complaints of the new-born are concisely discussed as are the common diseases of the new-born. While the author reflects the English school of thought, the book is so fundamentally sound in principle that it is well adapted to American instruction. The book will find its greatest field of usefulness among the nursing profession.

Some Notable Epidemics. By H. Harold Scott, M.D., F.R.C.P., D.P.H., Assistant Director, Bureau of Hygiene and Tropical Diseases. With preface by W. W. Jameson, M.A., M.D., F.R.C.P., Professor of Public Health in the University of London. Cloth. Price \$4.75. Pp. 272. Baltimore: William Wood & Company, 1934.

This volume is concerned wholly with epidemics occurring in England from the period 1854 to 1933. The epidemics include outbreaks of cholera, typhoid, diphtheria, scarlet fever, food poisoning and dysentery. In each instance careful analysis is made as to the mode of onset of the epidemic, the case incidence, the tracing of the spread of the disease and similar factors. The volume should be useful to public health officials and a valuable reference work for students in the field of preventive medicine.

Introduction à la chirurgie réparatrice. Par E. E. Lauwers. Préface du Dr. Ombredanne. Paper. Price 18 francs. Pp. 70. Paris: Masson & Cie, 1934.

The last word of the author, who is a professor at the University of Ghent, is that this is meant to indicate the principles and general application of reparative surgery, leaving the application to those who know how. Professor Ombredanne, who contributes a preface, notes the deliberate absence of surgical technique. The book, therefore, is a painstaking recital of what has been done and by whom, whether on the body surface, in the cavities or in relation to organs, members or disturbed functions. The work is thorough and besides being admirably written constitutes an annotated bibliography, including all the literature that is of high significance up to a certain date. What it may lack in completeness can be set down to the rapid progress that has been made recently. It is a reference work of great value not merely to those who adopt the limited view of the specialty but also to the general surgeon, and it has the merit of being compressed within eighty pages.

Medicolegal

Illegal Sale of Drugs Enjoined—The Kentucky board of pharmacy, on the relation of the Attorney General, instituted proceedings to enjoin the Ashland Gem Company, Inc., from operating a pharmacy in violation of the Kentucky pharmacy act alleging that the company was permitting the compounding and dispensing of prescriptions and the vending, at retail of drugs, medicines, poisons and pharmaceutical preparations by persons who were not registered pharmacists. After all the evidence had been introduced and after the case had been submitted to the court for judgment, the plaintiff sought leave to file an amended petition. The court after rejecting the proffered amended petition enjoined the defendant from compounding or dispensing prescriptions and from selling at retail, drugs, medicines, poisons or pharmaceutical preparations except by or in the presence and under the immediate supervision of a registered pharmacist, with the proviso that the injunction should not apply to the selling by the defendant of the usual non-poisonous domestic remedies, medicines, or of patent or proprietary medicines. The plaintiff, contending that the trial court erred in rejecting the amended petition and in refusing to grant the additional relief sought, appealed to the Court of Appeals of Kentucky.

The amended petition, in effect, requested the court to enjoin the defendant from selling at retail except by and under the supervision of a registered pharmacist, a number of preparations named in the original petition or any drug, medicine, poison or pharmaceutical preparation or any patent or proprietary medicine, domestic remedy, chemical or poison which in and of itself is liable to be dangerous or destructive to adult human life in quantities of 60 grains or less for medicinal use. The purpose of the pharmacy act, said the court, is to protect the health and lives of the public against acts of untrained and incompetent persons in compounding and dispensing medicines. That the legislature may, in the exercise of the police power enact such regulatory measures is no longer an open or doubtful question. In prescribing what the defendant may not do, said the Supreme Court, in the conduct or operation of its

drug store, except in the presence and under the immediate supervision of a registered pharmacist, the injunction granted by the trial court practically adopted the language of the pharmacy act. This was as broad and comprehensive as the decree could well be made. It would be an endless task for the court to attempt to enumerate the articles which might be properly included within the scope of different sections of the act. If the sale of any of the preparations specified in the amended petition, except by or in the presence of and under the immediate supervision of a registered pharmacist, would be a violation of the statute then such sale made by the defendant would also be in violation of the injunction. It is therefore apparent, concluded the court that under the decree the plaintiff, as well as the public generally, is afforded every remedy and protection authorized by the statute. The judgment of the trial court was consequently affirmed—*Kentucky Board of Pharmacy v. rel Attorney General v. Ashland Gem Co. (Ky.), 71 S W (2d) 1006*

Dead Bodies Liability of Undertaker for Unlawful Detention of Body—An undertaker, over the protest of the surviving wife, held the dead body of her husband and embalmed it without her consent, refusing to deliver the body until his fees were paid. The wife sued the undertaker to recover punitive damages and obtained judgment in the trial court. The undertaker thereupon appealed to the Supreme Court of North Carolina.

The surviving wife, said the Supreme Court, has a property right or quasi-property right in and to the body of her dead husband, which is paramount to the claim of any other person. Moreover, she may recover punitive damages for the mutilation or unlawful detention of the body by a third person if such conduct is wilful, wanton, reckless or unlawful. Manifestly, said the court the arbitrary withholding of the dead body of her husband from a widow as a security for a debt, or for services rendered, is an unlawful act even though courteously done as the Supreme Court of Washington said in *Gadbury v. Bleitz*, 133 Wash 134, 233 P 299, 44 A L R 425.

But we think that the holding of the body after the time for its cremation has passed, and claiming to hold it as a guaranty or as security for the payment of some indebtedness is making a misuse of the body, just the same as its mutilation or improper burial. The misuse in one case may be greater in degree but nevertheless it is a misuse.

In the present case the evidence offered by the plaintiff widow tended to show that she, in deep distress from nervous shock, was compelled to wait an hour or two in the dead of the night to haggle and barter for the body of her husband. The Supreme Court concluded that the plaintiff was entitled to recover punitive damages and affirmed the judgment of the trial court—*Bonaparte v. Fraternal Funeral Home (N C), 175 S E 137*

Duty of County to Furnish Surgical Treatment to Prisoner—A negro prisoner of Lauderdale County, Tennessee, needed surgical attention that was not available locally. He was sent to a hospital owned by the city of Memphis, carrying two letters, one signed by both the sheriff and the county physician, requesting that he be treated, and the other, signed by the sheriff, saying that Lauderdale County would pay for the necessary treatment. Later the city of Memphis brought suit against Lauderdale County and against the sheriff and the county physician, personally, to recover compensation for the treatment rendered. The trial court dismissed the suit against all defendants but the court of appeals of Tennessee, on appeal, rendered a decree in favor of the city against the county. The case was then carried to the Supreme Court of Tennessee.

In Tennessee, said the Supreme Court, the law requires a county physician to attend prisoners in the county jail and to direct or order treatment. So far, however, as the ordered treatment may not be supplied by the county physician, the prisoner is left to his own resources to provide it, in the same manner and degree as if he were not in confinement. A county physician may not bind the county to pay the cost of medical or hospital service rendered by others to a prisoner. There is no obligation on a county to furnish hospital services to a jail

prisoner who cannot pay the cost of the service. The court concluded, therefore, that there was no statutory authority for holding the county liable for the services rendered by the hospital to the prisoner. The county physician and the sheriff, continued the Supreme Court, were acting in good faith, believing that the county would be liable for the service they requested for the prisoner. The hospital authorities understood that they were not acting individually in their requests. There was no proof that the hospital authorities were without full knowledge of all the attendant circumstances when they rendered the surgical treatment. When public agents, said the court, contract in good faith with parties having full knowledge of the extent of their authority, or who have equal means of knowledge with themselves, they do not become individually liable unless the intent to incur personal responsibility is clearly expressed. The court concluded, therefore, that there was no individual liability on the sheriff or the county physician to pay for the services.

Judgment was entered in favor of the county and of the sheriff and county physician—*Lauderdale County v. City of Memphis (Tenn.), 71 S W (2d) 686*

Society Proceedings

COMING MEETINGS

- Alabama, Medical Association of the State of Mobile April 16-18 Dr D L Cannon 519 Dexter Avenue Montgomery Secretary
American Association of Anatomists St Louis April 18-20 Dr George W Corner University of Rochester School of Medicine Rochester N Y Secretary
American Association of Pathologists and Bacteriologists, New York April 18-19 Dr Howard T Karsner, 2085 Adelbert Road Cleveland Secretary
American Association of the History of Medicine Atlantic City May 6 Dr Edward J G Beardsley 1919 Spruce Street, Philadelphia Secretary
American Association on Mental Deficiency, Chicago, April 25-27 Dr Groves B Smith Beverly Farms Godfrey III, Secretary
American College of Physicians Philadelphia April 29-May 3 Mr E R Loveland 133 South 36th Street Philadelphia Executive Secretary
American Dermatological Association White Sulphur Springs W Va May 2-4 Dr William H Gay, 500 Penn Avenue Pittsburgh Secretary
American Pediatric Society Cleveland May 2-4 Dr Hugh McCulloch 325 North Euclid Avenue St Louis Secretary
American Physiological Society Detroit April 10-13 Dr Frank C Mann Mayo Clinic Rochester Minn, Secretary
American Society for Clinical Investigation, Atlantic City May 8 Dr H L Blumgart 330 Brookline Avenue, Boston Secretary
American Society for Experimental Pathology Detroit April 10-13 Dr Shields Warren 195 Pilgrim Road Boston Secretary
American Society for Pharmacology and Experimental Therapeutics, Detroit April 10-13 Dr E M K. Geiling 710 N Washington Street, Baltimore Secretary
American Society of Biological Chemistry, Detroit April 10-13 Dr H A Mattill State University of Iowa, Iowa City, Secretary
Arizona State Medical Association Phoenix, April 25-27 Dr D F Harbridge 15 East Monroe Street, Phoenix Secretary
Arkansas Medical Society, Fort Smith April 15-17 Dr W R Brookshar, 602 Garrison Avenue Fort Smith Secretary
Association of American Physicians, Atlantic City May 7-8 Dr James H Means, Massachusetts General Hospital, Boston, Secretary
District of Columbia Medical Society of the Washington May 1 Dr C B Conklin 1718 M Street NW Washington Secretary
Federation of American Societies for Experimental Biology Detroit April 10-13 Dr H A Mattill State University of Iowa Iowa City, Secretary
Georgia Medical Association of, Atlanta May 7-10 Dr Allen H Bunce 139 Forrest Avenue NE Atlanta Secretary
Iowa State Medical Society, Davenport May 8-10 Dr Robert L Parker 3510 Sixth Avenue Des Moines, Secretary
Kansas Medical Society Salina May 8-10 Mr Clarence Munn Stormont Building Topeka Executive Secretary
Louisiana State Medical Society New Orleans, April 29-May 1 Dr P T Talbot, 1430 Tulane Avenue New Orleans, Secretary
Maryland Medical and Chirurgical Faculty of Baltimore, April 23-24 Dr Walter Dent Wise 1211 Cathedral Street, Baltimore, Secretary
Missouri State Medical Association, Excelsior Springs, May 6-9 Dr E J Goodwin 634 North Grand Boulevard St. Louis Secretary
New Hampshire Medical Society Manchester May 7-8 Dr Carleton R Metcalf, 5 South State Street Concord Secretary
New Jersey Medical Society of, Atlantic City April 30-May 2 Dr J B Morrison, 66 Milford Avenue Newark Secretary
North Carolina Medical Society of the State of Pinehurst, May 6-8 Dr L B McBrayer Southern Pines Secretary
South Carolina Medical Association Florence April 23-25 Dr E A Hines Seneca Secretary
Tennessee State Medical Association Nashville April 9-11 Dr H H Shoulters 706 Church Street, Nashville Secretary
West Virginia State Medical Association Wheeling May 6-8 Mr Joe W Savage, Public Library Building Charleston, Executive Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

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Biologic Effects of Roentgen Rays Determination of Critical Periods in Mammalian Development with X Rays T T Job G J Leibold Jr and H A Fitzmaurice Chicago—p 97
Effect of Experimentally Produced Hyperthyroidism on Reproductive and Associated Organs of the Male Rat Rose S Cohen Cincinnati—p 143

American Journal of Cancer, New York

23:1246 (Jan) 1935

- Histologic Classification of Cancers of Uterine Cervix and Relation Between Growth Structure and Results of Radium Treatment H Chambers, London, England—p 1
*Malignant Epithelial Tumors of Neck Carcinoma of Branchiogenic Origin R L Oliver Baltimore—p 16
Primary Pulmonary Sarcoma Case Report E P Johns and W C Sharpe London Ont—p 45
Studies on Internal Organs of Mice Painted with Carcinogenic Agents J M Twort and C C Twort Manchester England—p 52
Comparative Pathology of Carcinoma of Pancreas Report of Two Cases in Mice Studies in Incidence and Inheritability of Spontaneous Tumors in Mice Thirty Third Report Maud Slye Harnett F Holmes and H G Wells Chicago—p 81
Freezing Points of Normal and Neoplastic Tissues and Their Changes During Autolysis Evelyn Howard Baltimore—p 87
Behavior of Rous Tumor Virus to Freezing J K Miller and H E Eggers Omaha—p 94
Tar Epithelioma in Sympathectomized Albino Rabbit R B Raney Rochester N Y—p 98
Suprarenal Tumors C F Geschickter Baltimore—p 104

Malignant Epithelial Tumors of Neck.—Oliver presents a study of eighty cases of carcinoma arising in the deep tissues of the neck without relation to the epidermis or glandular organs. The ultimate results in relation to the modes of treatment and the types of cellular pathology indicate that these tumors, which are usually fatal (seventy-seven out of eighty cases), are best treated by radical surgery if seen in the earlier stages. They comprise a single pathologic entity grading from the less differentiated basal cell forms through the cuboid cell type to the most highly differentiated squamous cell form. Surgery is slightly more favorable in these last two forms than in the first. Irradiation is probably advisable in conjunction with surgery in all forms, but particularly in the basal cell type. In advanced and inoperable cases, palliative irradiation may be helpful.

Organs of Mice Painted with Carcinogenic Agents.—The Tworts examined the organs of several thousand mice painted with various carcinogenic agents in relation to individual susceptibility to tumor formation. The studies revealed that carcinogenic, therapeutic and other agents may so interfere with the general metabolism of mice that there is a profound influence, direct or indirect on tumor development. Conversely, the presence of a tumor may so derange metabolism, especially of young animals, that cause and effect may be easily confused. It would appear that, in order to avoid errors in judgment, investigators should have a thorough knowledge of the changes likely to prevail among their animals. The observer should be in a position to discriminate between the direct and the indirect effect of a therapeutic or carcinogenic agent, with in consequence an added value to his experimental results. General debilitation and stimulation are it would seem, the key processes to bear in mind. It is when these have been gauged accurately as far as possible, and only then, that one is in a position to evaluate changes in specific tissues. The gen-

eral outcome of the authors' observations is that "balance" is the essential in keeping the animal free from malignant disease while at the same time the latter supervenes preferentially on a healthy tissue. Additional observations will, they hope, further enlighten them as regards some of the factors responsible for this balance.

Behavior of Rous Tumor Virus to Freezing.—Miller and Eggers found that the filtrate of the Rous tumor maintained its tumor-producing power after rapid freezing and thawing for sixty times when these experiments were so conducted as to avoid accompanying oxidation. There was no apparent change in its action, as determined by the rate of tumor growth or by the morphology of the tumor, when this procedure was repeated twenty times. With sixty freezings there were delays in the development of the tumor and marked changes in the morphology of the tumor. The filtrable agent of the Rous tumor displays a resistance to freezing and thawing greater than that exhibited by known living agents, such as bacteria or other cellular organisms. To the extent that this throws light on its nature, it would suggest an unorganized character. However, the possibility that the filtrate may contain organized bodies so minute as to escape the effect of sudden and repeated changes of volume cannot be absolutely precluded.

American Journal of Diseases of Children, Chicago

49:1286 (Jan) 1935

- *Cerebral Manifestations Following Acute Otitis Media in Infancy and in Early Childhood with Particular Reference to Occurrence of Jacksonian Convulsions Conjugate Deviation of Head and Eyes and Hemiplegia C B Courville and J M Nielsen, Los Angeles—p 1
Formation of Character as Observed in the Well Baby Clinic Preliminary Report Margaret E Fries Katherine Brokaw and V F Murray New York—p 28
Calcium and Phosphorus Content of Offspring After Feeding Vitamin D to the Mother Rat W W Swanson and L Vivian Job Chicago—p 43
Contour of Chest in Children II According to Weight and Height S A Weisman Minneapolis—p 47
Id III Environment S A Weisman Minneapolis—p 52
Symptomatic Therapy in Malignant Diphtheria D C Darrow and H Yarnet New Haven Conn—p 60
Immunization Against Whooping Cough L W Sauer Evanston Ill—p 69
Elimination of Milk Borne Disease W C Davison Durham N C—p 72
*Studies of Phosphorus of Blood III Phosphorus Partition in Whole Blood and in Serum and Serum Calcium and Plasma Phosphate During Healing of Late Rickets Genevieve Stearns and Edna Warweg Iowa City—p 79
Use of Pentnucleotide in Measles and in Pertussis J G M Bullowa L W Smith and T B Quigley New York—p 91
Iodine Content of American Cod Liver Oil A D Holmes Boston and R E Remington Charleston S C—p 94
Histology of Midlollary Region of the Medulla Oblongata in the New Born Infant Observations on Vessels and Cells Myrtelle M Canavan Boston and F A Hemsath New York—p 101
Respiration in Infancy I Method of Studying Rates Volume and Character of Respiration with Preliminary Report of Results Jean Deming and A H Washburn Denver—p 108
Incidence of Spina Bifida Occulta in Children With and Without Enuresis I W Karlin Brooklyn—p 125

Cerebral Manifestations Following Otitis Media.—Courville and Nielsen point out that a characteristic symptom complex is presented in certain cases following an attack of acute otitis media in early life. The onset of jacksonian convulsions, involving particularly the arm and face, often associated with conjugate deviation of the head and eyes and usually followed by weakness or paralysis of the affected members during a febrile state, suggests a vascular lesion of the cerebrum. Wide variation in the length of the clinical course is noted in these cases. In some instances, the patient recovers within a week, while in cases manifesting probably organic changes in the cortex residual parietic manifestations may persist for months. The vascular pathway of infection is indicated by the abrupt onset of cerebral manifestations. The lesion itself may be toxic, thrombotic or infectious. The toxic lesions are transient. Thrombotic lesions, which result in hemorrhagic softening, may be localized or diffuse. Residual scarring of the cortex probably persists but if this is slight residual paralysis may not be present. If the lesion is or becomes infected, a diffuse nonpurulent or a localized purulent encephalitis (abscess) results. The symptom complex is a manifestation of the localization of a lesion in the central or parietal area, but it does

not indicate the exact nature of the lesion. A similar clinical picture, dependent on hemorrhage or thrombosis following toxic lesions of the arterial walls, may be secondary to acute infectious diseases.

Phosphorus, Calcium and Phosphatase During Healing of Rickets.—Stearns and Warweg observed the serum calcium, the plasma phosphatase and the phosphorus partition in the whole blood and in the serum during the healing of late rickets in two children and over a period of three years in a child whose rickets had healed without a corresponding rise in the level of inorganic phosphorus of the serum. In active late rickets, the organic acid-soluble or ester fraction of phosphorus is definitely low and rises rapidly on addition of vitamin D to the diet. The rise in the ester phosphorus of the corpuscles was observed before the rise in the inorganic phosphorus of the serum occurred. If the amount of vitamin D given is insufficient for rapid healing, the increased level of ester phosphorus may not be maintained. The readily hydrolyzable (ten minute) fraction of the ester phosphorus was not significantly altered from the normal in one patient during the period of active rickets. The level of plasma phosphatase was increased in the blood of both children with active rickets. The values tended to decrease as healing progressed but was still far above normal when roentgenologic healing was complete. In one patient the plasma phosphatase was still double the normal value a year after healing was complete. Roentgenologic evidence of healing was observed in one child before any rise in the level of inorganic phosphorus occurred. The ester phosphorus at this time was still below the normal level but well above the level noted at the first observation.

American Journal of Medical Sciences, Philadelphia

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Stresses and Strains of Homeostasis W. B. Cannon Boston—p. 1
The Relation of Dentistry to Medicine L. M. S. Miner Boston—p. 15

*Determination of Phagocytic Power of Whole Blood or Plasma Leukocyte Mixtures for Clinical or Experimental Purposes. Description of Improved Method with Representative Findings F. Boerner and S. Mudd Philadelphia—p. 22

Effect of Tissue Extracts on Muscle Pains of Ischemic Origin (Intermittent Claudication) N. W. Barker, G. E. Brown and Grace M. Roth Rochester, Minn.—p. 36

Study of Sputum in Pulmonary Asbestosis R. C. Page Philadelphia—p. 44

Acetyl β Methylcholin (Mechoin). Observations Concerning Its Action on Blood Pressure, Skin Temperature and Heart as Exhibited by Electrocardiogram of Hypertensive Patients I. H. Page New York—p. 55

*So Called Hemorrhagic Encephalitis and Myelitis Secondary to Intravenous Arsphenamines. Based on Review of One Hundred and Fifty Eight Cases M. A. Glaser, C. P. Imerman and S. W. Imerman Los Angeles—p. 64

*Spontaneous Rupture of the Esophagus in Syphilis W. E. Glass and W. Freeman, Worcester, Mass.—p. 80

Obesity Treatment by Diet Thyroid and Dinitrophenol. Result on One Hundred and Six Outpatients Leona M. Bayer and H. Gray San Francisco—p. 86

Clinical Application of Polyvalent Staphylococcus Bacteriophage in Bronchoscopy. Preliminary Report W. F. Moore and J. W. Love Philadelphia—p. 91

Foreign Protein Therapy. I. Hemocytologic Changes Following Intravenous Injection of Killed Typhoid Paratyphoid A and Paratyphoid B Bacilli H. F. Hunt, C. E. Ervin and J. S. Niles, Danville, Pa.—p. 95

*Standardized Technic for Blood Sedimentation Test M. M. Wintrobe and J. W. Landsberg, Baltimore—p. 102
Macrocytic Anemia and Hepatic Cirrhosis D. O. Wright New Orleans—p. 115

Intrapleural Pressure in Artificial Pneumothorax During Pregnancy and Childbirth J. J. Lloyd and E. K. Richard Rochester, N. Y.—p. 119

Phagocytic Power of Whole Blood.—Boerner and Mudd submit a method for direct determination of the phagocytic power of whole blood or plasma-leukocyte mixtures. The following features are embodied to eliminate sources of error in current methods: (1) replacement by heparin of anticoagulants that combine with calcium, (2) a technic for collecting leukocytes from small samples of blood with a minimum of manipulation, (3) provision of an agitator to provide continuous mixing of phagocytes and test objects, and (4) determination of percentage phagocytosis as a function of time. Examples are given of the application of this method to a variety of problems, e. g., titration of the phagocytosis promoting action of therapeutic serum, detection of antibodies following infection

or vaccination, the relative resistance to phagocytosis of different bacterial strains, and inhibition of phagocytosis by soluble bacterial products. The blood of a patient with eosinophilia examined by this method showed phagocytosis by eosinophils, which was, however, quantitatively inferior to that by neutrophils in the same blood. The opsonization of human erythrocytes by human serums of incompatible types, described by Schiff, has been confirmed. Intracellular lysis and digestion of ingested erythrocytes has been observed. The reliability and significance of results obtained with the blood of dogs during the course of experimental pneumococcal infections are examined statistically.

Encephalitis and Myelitis Secondary to Arsphenamine Therapy.—Glaser and his associates point out that the mortality of cases with central nervous system involvement secondary to intravenous injection of arsphenamine is about 76 per cent. He says there is about one death due to central nervous system involvement in every 5,398 cases treated and in every 28,768 injections. The term "hemorrhagic encephalitis" is not adequately descriptive. The toxic reaction may occur in nonsyphilitic cases and is not related to the quantity of the drug given, to the number of injections, to the toxicity of the drug itself, to the age of the patient or to the sex. It occurs most frequently after the second dose, though it has been reported as occurring after the fifteenth dose. Cases have been reported in which the drug has not at first produced toxic effects but when again given several years later toxic reactions resulted. The symptoms may occur from twelve hours to seventy days after the injection but usually develop in from twelve to 144 hours. The principal symptoms are headache, vomiting, nervousness, chills and dizziness, with physical signs of fever, cyanosis, and respiratory and pulse changes. The principal neurologic signs are convulsions, unconsciousness, pupillary and ocular muscle changes, reflex changes, loss of sphincter control, mental disturbances, hemiparesis and rigidity of the neck. Myelitis and encephalomyelitis may also occur, while meningitis may coexist. This toxic reaction is diffuse rather than focal, as pathologic reports and clinical observations indicate involvement of the other organs. The clinical diagnosis is derived from the organ indicating the greatest involvement if the brain shows predominating clinical signs, it is an encephalitis, if it is the cord, it is myelitis, if the liver, a hepatitis. The curative measures are detoxification and reduction of intracranial pressure by medical or surgical methods.

Spontaneous Rupture of Esophagus in Syphilis.—In 436 consecutive necropsies performed, forty-four were on patients with syphilitic central nervous system involvement, five of whom, Glass and Freeman state, died during "paretic seizures." Of the latter, two patients died of hemorrhage resulting from complete nontraumatic rupture of the esophageal wall. In no instance were lacerations without complete rupture found. In the first case it was demonstrated that syphilis caused the periarthritis in the esophageal wall. It is logical to assume that these lesions materially weakened the wall. Attacks of retching such as are present in paretic seizures cause extremes of intra-abdominal pressure, which are easily transmitted through the diaphragm to the wall of the esophagus. The regurgitation of autolytic gastric contents over the lining of the esophagus that has been already damaged by the syphilitic reaction tends to erode it, allowing these contents to come in contact with the muscular layers. To substantiate this hypothesis, the epithelial lining round the rent in both specimens was almost completely denuded. In both instances there was a weakened esophageal wall being acted on by autolytic enzymes and severe intra-abdominal pressure, forming an ideal point of rupture. The authors urge a routine, detailed examination of this organ in all necropsies. The esophagus is more vulnerable to pathologic lesions than the statistics have heretofore indicated.

Standardized Technic for Blood Sedimentation Test.—Wintrobe and Landsberg recommend the use of a special hematocrit for the determination of the sedimentation rate because the same instrument can be used subsequently for the measurement of the volume of packed red cells, the volume of packed white cells and platelets, and the icterus index. The determination of the volume of packed red cells is especially

valuable, because by this means the sedimentation rate may be corrected for alterations due to anemia. The following appears to them to be an accurate method of procedure: with a dry syringe and needle, 5 cc of venous blood is collected and mixed in a small bottle containing 4 mg of solid potassium oxalate and 6 mg of solid ammonium oxalate. The blood should be used for the determination of sedimentation rate within four hours. The hematocrit is filled to the 10 cm mark with blood. The upper level of sedimenting corpuscles may be read at frequent intervals or, more simply, a single reading may be made at the end of one hour. Since the sedimentation rate increases with increasing temperature the sedimentation test should be carried out at a temperature of not less than 22 nor greater than 27 C. The hematocrit should be kept in an exact vertical position during the sedimentation of the blood corpuscles, for, when the instrument stands at an angle of even 3 degrees from the vertical, significant acceleration of sedimentation takes place. After the sedimentation rate has been determined, the hematocrit containing the blood should be centrifuged and the volume of packed red cells determined. The sedimentation rate may then be corrected for alterations due to anemia. The average sedimentation at the end of one hour has been found to be 37 mm in healthy men and 96 mm in normal women. In 86 per cent of the men examined the sedimentation rate ranged from 0 to 65 mm, whereas in the same proportion of women the sedimentation rate ranged from 0 to 15 mm. In an additional 9 per cent the sedimentation rate ranged as high as 9 mm in men and 20 mm in women. These values probably represent the extreme range of normal variation under the foregoing conditions.

American Journal of Physiology, Baltimore

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- Observations on Innervation of Carotid Sinuses and Section of Depressor Nerves as Method of Producing Arterial Hypertension. M F Green, A F Degroat and C H McDonald. Little Rock, Ark.—p 513
- Degree of Constancy in Human Basal Metabolism. F G Benedict. Boston.—p 521
- Study of Oxidation That Occurs in Dog After Ingestion of Galactose. J H Roe, A Gilman and G R Cowgill.—p 531
- Gaseous Metabolism of Frog Kidney. F O Schmitt. Ruth Side botham Kerr and E D Bueker. St Louis.—p 539
- Results of Feeding Lecithin and Pancreas in Depancreatized Dogs on Liver Fat and Its Saponifiable and Unsaponifiable Fractions. Elaine P Rall, G Flaum and R Banta. New York.—p 545
- Variability of H/T Ratio in Twitch of Isolated Skeletal Muscle and Proof of Validity of Method Used for Measuring Heat Production. C D Snyder. Baltimore.—p 552
- Effect of Oxygen on Man at Pressures from 1 to 4 Atmospheres. A R. Behnke, F S Johnson, J R Poppen and E P Motley. Boston.—p 565
- Tyrosine Content of Tissues After Intravenous Injection. F B King, R Simonds and M Aisner. Boston.—p 573
- Methylene Blue and Anoxemia. G Crisler. Morgantown, W Va.—p 580
- Effects of Thyroparathyroidectomy and Carbohydrate Intake on Action of Anterior Pituitary Extracts. O H Gaebler. Detroit.—p 584
- Theelin Content of Pregnancy Urine and Placenta of the Chimpanzee. E. Allen, A W Diddle and J H Elder. New Haven Conn.—p 593
- Aschheim Zondek Diagnosis of Pregnancy in the Chimpanzee. S Zuckerman. New Haven Conn.—p 597
- Studies on Depressor Cardiac Reflex After Vagotomy. W F Allen. Portland Ore.—p 602
- Blood Picture, Reproduction and General Condition During Daily Exposure to Illuminating Gas. Isabella R Williams and Erma Smith. Ames Iowa.—p 611
- Effect of Increased Air Pressure on Vital Capacity, Expiratory Force and Breath Holding Ability. C W Shilling, R A Hansen and J A Hawkins. Washington D C.—p 616
- Effect of Thyroidectomy and Thyroxine on Response of Denervated Heart to Injected and Secreted Adrenaline. M E M Sawyer and M G Brown. Boston.—p 620
- Analysis of Function of a Nerve to Muscle. J O Leary, P Heinbecker and G H Bishop. St Louis.—p 636
- Blood and Plasma Viscosity Determined by Method of Concentric Cylinders. J T Brundage with assistance of I Grobman. Philadelphia.—p 659
- Time of Occurrence of Cortical Response as Determined by Area of Stimulus Object. S H Bartley. St Louis.—p 666
- Nature of Ventricular Fibrillation Following Electric Shock and Its Prevention by Acetyl Methyl Choline Chloride. H E. Hoff and L. H Nahum, New Haven Conn.—p 675
- Some Influences of Estrin on Hypophyseal Gonad Complex of Immature Female Rat. C E. Lane. Madison Wis.—p 681
- Inhibition of Gastric Secretion by Oil of Peppermint. H Necheles and I Meyer. Chicago.—p 686

- Separation of Thyrotropic from Gonadotropic Substances of Pituitary. R O Greep. Madison Wis.—p 692
- Nervous Control of Intercoastal Respiration. D W Bronk and L K Ferguson. Philadelphia.—p 700
- Response to Steady Pressures of Single End Organs in Isolated Carotid Sinus. D W Bronk and G Stella. Philadelphia.—p 708

American Journal of Public Health, New York

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- Concern of the United States with Tropical Diseases. F W O Connor. New York.—p 1
- Civil Works Administration Emergency Relief Administration Malaria Control Program in the South. L L Williams Jr., Washington D C.—p 11
- Report of Special School Health Studies in New York City. D B Armstrong. New York.—p 15
- Housing Problem in a Southern City with Especial Reference to Its Influence on Residual Typhoid, Fever and on Infant Mortality. L M Graves and A H Fletcher. Memphis Tenn.—p 21
- The Public Health Officer and the Control of Syphilis. J E Moore. Baltimore.—p 31
- Natural Immunization to Diphtheria in an Institution. C C Young, Lansing Mich., G D Cummings and M E. Wilson. Lapeer Mich.—p 43
- Sources and Modes of Infection in Two Family Outbreaks of Syphilis. A L Gray Jackson, Miss and W H Cleveland, Tupelo Miss.—p 49
- Active Immunization Against Poliomyelitis. M Brodie. New York.—p 54
- Reduction of Maternal and Infant Mortality in Rural Areas. J H M Knox Jr., Baltimore.—p 68
- The Ninth Pan American Sanitary Conference. K Emerson. New York.—p 76

American Journal of Tropical Medicine, Baltimore

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- Educational Background for Practice of Tropical Medicine. F F Russell. New York.—p 1
- Small Spleen in Malaria Surveys. P F Russell, New York.—p 11
- First Fatal Case of Chagas Disease Observed on Isthmus of Panama. E DeCoursey. Ancon Canal Zone.—p 33
- Absence of Tissue Invasion in Monkey Carriers of Endamoeba Histolytica. R Hegner. Baltimore.—p 41
- *Human Intestinal Myiasis Due to Larvae of Soldier Fly, *Hermetia illucens* Linné (Diptera Stratiomyidae). H E Meleney and P D Harwood. Nashville Tenn.—p 45
- Use of Guinea Pigs in Tests of Immunity Against Yellow Fever with Small Quantities of Serum. W Lloyd and A F Mahaffy. Lagos Nigeria West Africa.—p 51
- Tropical Medicine in New York City. T T Mackie. Ithaca N Y.—p 59
- Malaria Studies in Greece. Reaction of Anopheline Mosquitoes to Certain Microclimatic Factors. R C Shannon. New York.—p 67
- Human Intestinal Myiasis Due to Larvae of Soldier Fly.—Meleney and Harwood report a case of intestinal myiasis in a boy due to the larvae of the soldier-fly, *Hermetia illucens* Linné. This is apparently the second human case to be recorded. Descriptions of the larva and adult fly are given. The larvae caused symptoms of local irritation in the stomach and rectum and spells of fainting. They were apparently acquired by eating raw fruit or vegetables on which the eggs of the fly had been deposited.

Anatomical Record, Philadelphia

61 141260 (Jan 25) 1935

- Follicular Apparatus of Ovary of Immature Rat and Some of the Factors Which Influence It. C E Lane, Madison Wis.—p 141
- *Fate of Ultimobranchial Body Within Human Thyroid Gland. B F Kingsbury. Ithaca N Y.—p 155
- Prepubertal Reversal of Sex Difference in Gonadotropic Hormone Content of Pituitary Gland of Rat. Helen M Clark. New York.—p 175
- Sex Difference in Change in Potency of Anterior Hypophysis Following Bilateral Castration in New Born Rats. Helen M Clark. New York.—p 193
- Studies on Development of Human Lung. I. Pulmonary Lymphatics. D F Harvey and H M Zimmerman. New Haven Conn.—p 203
- Quantitative Study and Interpretation of Occurrence of Basophil (Mast) Cells in Subcutaneous Tissue of Albino Rat. E O Bates. Ithaca N Y.—p 231
- Probable Superfetation in Cat. Case. J E Markee and J C Hinsey. San Francisco.—p 241
- Studies on Uterine Growth. I. Does Thoracolumbar Sympathectomy Affect Growth of Pregnant Cat Uterus? J C Hinsey and J E Markee. San Francisco.—p 253

Ultimobranchial Body in Human Thyroid.—The examination of forty selected human embryos, from 13 to 55 mm in length, has furnished Kingsbury with no conclusive evidence of the development of thyroid parenchyma from material contributed by the caudal pharyngeal complex. On the contrary, the evidence has indicated that after fusion with the median

thyroid the complex undergoes reticulation and progressive degeneration. Thus there seems to be no justification for substituting the term lateral thyroid for that more usually employed—ultimobranchial body.

Colorado Medicine, Denver

32 188 (Jan.) 1935

- Acute Abdominal Conditions in Children J Brennenman, Chicago—p 14
Dangers of Proprietary Drugs E Jackson, Denver—p 23
Discussion of Problem of Contraception C B Ingraham, Denver—p 26
Some Phases of Medical Economics P S Read, Worland, Wyo—p 42

Journal of Pharmacology & Exper Therap, Baltimore

53 1138 (Jan.) 1935

- Cerebral Circulation XXXIV Action of Narcotic Drugs on Pial Vessels J E Finerger and S Cobb, Boston—p 1
Respiratory Effects of Morphine, Codeine and Related Substances III Effect of Morphine Dihydromorphine Dihydromorphinone (Dilaudid) and Dihydrocodeinone (Diconid) on Respiratory Activity of Rabbit C I Wright and F A Barbour, Ann Arbor, Mich—p 34
Iodine Remission in Experimental 'Exophthalmic Goiter' of Guinea Pigs H B Friedgood, Baltimore—p 46
Metabolic Activity of Compounds Related to Dinitrophenol M L Tainter, F W Bergstrom and W C Cutting, San Francisco—p 58
Chemistry and Toxicity of Mussel Poison H Muller, San Francisco—p 67
Comparative Study of Cyclopropane and Ethylene with Reference to Body Saturation and Desaturation M H Seever, S F De Fazio and S M Evans, Madison, Wis—p 90
Elimination of Uric Acid from Rat's Liver by Action of Phenyl cinchoninic Acid (Cinchophen) and Ethyl Ester of Paramethylphenyl cinchoninic Acid (Tolymn) O Turth and E Edel, Vienna, Austria—p 105
Effect of Ergotamine Tartrate on Cerebral Circulation of Man W G Lennox, E L Gibbs and F A Gibbs, Boston—p 113
Comparative Study of Actions of Morphine and Dihydrid (Dihydro morphinone Hydrochloride) on Intact Small Intestine of Dog C M Gruber and J T Brundage, with assistance of A DeNote and R Heigman, Philadelphia—p 120
Studies on Barbiturates Distribution of Barbiturates in the Brain Remarks on Publication of Same Title by Koppanyi, Dille and Krop, E Keiser and I Keiser, Hamburg, Germany—p 137

Kansas Medical Society Journal, Topeka

36 144 (Jan.) 1935

- Hyperparathyroidism F W Rankin, Lexington, Ky—p 1
Puerperal Infection T A Brown, St Louis—p 5
Benign Prostatic Obstruction Gross Pathology and Its Relation to Type of Treatment A G Isaac, Newton—p 9
*Chronic Endogenous Hypoglycemia with Neuropsychiatric Syndrome L Stone, Topeka—p 13
Traumatic Ruptured Spleen—Splenectomy—Cure L W Angle and H W Kassel, Kansas City—p 22

Chronic Endogenous Hypoglycemia—Stone cites a case of chronic endogenous hypoglycemia with a neuropsychiatric syndrome. The hypoglycemia is thought to be probably of hepatic origin. The case represents a disease entity, only recently appreciated by medical men, which is probably far more common than the frequency of diagnosis would indicate. The diagnosis will probably be made with increasing frequency as the concept becomes more widely accepted. It should be borne in mind that certain clinical features of the disease and blood sugar determinations are both essential to proper diagnosis. Although the study of the urine may give invaluable information about hyperglycemia or renal function, the urine in hypoglycemia is usually lacking in distinguishing characteristics. A clue may be found in the small proportion of cases with sugar-free acetoneuria, in the absence of other causes. Thus, however, is not pathognomonic and direct blood chemistry is always indispensable to a complete diagnosis.

Minnesota Medicine, St Paul

18 164 (Jan.) 1935

- Treatment of Pelvic Inflammation by Heat: Indications and Results L M Randall and V S Counseller, Rochester—p 1
Hemorrhage in Obstetrics R T La Vake, Minneapolis—p 4
Roentgenologic Diagnosis of Placenta Praevia W H Ude and J A Urner, Minneapolis—p 9
Menopausal and Postmenopausal Bleeding H M N Wynne, Minneapolis—p 12
Essential Thrombocytopenic Purpura C O Kohlbry, Duluth—p 15
Electrocardiography as Diagnostic Adjunct in Anginal Syndrome of Coronary Sclerosis F A Willis, Rochester, Minn—p 20
Borderline Between Neuropsychiatry and General Medicine F J Hirschboeck, Duluth—p 26
Blood Transfusion in Treatment of Sepsis D K Bacon, St Paul—p 30

New England Journal of Medicine, Boston

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- Fractures of Femoral Neck Treated by Blind Nailing J W O'Meara, Worcester, Mass—p 43
Present Status of Infection of Upper Respiratory Tract in Its Relation to Focal Infection W V Mullin, Cleveland—p 50
Diagnosis of Chronic Infection of Tonsils in Relation to Indications for Operation in Cases of Chronic Focal Infection G M Cozmes, Philadelphia—p 52
James Jackson (1815) and Digitalis Historical Note H A Christian, Boston—p 54
Diagnosis in Spinal Fluid Contaminated by Blood The Bloody Tap P Solomon, Boston—p 55
Injection Treatment of Internal Hemorrhoids F G Balch Jr, Boston—p 57
Malnutrition The Medical Octopus J P Sutherland, Boston—p 60

Northwest Medicine, Seattle

34 136 (Jan.) 1935

- Recent Trends in Medicine W S Middleton, Madison, Wis—p 1
Glaucoma Some Practical Considerations A J Browning, Portland, Ore—p 6
Sensitization in Eczema Some Phases of Its Problem H Odland, Seattle—p 9
Cosmetic Dermatitis R M Balyeat, Oklahoma City—p 12
Gonorrhea in the Male J G Strohm, Portland, Ore—p 13
Periappendicitis Due to Penetration by Oxyuris Vermicularis C G Bain, Centralia, Wash—p 14
Future of Medical Practice W T Johnson, Corvallis, Ore—p 15
Economic Problems of Physicians of Washington H J Davidson, Seattle—p 18
Care of County Indigents E L Spohn, d Alene, Idaho—p 21

Pennsylvania Medical Journal, Harrisburg

38 233 308 (Jan.) 1935

- Diagnosis and Treatment of Cancer of Large Bowel J S Horley, Richmond, Va—p 233
Diagnosis and Treatment of Nontuberculous Pulmonary Disease B Gordon, Philadelphia—p 238
Treatment of Antral Disease W L Allison, Pittsburgh—p 241
*Venous Pressure Its Clinical Importance with Simplified Technique for Its Determination by Direct Method W G Leaman Jr, Philadelphia—p 244
Treatment of Enuresis Past and Present M R Goldman, Pittsburgh—p 247
Influenza Frontal Sinusitis Complicated with Meningoencephalitis Complete or Partial Paralysis of All Cranial Nerves Except Cochlear Branch of Auditory, with Complete Recovery P S Stout, Philadelphia—p 251
Management of Cutaneous Ringworm Infections J P Guequierre, Philadelphia—p 255
Report of State Society Committee on Appendicitis Mortality J O Bower, Philadelphia—p 257
Medical Care of Aged R R Snowden, Pittsburgh—p 260

Venous Pressure—For two years, Leaman has used the direct method of determining venous pressure. The apparatus consists of an 18 gauge needle, a special adapter, a 20 cc syringe and an upright manometer tube with a 4 mm. bore graduated in centimeters. Before the determination is made, the patient should rest on an examining table without a pillow for fifteen minutes, during which time the apparatus may be sterilized in 70 per cent alcohol. The patient's arm is prepared and then supported until parallel to an imaginary line in the midaxilla. A cuff of a blood pressure apparatus is placed round the upper arm and inflated to 20 mm of mercury. The apparatus is assembled with the needle on one end of the adapter and the syringe on the other. The stopcock of the adapter must be kept parallel to the needle. As the needle enters the vein, the amount of blood needed for the laboratory is drawn into the syringe and the air is allowed to escape from the cuff of the blood pressure apparatus. The manometer tube is now fitted into the adapter perpendicular to the arm and the stopcock moved up until it is parallel to the manometer tube. Blood will at once start up the tube, and when the column has ceased rising the level on the tube is read. This is the venous pressure, which may be recorded as centimeters of water. To prove the absence of clotting and check the reading, the cuff may be inflated slightly. The column will mount promptly in the tube. When subsequent readings are taken the needle may be introduced on the syringe and adapter or on the adapter alone with the stopcock parallel to the manometer tube. The amount of blood lost at subsequent readings amounts to only a few cubic centimeters. The venous pressure of normal patients at rest in recumbency ranges between 4 and 12 cm of water.

Exercise causes an increased flow of blood to the heart but in the presence of an intact myocardium the demand is almost immediately met. If the heart is incompetent there is a high venous pressure reading after exertion which, if sustained is indicative of impending cardiac failure. Venous pressure readings will be found to be subject to diurnal variations. They are lower during sleep. The opposite is true in cases of congestive failure. Age does not influence the venous pressure if the previously stated precautions in obtaining the reading are followed. Respiratory variations in the level of the top of the column will be noticed as soon as the first venous pressure readings are made. During inspiration the negative intrathoracic pressure is greater and causes more complete emptying of the larger veins, with a consequent drop in the peripheral venous pressure. The opposite is true during expiration. Single venous pressure determinations, like single blood pressure readings will prove of little value. It is the venous pressure trend that is significant.

Radiology, Syracuse, N. Y.

24 1130 (Jan) 1935

- Increased Irritability of Gastro-Intestinal Tract. Discussion of Disturbed Physiology. B. A. Rhinehart. Little Rock, Ark.—p. 1.
Protracted External Irradiation in Treatment of Neoplasms of Mouth and Throat. Comparison of X Rays 5 Gram Radium Pack and 100 Milligram Radium Pack. M. Friedman and Rieva Rosh. New York.—p. 7.
Roentgen Therapy in Syringomyelia. F. W. O'Brien. Boston.—p. 16.
Osteitis Tuberculosis Multiplex Cystica. Report of Two Cases. J. H. Vastine and Emily P. Bacon. Philadelphia.—p. 22.
Volume Increase of Bacteria from X-Ray Irradiation. T. J. Dietz. Schenectady, N. Y.—p. 31.
Simplified Mechanical Method for Radiographic Mensuration and Localization. H. E. Kimble. Chicago.—p. 39.
Diverticula of Fundus of Stomach. L. W. Paul. Madison, Wis.—p. 47.
Basophilic Adenoma (Pituitary Basophilism). Report of Case with Clinical Improvement of Systemic Manifestations After Irradiation of Pituitary. M. G. Wobl, J. R. Moore and B. R. Young. Philadelphia.—p. 53.
Management of Productive Lesion in Pulmonary Tuberculosis. Study of Five Hundred Cases. C. C. Birkelo and S. M. Geleuger. Detroit.—p. 58.
Progress Indications. Technique and Successful Results of Radiotherapy in Prostatic Hypertrophy. I. Gonzalez Martinez. San Juan, Puerto Rico.—p. 66.
X-Ray Experimental Studies Showing That Rachitic Rats with Healed Bone Lesions Continue to Show Alteration in Their Gastro-Intestinal Tract. L. J. Menville, J. N. Anté and S. N. Blackberg. New Orleans.—p. 74.
Roentgen Pelvimetry and Fetal Cephalometry. New Technique. Preliminary Report. R. P. Ball and S. S. Marchbanks. Chattanooga, Tenn.—p. 77.
Encephalographic Experiences. Medicolegal Deductions. E. S. Gurdjian and H. A. Jarre. Detroit.—p. 85.
Cancer Metastatic to Bone. W. A. Fort. Mare Island, Calif.—p. 96.
Treatment of Epithelioma of Cheek. G. E. Pfahler. Philadelphia.—p. 99.

Cystic Tuberculosis of the Bone—Vastine and Bacon report two cases of cystic tuberculosis of the bone. The diagnosis in one was made by biopsy and in the other case clinically and roentgenologically but was not confirmed. The roentgen observations were quite diagnostic. The authors state that cystic tuberculosis of bones in children is due to dissemination of the tubercle bacilli through the blood stream, probably from a caseous lymph node in the chest. There may or may not be swelling over the involved bones. Since these cystic areas are apparently painless, the condition is doubtless more common than the literature would indicate. Routine fluoroscopy of the long bones in infants, examined roentgenologically with a question of tuberculosis in the chest, may lead to more frequent recognition of the condition. The cystic areas sometimes break through the cortex and form abscesses, which rupture through the overlying skin so that sinuses develop. Fever is not necessarily present. It may occur as a result of secondary infection through a draining sinus or as a result of the primary tuberculous process in the chest. There is an associated secondary anemia. Leukopenia and slight lymphocytosis may be found. The blood chemistry is not changed, this being an important diagnostic aid in differentiating cystic tuberculosis from osteitis fibrosa cystica. Diagnosis should be made from roentgenograms, in which the appearance is quite characteristic. The blood calcium and phosphorus are within the normal limits in cystic tuberculosis. A strongly positive tuberculin reaction is important diagnostic evidence. Clinical

or roentgen evidence of an infantile tuberculous process in the chest, particularly involvement of the bronchial glands, was found in the authors' cases.

Healing of Rachitic Bone Changes in Rats—The experiments of Menville and his co-workers definitely demonstrate that young rats, made rachitic, show a marked hypomotility of their gastro-intestinal tracts and that the healing of their rachitic bone changes by the different means employed does not relieve them of their hypomotility even after a period of months when the bones have healed. If the life cycle of these rats is compared with that of human beings it must be concluded that, if the cause of constipation in rachitic rats is due to muscular weakness and relaxation of their gastro-intestinal tracts as evidenced by hypomotility, rachitic patients who have had their bone lesions healed by the various methods employed at the present time are apt to continue to show alterations in the motility of their gastro-intestinal tracts for a long time after they are considered cured of rickets.

Rhode Island Medical Journal, Providence

18 1116 (Jan) 1935

- If I Were a Medical Man. W. H. Rivard. Providence.—p. 1.
Some Nervous and Mental Problems of Childhood. Illustrative Case Report. C. Bradley. East Providence.—p. 2.
Contraction of Color Fields in Neurosyphilis. W. M. Muncy. Providence.—p. 9.
Giardiasis. Clinical Study. R. S. Bray and W. Leet. Providence.—p. 10.

South Carolina Medical Assn. Journal, Greenville

32:1120 (Jan) 1935

- Macrocytic Anemia. R. Wilson Jr. Charleston.—p. 5.
Cancer of Cervix. O. D. Baxter. Sumter.—p. 10.
Precancerous Lesions and Early Cancer. W. M. Sheridan. Spartanburg.—p. 13.

Southwestern Medicine, Phoenix, Ariz.

19 1132 (Jan) 1935

- Classification and Treatment of Nephritis. F. H. Helier. Pueblo, Colo.—p. 1.
Health Survey in New Mexico. Incidents of Survey. H. S. Alexander. Santa Fe, N. M.—p. 4.
Local Health Activities in Texas. J. W. Brown. Austin, Texas.—p. 8.
Present Status of X-Ray and Radium Therapy in Tonsils. J. S. Summers. Jefferson City, Mo.—p. 11.
Some Problems of Obstetrics. G. Heusinkveld. Denver.—p. 14.
Prevention of Heart Disease. M. K. Wylder. Albuquerque, N. M.—p. 18.
Management of Intractable Asthma. R. A. Wilson. Tucson, Ariz.—p. 22.

Surgery, Gynecology and Obstetrics, Chicago

60 129256 (Feb 1) 1935

- Atypical Growth Induced in Cervical Epithelium of Monkey by Prolonged Injections of Ovarian Hormone Combined with Chronic Trauma. M. D. Overholser and E. Allen. Columbia, Mo.—p. 129.
*Origin of Pilonidal Sinus with Analysis of Its Comparative Anatomy and Histogenesis. S. L. Fox. Baltimore.—p. 137.
Function of Long Plantar Muscles. T. A. Willis. Cleveland.—p. 150.
*Blood Sedimentation Test and Its Value in Differential Diagnosis of Acute Appendicitis. A. Lesser and H. A. Goldberger. New York.—p. 157.
Malignant Diseases in First Three Decades of Life. B. F. Schreiner and W. H. Wehr. Buffalo.—p. 167.
Study of Action of Ergot on Human Puerperal Uterus. A. K. Koff. Chicago.—p. 190.
Present Status of Sterility of Surgical Catgut Sutures with Particular Reference to American Made Catgut. R. O. Clock. New York.—p. 203.
*Reaction of Lipids in Blood Leukocytes to Fever and Infection. E. M. Boyd. Rochester, N. Y.—p. 205.
Operation for Repair of Internal and External Lateral Ligaments of Knee Joint. W. C. Campbell. Memphis, Tenn.—p. 214.
Surgical Treatment of Tuberculous Empyema. R. H. Macdonald. Saskatoon, Sask.—p. 216.
Uterosalpingography by Interrupted Fractional Injections. Modified and Improved Technique. M. N. Hyams. New York.—p. 224.
Tuberculous Abscesses of the Brain Secondary to Tuberculosis of Cecum. C. W. Rand. Los Angeles.—p. 229.
Paraldehyde as Factor in Painless Labor. H. H. Rosenfield and R. B. Davidoff. Boston.—p. 235.

Origin of Pilonidal Sinus—Fox presents evidence from studies on the human embryo which indicate that 1. The pilonidal sinus is a derivative of skin ectoderm and not neurogenic or enteric in origin. 2. The structures forming the sinus are derived by a process of ectodermal invagination from the

surface of the skin at the time and in the cells destined to form skin appendages (hair and glands) during the third and fourth months of embryonic life. 3 Its mode of origin and the analogy drawn between this structure and the special "scent" gland in the sacrococcygeal region of birds and amniotes suggest the probability that the sinus represents a vestigial skin appendage developing at puberty—hence the age distribution of pilonidal sinuses. 4 Coccygeal medullary vestiges do not give rise to the pilonidal sinus. They probably give rise to the large cystic and solid tumors that occur usually in infants and the new-born. There is also the possibility that they may play a part in the upward direction which the pilonidal sinus takes. 5 Clinical and pathologic observations are presented and explained by this theory. 6 The coccygeal region may possess several sites for the origin of paraganglioma instead of only Luschka's gland as originally thought. 7 Recurrence following operation for pilonidal sinuses should take place in less than 10 per cent of the cases and is due to the fact that certain of the ramifications are left behind. Since the coccyx is fully developed in the first six weeks of fetal life and has no dorsal arches and since the fourth and fifth sacral vertebrae have only vestiges of the neural arch, it is illogical to assume that the coccygeal medullary vestiges may be included within the sacrococcygeal joint. In operations for pilonidal sinus wherein the coccyx is removed and the sacral stump curetted, the improvement is due to the removal of the contiguous infection of periosteal or bony parts. 8 In the prevention of recurrences, wherever the sinus tract extends to the bony parts, the periosteal and fibrous layers should be carefully stripped off and curetted. Dead spaces and recesses with inflammatory products should be guarded against by preventing too early epithelial bridging of the wound and by careful packing.

Blood Sedimentation Test in Appendicitis—Lesser and Goldberger submit a modification of the Westergren technic allowing accurate Westergren interpretation. Test tubes are prepared, each containing 30 mg of dried sodium citrate; these tubes are kept available in the wards at all times. To perform the test, 45 cc of blood is drawn from a vein, added to a test tube and shaken thoroughly, the test then proceeds as in the original method. However readings were taken at the end of fifteen minutes and at the end of the hour, the final hour reading giving the desired information as to rapidity and intensity of the reaction. The authors' study is based on the observations of 3,000 readings in 2,000 cases. The sedimentation reading in cases of acute appendicitis (catarrhal, suppurative or gangrenous) is uniformly normal. The sedimentation readings in all other acute abdominal conditions are consistently abnormal. Further, the sedimentation readings in all extra-abdominal conditions simulating acute conditions of the abdomen are consistently abnormal. No physicochemical or anatomic explanation for this phenomenon is offered but presents itself as a problem for further study. A significant observation is described and offered as a potential specific aid in the differential diagnosis of acute appendicitis.

Reaction of Lipids in Blood Leukocytes to Infection—Boyd's investigations demonstrate that the white blood cells undergo marked metabolic variations, as indicated by changes in their lipid content, in pregnancy, lactation, postoperative convalescence, fever and convalescence from fever. He presents twenty-six complete differential analyses of the lipids in the leukocytes under fasting conditions in twelve cases of fever. In each analysis the lipids determined were free cholesterol, ester cholesterol, total cholesterol, phospholipid, neutral fat, total fatty acids and total lipid. Oxidative micromethods were used. In patients who recovered normally from fever due to a variety of causes, the white blood cells contained large amounts of phospholipid. There was generally also an increased value for free cholesterol with low figures for ester cholesterol and neutral fat. In these, convalescence was accompanied by a further rise in phospholipid. Patients who died as a result of their infection were noted to have low phospholipid values in the blood leukocytes during the febrile period. The same was found true in a case of thrombophlebitis when complications developed. The activity of the white blood cells may be measured by determining their lipid content, especially the

phospholipid fraction. Data from one case suggests that a blood transfusion may increase the activity of the white blood cells.

Tennessee State Medical Assn Journal, Nashville

38 146 (Jan.) 1935

- Purulent Pleuritis in Children O W Hill, Knoxville—p 1
Black Widow Spider Bite Report of Four Cases J B Wright
Lynchville—p 6
*Pathologic Basis for the Disabled Back G A Carpenter, Nashville—
p 8
A Day in Court J K Hall, Richmond Va—p 14
Urinary Urobilinogen Value of Routine Estimation P H Levinson
Chattanooga—p 17
Optic Atrophy Due to Chiasmatic Tumor R O Rychener, Memphis—
p 20
Management of Puerperal Eclampsia in the Home K S Howlett
Franklin—p 22
Abdominal Pain Often a Symptom Referable to Kidney G R Liver
more Memphis—p 27
*Undistorted Radiography in Obstetrics E F Buchner, Chattanooga
—p 30
Group of Diseases Dependent on Paranasal Sinusitis as the Cause
N E Hartsook, Johnson City—p 32

Pathologic Basis for the Disabled Back—Carpenter states that injury to the intervertebral disk, whether the result of disease or of trauma, either acute or chronic, must be given consideration as the pathologic process responsible for any back disability. The intervertebral disk injury is not revealed by roentgen examination, but the resulting vertebral changes produce characteristic roentgen appearances. Intervertebral disk injury manifests itself most frequently as (1) retropulsion of the nucleus pulposus into the spinal canal, (2) prolapse of the nucleus pulposus into the adjacent vertebral body, (3) localized vertebral osteo-arthritis, (4) generalized vertebral osteo-arthritis, (5) thinning of the intervertebral disks, with or without wedging of the vertebral bodies, and (6) biconcave vertebral bodies and spherical disks. Since the knowledge of the intervertebral disk has recently been greatly advanced, one is often able to find a disturbance of the intervertebral disk as the pathologic basis for the disabled back.

Undistorted Radiography in Obstetrics—To avoid distortion of the image within the limits of practicability in obstetrics, Buchner suggests that teleroentgenograms be taken, particularly lateral teleroentgenograms. These will record antepartum signs directly and without bias. He recommends the use of the six-foot tube distance, 10 milliamperes at from 90 to 110 kilovolts peak for forty seconds with the Potter-Bucky diaphragm. The patient should lie on her back at a right angle to the path of the ray with the casset held vertically to assure a true lateral picture. There will be no magnification of the image necessitating correction, and the most important measurements may be taken directly from the one roentgenogram. The fetal biparietal diameter is the cephalic diameter desired, and the one usually found, and the anterior or posterior tendency of the fetal spine is readily seen in both vertex and breech presentations. The thickness of the maternal soft parts separating the fetal and maternal bony structures can frequently be clearly traced. The true conjugate can be measured from the sacral promontory to the anterior-inferior border of the superimposed acetabular rings, as this represents the inner or obstetric surface of the symphysis pubis in the roentgenogram. In this manner, no special apparatus or difficult patient position is necessary, only one 14 by 17-inch film is used, and from that the most important diameters are read directly with an ordinary centimeter ruler.

United States Naval Med Bulletin, Washington, D C

33 1168 (Jan.) 1935

- Motor Vehicle Damage to Men of the Navy L W Johnson—p 1
Report of Injuries Admitted to Hospital Ship in One Year A H
Deering—p 14
Practice of Medicine in American Samoa J L Schwartz—p 27
Gastric Retention in Peptic Ulcer C C Kress—p 35
Physiology, Pathology and Diagnosis of Nephritis E P Lunkel—
p 44
Method of Local Anesthesia for Intranasal Operations F F Lane
—p 55
Russell Treatment of Fractures of the Femur H A Gross—p 59
Four Interesting Surgical Cases K E Lowman—p 64
Gaster O D King—p 68
Fractures of the Maxillae E B Howell—p 76
Appendicitis R D Joldersma—p 78
Industrial Medicine H L Shinn—p 84

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

D 335 378 (Dec.) 1934

- *Urea Clearance Test in Children W W Payne and H Shukry — p 335
Cutaneous Myiasis in Infants N Silverthorne and A Brown — p 339
Hematology of Infantile Sepsis Pauline Klenerman — p 343
*Pollen Sensitiveness in Children with Asthma R B Pearson — p 353
Iron Deficiency Anemia in Children Its Association with Gastrointestinal Disease Achlorhydria and Hemorrhage J C Hawksley R Lightwood and Ursula M Bailey — p 359
*Relapse in Scarlet Fever J S Anderson — p 373

Urea Clearance Test in Children—Payne and Shukry examined thirty-nine children suffering or convalescent from diseases not involving the renal tract. The urine was tested and was normal in all but one child who was passing albumin and had hemophilia with no history of renal involvement. The average for children is higher than that for the adult and the zone into which most cases fall is also greater (80-140 as against 80-120). In examining the results applied to individual cases, the authors found that no normal case failed to exceed in at least one test the minimal value. McLean's test was applied to the same group, and in all but one values of more than 25 per cent of urea were obtained in one or more specimens indicating a normal function. In the one failure the highest value was 24 per cent and this was in the same case of hemophilia. Another group of thirteen children having some disease involving the kidney were examined by each test. There was no great difference between the two clearance tests but in three cases doubtful results according to the standard test were definitely abnormal in the maximal test. McLean's concentration test gave normal results in six cases in which the maximal test gave an abnormal response. Therefore it is apparent that the capacity of the kidney to excrete urea decreases earlier in disease than the capacity to concentrate urea in the urine. The urea clearance test is more likely to detect early loss of kidney function than is McLean's concentration test.

Pollen Sensitiveness in Children with Asthma—To estimate the frequency with which pollen sensitization occurred in asthmatic children, Pearson examined 250 unselected children attending the asthma clinic. The children examined were divided into four groups: (1) those whose asthma occurred at all seasons of the year, (2) those who were worse in the summer, (3) those who were worse in the winter, and (4) those whose symptoms had not been present for a sufficient length of time to allow classification. Grass pollen is of greater importance in the precipitation of asthmatic attacks than is generally recognized. Of the children tested, 42 per cent gave skin reactions to pollen. A series of thirty-three children of the same age group not suffering from any allergic condition, attending the general medical outpatient clinic, were tested with the same extract, and none of them gave any reaction. If the asthmatic groups are subdivided according to age, an increase in the number of cases giving positive reactions occurs after the age of 9 years. This is in accordance with the well recognized fact that sensitiveness to inhalants becomes more marked as childhood advances. When sensitiveness to pollen was considered in relation to the mode of onset it was found that the groups who have or have had allergic eczema (20 per cent of the series) show the highest proportion of reactors (66 per cent). The capacity for sensitization to allergens of all types seems to be far higher in this than in any other group. For example, 42 per cent stated that they were clinically sensitive to certain foods compared with 12 per cent of the remainder. 22 per cent were clinically sensitive to egg compared with 4 per cent of the rest. The group of apparently pure spasmodic asthma gives the next figure of 42 per cent, while those patients in whom asthma followed a respiratory infection (such as bronchitis, whooping cough or pneumonia) give 34 per cent positive responses.

Relapse in Scarlet Fever—Anderson shows that the development of immunity after an attack of scarlet fever is not invariable by the occurrence of second attacks and relapses. Second attacks developing some months or years after the first attack are according to Rolleston more uncommon than relapses, yet it is noteworthy that, of the admissions in 1933 to the Leeds

City Hospital, 35 per cent gave a history of a previous attack. As regards relapses the same authority, after making allowance for errors in the original diagnosis, estimates that a return of all the characteristic symptoms of the disease occurs in about 1 per cent of all cases. The relapse rates for the Leeds City Hospital for the years 1931, 1932 and 1933 were 3.6, 4 and 4.3 per cent respectively. Such rates appear to be high and they give rise to an administrative problem, as they indicate an additional burden on the available accommodation of the hospital and a definite increase in the cost of treatment of scarlet fever. The author suggests the administration of scarlatinal toxin as a logical procedure in the prevention of relapses.

British Journal of Dermatology and Syphilis, London

47 150 (Jan.) 1935

- Nature and Causation of Skin Pigmentation in Hemochromatosis F F Hellier — p 1
Dermatitis Due to Podophyllum Resin W J O Donovan — p 13
Multiple Benign Superficial Epithelioma E B Tauber and L Goldman — p 21

British Journal of Ophthalmology, London

19 164 (Jan.) 1935

- Catarrhal Diphtheritic Conjunctivitis J Francois — p 1
*Disturbances of Visual Apparatus in Toxemias of Pregnancy Associated with Eclampsia or Preeclamptic State R E Wright K K Nayar and T V Nayudu — p 19
Structure of Herbert's Pits A Busacca — p 26
Retinal Detachment Presenting Certain Unusual Features After Operation by Surface Diathermy Two Cases H B Stallard — p 31
Result of Orthoptic Treatment in Divergent Strabismus Sheila Mayou — p 37
Fixation of Specimens for Celloidin Sectioning Note W A Gray — p 47
Double Congestive Glaucoma and Response to Diathermy J E. Martin — p 48

Visual Disturbances in Toxemias of Pregnancy—Wright and his co-workers assert that practical blindness associated with normal eyegrounds may follow the eclamptic state, the presumption being that the injury has acted at a higher level than the third neuron. The loss of vision may also result from an injury acting at the retinal level either suddenly (usually recovered in whole or in part) or gradually and permanently (owing to late changes in the vessels). Minor injuries may take place involving the retinal vessels, as evidenced by hemorrhages, edema and alteration in the caliber of arteries and veins without immediate interference with vision, such are relatively common. The lesser spastic phenomena of the arteriolar tree described of recent years were probably missed in the authors' cases, owing to the hurried nature of the ophthalmoscopic observation, rather than absent, on account of any peculiarity in the local conditions. Detachment of the retina as a sequel to the toxemias of pregnancy has not been observed by the authors in the last ten years.

British Medical Journal, London

2: 1137 1186 (Dec. 22) 1934

- *Weil's Disease (Leptospirosis) Clinical and Bacteriologic Study of Nineteen Cases Occurring Chiefly Among Fish Workers L S P Davidson R M Campbell H J Rae and J Smith — p 1137
Account of Weil's Disease in Queensland J G Drew — p 1142
Modern Sanatorium Treatment A S MacNalty — p 1143
Septicemia Following Tonsillectomy Record of Cases B Morgan — p 1145
Acute Iodism Following Lipiodol Bronchography J G Scadding — p 1147

Weil's Disease—Davidson and his associates discuss nineteen cases of Weil's disease, in fifteen of which the clinical diagnosis was confirmed by bacteriologic or serologic tests. Thirteen of the patients were employed in the handling and cleaning of fish. These observations show that workers among fish must be included in the occupational groups especially liable to Weil's disease. Favorable results have been reported following the administration of specific antiserum in the early stages of the disease, and also in cases with commencing icterus. The best results, however, are obtained when serum is given within the first three days of the onset. Since jaundice does not appear regularly before the fifth day, the clinical diagnosis depends on the recognition of such symptoms as abrupt febrile onset, muscular pain, "red eyes" and marked prostration. None of these symptoms, however, can be held to be specific for Weil's disease, since they may occur in many acute infections.

This is particularly true of influenza and acute tonsillitis. While it is true that the occurrence of a sudden acute fever in a sewer worker might suggest the possibility of leptospirosis, even in the preicteric stage, the problem is entirely different in workers connected with fish curing and cleaning. For every case of Weil's disease occurring among the thousands of fish workers in Aberdeen there must be hundreds of cases of acute febrile illness of other origin with similar symptoms to those mentioned previously. Weil's disease in the early stages might be suspected on the following additional grounds: a leukocytosis with a shift to the left in the polymorphonuclear series, latent icterus with a direct or biphasic van den Bergh reaction, acute nephritis unassociated with edema or hypertension but indicated by slight albuminuria, the presence of granular and cell casts in the urine and a raised urea or nonprotein nitrogen content in the blood. The tests required to obtain the foregoing data, as well as guinea-pig inoculation with blood, would be impossible in view of the numbers concerned, hence it appears to the authors that the clinical diagnosis in the early stage, before jaundice occurs, presents almost insuperable difficulties. Accordingly, the full benefits of specific serum treatment are unlikely to be realized. In view of the practical difficulties connected with guinea-pig inoculation of blood and urine, the seroreaction will remain the chief method by which the diagnosis will be confirmed finally. Since a positive seroreaction does not occur before the seventh day of the disease, the information obtained is of little value in regard to treatment. Schuffner's investigations indicate that this reaction in Weil's disease is as specific as the Widal reaction in typhoid. The authors' experience is in keeping with this, since serums from 180 cases other than those of Weil's disease have been examined, and in no instance has the reaction been obtained even in a dilution of 1:10.

Glasgow Medical Journal

5 1-48 (Jan.) 1935

- Surgical Shock A. Clark—p. 1
Effect of Continued Unemployment on Health of School Children in Depressed Area H. W. O. Frew—p. 8
Rabelais: Physician and Humanist E. H. L. Oliphant—p. 14

Journal of Laryngology and Otology, London

30 172 (Jan.) 1935

- Chronic Pyogenic Inflammation of Antrum and Other Accessory Sinuses (Some Clinical Manifestations of Its Pathology) H. Tilley—p. 1
Precancerous Epitheliomatosis (Bowen's Disease) of Palate and Tongue W. Howarth—p. 28

Journal of Physiology, London

83 129-254 (Dec. 31) 1934

- Variation in Activity of Rabbit Hypophysis During Reproductive Cycle R. T. Hill—p. 129
Species Variation in Gonadotropic Activity of Hypophysis R. T. Hill—p. 137
The Assay of Progesterin M. K. McPhail—p. 145
Further Experiments on Relation of Pituitary Gland to Action of Insulin and Adrenalin O. Cope and H. P. Marks—p. 157
Effect of Cortical Stimulation on Gastric Movements in Monkey D. Sheehan—p. 177
Reflex Interruptions of Rhythmic Discharge E. C. Hoff, H. E. Hoff and D. Sheehan—p. 185
Conditions of Fetal Respiration in the Goat J. Barcroft, R. H. E. Elliott, L. B. Flexner, F. G. Hall, W. Herkel, E. F. McCarthy, T. McClurkin and M. Talbot—p. 192
Utilization of Oxygen by Uterus in Rabbit J. Barcroft, L. B. Flexner, W. Herkel, E. F. McCarthy and T. McClurkin—p. 215
Hemoglobin Function in the Developing Chick F. G. Hall—p. 222
Development of Blood Pressure Reflexes G. A. Clark—p. 229
Fate of Carotene Injected into Circulation of the Rat J. C. Drummond and R. J. Macnair—p. 236
Origin of Wever and Bray Phenomenon C. S. Hallpike and A. F. Rawdon Smith—p. 243

Relation of Pituitary to Action of Insulin and Epinephrine—The experiments of Cope and Marks on rabbits confirm the evidence that the anterior lobe of the pituitary plays an important part in the normal glycogenolytic action of epinephrine and that in its absence the glycogen of the liver at any rate, becomes resistant to mobilization by epinephrine. Their observations show that after removal of the pituitary body the adrenals respond normally to insulin hypoglycemia by liberating epinephrine into the blood stream, yet this epinephrine fails to restore the lowered blood sugar to the normal level, in spite of the presence of ample reserves of liver glycogen. The

hyperglycemic response to injected epinephrine is likewise diminished. Converse changes, viz., a resistance to insulin and an increased response to epinephrine, are produced by injection of a suitable extract of the anterior lobe of the pituitary. The foregoing changes are explained on the supposition that the anterior lobe of the pituitary contains a principle which renders the glycogen stores of the liver, and possibly also those of the muscles (now under investigation), susceptible to the mobilizing action of epinephrine. The changes following removal of the hypophysis cannot be reversed by the administration of thyroid, and hence they are not due to the concurrent thyroid degeneration. Conversely, the changes produced by the injection of anterior pituitary extract are not prevented by the removal of the thyroid.

Practitioner, London

134 1120 (Jan.) 1935

- Treatment of Chest Diseases R. A. Young—p. 1
Diagnosis and Treatment of Empyema L. S. T. Burrell—p. 7
Place of Surgery in Chest Disease A. T. Edwards—p. 14
Bronchitis T. S. Nelson—p. 26
Treatment and Prognosis in Acute Lobar Pneumonia J. W. Linnell—p. 39
Prognosis and Treatment of Bronchitis and Bronchopneumonia in Children B. Schlesinger—p. 50
Conditions Simulating Pulmonary Tuberculosis G. Marshall—p. 62
Some Practical Points in Treatment of Consumptives at Their Homes A. French—p. 75
Significance and Treatment of Cough J. B. Alexander—p. 83
Favorite Prescriptions I. The Pharmacopoeia of St. Bartholomew's Hospital P. Hamill—p. 96

South African Medical Journal, Cape Town

8 901-936 (Dec. 22) 1934

- The Medical Curriculum S. F. Silberbauer—p. 903
Diagnosis and Treatment of Allergies J. Pratt-Johnson—p. 905
Cause of Death in High Acute Intestinal Obstruction M. Cole Ross—p. 909

Diagnosis and Treatment of Allergies—Pratt-Johnson discusses the preparation and use of various group protein solutions consisting of twenty-five compound extracts for diagnosis and treatment of hay fever and asthma. The cutaneous or scratch test is recommended for general adoption. General reactions are much less likely to occur with the scratch test than with the intradermal. Dilute solutions and limitation to six or eight tests at one sitting are essential if the intradermal method is used. Treatment with a series of graduated doses prepared from all the extracts which give positive tests is recommended, beginning with an initial dose of $2\frac{1}{2}$ units. Increasing doses are given at intervals of three or four days up to 60 units, and then further doses at intervals of from five to seven days up to 250 units. At least twelve to fifteen doses should be given. Further maximal doses are then advisable at monthly intervals. Treatment should be commenced as soon as the diagnosis is made. Peptone solutions, mixed B. coli and streptococcus vaccines and other substances may be used non-specifically to reduce sensitiveness to foreign proteins generally. In asthma following infectious catarrhs, the removal of foci of infection and treatment with autogenous vaccines is recommended. It is advisable, in these cases, to exclude other causes by carrying out skin tests.

Tubercle, London

18 145-192 (Jan.) 1935

- Reinfection in Tuberculosis L. S. T. Burrell—p. 145
Protein Therapy and Chemotherapy in Genito-Urinary Tuberculosis T. E. Hammond—p. 152
Histology of Tuberculous Cavity Wall S. R. Gloyne—p. 161

Japanese Journal of Experimental Medicine, Tokyo

12 503-612 (Dec. 20) 1934

- Influence on Respiratory Metabolism of Liver Cell Constituents Injected Parenterally into Rabbits. First Report. Influence of Liver Cell Constituents on Respiratory Metabolism of Normal Rabbits F. Kobayashi—p. 503
Id. Second Report. Influence of Cell Constituents of Organs Other Than Liver on Respiratory Metabolism of Normal Rabbits F. Kobayashi—p. 517
Id. Third Report. Influence of Liver Cell Constituents on Gaseous Metabolism at Time of Taking Food F. Kobayashi—p. 533
Relation Between Toxicity of Ricin and Temperature of the Frog's Body H. Moriyama—p. 591
Studies on Etiology of Scarlet Fever A. Imamura, H. Ono, T. Endo and I. Kawamura—p. 601

Presse Médicale, Paris

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- *Synchronous and Rhythmic Myoclonic Syndrome G Guillaum and P Mollaret—p 57
- *Chronic Intoxication by Manganese Compounds Manganous Parkinsonism L Lyon Caen and A Jude—p 60
- Studies on Postinsulin Hypoglycemia in Diabetic Patients J Penison and J Wohl—p 63

Myoclonic Syndrome—Guillaum and Mollaret discuss the rare condition of myoclonia. Three conditions appear able to inhibit such myoclonias. The first is voluntary muscular contraction, but this exists only in certain patients and often only at the beginning of their illness. The other two are paralysis and perhaps contracture. Synchronism constitutes the final characteristic of these myoclonias. Anatomic studies indicate that in three fourths of the cases the etiology is vascular. More rarely sclerosis, epidemic encephalitis, tumors and other causes may be etiologic. The location of the lesion is circumscribed. One observation localized the lesion exclusively in the two olivodentate complexes. The involvement of these bulbar olives was most striking and predominant at the level of the caudate portion of the principal olive, the endociliary and periciliary myelin sheath of which had almost entirely disappeared. The neuroganglionic cells were diminished in number and showed bulbous degeneration and nuclear bipartition. The vessels of the olivary region showed lesions of intense perivascular inflammation, which were found in an attenuated form outside the olives. To these olivary lesions were added involvement of the olivodentate fibers and especially of the dentate nucleus. These showed a degeneration of the extraciliary interlacing fibers and an abnormal pigmentary infiltration of the cells.

Intoxication by Manganese Compounds—Lyon Caen and Jude state that the use of manganese in France is relatively infrequent since it must be almost entirely imported. Most of the mineral is in the form of oxides and it is used principally in iron metallurgic and grinding factories. The route of toxic absorption is poorly understood but may be digestive, respiratory or even cutaneous. The action on the nervous system appears to be an encephalomyelitis with predominating involvement of the central gray matter—cellular degeneration in the lenticular and caudate nuclei with vascular and perivascular lesions. The action on the liver is acute hepatitis with necrosis blood effusion and beginning cirrhosis. In small doses manganese may be substituted for iron in the blood producing an increased number of cells and hemoglobin, but grave and fatal anemia may occur from large or continued doses. Little is known of its accumulation in the body. It is eliminated by the bile and feces and slightly in the urine. The characteristic symptomatology is parkinsonism. Six groups of symptoms are almost constant: (1) difficulties in walking with muscular hypertonia, rigidity and disorders of coordination, (2) modification of the facies, (3) changes in the voice, (4) shaking, (5) subjective sensory disorders, and (6) psychic disturbances. No cases of death have been reported. Treatment should be based principally on rapid and complete removal of exposure to manganese. Proper hygiene and legislation are important factors in prevention.

Archiv für Kinderheilkunde, Stuttgart

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- Local Blood Picture in Erythema Nodosum D von Moritz and A. Dóra—p 65
- *Dysenteric Vulvovaginitis Z Teveli—p 69
- *Evacuation Disturbances of Stomach During Childhood E Hainiss—p 71
- Epidemic of Dysentery During 1933 in Budapest. J Tamasi—p 75
- Functional (Orthostatic) Albuminuria. K Dietl and W Koblmaier—p 80

Dysenteric Vulvovaginitis—Teveli observed two cases of pyuria caused by the Flexner bacillus. The dysentery bacillus produces in the intestine a suppurative inflammation. Involvement of the urogenital system may occur because the frequent stools expose the vulva to contact with the feces. However, since in two other cases the pyuria was preceded only by a mild colitis, he considers an ascending infection more likely. In a girl, aged 1, it was found that the vulvovaginal discharge was only an accompanying symptom of the dysentery for it was cured within two weeks and the dysentery persisted after

that. The bacterial strain yielded by cultures from the vaginal pus proved to be a bacillus of the Flexner Y group. It was agglutinated by the serum of the Flexner Y, the paratyphoid bacillus up to a high titer. It split mannite and maltose but not saccharose and it did not cause coagulation of milk. The strain yielded by cultures from the stool was of the Shiga-Kruse type. It was agglutinated by the Shiga-Kruse serums up to the final titer, but it did not grow in bouillon and on milk culture mediums it produced flocculation within two weeks (atypical Shiga-Kruse strain). These observations indicate that the strain in the stool differs from that in the vaginal pus. It is possible that the stool also contained Flexner Y bacilli, which escaped discovery, or it is possible but not probable that the vaginal and fecal strains were identical and assumed different characteristics only because they existed under different conditions. The author points out that such a mutation of the various dysentery types, although considered possible by some investigators has not been proved.

Evacuation Disturbances of Stomach During Childhood—Hainiss thinks that in children with lack of appetite the gastric function is not given sufficient attention. For the purpose of examination, the feeding of bismuth paste, against which children often have an aversion, is not necessary and drinking of 0.1, 0.2, 0.25 or 0.3 liter of milk is sufficient, for transillumination reveals whether evacuation progresses satisfactorily or not. Ordinarily the stomach evacuates these quantities of milk in from two to three hours, while in children with lack of appetite the stomach may still be partly filled at the end of this period. To overcome this disturbance the physician should pay attention to the following factors: 1. The composition of the diet should be such that evacuation is facilitated. 2. The intervals between meals must be arranged for the slow evacuation, that is, they should be of sufficient length (at first six hours and later four hours). 3. Attempts should be made to increase the *tonus* of the stomach by means of medicaments. After the meal the child should rest so as not to burden the hypotonic stomach by the weight of the gastric contents. During the night a Priessnitz compress should be applied. The alkaloids of cinchona bark as well as quinine increase not only the function of the muscular elements but act also as a general tonic.

Archiv für klinische Chirurgie, Berlin

181 383 478 (Dec 19) 1934 Partial Index

- *Evaluation of the Donor Through Determination of His Psychic Physiologic Status T Chvilivicky—p 383
- Anatomy of Umbilical Canal M A Gorelov—p 395
- Relationship Between Chondromatosis and Osteochondritis Dissecans in Roentgenogram R Toppner—p 406
- Hernia and Hydrocele of Childhood M Langer—p 418
- Pathology of the Cecum H Angerer—p 427
- *Observations on Gastro Intestinal Peristalsis After Operations. M Mátyás—p 432

Evaluation of the Donor Through Determination of His Psychic-Physiologic Status—Chvilivicky studied the effect of single and repeated withdrawals of blood on the central nervous system of the donor. He submitted ninety-six donors to the following tests: (1) testing of steadiness of the hand by means of a tremometer, (2) cephalographic studies consisting of kimo-graphic recording of swaying of the body while in the erect posture, (3) determination of the power of mental concentration by solving arithmetical problems, (4) determination of the blood pressure with simultaneous counting of the pulse in order to obtain the amplitude-frequency index, and (5) determination of the skin temperature. The following conclusions were arrived at: 1. Periodic withdrawal of blood in persons without decidedly pathologic reactions is not injurious. 2. The occurrence of certain neuropsychic alterations makes it inadvisable from a social point of view to draw donors from certain occupations. 3. Because the finer functions are most sensitive to loss of blood, the utilization of skilled mechanics or of motor truck drivers is not desirable. 4. Neurotic subjects with pronounced motor and vegetative disturbances are to be excluded. 5. The amount of the blood to be withdrawn depends on the body weight as well as on the question of whether or not this is the donor's first experience. 6. Withdrawal of the following amounts were found to be well tolerated: from 2 to 3.5 cc per kilogram of body weight on the first withdrawal and from

4 to 6 cc per kilogram in habitual donors 7 Rest after giving of blood accelerates the return to the normal psychic-physiologic status 8 The return to normal psychic-physiologic status takes place quicker after the first withdrawal of blood than after repeated withdrawals All the alterations noted were most pronounced on the seventh day The explanation offered is that at this time an energetic regeneration of blood elements takes place, depriving the organism of a certain amount of oxygen The central nervous system, being most sensitive to oxygen deprivation, shows a lowered capacity for the performance of highly differentiated mechanisms

Gastro-Intestinal Peristalsis After Operations—Matyas made roentgenologic studies of the gastric and the intestinal peristalsis by administering barium sulphate by mouth immediately after the operation He found that emptying of the stomach was delayed for at least ten hours and, after operations on the stomach, for fifty-two hours Early oral administration of water following an operation may therefore result in acute dilatation of the stomach This is particularly likely to happen after partial gastric resection The author advises abundant preoperative administration of water but warns against this for at least from twelve to twenty-four hours after any surgical intervention The water in the meantime may be supplied by the rectal and hypodermic routes

Deutsche medizinische Wochenschrift, Leipzig

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Counting of Labor Pains in Obstetric Practice K F Schultze—p 121
Duration of Birth, Acceleration of Birth and Alleviation of Pain W Kaute—p 124

*Further Experiences with Transfusion of Blood of Pregnant Women K Ehrhardt and H Winkler—p 127
Early Diagnosis of Cancer by Gynecologist A Lange—p 130

Transfusion of Blood of Pregnant Women—Ehrhardt and Winkler point out that Ehrhardt employed the transfusion of blood of pregnant women in patients with amenorrhea a number of years ago but the results were not entirely satisfactory Clauberg and Siebke employed the transfusion of pregnancy blood in pathologic genital hemorrhages that were caused by persistence of the follicle, for it was Clauberg's aim to destroy the persisting follicle by large amounts of the hormone of the anterior lobe of the hypophysis Siebke, in his studies on the hormone foundations of pathologic genital hemorrhages, came to the conclusion that the combined administration of a hormone extract of the anterior hypophysis and of 100 cc of pregnancy blood made surgical intervention unnecessary in many instances The authors employed injections of pregnancy blood within the last four years in twenty-five patients with glandular hyperplasia The quantities of blood varied between 500 and 1,000 cc In ten patients it was possible to observe the results for two years or longer, and the histories of these patients are reported In three patients the treatment failed in five a permanent normalization of the menstrual cycle was attained, in two others the treatment was partly successful These results indicate that the treatment represents a therapeutic advance, at least in regard to the genital hemorrhages caused by persistence of the follicle The authors assume that the results of this treatment are largely due to the anterior pituitary hormone content of the pregnancy blood, and they think that, when pregnancy blood is not available, concentrated hormone preparations of the anterior hypophysis may be administered However, in patients who have lost a large amount of blood, transfusion is the better method, since it supplies blood, hormones and other stimulating factors

Klinische Wochenschrift, Berlin

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*Influence of Spleen Extract on Coagulation Time, Thrombocytes and Erythrocytes E Haenlein and E Schliephake—p 79

Mixed and Secondary Infections J Grillo—p 83

Clinical Aspects of Late Emucoridism B Aschner and A Buch Cassamor—p 86

Clinical Observations on Eighty Cases of Tumor of Hypophysis G Peremy—p 92

*Function of Fluorine in Human Organism L Michaels—p 94

Influence of Spleen Extract on Thrombocytes and Erythrocytes—Haenlein and Schliephake made studies with a spleen extract from which most of the protein substances had

been removed without destroying the physiologically active substances They tested and standardized the extract by sensitization of the vagus of rabbits or by increasing the phagocytosis of human blood With the latter method they were able to detect extremely small quantities To determine the action of the extract on the blood they made their tests on healthy persons who applied for a health certificate, on persons who were in their fourth week of treatment for duodenal ulcer, on patients with nervous heart, aortic defects or asthma, and on persons taking a reducing treatment The persons had to fast during the entire duration of the test First blood was withdrawn for the determination of the normal coagulation time and to detect the normal number of erythrocytes, leukocytes, thrombocytes and reticulocytes Then 2 cc of the spleen extract was injected subcutaneously The coagulation time was determined 5, 15, 30 and 60 minutes after the injection and later every 30 minutes until 210 minutes had elapsed since the injection The erythrocytes, leukocytes, thrombocytes and reticulocytes were counted 30, 90 and 150 minutes after the injection of the extract The authors observed that the spleen exerts a regulatory influence on the coagulation, that the erythrocytes and thrombocytes increase in healthy persons, that the action on the leukocytes is variable, and that the reticulocytes remain uninfluenced They conclude that, in the defense against disease, the spleen not only increases the phagocytic power but also contains hormone-like substances that exert their influence on the composition of the blood

Function of Fluorine in Human Organism—Michaels points out that studies have disclosed that fluorine is a constituent of bones but that it decreases with advancing years It has been assumed that the greater brittleness and the poorer healing tendency of the bones of older persons has some connection with the lesser fluorine content The quantity of fluorine, when compared with other constituents of the bone, is extremely small, but it may play the part of a catalyzer He calls attention to the work of Gautier and Clausmann Gautier was of the opinion that fluorine is a sensitizer for phosphates and that it enables the phosphorus compounds to combine with the tissues This means that the presence of fluorine is essential for the formation of calcium phosphate in the tissues This factor is important in the treatment of calcium deficiency of the skeleton, and he is now engaged in research on this problem He calls attention to factors that indicate an antagonism of fluorine and iodine in the organism to the deleterious effect of the use of iodine on fractured bones, to the possibility that an excess of fluorine as well as a deficiency of iodine may play a part in endemic goiter and to the fact that small doses of iodine have been found helpful in counteracting the symptoms of arteriosclerosis The antagonism of fluorine and iodine suggests the possibility of treating iodine idiosyncrasy with a fluorine preparation

Medizinische Klinik, Berlin

31 37 68 (Jan 11) 1935 Partial Index

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*Foundations and Results of Vaginal Insulin Therapy in Erosions of Uterine Cervix E Klasten—p 44

*Oil of Chenopodium in Treatment of Ascariasis During Childhood Schulz-Schmidtborn—p 47

Results of Encephalography in Epilepsy A Wand—p 48

Vaginal Insulin Therapy in Erosions of Uterine Cervix—Klasten states that for years he has treated erosions of the uterine cervix by means of vaginal insulin therapy and obtained favorable results The erosions were usually a symptom of cervicitis, but there were also ulcerations in women with prolapse The treatment was most effective in those developing as the result of the abnormal position of the uterus when the cervix is pressed against the posterior wall of the vagina The erosions observed were frequently of the coarse papillary form, and on first inspection they occasionally made carcinoma seem possible These and other types of erosions responded favorably to local insulin therapy At first the erosions or ulcerations were painted twice daily with insulin and then a tampon was applied that had been saturated with insulin Later the painting was done only once a day or every second day The diet provided rather large quantities of car-

bohydrates. The author observed repeatedly that the formerly regular menstruation was retarded after the local insulin therapy. He never observed hypoglycemic manifestations, but he considered it advisable to study the behavior of the blood sugar following local insulin therapy. There is a slight resorption in vaginal application of insulin, especially if erosions exist, however, it is not sufficient to warrant this method in treating patients with diabetes.

Oil of Chenopodium in Ascariasis.—Schulz-Schmidtborn maintains that ascariasis is more frequent in children than is believed and that its symptoms are often mistaken for appendicitis. He emphasizes the necessity of examining the stool for ova. He has used oil of chenopodium with favorable result for years and he has never observed cases of fatal idiosyncrasy or poisoning. He thinks that, if poisoning does occur, it is because no purgative is given with the oil of chenopodium or the purgative is not given in adequate doses. He considers castor oil the most suitable purgative but thinks that, if the medication is left to the parents, castor oil may not be given in sufficiently large doses, since the children are unwilling to take it. To avoid this, he advises simultaneous administration. He recommends the following prescription: oil of chenopodium, from 0.2 to 1 cc., sucrose, 1.5 Gm., oil of cinnamon 3 drops, oil of peppermint, 1 drop, castor oil, sufficient to make 90 cc. This prescription is administered on two successive days. Without evacuating the bowel on the evening before, the children are given at 8, 10 and 12 o'clock in the morning one dose (spoonful) of the prescription. The size of the dose depends on the age, weight and the general condition of the patient. Before the mixture is administered it should be warmed up and well shaken.

Münchener medizinische Wochenschrift, Munich

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- Medical Advice About Breast Feeding L. Schall—p 83
*Detachment of Retina and Accidents F. Schieck—p 86
Technical Aspects of Biology of Treatment of Wounds C. Hempel—p 88
Significance of Overextension of Muscles in Paralysis A. Faber—p 91
Late Arsphenamine Shock H. Mühlhordt—p 94
*Serotherapy and Vaccinotherapy in Brucella Abortus Infection Hilgermann—p 98
Reorganization of Social Insurance in Germany K. Haedekamp—p 100

Detachment of Retina and Accidents.—Schieck points out that, if detachment of the retina follows a perforating injury of the eyeball or a severe blow to the eye, the development of the detachment is usually quite clear. However, if the detachment takes place spontaneously, it is more difficult to understand the mechanism. Certain diseases of the eye result in conditions that make a detachment more likely, but there are also cases of detachment in which previous disease of the eye cannot be proved. These cases of detachment are often referred to as 'primary.' Nevertheless, the opinion predominates that in the latter cases the true factors are only obscure and that a real 'primary' detachment does not occur. From the point of view of accident compensation, there are patients who report a relatively slight trauma as the cause of the detachment, such as the dashing of a branch against their eye or being hit in the eye by the tail of a cow, which as a rule leaves no outer signs on the eye. The conditions are more obscure when the patients state that the ocular symptom appeared first after an extraordinary physical exertion, during which there was a rush of blood to the head. In such cases it is difficult for the physician to decide, for a satisfactory decision is possible only if the factors are understood that produce a predisposition to the detachment of the retina. The author is convinced that in a completely healthy eye such causes do not result in the detachment of the retina, and he thinks that a predisposition must exist. He concludes that, when certain predispositions have been produced, even comparatively slight traumas or extraordinary physical exertions are sufficient to produce a detachment of the retina. He thinks that in cases of this nature the patients are entitled to accident compensation and opposes the decision rendered by zur Nedden, who virtually rejects the recognition of compensation claims in such cases. The author shows that zur Nedden justifies

his attitude on the basis of a theory that is a complete contradiction to the opinions held by all other ophthalmologists who have studied the problem of detachment of the retina.

Serotherapy in Brucella Abortus Infection.—In Brucella abortus infection, Hilgermann obtains specific serum by immunizing rabbits with a dextrose-bouillon suspension of a concentration of 20 cc of blood withdrawn from the vein of the patient. In order to activate the immunization, he adds to the blood suspension before injecting a small amount of a suspension of two cultures of Brucella abortus. During the course of the immunization the blood concentration is kept in the anaerobic apparatus at 37 C. Two rabbits are given on two successive days intravenous injections of 2 cc. each of the blood concentration plus the bacilli. After a one day interval they are given another injection, and after that two more injections at three day intervals. Three days after the last, the fifth, injection the blood is withdrawn from the animals and the serum extracted from it. The serum (50 cc.) is injected on two successive days (25 cc. each time). Immediately following the intramuscular injection of the serum, the patient whose history is reported developed fever, but four days later the temperature became normal and the general condition improved. A repetition of the Gruber-Widal reaction several weeks later was negative. During the time the serum was prepared and also after the injection of the serum, the formation of antibodies was stimulated further by injecting at seven day intervals 0.5 cc of a weak vaccine consisting of the centrifugate of the blood concentration, to which had been added the suspension of two strains of Brucella abortus. The author reaches the conclusion that by specific serotherapy, supported by vaccino-therapy, even the most severe cases of Brucella abortus infection can be cured.

Wiener klinische Wochenschrift, Vienna

48 65-96 (Jan 18) 1935 Partial Index

- *Influence of Exclusion of Blood Pressure Regulators on Vasoconstricting Action of Blood, T. Konecny—p 65
Thrombosis and Embolism, H. Eppinger—p 68
*Velocity of Blood Circulation in Patients with Aortic Insufficiency and with Mitral Stenosis in the Compensated Condition H. Elias and R. Laub—p 74
Infectious Diseases and Hyperthyroidism A. Hofmann—p 80
*Causal Treatment of Poliomyelitis E. Barla Szabo—p 81

Vasoconstricting Action of Rabbit's Blood.—Konecny found that the blood of normal rabbits exerts a vasoconstricting action on the surviving human artery, beginning at a dilution of from 1 1,400 to 1 1,700. The blood of rabbits with hypertension produces contraction at higher rates of dilution. Depending on the degree of hypertension, contraction is produced by dilutions of from 1 1,700 to 1 4,000. The same proportionate relation between blood pressure and contracting capacity of the blood could be demonstrated also in the serum. The vascular contraction is not caused by epinephrine, but in rabbits with hypertension as well as in those with normal pressure the contraction is caused by so called constrictines.

Velocity of Blood During Valvular Lesions.—To determine the types of stasis in the various valvular lesions, Elias and Laub decided to study the circulatory velocity in compensated cardiac defects, because it has been demonstrated that the decompensated cardiac lesions have a retarded circulation time. The authors wanted to determine whether the two cardiac defects, which clinically as well as physiochemically (oncotic pressure) presented antithetical symptoms, differed also in the velocity of their circulation. Of the several test methods that have been suggested for the determination of the circulation time, they chose the one that employs a 20 per cent solution of the sodium salt of dehydrocholic acid. They preferred this method (1) because it is rather simple, (2) because it is the least dangerous, and (3) because the diuresis induced by it has a therapeutic effect. The patient was advised to tell at once when a bitter taste appeared. The patient was lying quietly with the arm in the horizontal position, and 10 cc. of a 20 per cent solution of the sodium salt of dehydrocholic acid, diluted with 10 cc of a 30 per cent solution of dextrose was injected into the cubital vein. The injection was made in such a manner that 4 cc. of the solution was injected in ten seconds. Even if the bitter taste had already appeared, the

remaining quantity was always injected for therapeutic purposes. The time was determined that elapsed between the onset of the injection and the appearance of the bitter taste. Before the tests were made, the sensitivity of the taste was determined by means of graduated quinine and sugar solutions. The velocity of the circulation was tested in thirty-seven persons. It was observed that in patients with mitral stenosis the circulation time was slightly prolonged, while in those with aortic insufficiency it was considerably prolonged. To what extent the prolonged circulation time is due to a reduced velocity of the blood stream or to retarded secretion of fluid out of the blood stream cannot be determined with these experiments.

Causal Treatment of Poliomyelitis—Barla-Szabo, after calling attention to the shortcomings of the specific serotherapy, enumerates the factors required of a causal therapy and shows that the virus of rabies meets some of these requirements in regard to poliomyelitis. Accordingly he decided to use the method employed for prophylactic vaccinations against hydrophobia in the treatment of poliomyelitis. The spinal cord of a rabbit infected with rabies served as material. He prepares the vaccination solution in the following manner. The infected material is ground in a sterile mortar and diluted with physiologic solution of sodium chloride. The substance thus prepared can be used for five or six days. The author begins the subcutaneous injections with a solution of 1:500 (0.1 Gm. of brain substance and 50 cc. of physiologic solution of sodium chloride). As a rule, ten subcutaneous injections are required. The first five are given daily and the later five at intervals of two days. The series of injections may be repeated after two weeks. The author employed this treatment in ten acute cases (from three to ten days after onset of the paralysis) and in seventeen subacute cases (from three to six weeks after onset of the paralysis). In the latter group, convalescent serum had not produced the desired results. Since in the small number of acute cases it is difficult to differentiate between spontaneous remission and remission as a result of treatment, he describes only the results obtained in the subacute cases. Two patients with diplegia and two others with diplegia and paralysis of the trunk began to walk again paretically after six days of treatment and the reflexes likewise returned after another five or six days. In seven other patients, of whom three had monoplegia, three diplegia and one diplegia and paralysis of the trunk, cure was effected in from twenty to twenty-five days. The other six patients showed only slight improvement after twenty and twenty-two days, but after an additional twenty-five or thirty days two of them were cured, three were considerably improved and one was slightly improved.

Norsk Magazin for Lægevidenskapen, Oslo

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- Acute Infectious Diseases and Early Seasons C Schjotr—p 1
- Sporotrichosis of Lungs Case J A Voss—p 14
- Filaria Case J A Voss—p 17
- Quantitative Urobilin Test E Wang—p 22
- Pernicious Anemia Without Achylia with Recurring Agranulocytosis Case L L Linneberg—p 31
- *Acute Rheumatism with Abdominal Symptoms Treated in Surgical Divisions H Støren—p 35
- Acute Pancreatic Necrosis R Steinert—p 43
- Purpura During Fibrolysis Treatment A Arnesen—p 46
- Transportable Roentgen Apparatus and Treatment of Fractures in Lower Extremities H C Wennebold—p 53
- Type Determinations of Fourteen Tubercle Bacillus Strains Isolated from Patients with Tuberculosis of Bones and Joints P Ancheren—p 61
- *Porphyria or Porphyrinogen Elimination in Urine in Acute Idiopathic Porphyria Sources of Error in Urine Analysis New Method for Clinical Use R Opsahl—p 66
- Pyloric Stenosis with Tetany and Azotemia Case R Opsahl—p 81
- *Mesodermic Dystrophia (Marfan)—Arachnodactylia Case T Christophersen—p 85

Acute Rheumatism with Abdominal Symptoms—Støren says that in the diagnosis of acute rheumatism with abdominal symptoms great importance attaches to the good intestinal peristalsis demonstrable on auscultation in spite of marked muscular resistance and tenderness. In the five cases reported, which were admitted as acute abdominal disorders, the two main types of abdominal pain in acute rheumatism were represented: one with paroxysmal pain with slight or no resistance, the other with marked resistance and tenderness. In the case

in which operation was performed there was an acute serous peritonitis. The cause of the abdominal symptoms described is thought probably to be an acute rheumatic peritoneal disturbance of varying intensity.

Acute Idiopathic Porphyria—Opsahl asserts that the frequent negative results of the urine test in acute porphyria may be due to intermittent elimination and that the color of the urine is no indicator of the porphyrin content. In some cases Garrod's and in other cases Fischer's method prove unsatisfactory. For clinical use the following method for relative quantitative determination in porphyria is presented. The urine is examined in mercury quartz light with Wood's filter for fluorescence. By the addition of iodine (1 drop of tincture of iodine to 5 cc. of urine) the porphyrinogen possibly present, which does not fluoresce, is at once oxidized into fluorescing porphyrin. After the characteristic fluorescence has been found, the substance is identified according to Fischer's method.

Mesodermic Dystrophia (Marfan)—Arachnodactylia—Christophersen says that his typical case in an infant presents a combination not previously reported, mesodermic dystrophia and congenital pyloric stenosis. After operation for the stenosis a volvulus of the stomach developed, operative treatment was followed by uneventful recovery. Roentgen examination of the patient's cranium revealed a convexity of the orbits toward the foremost groove of the brain, an anomaly also seen in the mother. While lens luxation was not confirmed, there were indications of a luxation or a subluxation. Seven other cases of arachnodactylia on the maternal side of the patient's family are known.

Ugeskrift for Læger, Copenhagen

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- Suprapubic Cystostomy Sequels and Their Treatment Four Cases E Kindt—p 6
- Preliminary Remarks on Forms of Dementia Paralytica in Acute Anterior Poliomyelitis M Norn—p 8
- *Agranulocytosis with Recovery Case A Barfred—p 9
- Uremia Treated with Sodium Chloride, in Patient with Hematuria Case G Herborg—p 13

Agranulocytosis with Recovery—In Barfred's case, originated after treatment with amidopyrine, treatment with pent-nucleotide and a liver extract (hepsol) was followed by rapid recovery. Tabulation of the course of the blood picture in five cases with recovery reported in the literature and in this case shows identical curves in all cases.

Uppsala Lakareförenings Förhandlingar, Uppsala

39 307 448 (June 15) 1934

- Studies on Influence of Some Natural Fats and Their Components on Animal Tissue Structures E Agdubur—p 307
- Remarks on Dentite Fascia and Its Relation to Sense of Smell (Case of Combined Defect of Olfactory Portion of Brain) S Oldberg—p 395
- Innervation of Musculus Sternalis Also Through Cervical Plexus K Martensson—p 407
- *Contribution to Knowledge of Thyroid Changes in Nongonitrous Highly Toxic Form of Exophthalmic Goiter A Gellerstedt and E Norinder—p 423
- Familial Multiple Changes in Epiphyses and Osseous Aseptic Necrosis Preliminary Report S Ribbing—p 433

Nongonitrous, Highly Toxic Form of Exophthalmic Goiter—Gellerstedt and Norinder state that their case presented the clinical picture of a disturbance of the heart with gastro-intestinal disorders. Necropsy revealed a small firm thyroid. Histologic examination showed the thyroid to be abundantly vascularized, with strongly increased interstitial tissue, small lobuli and scanty lymphoid foci. The preponderantly small follicles were covered with a high cylindrical epithelium containing abundant fat and vacuoli. The colloid matter was lacking or remarkably scanty, consisting mainly of small homogeneous or granulated spheres and foamlike masses. The follicles also contained abundant desquamated epithelial cells and some red blood corpuscles. In many places the epithelium showed marked proliferation into the follicle lumen. The pronounced changes bore unmistakable characteristics of exophthalmic goiter. The atrophy and the tendency to fibrosis, however, appear rarely and only as the end stage of a long and grave exophthalmic disease.

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REPEATED LUMBAR PUNCTURES OF SPINAL DRAINAGE

DIAGNOSTIC AND THERAPEUTIC VALUE IN TRAUMATIC AND ALLIED LESIONS OF THE
CENTRAL NERVOUS SYSTEM

WILLIAM SHARPE, M.D.

NEW YORK

The use of lumbar puncture as an important aid in the diagnosis of lesions of the central nervous system has become much more frequent within the past ten years, no longer is the test considered an "operation," deferred until the increasing severity of the patient's condition demands an accurate diagnosis and then often used as a last resort. Even today, however, in many hospitals lumbar puncture is employed only for diagnostic purposes and only in selected conditions, but the use of repeated lumbar punctures of spinal drainage in acute traumatic intracranial lesions is considered dangerous and radical.¹

During the past twenty years in this clinic, the use of diagnostic lumbar punctures has become progressively more frequent and earlier, as a part of the routine examination of any patient having complaints severe enough to warrant reference to a neurologic clinic.¹ As a diagnostic aid, there has been little or no criticism of its possible danger, except in subtentorial expanding lesions, and even in these conditions, if the lumbar puncture is properly performed, there is no danger of a serious complication. Diagnostic lumbar punctures, and by all means therapeutic lumbar punctures, should always be performed with the manometric attachment, preferably the mercurial one, in this manner, the pressure of the cerebrospinal fluid can be accurately registered, and under no circumstances should an amount of cerebrospinal fluid be withdrawn to lower the pressure more than one half of the initial pressure. For diagnostic purposes alone, 2 cc of fluid is amply sufficient, but for therapeutic purposes, it is at times possible to withdraw slowly 20 cc and even more before the pressure is lowered to one half of the initial pressure. In these therapeutic cases, however, the free escape of the cerebrospinal fluid from the puncture needle, when no manometer is being used to estimate the pressure until the pressure is lowered to a point far below one half of the initial pressure, is attended by the well known definite danger of medullary complications of direct pressure by the foramen

magnum collar, as well as intracranial vascular alterations to the degree of spontaneous rupture of the arterioles themselves. Such lumbar punctures, especially without the use of the manometer, are not properly performed and therefore the possible resulting complications are not valid criticisms of the test itself. In this clinic in a period of twenty years, serious complications following lumbar punctures have occurred in only three patients, and in each case the test itself had not been properly performed—the cerebrospinal fluid having been allowed to escape freely from the needle without the manometric attachment and, therefore, no pressure reading having been made. In each of these earlier cases, necropsy disclosed that the rapid lowering of the high intracranial pressure had forced the median portion of the cerebellum into the foramen magnum. In no other patients have complications occurred during or following the lumbar puncture properly performed with the aid of the mercurial manometer.

The observations in this paper will be limited, first, to acute traumatic intracranial lesions in adults, children and the new-born, secondly, to acute traumatic lesions of the spinal cord, and, in the third place, to acute spontaneous intracranial hemorrhage of the subarachnoid type, so often diagnosed and confused clinically as cases of "apoplexy" within the internal capsule. Repeated lumbar punctures of spinal drainage to lessen the symptoms in selected conditions of diffuse purulent meningitis will merely be mentioned.

ACUTE TRAUMATIC INTRACRANIAL LESIONS

1 *In Adults*—As is now commonly recognized, the important factor in acute cases is not a fracture of the skull, whether of the vault or of the base, but an increased intracranial pressure, whether due to hemorrhage or to acute cerebral edema and increased amount of cerebrospinal fluid or to both. The presence of a fracture merely demonstrates that the cranial injury was sufficient to fracture the skull, and naturally fractures of the base are the more serious as indicative of a greater force at the time of the cranial impact in order to produce an indirect fracture, and, therefore, the much greater danger of associated complications of intracranial hemorrhage and acute cerebral edema. The presence of the fracture is frequently also of value in permitting free blood and excess cerebrospinal fluid to escape from the cranial cavity, a natural decompression and drainage thus results in lowering any marked intracranial pressure. However, in acute cases of cranial injury, if the intracranial pressure is markedly increased, this important fact should be determined as soon as possible after the patient has survived the period of initial shock.

The only accurate method of determining the presence of an increased intracranial pressure is by the

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¹ Sharpe, William. *Diagnosis and Treatment of Brain Injuries With and Without a Fracture of the Skull*. Philadelphia: J. B. Lippincott Company, 1920.

lumbar puncture. However, no prolonged examinations such as roentgenograms and lumbar puncture tests should be made until the patient has recovered from the initial shock of the injury, as such examinations merely prolong the shock. If the patient cannot recover from the shock with all the treatment directed to that end, surely neurologic examinations and tests will not lessen the shock, and they may even increase it.

If the diagnostic lumbar puncture reveals clear fluid under a normal pressure (from 6 to 8 mm of mercury), or if the pressure is only slightly increased to 10 mm and at the most to 12 mm, or if the fluid is merely blood tinged, a favorable prognosis may be given, the general condition of the patient being good and in the absence of serious internal bodily injuries. On the other hand, if the pressure of the cerebrospinal fluid is markedly increased to more than twice the normal (from 14 to 16 mm) and especially if it is bloody, the diagnostic lumbar puncture should be converted into a therapeutic one of spinal drainage by withdrawing slowly an amount of fluid to lower the pressure to one half of the initial pressure recorded. That is, if the initial pressure reads 20 mm, then only an amount of fluid should be withdrawn to lower the pressure to 10 mm and not below 10 mm. In this manner, there is no danger of medullary complications or of increasing intracranial hemorrhage. The latter fear, so often expressed in the literature, that lumbar punctures theoretically will permit greater intracranial hemorrhage to occur has not been observed in this clinic when a lumbar puncture has been properly performed with the aid of the manometer as previously described.

By use of the test tube rack, whereby the cerebrospinal fluid withdrawn at each puncture of spinal drainage is placed in a test tube and labeled consecutively with the date and the exact time attached, as the blood settles at the bottom of the tubes, the blood percentage can be estimated approximately and the lessening blood percentage of successive punctures is clearly demonstrated. Specimens may also be centrifugated or sent to the laboratory for accurate red blood cell counts but in this clinic the tube rack is considered a most impressive demonstration for the entire staff to observe the therapeutic value of repeated lumbar punctures of spinal drainage. Depending on the height of the increased intracranial pressure and the degree of percentage of blood in the cerebrospinal fluid, the frequency of the repeated lumbar punctures of spinal drainage will vary from one to two or three daily, and, in severe cases showing both high pressure and high blood percentage of the cerebrospinal fluid as many as four spinal drainage punctures each day (one every six hours) have given the best results. In these borderline cases, which are comparatively rare, if the high pressure and the blood percentage of the cerebrospinal fluid are not progressively lowered by the consecutive lumbar punctures, early cranial operation and drainage are indicated, before the patient reaches the serious period of medullary compression. To permit the intracranial hemorrhage to form a layer of supracortical clot during the period of expectant palliative treatment merely lessens the chances for a good end-result if the patient recovers and also makes operative cranial decompression and drainage imperative in the more severe cases.

In this clinic diagnostic lumbar punctures are part of the routine neurologic examination on all patients having acute head injuries of a severity warranting

their being brought to the hospital. Occasionally, the results of this test are surprising in cases of apparently trivial head injuries, which would be clinically diagnosed as simple concussion, contusions or laceration of the scalp without the aid of lumbar puncture. In this manner, cases of slowly increasing extradural hemorrhage have been immediately suspected by a definite rise of the pressure of clear cerebrospinal fluid, even in the absence of positive roentgenograms, and an early differential diagnosis of an increasing extradural hemorrhage from acute cerebral edema and excess cerebrospinal fluid is greatly aided by the amount of fluid withdrawn in order to lower the pressure to one half of the initial pressure recorded.

In the treatment of acute head injuries when the diagnostic lumbar puncture discloses clear or merely blood tinged cerebrospinal fluid under normal or only slightly increased pressure, the routine expectant palliative method, aided by dehydration of varying degrees is usually entirely satisfactory and the end-results are excellent. In these cases, even without lumbar punctures, the end-results would be the same, but the physician can never be certain in regard to the intracranial status without the diagnostic lumbar puncture. Also, if during the convalescence, symptoms and signs of an intracranial complication develop, then the results of this initial lumbar puncture will be of the greatest value for a comparison with those of a later test in order to determine accurately the progress of the intracranial condition. Only too frequently patients having apparently minor head injuries become gradually or suddenly worse during the first week, if the diagnostic lumbar puncture in the initial period has been negative, any marked rise of pressure, whether due to hemorrhage or to excess cerebrospinal fluid or to both, can be easily determined and treated accordingly.

In cases in which the initial diagnostic lumbar puncture discloses hemorrhage of a mild degree, or a moderately increased pressure of cerebral edema and an excess amount of cerebrospinal fluid, the patient will receive naturally more careful attention, especially dehydration will be added to the expectant palliative treatment, and the physician will be constantly on the lookout for the development of symptoms and signs of an increasing intracranial pressure. If these symptoms and signs appear, another lumbar puncture should be performed immediately to determine accurately the intracranial status.

In cases in which the initial lumbar puncture reveals a cerebrospinal fluid pressure of over 12 mm, whether or not the fluid is bloody in the experience of this clinic the expectant palliative treatment, aided by dehydration and the repeated lumbar punctures of spinal drainage, is eminently satisfactory in the vast majority of patients, so much so that the advisability of cranial operations of decompression and drainage has been greatly lessened. At the time of my last report on this subject in 1928,² the operative treatment of acute brain injuries was advised in 31 per cent of the cases, but now, up to Jan 1, 1934, this figure has been lowered to 26 per cent, the decrease in operative treatment being due chiefly to the more persistent use of repeated lumbar punctures of spinal drainage. Dehydration is of temporary value only in the less seriously injured patients having a moderate degree of cerebral edema and an excess of cerebrospinal fluid, especially in the absence of much blood in the cerebrospinal fluid.

² Sharpe, William. *Neurosurgery: Principles, Diagnosis and Treatment*. Philadelphia: T. B. Lippincott Company, 1928.

Patients in whom the cerebrospinal fluid has a blood percentage higher than 10 should not be dehydrated for fear of hastening the coagulation of the free blood before it can be absorbed or drained and thus a layer of supracortical hemorrhagic clot of varying amount may be formed. There is a real danger that the organized residue of the blood clot may later produce cortical instability and even a partial blockage of the absorption of the cerebrospinal fluid. This causes a chronic condition of the "wet" brain type associated with persistent headaches, vertigo, early fatigue and changes of personality of the depressed or irritable type, and even convulsive seizures.

During the past twenty years in this clinic the total mortality of traumatic cranial lesions has been greatly lowered so that now it is less than 29 per cent and with the exclusion of those patients who are admitted to the hospital in a moribund condition and die within six hours from shock and internal injuries, the mortality is 18 per cent. Naturally, in the alcoholic, arteriosclerotic and nephritic type of patient, the prognosis must always be grave, since even apparently trivial bumps on the head may produce a severe degree of cerebral edema and the rapid development of a terminal medullary edema.

2 In Children—Fortunately, acute traumatic cerebral edema and an excess amount of cerebrospinal fluid are comparatively rare occurrences in children. There is also lessened danger of hemorrhage following head injuries, but any child with a cranial trauma of severity warranting admission to the hospital should, in my opinion, receive the careful examination suggested for adults and should be treated accordingly. In children under 12 years of age the expectant palliative treatment, aided by dehydration in selected cases, and repeated lumbar punctures of spinal drainage has been entirely satisfactory in 78 per cent, and in only 14 per cent has it been considered advisable to institute cranial drainage, in order to save the life and furnish the best possible chance for the ultimate recovery of function and normality. So often in the past, the end-results in patients having head injuries have been overlooked. The immediate saving of life is important, yet surely the efforts of the physician should be directed to include physical and especially mental recoveries, which are almost equally important socially.

3 In the New-Born—A tremendous advance has been made within recent years in the diagnosis and treatment of acute cerebral birth hemorrhage. The diagnosis is now no longer deferred for months after birth in order to await the appearance of signs of an intracranial lesions with delayed physical and mental development, such as inability to hold up the head, inability to sit up, increasing spasticity of the arms or legs and delayed speech. It is the present practice to perform diagnostic lumbar puncture immediately in a new-born baby whether or not it was born by an instrumental labor, if there is difficulty in nursing, refusal to nurse or abnormal stupor, especially in the presence of twitchings of the extremities or of the facial muscles, or even, in rare cases, convulsive seizures. If free blood is present in the cerebrospinal fluid, repeated lumbar punctures of spinal drainage are immediately instituted, just as in adults and children with head injuries, in order to permit the free blood to escape and thus avoid the great danger, not only of death but in some cases the even more tragic result of spasticity and retarded mentality. If the diagnostic lumbar punc-

ture reveals clear cerebrospinal fluid, the physician knows almost certainly that no intracranial hemorrhage has occurred and that the signs were most probably due to a temporary cerebral edema of varying degree.

In cases in which the cerebrospinal fluid is bloody, all treatment and not including the injection of mother's blood and other coagulants, should be directed toward aiding the natural absorption of the blood by draining as much of it as possible, and thus lessen its blood percentage, before it can coagulate to form the organization-residue of unabsorbed supracortical hemorrhage—the direct cause of future physical and mental cerebral signs. Once this fibrous organization residue has been formed about the supracortical veins in the sulci there results the serious probability of a partial blockage in the absorption of the normal cerebrospinal fluid through the stomas of exit in the walls of these supracortical veins and thus is presented the great danger of a chronic "wet" brain of the external hydrocephalic type associated with an increased intracranial pressure of varying degree. It is this later development of increased intracranial pressure and not a primary damage to the brain at the time of the acute hemorrhage at birth, that produces the chronic spastic paralysis and mental retardation in these patients. In a percentage of only one in sixteen cases in a large series has there been any pathologic evidence of a primary brain injury.

In acute cases of cerebral birth hemorrhage, the early diagnostic lumbar puncture disclosing bloody cerebrospinal fluid under varying degrees of increased pressure is converted into a therapeutic spinal drainage, owing to the presence of the open cranial fontanels, there is apparently no danger of producing medullary compression by permitting as much of the bloody cerebrospinal fluid to escape as will do so. In this clinic these therapeutic lumbar punctures are repeated every two hours until the blood percentage of the cerebrospinal fluid becomes less than 10, and then every six to twelve hours until the fluid is practically clear. The average number of spinal drainage punctures has been five in the milder cases and as many as twelve in the more serious ones with extensive hemorrhage under high intracranial pressure.

This method of spinal drainage has been eminently successful in over 80 per cent of the cases of acute cerebral birth hemorrhage, and in no case in this clinic has it been necessary to advise a cranial drainage of the hemorrhage during the past four years. This is also due to the fact that in the cases of massive gross hemorrhage such as follow rupture of the tentorium with cerebral and cerebellar laceration, the child is in a severe condition of shock and is usually moribund, so that no cranial operation nor even spinal drainage can be considered. It is, however, the milder cases that are so frequently overlooked in which the signs are often vague and indefinite, these cases should have the benefit of an early diagnostic lumbar puncture, and if bloody cerebrospinal fluid is revealed the repeated lumbar punctures of spinal drainage should be instituted immediately in the hope that all the hemorrhage can be drained the great danger of later physical and mental impairment being thus avoided. In many of these acute cases the patients are now apparently normal in every respect as the result of the outlined treatments, whereas, once the condition has been permitted to become chronic the most that can be expected from any known treatment is an improvement, never normality.

ACUTE TRAUMATIC LESIONS OF THE
SPINAL CORD

As in cranial injuries, the important factor in trauma of the spinal column is not the presence of fracture of the bony structure but rather the degree of involvement of nerve tissue, naturally, depressed fractures of the skull should be elevated soon after recovery from the initial shock. Likewise, direct bony compression of the spinal cord resulting from vertebral fracture dislocation should be relieved early, the one and only exception being the patient having such a marked fracture dislocation of the vertebrae that the spinal cord must have been irreparably and completely damaged by severance or extreme compression and therefore presenting a hopeless prognosis. Any operative procedure advised in these tragic cases merely discredits the operation and the surgeon.

Fortunately, however, the cases of direct bony compression of the spinal cord itself are comparatively rare—and the much more common condition in conjunction with fracture dislocation is the presence of partial or complete spinal canal block, whether due to a narrowing of the bony canal from the associated fracture dislocation, or, as frequently happens, to an edematous enlargement of the cord itself, to a degree that the canal may be entirely blocked at the site of the trauma. Just as in cranial injuries, the swollen edematous brain, together with hemorrhage and excess cerebrospinal fluid, may produce an increased intracranial pressure sufficient to cause medullary compression and even death of the patient so in traumatic lesions of the spinal cord the swollen edematous cord with varying degrees of subarachnoid hemorrhage may so fill and block the canal that a direct compression of the cord itself results in the clinical picture of acute transverse myelitis. Unless this extreme blockage is relieved at the earliest possible moment, many cord fibers may be considered permanently and hopelessly damaged.

An early diagnostic lumbar puncture to permit the use of the Queckenstedt test in order to determine the presence of canal block is absolutely essential in the rational treatment of patients having cord lesions. If no canal block is present, only the routine expectant palliative treatment with the usual orthopedic measures of immobilization and traction is indicated. If, however, a partial block of the canal is demonstrated by the Queckenstedt test, then, just as in traumatic intracranial lesions associated with increased pressure of hemorrhage, cerebral edema or excess cerebrospinal fluid, the diagnostic lumbar puncture is converted into a therapeutic one of spinal drainage, and as much bloody cerebrospinal fluid is drained as possible in the hope that the canal blockage can be lessened. In almost one half of our cases of partial canal block, in the absence of marked fracture dislocation to the degree of a definite kyphosis, spinal drainage of repeated lumbar punctures together with the usual measures of dehydration was sufficient to lessen and even remove the block, and when lumbar drainage failed, combined lumbar and cisternal punctures were entirely satisfactory. In no case of partial canal block in the absence of marked bony displacement was a spinal decompression of laminectomy necessary.

In cases of complete canal block, unless the vertebral fracture dislocation is so extensive that no amount of spinal and cisternal drainage could relieve the cord compression, the patients should be given the opportunity of having the canal block lessened by combined

lumbar-cisternal drainage of repeated punctures, if no immediate lessening of the canal block is demonstrated, an early laminectomy of direct spinal decompression and drainage should be performed to give the patient the greatest possible chance of improvement. The longer the delay, the greater the irreparable damage to nerve tissues by the continued compression. If the neurologist cannot state with certainty that the entire cord in cases of clinically acute traumatic transverse myelitis is irreparably damaged—and one cannot except when the roentgenograms reveal a vertebral malalignment of such a degree that the cord must have been destroyed—the patient, in my opinion should have the possible benefit of lumbar and cisternal drainage, and if that fails to lessen the canal block, then the advisability of an immediate decompression laminectomy should be considered. Patients having the clinical picture of complete transverse myelitis should not be condemned to a hopeless future without at least a determination of whether there is a canal block. Months later they may begin to move the toes, then the legs, and in rare cases they may even stand. Such partial improvement is not uncommon and clearly demonstrates the fact that the diagnosis of complete acute traumatic transverse myelitis cannot be made with certainty, because some of the cord fibers may not be irreparably damaged, and unless the canal block of vertebral malalignment is so extreme that the entire cord must have been destroyed, every opportunity should be given to the patient to obtain the greatest possible recovery of function.

ACUTE SPONTANEOUS INTRACRANIAL HEMOR-
RHAGE OF THE SO-CALLED APOPLEXY
SUBARACHNOID TYPE IN THE
ELDERLY

Careful histories and thorough physical and neurologic examinations are always most important and essential in the diagnosis and treatment of these patients, and, as an additional aid, the diagnostic lumbar puncture is of real value. It is not dangerous when properly performed in the manner described, for determining a definite diagnosis in the spontaneous cerebral accidents and vascular encephalopathies of the elderly. The latter vague generalizations of nomenclature are no longer satisfactory and only rarely is it impossible to classify with accuracy the character, as well as the localization and extent of the vascular lesion.

A diagnostic lumbar puncture that reveals clear cerebrospinal fluid is naturally not repeated, and not more than from 1 to 2 cc of cerebrospinal fluid is removed for laboratory examination. Clear cerebrospinal fluid immediately eliminates subarachnoid and ventricular hemorrhage, so that the lesion, if hemorrhagic, is localized most probably in the internal capsule or infrequently within the cerebral hemispheres. In the latter cases an increased intracranial pressure of varying degree is disclosed. In these cases of clear cerebrospinal fluid the possibilities also include arterial blockage of a thrombotic or embolic character, or simply a transient arteriospasm.

If, on the contrary, the cerebrospinal fluid at lumbar puncture is bloody, any form of arterial blockage is immediately excluded, and the diagnosis becomes limited to subarachnoid hemorrhage or to an extensive internal capsular hemorrhage that has ruptured into the ventricle, producing the most serious type of apoplexy, or to a massive cerebral hemorrhage that has ruptured into the subarachnoid spaces or into either lateral ventricle. Naturally, the history of the patient, including

the preexisting symptoms and signs the character of the onset of the acute illness, the examination of the heart, the blood pressure, the urinalysis and, of the greatest importance, a painstaking neurologic examination, in addition to the results of the lumbar puncture, will make possible the accurate diagnosis and localization of the lesion in almost all these cases of cerebral accidents.

With a diagnosis of subarachnoid hemorrhage, it has been the experience in this clinic that repeated lumbar punctures of spinal drainage not only permit a more rapid recovery of physical, mental and emotional functions of the patient but the degree of improvement may be so increased that the ultimate functional recovery may approximate normality.

During the past three years, nineteen patients have been admitted to the hospital with the final diagnosis of spontaneous subarachnoid hemorrhage of the elderly, and, without a diagnostic lumbar puncture, in seven of these patients the diagnosis would have been impossible. Just as in cases of cranial injuries, the diagnostic lumbar puncture should never be performed before the patient has recovered from the initial shock.

In patients having bloody cerebrospinal fluid when the diagnostic lumbar puncture is made, the pressure of the fluid was registered by the mercurial manometer and only enough bloody cerebrospinal fluid was removed to lower the pressure to one half of the initial pressure. Depending on the height of the increased pressure and on the degree of blood percentage in the cerebrospinal fluid, repeated lumbar punctures of spinal drainage were performed once a day in the milder cases and as many as six times a day in the more severe cases of extensive subarachnoid hemorrhage. Five therapeutic lumbar punctures have been done in the average case, the largest number in any one patient being eleven before the cerebrospinal fluid became straw colored and under normal pressure (from 6 to 8 mm of mercury). In no patient in this series of cases of simple subarachnoid hemorrhage has the condition become worse following the diagnostic lumbar puncture, and in each case the blood percentage has lessened in the successive therapeutic punctures of spinal drainage. In no patient in this series of cases of bloody cerebrospinal fluid has cranial drainage been considered either necessary or advisable, if spinal drainage is successful in eventually clearing the cerebrospinal fluid of blood, naturally cranial drainage is not indicated.

In the severe cases either of extensive internal capsular hemorrhage or of massive cerebral hemorrhage rupturing into the ventricles, the clinical picture was frequently one of profound shock at first, followed by the rapid onset of bilateral spasticity with rising temperature, so that not even a diagnostic lumbar puncture was to be considered, the mortality has been 100 per cent in these moribund patients. Fortunately, these most serious types of massive spontaneous hemorrhage are comparatively rare, as are the complete thromboses that have occurred in this clinic, the much more common types of so called apoplexy being the subarachnoid as described, with an excellent prognosis, and also the frequent cases of arteriospasm of only temporary impairment. The much described internal capsular hemorrhage of varying degree, and usually limited to a small area of the capsule itself, must not be confused with the described lesions, and usually a careful neurologic examination makes the differentiation possible. This is also true of the internal capsular thromboses of embolic origin.

SELECTED CASES OF DIFFUSE PURULENT MENINGITIS

As a last resort, repeated lumbar and cisternal punctures of spinal drainage may be used as a symptomatic treatment to relieve the persistent severe headache of high intracranial pressure. They may prove of real value, and occasionally the patient may recover with life. Such patients might have recovered without spinal drainage, and yet if the headaches are lessened and the patient's general condition is improved and no ill effects of spinal drainage are demonstrable, surely the advisability of this expectant palliative method of treatment should at least be considered. Naturally, the lumbar punctures should be properly performed, as in hemorrhagic intracranial lesions. The spinal mercurial manometer should always be used to estimate the initial pressure and only the amount of cerebrospinal fluid necessary to reduce the pressure one half and not lower than one half should be permitted to escape. If the spinal puncture is done in this manner there will be no danger of any medullary complication of foramen magnum compression or other unfavorable signs.

CONCLUSIONS

1 Lumbar puncture is an important diagnostic aid, and repeated lumbar punctures of spinal drainage are of therapeutic value in selected cases of traumatic and allied lesions of the central nervous system.

2 Diagnostic and therapeutic lumbar punctures are without danger when properly performed. The manometric attachment should always be used and only the amount of cerebrospinal fluid necessary to lower the pressure to one half of the initial pressure should be withdrawn.

3 In the most frequent subarachnoid type of traumatic intracranial and spinal hemorrhage, in adults, children and the new-born, and in the spontaneous subarachnoid "apoplexies" of the elderly, repeated lumbar punctures of spinal drainage not only reduced the mortality but give a higher percentage of recovery of function.

4 Therapeutic lumbar punctures of spinal drainage, combined with dehydration, have lessened by about 20 per cent the advisability of operative cranial drainage in head injuries in adults and by more than 50 per cent in the new-born.

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ABSTRACT OF DISCUSSION

DR TEMPLE FAY, Philadelphia. In 1921 I introduced the method of "dehydration" as a therapeutic means of treating these acute traumatic cases. This year I had the opportunity of reviewing cases of head trauma covering a period of fourteen years. In this series about half of the cases were treated by the older methods. Therapeutic and diagnostic lumbar puncture was not done and surgical decompression was frequently resorted to. The mortality was 26 per cent. Following the advent of spinal drainage and dehydration, the mortality dropped so that in the latter half of the series it has never exceeded 18.2 per cent. This includes all patients that entered the hospital whether they lived three minutes or three weeks. After the third hour the mortality dropped sharply to 14 per cent where spinal drainage and dehydration were employed, and this mortality has been a consistent one over a period of ten years. I believe it can be said that there is ample clinical evidence in favor of the conservative methods described. Lumbar puncture should be undertaken with a full knowledge of the mechanisms involved so as to avoid the dangers Dr Sharpe has described. It is perfectly obvious that if the ventricular system is "open" and one reduces the fluid pressure so that there is an equalization of the loss of fluid from within

the brain ventricles and from without simultaneously, no actual mass movement of the brain in the direction of the foramen magnum will occur. If, however, lumbar puncture is not done until after the first day and the symptoms then require lumbar puncture, there may be real danger because of a tremendous mass edema of the brain with no free fluid spaces open, owing to a diffuse interstitial edema with cellular swelling. I believe that delayed lumbar puncture affords a very distinct danger of foraminal hernia. If one is going to adopt the method, it should be adopted sincerely from the very beginning either no lumbar puncture following the old school of thought, or frequent drainage as the best means of restoring oxygen and nutrition to the brain throughout a period of compression so that it may survive. Spinal drainage and reduction of intracranial pressure, after all, simply mean providing the additional space required by cerebral circulation during the period of swollen brain cells, hemorrhage, or an overaccumulation of spinal fluid. Spinal drainage, properly performed, has undoubtedly proved to be a valuable adjunct to treatment.

DR A. S. CRAWFORD, Detroit. Dr Sharpe is one of the pioneers whose teachings and writings have stimulated the much wider use of lumbar puncture as a diagnostic and therapeutic means in treating these cases. As Dr Fay has said, this has led to a clearer understanding of the conditions and has resulted, in a way, in greater conservatism, because it has helped to cure many cases without operation. In a careful analysis of more than 1,300 cases of definite craniocerebral injuries in the last eleven years, I found that during the last three years there has gradually been a tendency toward more conservatism in the use of lumbar puncture. At one time it was being done in nearly 50 per cent of the cases and now I find it necessary for diagnostic or therapeutic purposes in something over 10 per cent. Mortality rates have gradually become lower. I do not know that these two factors are necessarily interrelated, but I do know that as experience increases I am able to carry more cases through the critical period without the use of lumbar puncture. On the other hand, I feel that if there is any question of the diagnosis or prognosis a lumbar puncture should be done. If it is done carefully, as pointed out by the speaker, with fine needles and withdrawing slowly, there is very little risk. Of course, it must be realized that there is a great deal of risk in a certain type of case in which there is gross blood and blockage of the posterior fossa. With regard to treatment of hemorrhage in children, I have been able, by means of punctures, and particularly when I have found the localized blood to save some in whom spastic paraplegias would have developed. I remember two cases in which I put a needle in the cisterna and found gross blood. I was able to remove that blood and then go a little farther in and find clear spinal fluid showing that the hemorrhage was subdural but extra-arachnoid. These patients were going down hill rapidly and probably would have died, had the obstruction not been relieved. They were entirely cured. I think this is a subject which should be brought up periodically, because the reporting of experiences adds to the fund of knowledge and permits the application of better judgment.

DR NED R. SMITH, Tulsa, Okla. I wish to present a thought from the standpoint of the consulting neurologist who lives in a community in which there is no neurosurgeon. The traumatic head cases are for the most part seen by the general surgeon, and occasionally the neurologist is called in consultation. A month ago I heard a paper by an eminent neurosurgeon who deprecated the use of the lumbar puncture. At the end of that paper, I was convinced that he was quite sound in his point of view. At the end of Dr Sharpe's paper, I am convinced that in his hands the lumbar puncture method and drainage has certain phases of distinct value. It seems to me that the weight of evidence thus far would point to the judicious use of the well known method of dehydration by intravenous and other types of medication, plus the always available diagnostic method of lumbar puncture if necessary.

DR PAUL C. BUCY, Chicago. I have always been a little perplexed by this difficulty about lumbar puncture or no lumbar puncture. The general surgeon has never outlined a standard method of treating all abdominal injuries. He doesn't set up a group of rules and say "We will always do this" and "We

will never do that." His treatment of the abdominal injury depends on what the intra-abdominal condition is. If the bladder is ruptured, he treats it one way, if the liver or spleen is ruptured, he treats it another way. In other words, he individualizes the treatment for the type of injury. The same thing is true of cranial injuries to a large extent. They are not all alike, in spite of the fact that they are classed more or less together under cranial or cerebral injury. What is needed is individualization of treatment and adaptation of treatment to the needs of the case. It seems to me just as illogical to say that we will always do a lumbar puncture as it is to say we will never do a lumbar puncture. I think that if our cases are studied and the necessary treatment applied in accordance with what exists in a given patient, the end results will be distinctly better. As to operation on head injuries, my experience with the subject is not as extensive as Dr Sharpe's or Dr Fay's. Nevertheless, if one excludes the cases of depressed fracture and intracranial hemorrhage, I have yet to see the patient who needs an operation, a decompression, if you like.

DR S. D. SWOPE, El Paso, Texas. The neurologist, the psychiatrist and the neurosurgeon must go hand in hand in work of this character. Few of us are able to combine those three qualities. They are so distinct and so characteristic in their requirements that one man can hardly complete all of them in the course of a lifetime. The diagnostic value of a lumbar puncture is always dependent on the careful examination of the patient from all sources. In the clinic with which I am affiliated, practically every psychiatric case is carefully examined by lumbar puncture. The prevalence of syphilitic infection alone would require that procedure in a community where the disease is probably more prevalent than in any other section of the United States. I would call attention to the importance of early decision in cases of birth injury. The average psychiatrist does not see the effect of birth injury until it is too late to accomplish anything in the way of specific results. The fact is that a baby born today and crying for the next three days in all probability has a cerebral injury, and that cerebral injury can be benefited only by immediate attention. The importance of lumbar puncture certainly depends on the amount of pressure, and all our lumbar punctures are regulated by mercury manometers, which will give us the nearest we can get to a natural result. I thoroughly concur in the suggestion that as a general rule the removal of 50 per cent of the pressure is amply sufficient, but there are times when conditions exist in which the removal must extend much further, and that also is a matter of judgment, which, after all, is the best armamentarium the physician has.

DR A. L. SHOOG, Kansas City, Mo. I agree with the author regarding the dangers, but if it is in the hands of a man who has had adequate experience, who has mechanical skill and a good knowledge of the central nervous system, the dangers may be reduced to nil, particularly if he selects his cases after careful neurologic examination. Regarding the type of manometer, I see no reason why one can't use either a mercury or a water manometer. Possibly in some cases the water manometer may be better.

DR ADRIAN VERBRUGGHE, Chicago. It is possible to divide skull fractures into certain categories and to suggest appropriate treatment for each category. First there is the type of patient who comes into the hospital with a head injury and is in severe shock and obviously about to die. I doubt whether it is wise to intervene in a case of this type except to treat the shock. Certainly one would not attempt to do a lumbar puncture in this type of case merely to find out whether the fluid is blood or not. There is a second type of patient who is admitted with a head injury, who may be slightly irrational but is relatively conscious and who will in all probability get better if he is left alone, and I cannot see any reason for not leaving him alone. There is another type of patient who is received into the hospital unconscious and whose level of consciousness and whose neurologic signs remain the same. One feels in these cases that anything which can be done to turn the tide in their favor should be done and for that reason an attempt is made to reduce the increased intracranial pressure. It seems that in these cases lumbar puncture, with halving of

the spinal manometric pressure, offers one of the principal indications of puncture. Thus, combined with the repeated intravenous injections of hypertonic dextrose solution, may be sufficient to turn the balance in favor of the patient. There is still another type of patient who does not require lumbar puncture—the patient who is draining cerebrospinal fluid from his ear or nose. He is performing a continuous lumbar puncture on himself. I must agree entirely with Dr. Bucy's unfavorable attitude toward decompression in head injury and certainly experience at the Cook County Hospital of Chicago confirms this. At this hospital decompression is very rarely performed for the purpose of relieving intracranial pressure. However, if an individual goes on for forty eight hours or more in an unconscious state in spite of lumbar puncture and dehydration, it has been thought wise to perform decompression in some of these cases in order to afford an additional means of reducing the intracranial pressure.

DR. WILLIAM SHARPE, New York. There is no treatment that can be standardized. In the Pan-American Clinic we look on diagnostic puncture as simply a test just as one would test the reflexes or have roentgenograms taken, or any of the other tests in neurology. It is not a dangerous procedure in our experience, and I defy any neurologist to tell with any degree of certainty what the intracranial status is in these acute head injuries unless a lumbar puncture is performed. Many cases presenting merely contused scalps and no neurologic signs whatever have shown a blood percentage above 50 and it may be possible in some cases for the natural means of absorption to take care of all that blood so that no residue is left and the patient can regain his normality. I am thinking of normality in addition to recovery of life, and I think that in the past the profession has considered the patient who has been able to leave the hospital rather than the end result as to the normality of a patient able to earn his living and hold his job. I had that experience in looking over the records of four of the leading hospitals in New York over a ten year period ten years after their discharge. Of the patients I could find and I found about 30 per cent of them 34 per cent plus were having symptoms and signs of their head injury. It was ascertained that in those patients still having symptoms and signs years after the head injury, frequently in the notes in the hospital I found "persistent headache, dizzy spells and increased blood pressure," which often was raised 10 or 15 points, and of course in that period twenty years ago, no lumbar puncture had ever been performed. It was the period when the ophthalmoscopic examination of the fundi was considered sufficient to determine an increased intracranial pressure in a traumatic lesion. Dr. Fay asked whether in dehydrating patients with bloody cerebrospinal fluid there would be any organic evidence later that possibly the dehydration did have some effect on the early coagulation of the free blood in the cerebrospinal fluid. I have been called to see patients when dehydration had been used and when there had been very bloody cerebrospinal fluid, and if operation was indicated on the fourth, fifth or sixth day the blood was found to be coagulated. Usually in these cases the blood does not coagulate for seven eight or ten days ordinarily, so that it seemed to me that the dehydration did hasten the coagulation of the free blood and naturally, that is something one wishes to avoid for fear of a clot formation. The early accurate diagnosis by lumbar puncture in all of these cases is therefore important. I agree with Dr. Bucy in regard to operations for head injuries.

The Two Laws of Euclid—Thus while modern physical science makes headlines for itself so fast there is difficulty even for experts to keep up with it. Sir James Jeans publicly acknowledges that photons electrons and protons though their properties can be expressed mathematically, are really as meaningless as x , y and z to a child on its first lesson in algebra and it has been admitted by someone else that the advance of physical knowledge is at present reduced to the extraction of one incomprehensible from another incomprehensible. Yet we are assured that the mathematical starting point for all this was Hero's synthesis of the two laws of Euclid which have merely been expanded by Newton, Einstein and Sulaiman to embrace all the activities of the universe.—Cushing, Harvey. *The Humanizing of Science, Science* 81 137 (Feb 8) 1935

STUDIES ON THE THYROTROPIC HORMONE OF THE ANTERIOR PITUITARY

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AND
EVILYN M. ANDERSON, M.D.
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A study of the physiologic activity of the thyrotropic hormone of the anterior pituitary has shown that the stimulating effect of the hormone on the thyroid gland is only temporary and that retrogressive changes actually take place in spite of continued injections of the hormone. Korenchevsky¹ injected rats with a glycerol extract of the anterior pituitary for periods of from six to eleven weeks. A decrease in the weight of the thyroid gland was found, which averaged 17 per cent below the control weight. Siebert and Smith² and Verzar and Wahl³ noted that the rise in metabolic rate of guinea-pigs injected with thyrotropic hormone reached a peak by the tenth day and then returned to the normal level. The latter showed that a marked drop in basal metabolic rate occurred when the hormone was injected into thyroidectomized guinea-pigs. Houssay,

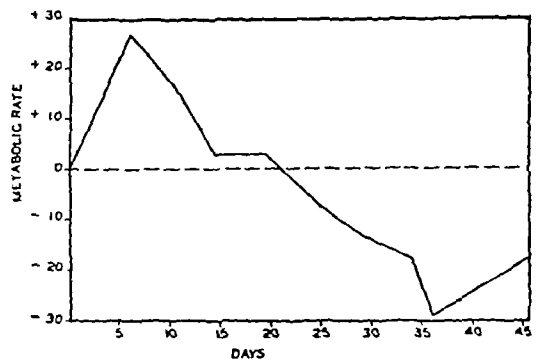


Fig. 1—Effect of chronic injections of thyrotropic hormone on the metabolism of normal rats (average of eleven animals)

Biasotti and Mazzocco⁴ have reported that anterior pituitary extract causes a fall in the blood iodine of thyroidectomized dogs, which is the opposite of the response to the thyrotropic hormone in normal and hypophysectomized animals. Lee and Gagnon⁵ found that anterior pituitary extract caused a lowering of the metabolic rate of rats when injected for a prolonged period, the metabolic levels in some instances going as low as from 10 to 39 per cent below the preinjection value. Evans and Sarka⁶ obtained basal metabolic rates 18 per cent below the preinjection value in rats chronically treated with anterior pituitary extracts. Retrogressive changes in the thyroid gland of guinea-pigs and ducks treated over a long period with anterior

From the Department of Biochemistry McGill University Faculty of Medicine.

Read before the Section on Pharmacology and Therapeutics at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland June 13, 1934.

1. Korenchevsky V. *Biochem J* 24 383 1930
2. Siebert W J and Smith R S. *Proc Soc Exper Biol & Med* 27 622 (April) 1930
3. Verzar F and Wahl W. *Biochem Ztschr* 240 37 1931
4. Houssay B A, Biasotti A and Mazzocco P. *Rev Soc argent de biol* 8 254 (May/June) 1932
5. Lee M O and Gagnon J. *Endocrinology* 14 233 (July/Aug) 1930
6. Evans H M and Sarka A. quoted by Evans H M and others. *The Growth and Gonad Stimulating Hormones of the Anterior Hypophysis. Memoirs of the Univ of California Berkeley, Calif University of California Press* 1933 2 section 11

pituitary extracts have been noted by Aron,⁷ Loeb and Friedman,⁸ Schockaert,⁹ Thurston¹⁰ and Friedgood.¹¹

We have followed the changes in metabolic rate of a group of rats injected with large doses of a purified extract of thyrotropic hormone (fig 1). A rise in the metabolic rate occurs during the first week of injections, reaching a peak of plus 28 per cent, the metabolism then drops to the preinjection value by the second or



Fig 2—Normal thyroid gland of rat

third week and continues to fall, going as low as minus 29 per cent by the fifth week. This is the level of metabolism of the untreated hypophysectomized rat.¹² The microscopic appearance of the thyroid at this stage of treatment resembles that of the untreated hypophysectomized animal (figs 2 and 3). The pituitary glands of the animals injected with thyrotropic hormone for a long period of time give a negative response when tested for the presence of thyrotropic hormone, although they still contain the growth hormone.¹³

In studying the nature of this apparent resistance to the thyrotropic hormone, we have found that the serum of animals which have been injected for a long period of time with thyrotropic hormone contains a substance that is capable of inhibiting the action of thyrotropic hormone. The serum from these rats, when given in doses of from 0.5 to 1 cc twice daily for three days to hypophysectomized rats, prevented a rise in metabolic rate with amounts of thyrotropic hormone equal to 200 times the minimum effective dose (fig 4). A similar finding was obtained when normal rats and guinea-pigs were used as test animals.¹⁴

We have injected a horse with thyrotropic hormone for a period of four months. After one month the antithyrotropic substance was found to be present in the horse's serum. Extracts of the antithyrotropic serum of the horse have been prepared which, when given in doses of 0.4 cc, are capable of inhibiting the action of 100 units of thyrotropic hormone in the normal rat (fig 5). Larger amounts of the extract, up to 4 cc daily, not only inhibit the action of 100 units of thyrotropic hormone injected into normal rats but at the same time apparently inhibit the thyrotropic hor-

none of the animal's own pituitary gland, causing a fall in metabolic rate to minus 24 per cent, which is the metabolic rate of the hypophysectomized animal.

The antithyrotropic substance appears to be unstable. Boiling the extract at pH 5 for three minutes completely destroys the inhibitory substance. Furthermore, the extract has been found to lose a considerable degree of its potency when kept in sterile ampules in the refrigerator for two months. When kept at room temperature the potency was entirely lost after this time.

We have obtained the inhibitory substance in the serum of animals of different species that have been injected with thyrotropic hormone. In addition to the rat and horse, the guinea-pig, rabbit and dog have been studied. We have tested the blood from a small group of patients that have been given therapeutic injections of thyrotropic hormone, and we have evidence of the presence of the inhibitory substance in the serum of such cases. This finding is doubtless the explanation for the numerous negative reports on the clinical use of thyrotropic hormone. We have evidence also of the antithyrotropic hormone occurring spontaneously in the serum of certain patients exhibiting low basal metabolic rates.

The mechanism of the action of the antithyrotropic substance is not understood. It does not inhibit the action of thyroxine. Rats injected with thyrotropic hormone for periods of from forty to seventy days showed practically the same response to a given amount of thyroxine as normal animals. Furthermore, the giving of antithyrotropic serum in conjunction with thyroxine did not prevent a rise in metabolism. This would suggest that we are dealing with a substance quite different from diiodotyrosine, which Abelin¹⁵ has found to antagonize thyroxine, and also "Katechin" of Blum,¹⁶ which has the same property. Abelin and Wegelin¹⁷ showed that simultaneous injections of diiodotyrosine with anterior lobe preparations prevent the marked hyperplasia of the thyroid that is seen with

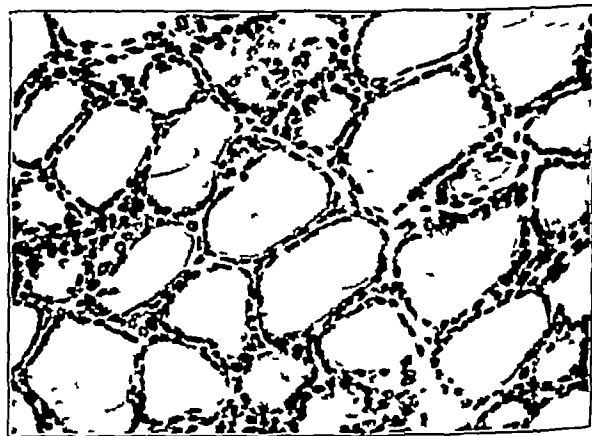


Fig 3—Involutional atrophy of thyroid after injection of thyrotropic hormone for two months. This resembles the thyroid of the hypophysectomized rat.

the latter alone. Anselmino and Hoffmann¹⁸ have prepared a lipid soluble extract of normal blood which also inhibits the action of thyroxine. Herold¹⁹ has shown that this lipid extract of normal blood prevents

7 Aron, M. *Compt rend Soc de biol* 103 145 (Jan 24) 1930
8 Loeb Leo and Friedman, H. *Proc Soc Exper Biol & Med* 29 172 (Nov.) 1931
9 Schockaert, J. A. *Am J Anat* 49 379 (Jan.) 1932
10 Thurston, E. W. *A Comparison of Hypertrophic Changes in Thyroid Arch. Path.* 15 67 (Jan.) 1933
11 Friedgood, H. B. *Bull Johns Hopkins Hosp* 54 48 (Jan.) 1934
12 Anderson, Evelyn M. and Collip J. B. *J Physiol* 98 11 (Aug. 24) 1934
13 Anderson, E. M. and Collip J. B. *Lancet* 1 784 (April 14) 1934
14 Collip J. B., and Anderson, Evelyn M. *Lancet* 1 76 (Jan. 13) 1934

15 Abelin, I. *Biochem Ztschr* 233 483 1931
16 Blum, F. *Schweiz med Wchnschr* 63 777 (Aug. 12) 1933
17 Abelin, I. and Wegelin, C. *Klin Wchnschr* 11 2103 (Dec. 17) 1932
18 Anselmino, K. J. and Hoffmann, F. *Klin Wchnschr* 12 99 (Jan. 21) 1933
19 Herold, L. *Ztschr f exper Med* 90 684 1933

hyperplasia of the thyroid in rats treated with small doses of thyrotropic hormone but that extract of blood from pregnancy and exophthalmic goiter²⁰ had no such action

It is to be hoped that a study of the combined action of the thyrotropic and antithyrotropic hormones on the thyroid gland may clear up some of the discrepancies between changes in function of the thyroid

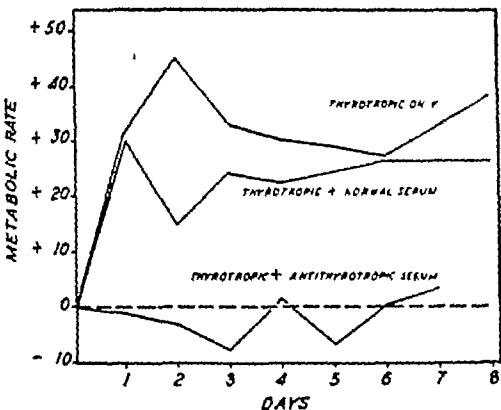


Fig 4—Complete inhibition of thyrotropic hormone by the antithyrotropic serum tested on hypophysectomized rats

gland and the cellular activity. As is stated earlier in this paper, when the animal has built up its own antithyrotropic substance as a result of prolonged injections of thyrotropic hormone the thyroid gland undergoes hyperinvolution until it resembles somewhat the atrophic thyroid seen in the hypophysectomized animal. On the other hand in an attempt to find the amount of antithyrotropic hormone which would just inhibit the action of a definite amount of thyrotropic hormone we have found that a given amount of antithyrotropic hormone may be sufficient to prevent the rise in metabolic rate without inhibiting the production of hyperplasia of the thyroid by the thyrotropic hormone. Hypophysectomized rats that received both thyrotropic and antithyrotropic hormones for from seven to ten days showed hyperplastic changes at the end of this period,

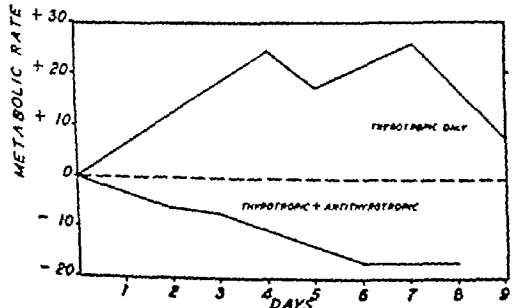


Fig 5—Effect of antithyrotropic extract on the metabolism of normal rats treated with thyrotropic hormone

associated with a lowered metabolic rate, which was depressed in some instances to 38 per cent below normal (fig 6). It has been shown by a number of workers²¹ that the injection of thyrotropic hormone causes an outpouring of organic iodine from the thyroid gland. This is coincident with the appearance of vacuoles in the colloid of the gland and a rise in the

metabolic rate of the animal. These changes have been noted twenty-four hours after the first injection of the hormone. Hyperplastic changes in the thyroid appear later. One might possibly interpret the cellular changes in the thyroid as a compensatory effect in an attempt to replenish thyroid secretion that is being released from the gland. This would be in keeping with Marine's²² view that hyperplasia of the thyroid is due to a functional insufficiency of the gland.

In a large series of rats and guinea-pigs in which we have studied the morphologic changes of the thyroid coincident with changes in metabolic rate during treatment with thyrotropic hormone, we have found it difficult in many cases to correlate the microscopic appearance with the physiologic changes, as indicated by the metabolic rate. On the sixth day of injections of thyrotropic hormone in the rat one usually finds an increase in metabolic rate of 28 per cent and hyperplastic changes in the thyroid gland. On the tenth day of treatment the metabolic rate has dropped to plus 10 per cent, hyperplasia of the thyroid is still present, although evidence of involutionary changes may be seen (fig 7). Scattered throughout the gland are large

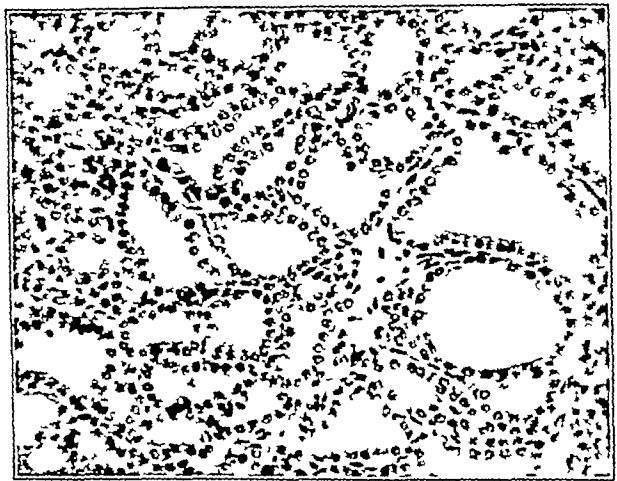


Fig 6—Hyperplasia of the thyroid of a hypophysectomized rat after seven daily injections of thyrotropic and antithyrotropic hormones. The metabolic rate was minus 26 per cent.

vesicles lined with a very flat epithelium and distended with a deeply staining colloid. By the fourteenth day of treatment a residual hyperplasia may still be present, but one usually finds the follicles lined with a flat epithelium and filled with dense colloid (fig 8), the metabolic rate at this time has returned to the normal level. However, one frequently finds exceptional cases, for instance, one animal with a metabolic rate of plus 41 per cent on the fourteenth day of injection showed marked involutionary atrophy of the thyroid, in another case the metabolic rate had dropped to minus 18 per cent by the fourteenth day, while hyperplasia was still seen in the gland. Oehme, Paal and Kleime²³ have reported a similar observation in which there was present a very active thyroid following injections of thyrotropic hormone without an increase in metabolism.

A group of goitrous rats in which the thyroid morphology resembled the hyperplasia seen in exophthalmic goiter showed a subnormal metabolism, in some cases the rates were as low as minus 17 per cent. A severe

20. Herold L. Klin Wchnschr 13 1242 (Sept 1) 1934
21. Schockaert J A and Foster G L J Biol Chem 95 89 (Feb) 1932
22. Gloss K, Loeb L and Mackay E M (idid 98 585 (June) 1932
23. Loester A Arch f exper Path u Pharmacol 163:530 1931
Grah W., ibid 186:715 1932

23 Marine David Report of the International Goiter Conference Bern Hans Huber, 1937
23 Oehme C Paal H and Kleime H O Arch f exper Path u Pharmacol 171 1 1933

hyperthyroidism developed in these animals when thyrotropic hormone was given, the metabolic rates varied from plus 120 to plus 200 per cent. The animals that died, death being due apparently to thyrotoxicosis, showed beginning involutional atrophy of the thyroid.

Evidence has been gathered in the study of the physiologic properties of the thyrotropic hormone which suggests that the anterior pituitary may play an etiologic rôle in exophthalmic goiter. The finding of an antithyrotropic hormone brings in another factor that needs to be correlated with the present knowledge of thyroid disease. The injection of thyrotropic hormone produces a condition of hyperthyroidism in normal animals, which is only temporary because of the occurrence of large amounts of an inhibitory substance that antagonizes the action of the thyrotropic hormone. In exophthalmic goiter there is the condition that has been described as a "thyroid diarrhea," which causes the thyroid gland to pour out excessive amounts of thyroid hormone. Presumably the hyperplasia of the gland is an attempt to compensate for the rapid loss of its hormone. The characteristic course of the disease is a cyclic variation of acute exacerbations and remissions of hyperthyroid symptoms. The occurrence of an infection frequently is associated with a relapse of hyperthyroidism. Changes in the physiology of other endocrine organs, as in pregnancy, often coincide with a return of the hyperthyroidism. If one may assume that in the normal individual there is a balance between the thyrotropic hormone of the anterior pituitary and the inhibitory substance, one may then expect an upset of the balance to occur in clinical hyperthyroidism which is characterized either by an increase in the thyrotropic hormone or by a decrease in the inhibitory substance. An increase of the thyrotropic hormone probably occurs in those cases of acromegaly in which there is evidence of increased activity of the thyroid gland. In exophthalmic goiter in which no evidence of any objective changes in the anterior pituitary gland is found the mechanism for the production of the anti-

tropic substance. It is likely that a great many factors influence the balance of this mechanism of the stimulator and inhibitor and that there are also intrinsic factors in the thyroid gland which are responsible for the disturbance in its physiology.

One of us has postulated recently the theory of the principle of inverse response and of antihormones. Briefly stated, these theories are as follows: 1. The

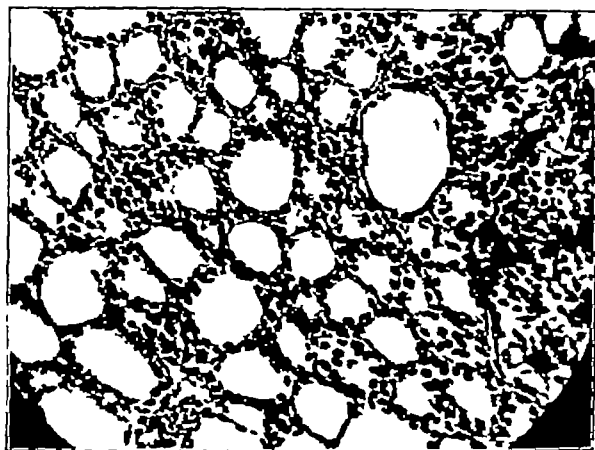


Fig. 8—Involution of the thyroid of the rat after fourteen daily injections of thyrotropic hormone.

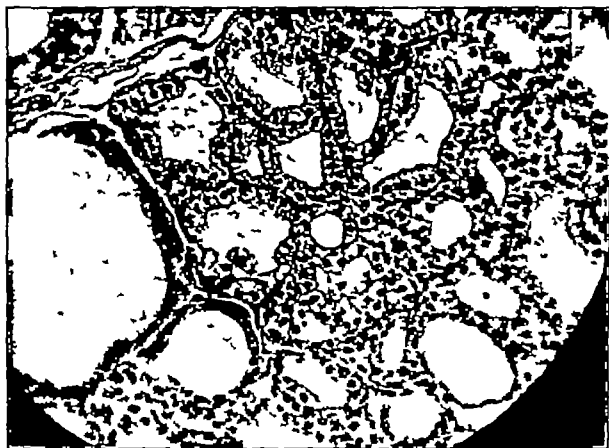


Fig. 7—Hyperplasia of thyroid of rat with beginning involution.

thyrotropic substance may possibly be defective. We have found that bacterial toxins increase the sensitivity of the experimental animal to thyrotropic hormone. It might be assumed that the toxin has interfered with the production of the inhibitory substance. One must consider also in the condition of the nontoxic parenchymatous goiter whether an upset in the balancing mechanism is present, with either a decrease of the thyrotropic hormone or an increase of the antithy-

responsiveness of an individual to administered hormone varies inversely with the hormone content or production of the subject's own gland. 2. For each hormone there is an opposite an antagonistic or antihormone substance. 3. The absolute amount of a hormone and of its respective antagonist determines the degree of stability of the subject so far as this one particular endocrine function is concerned. The hormone antihormone complex may be regarded as a buffer system. Some individuals of a species may appear on superficial study to be normal as regards some endocrine function, yet they may have a decrease or an increase in the respective hormone buffer system, and this condition may be detected only when abnormal responses are obtained following the administration of hormone extracts. As has been mentioned previously, it follows that a supposedly hyperhormone state may in actuality be due not to an increase in the production of a specific hormone but to a decrease in the corresponding antagonistic substance. Also the converse condition—namely, a supposedly hypohormone state—may be due to an increased amount of antihormone. Endocrine dysfunction in general may be regarded as primarily a hormone antihormone imbalance.

These theories were enunciated largely on account of the clear-cut demonstration that we had obtained of the production, in readily detectable amounts in the serum of animals treated with thyrotropic hormone, of a substance that was antagonistic to the thyrotropic hormone. More recently, there have been made in our laboratory a number of observations that tend to support the theory as stated. Thus we have evidence of the existence of an antiketogenic substance,²⁴ of an anti-growth substance, of an antimaturity factor (pituitary) and of an antigonadotropic substance.²⁵ The active prin-

24. Black, P. T., Collip, J. B. and Thomson, D. L. *J. Physiol.* **83** 385 (Aug. 17) 1934.
25. Selye, Hans, Collip, J. B. and Thomson, D. L. *Proc. Soc. Exper. Biol. & Med.* **31** 487 (Jan.) 566 (Feb.) 1934. Selye, Hans, Bachman, C., Thomson, D. L. and Collip, J. B., *ibid.* **31** 1113 (June) 1934. Bachman, C., Collip, J. B. and Selye, Hans, *ibid.* **32** 544 (Dec.) 1934.

ciple in an antiserum produced as a result of long continued daily injections of hormone extracts may be regarded quite rightly as a possible antibody reaction to the administered extract (antigen). We prefer to think, however, of the antagonistic principles present in the serum of chronically treated animals as normal constituents of blood, the level of which has been increased by the treatment. We are encouraged further in this belief since we have found in the serum of certain human patients antithyrotropic substance and in other human cases an antimaturity substance. These patients had not been treated but there had occurred in them spontaneously a hormone imbalance resulting in the predominance of the respective antistubstance. Also we have been able to antagonize the estrogenic effect and in part the ovarian effect of a maturity hormone extract by another extract made from the pituitary glands of the same species. There is some evidence, therefore, that antagonistic hormones may be produced by the same gland. In fact in the case of the anterior pituitary we have evidence that the maturity or gonadotropic factor is associated with an antagonistic principle.

In the Welch lectures a few months ago a word of caution was given in regard to the indiscriminate use of glandular extracts—this in view of the danger of the production of a hyperantihormone state. We have now available and in use in our laboratory methods for assaying the blood serum for the presence of certain inhibitory substances. It appears to us that progress in clinical endocrinology will be more rapid as well as more certain if attention is for the time being diverted from treatment to a study of the blood of the patient so far as reliable methods are available.

THE ACTION OF IODINE IN THYROTOXICOSIS

WITH SPECIAL REFERENCE TO REFRACTORINESS

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AND

JACOB LERMAN, M.D.

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Eleven years has now elapsed since Plummer¹ introduced the use of iodine in the management of toxic goiter. During that entire period, iodine has been given as a routine in the Thyroid Clinic of the Massachusetts General Hospital and in some 575 cases its action has been made a matter of careful study. It is our purpose at the present time to evaluate this whole experience and to state the conclusions derived from it in the form that seems soundest to us today. We believe this a useful undertaking because it is evident that much confusion exists even now in the professional mind as to what iodine will and won't do in thyrotoxicosis.

A brief summary of the biologic facts of the problem is in order. First of all, it may be stated that, so far as is known, the sole function of the thyroid is the manufacture of thyroxine and that in toxic goiter this function is accelerated. The cause of the acceleration is obscure. Hyperfunctioning of adenomatous tissue is

a possibility, tissue that possesses the power to make the hormone but has escaped from whatever control governs the normal output of the gland. Following Plummer,² at one time the profession accepted as a fact that hyperfunctioning adenomas might occur in the thyroid. With the passing of time it has grown increasingly doubtful that they constitute an entity clinically separable from exophthalmic goiter. In the so-called toxic adenoma cases if one searches the non-adenomatous portion of the gland carefully enough, one usually can find areas of ordinary hyperplasia, also it appears that these patients usually respond to iodine as do those with typical exophthalmic goiter.

Two other explanations of hyperfunction are obvious. The gland cells may be whipped up to overactivity by some stimulus from without or they may because of an increased rate of removal of their product, hyperfunctionate to compensate. The known facts seem to us more consistent with the latter hypothesis. It has been shown, for example, that in toxic goiter the thyroid gland is poor in organic iodine, colloid and thyroxine³ and that the blood is abnormally rich in organic iodine and thyroxine⁴ and the urine in iodine⁵. Iodine, of course, is a necessary component of the thyroxine molecule but iodine exists in the body in other forms than as a part of this molecule. Nevertheless, the fall in thyroxine in the gland and the rise in the blood and the increased excretion of iodine in the urine suggest more rapid departure of the hormone from the gland, and the disappearance of colloid does the same, for it is in the form of iodothyroglobulin that thyroxine is stored in the acini. Thus emerges the concept of a leaking, or too porous gland that attempts to compensate for leakage of hormone by hyperplasia and hyperfunction.⁶ Another writer calls it "thyroid diarrhea."⁷ We believe also that the observed clinical facts are consistent with such a theory.

What these clinical facts are can be stated quite briefly. First, our entire experience confirms Plummer's original contention that iodine brings about a rapid amelioration of the symptoms of thyrotoxicosis in toxic goiter and, accompanying this a fall in basal metabolic rate. So constant and specific is this response that we have come to regard it as one of the cardinal manifestations of the disease. When it does not occur, we are always doubtful of the existence of thyrotoxicosis and search for some other explanation for the clinical picture. We make use of the specific response not only in treatment⁸ but for diagnosis.⁹ Its actual magnitude, so far as the metabolic side is concerned, is predictable with a fair degree of accuracy. It is in the neighborhood of 38 points of basal metabolic rate daily.

The preparation of iodine used is of no importance. Iodine is active in any form, provided the

2 Plummer H S. The Clinical and Pathological Relationship of Simple and Exophthalmic Goiter. *Am J M Sc* 146: 790 1913.

3 Gutman A B, Benedict E M, Barter B and Palmer W W. The Effect of Administration of Iodine on the Total Iodine Inorganic Iodine and Thyroxine Content of the Pathologic Thyroid Gland. *J Biol Chem* 97: 303 (July) 1932. (See particularly their figure 2.)

4 Holst Johan, Lunde G, Closs A and Pedersen O C. Ueber den inneren Jodstoffwechsel bei primären Thyreotoxikosen. *Klin Wchnschr* 7: 2287 (Nov 25) 1928.

5 Curtis G M, Davis C B and Phillips F J. Significance of the Iodine Content of Human Blood. *J A M A* 101: 901 (Sept 16) 1933.

6 Holst Johan. Die pathogenetischen Grundlagen der Thyreotoxikose therapie. Oslo: Jacob Dybwad 1923.

7 Harrington C R. *The Thyroid Gland Its Chemistry and Physiology*. London: Oxford University Press 1933.

8 Means J H. The Use of Iodine in Exophthalmic Goiter. *Ann Int Med* 4: 117 (Aug) 1930.

9 Means J H. The Diagnostic Use of Iodine in Thyrotoxicosis. *Ann Int Med* 7: 439 (Oct) 1933.

From the Thyroid Clinic of the Massachusetts General Hospital.
Read before the Section on Pharmacology and Therapeutics at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.
1 Plummer H S. Results of Administering Iodine to Patients Having Exophthalmic Goiter. *J A M A* 80: 1955 (June 30) 1923.

minimum effective dose or more is given. At the present time we use 10 minims (0.6 cc) of saturated solution of potassium iodide once daily. This should be sufficient in any case.

The next important point is that the specific response will occur at any time during the course of the disease. It is not a feature merely of the onset of the malady. We have observed it taking place in characteristic form in a patient continuously thyrotoxic for eighteen years.

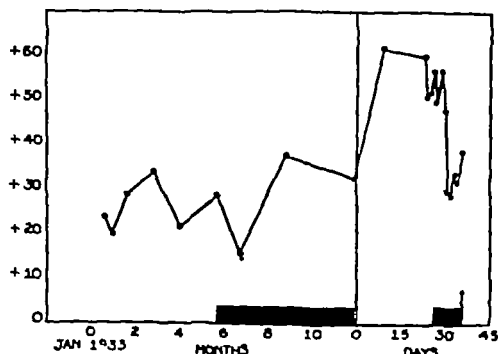


Chart 1 (case 1)—Basal metabolism chart in exophthalmic goiter showing exacerbation during iodine administration (pseudorefractoriness) and sudden upshoot on escape from iodine control. Readministration restored basal metabolic rate to level that had been reached when iodine was stopped. The iodine administration is shown in black, the arrow denotes operation. Attention is called to the fact that the time interval is in days to the right of the perpendicular line, in months to the left.

Finally, it is our belief that iodine alters neither the duration nor the direction of progress of the disease. It merely, at any one moment, holds in abeyance a portion of its symptoms. This conception is not susceptible of proof, but our clinical experience makes us feel that its being correct is very probable.

One is next led to inquire in what way this specific response to iodine is brought about, and this question is intimately involved with that of refractoriness. It is the experience, doubtless, of all who give iodine to thyrotoxic patients that if the drug is continued the patients will often get worse in spite of it. Is this because the drug has become ineffectual and no longer capable of exerting an influence on thyroxine discharge or is it because the disease, entering a more severe stage, produces an intensification of symptoms in spite of a continued iodine control? One must bear in mind that control of symptoms by iodine is to be looked on as partial or relative, not total or absolute. Failure to grasp this fact is responsible for some of the existing differences of opinion about refractoriness.

Whether true refractoriness in the sense of cessation of drug action exists is difficult to determine. It has seemed to us that the behavior of the patient on stopping the drug is the chief source of evidence. Should a patient getting worse on iodine become refractory to iodine, one would expect that no great change in symptoms or direction of metabolic trend would occur on the omission of the drug. On the other hand, under the same circumstances should iodine be yet exerting some control, one would expect an intensification of the symptoms and an abruptly steeper upward trend of the basal metabolic rate. The patient, though getting worse on iodine, would get worse at a still faster pace on its omission, provided the drug was exerting some influence.

Scrutiny of our cases leads us to believe that the latter is what actually happens and to conclude therefore, that so-called refractoriness to iodine is apparent,

not real. The point is one of more than academic interest, because the therapeutic program depends on it. If a patient became truly refractory to iodine, the indication would be to stop the drug for a time and later resume its administration. If, on the other hand, there is no such thing as true refractoriness, iodine should be maintained steadily until thyroidectomy is performed. In 1917 Means and Aub¹⁰ called attention to the fact that a rising basal metabolic rate in toxic goiter indicates that surgery may be hazardous and that a rising metabolism constitutes a positive indication for the postponement of operation. This was in preiodine days. The principle, however, holds good now as well as then. Therefore the practical question comes up occasionally when one has a patient in the hospital, fully iodimized yet getting worse, of what shall be done with him. Shall he be taken off iodine or left on it? We believe he should be kept on. Nothing is gained by taking him off and he is allowed to run a greater risk of death from thyrotoxicosis by so doing. Our procedure would be to follow a policy of watchful waiting with iodization maintained. When a plateau had been reached, if not at too high a level, we should advise operation. Following such a course, we believe that the risk of toxic crisis or storm is minimized. Allowing escape from iodine control at a high level is definitely running the risk of storm.

Two cases will serve to illustrate these points.

CASE 1—Phyllis A., aged 19 years, with recurrent thyrotoxicosis (exophthalmic goiter), had a basal metabolic level in the neighborhood of plus 25. Under iodine it dropped slightly (chart 1), then rose again, although iodine was continued. One might say that she had become refractory to iodine. This is not true, however, for on the omission of iodine there is a very rapid rise in basal metabolic rate to a new high level of plus 60 and intensification of symptoms. On the readministration of iodine she returns to precisely the metabolic level which

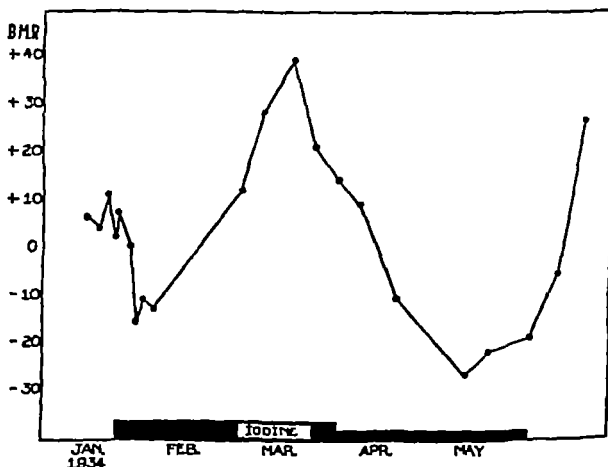


Chart 2 (case 2)—Basal metabolism chart in exophthalmic goiter. At the left a positive diagnostic test with iodine is shown and then an exacerbation and remission, both occurring during maintained iodization. The iodine administration is shown in black.

she left on cessation of iodine. We have observed this sort of thing in other cases and believe that it represents the rule. Of course, ordinarily we do not omit iodine because, as already stated, we believe it undesirable from the patient's point of view to do so.

CASE 2—Beatrice H., aged 17 years, had a metabolic rate within the normal zone. There was a firm and somewhat

¹⁰ Means, J. H. and Aub, J. C. A Study of Exophthalmic Goiter from the Point of View of the Basal Metabolism. J. A. M. A. 69: 13 (Jul. 7) 1917.

irregular thyroid with palpable thrill and bruit and very questionable thyrotoxic symptoms. There were no eye signs. Iodine was given for diagnostic purposes and as seen in chart 2 there was a prompt fall to a basal metabolic level in the neighborhood of minus 12 (from one of about plus 7). This is to be regarded as a positive test ruling in thyrotoxicosis. Subsequent events prove its trustworthiness. The patient was continued on iodine and in spite of it the basal metabolic rate continuously rose till it reached plus 40 and the symptomatology became typical. In other words a classic exophthalmic goiter was developing under our eyes in a fully iodimized patient. This might be interpreted as refractoriness but we believe, not correctly. The next chapter is that as iodine is further continued the metabolism again falls clear to a new low level of minus 23, and the symptoms improve. Had iodine been omitted in the middle of March and resumed early in April one would seemingly have had a perfect case for refractoriness. We believe, however, that the truth of the matter is that iodine has continuously exerted an effect in this case and that the curve indicates a spontaneous exacerbation and remission taking place in spite of iodine but at a lower level than would have obtained if no iodine had been used. The proof of this is the final event, namely, that when iodine is at last omitted, back comes the disease full-blast. This is another form of the diagnostic use of iodine—intensification of symptoms on omission instead of amelioration on giving the drug.

Addendum—After this paper was prepared certain additional data of importance were secured in case 2. The last metabolic rate determination shown in chart 2 was plus 27 per cent on June 6. For two months it fluctuated about plus 20 off iodine. August 4, iodine was given again. The metabolism promptly fell to minus 3 on August 11, and on August 12 the patient had a subtotal thyroidectomy. This added information confirms the opinion expressed in the paper that the rapid rise on cessation of iodine, beginning March 19, was due to escape from iodine control, and that the slower rise in the months of January, February and March, on iodine, was due to a natural intensification of the disease.

In 1931 our colleagues Drs W. O. Thompson and Phebe K. Thompson¹¹ published the reports of a group of cases, some from the Massachusetts General Hospital, some from the Presbyterian Hospital in Chicago, which they believed showed refractoriness. We have studied these data rather carefully. In each case the omission of iodine is followed by a steeper upward trend of the metabolic curve. Therefore we believe that the interpretation of refractoriness is not entirely sound. In short, it seems to us that the thyrotoxic patient fails to respond to iodine only when he is already under its influence. On the omission of iodine a certain time, from two to three weeks perhaps, must elapse before a maximum response again can be had. This, we believe, is simply because it takes some such time for the effect of previous iodine to wear off or for the patient to escape fully from iodine control. He cannot respond to a second course of iodine until he has escaped from the influence of his first. The occasional apparent lack of response to iodine can be explained by the assumption that the drug was given at a time when the intensity of the intoxication was increasing. The effect of iodine under such circumstances might be merely to hold things level for a time.

It may be permissible to show again a diagram published some years ago,¹² which we still find consistent with what we observe clinically. It indicates simply that thyrotoxicosis runs its course, irrespective of iodine control, but that at any one time the intensity

of intoxication is less if the patient is under iodine control than if he is not. At any stage of the disease the effect of giving iodine will be to drop the intensity of thyrotoxicosis from the upper curve to the lower, and, of omitting it, the reverse.

How now, may one relate all this to the morbid physiology of the thyroid? We mentioned the appeal of the concept of a leaking gland. A plausible explanation of the action of iodine is that raising its concentration in the blood in part dams back the leak. The follicles fill up with colloid and the abnormally rapid escape of hormone is partly checked. When iodine is withdrawn, out it spills again.

The production of thyrotoxicosis by means of iodine, the so-called iod-Basedow of the Germans, is difficult to reconcile with such a theory. We are very doubtful however of the existence of iod-Basedow, having never ourselves seen any convincing evidence of it. Furthermore we have the word of one competent European investigator, Professor Dautrebande of Liege,¹³ that cases diagnosed iod-Basedow seen by him

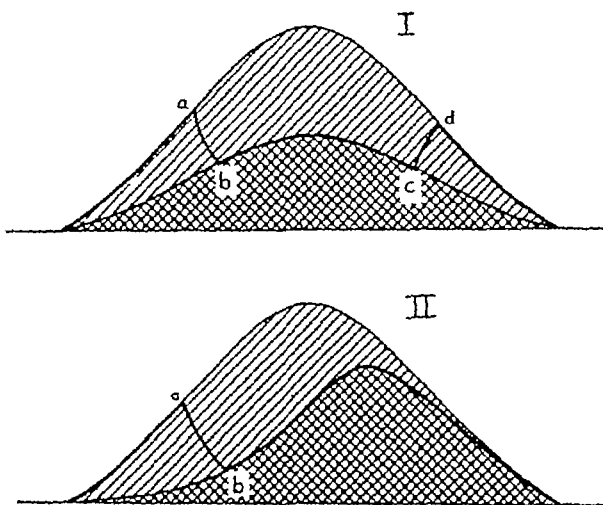


Chart 3—Schematic representation of iodine relationships in toxic goiter. The curves represent the totality of thyrotoxicosis. The upper curve in each graph is the course that would be followed if no iodine was ever given; the lower the course that would be followed if iodine should be given throughout. The duration of the disease it will be noted is not affected by iodine nor is its direction of progress merely its intensity. The effect of giving iodine at any moment will be to drop the intoxication from the upper to the lower curve, as from a to b; that of omitting iodine the reverse, as from c to d. Graph II is added to indicate that the curve of full iodimization and that of no iodimization may not always be precisely parallel.

have responded to iodine in the usual manner. This certainly throws great doubt that iodine in the first place produced their thyrotoxicosis.

CONCLUSIONS

1 The clinical facts regarding iodine in thyrotoxicosis are that it produces an altogether characteristic and specific response, which consists in an amelioration of symptoms and a drop in metabolic rate. This response will occur at any stage of the disease.

2 It appears that the response has no relation to the duration or direction of progress of the disease but merely acts as a check on the intensity of its symptoms.

3 These clinical facts are consistent with the theory that in thyrotoxicosis the thyroid allows the escape of thyroxine to proceed at an excessive rate, to leak, in fact, and that the cells of the thyroid hyperfunction in consequence. Iodine, it is suggested, sets up a tem-

¹¹ Thompson W. O. and Thompson Phebe K. Exophthalmic Goiter. The Development of Refractoriness to Iodine. Arch. Int. Med. 48: 351 (Sept.) 1931.

¹² Means J. H. Thompson, W. O. and Thompson Phebe K. On the Nature of the Iodine Reaction in Exophthalmic Goiter with Particular Reference to the Effect of Iodine Late in the Course of the Disease. Tr. A. Am. Physicians 42: 146 1928.

¹³ Dautrebande I. Personal communication to the authors.

porary obstacle to this excessive outflow it checks the leakage of thyroxine from the gland. The known facts of iodine and thyroxine content of the gland, blood and urine are consistent with such a theory.

4 We believe that so-called refractoriness is apparent, not real. Thyrotoxic patients who are unaffected by iodine are those who are already fully iodinized.

5 We doubt the existence of so-called iod-Basedow.

6 The iodine response is valuable in the management of toxic goiter, both in treatment and in diagnosis, but its fundamental nature must be familiar if it is to be used successfully.

THE PHARMACOLOGY OF THE THYROID IN MAN

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Although more is known about the thyroid than about any other gland of internal secretion, many important problems concerning its physiology and pharmacology remain unsolved. For example, very little is known about the mechanism of the action of thyroxine and more precise information should be obtained about the form or forms in which iodine occurs in the gland, the mechanism of the action of iodine in exophthalmic goiter and the relationship between the thyroid and other glands of internal secretion, notably the pituitary. It was with the idea of throwing some light on these problems that the present series of observations was undertaken.

THE RATE OF FORMATION OF THYROXINE

Boothby and his co-workers¹ and we ourselves² have shown that about 0.25 mg to 0.35 mg of thyroxine must be injected intravenously every day in order to maintain the basal metabolism of patients with marked myxedema at the normal level. In such patients there is little or no functioning thyroid tissue and this figure of about 0.3 mg (0.2 mg of iodine) daily is the nearest approach that can be made at present to the rate of formation of thyroxine or its equivalent by the normal thyroid gland. At this rate, in three score years and ten the thyroid of a normal individual would produce about 78 Gm of thyroxine. From the maintenance dose of thyroxine and the effect of 10 mg given intravenously in myxedematous man we have calculated that there are about 10 to 14 mg in the body of a normal individual outside of the thyroid gland, a figure almost

the same as that previously arrived at by Plummer³ and Boothby.⁴ If the figure for the rate of production of the thyroid hormone is approximately correct, then the iodine requirement of the normal thyroid may be about 0.2 mg a day and the amount of iodine supplied on the average to an individual in this country in the form of iodized salt (approximately 1.0 mg each day) is probably more than adequate for the prevention of simple goiter.

THE EFFECT OF THYROXINE

The intravenous administration of 10 mg of thyroxine produces about seven times as much effect when given to a patient whose basal metabolism is minus 40 per cent as when given to a patient with a normal level of metabolism.⁵ The duration of the effect both clinically and metabolically at the low level of metabolism is remarkable. Thus, 10 mg at this level raises the metabolism about 32 points on the average in from three to ten days and the effect on metabolism persists for from seventy to eighty days. Beginning about twenty-four to forty-eight hours after the injection is a period of intoxication, which lasts for from two to three weeks but is particularly marked during the first week and is characterized by aching and marked tenderness of the muscles, falling out of the hair and peeling of the skin. During the first few days there is often fever (the temperature sometimes rising as high as 104 F) occasionally nausea and rarely vomiting. The period of improvement which overlaps the period of intoxication begins a few days after the injection is given and gradually reaches a maximum about four to six weeks after the administration, when the metabolism has already fallen considerably. In other words the maximum clinical improvement following a single dose does not coincide with the maximum increase in metabolism. When the metabolism finally returns to its original level in from two to three months after treatment the patient is still alert and usually does not appear very myxedematous. Often the body weight is less than before the injection was given. The full blown picture of myxedema develops only after the metabolism has persisted at the level of minus 40 per cent for many weeks and in some instances for many months.

Because of the initial period of intoxication that follows the administration of a single large dose of thyroxine or of desiccated thyroid and the fact that improvement in a patient with myxedema occurs only slowly, the ideal method of treatment is to raise the metabolism gradually by slowly increasing doses until the minimum amount is being administered that will maintain the basal metabolism at the normal level. In this way unpleasant symptoms are avoided. In particular sudden changes in metabolism are to be avoided in patients with heart disease, notably those with angina pectoris. In patients with myxedema who are desperately ill there is great danger of death from large doses because of the period of intoxication and the slowness with which beneficial effects appear. They are unable to tolerate the sudden replacement of the very thing that their bodies lack. In the treatment of all patients with myxedema it should be remembered that adjust-

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From the Department of Medicine, Rush Medical College of the University of Chicago; the Department of Biochemistry, Tulane University of Louisiana School of Medicine, New Orleans; and the Presbyterian and Cook County hospitals, Chicago.

1 Boothby W M, Sandiford Irene, Sandiford A and Sloane J. The Effect of Thyroxine on the Respiratory and Nitrogenous Metabolism of Normal and Myxedematous Subjects. I. A Method of Studying the Reserve or Deposit Protein with a Preliminary Report of the Results Obtained. *Tr A Am Physicians* 40: 195, 1925.

2 Thompson W O, McLellan L L, Thompson Phebe K and Dickie Lois F N. The Rates of Utilization of Thyroxine and of Desiccated Thyroid in Man. The Relation Between the Iodine in Desiccated Thyroid and in Thyroxine. *J Clin Investigation* 12: 335 (Jan) 1933.

3 Plummer H S. Interrelationship of Function of the Thyroid Gland and of Its Active Agent Thyroxine in the Tissues of the Body. *J A M A* 77: 243 (July 23) 1921.

4 Boothby W M. The Thyroid Problem, Collected Papers of the Mayo Clinic 80: 495, 1928.

5 Thompson W O, Thompson Phebe K, Brailey A G and Cohen A C. The Calorigenic Action of Thyroxine at Different Levels of Basal Metabolism in Myxedema. *J Clin Investigation* 7: 437 (Aug) 1929.

ment to any dose may require many months, and changes should be made slowly

IMPORTANCE OF THE PECULIAR CONFIGURATION OF THE THYROXINE MOLECULE

The marked reduction in the calorogenic activity of thyroxine produced by making slight changes in the molecule may be seen from chart 1. We have extended our previous observations⁶ and have noted that in a patient with myxedema the intravenous administration of 8.6 Gm of diiodothyrosine in sixteen injections over a period of eighteen days produced an increase in basal metabolism from minus 36 per cent to minus 26 per cent and a loss of 2.4 Kg. If this represents a true change, the effect per millimol was only about one ten thousandth that of thyroxine.

If a phenol group is added to the diiodothyrosine molecule with the formation of a diphenyl ether group, diiodothyronine is produced. This compound represents thyroxine with two atoms of iodine removed from the molecule. Diiodothyronine has a much greater calorogenic action than diiodothyrosine. Thus in one

to another without any clear-cut effect on metabolism. These observations with thyroxine and diiodothyronine show the importance of the iodine in the thyroxine molecule.

It is of interest to observe the effect of altering the amino group in the molecule. To do this, one of us (S. B. N.) has prepared N-acetyl thyroxine according to the method of Kendall and Osterberg.⁷ In this compound one of the hydrogen atoms of the amino group is replaced by an acetyl group. The acetyl group is comparatively stable and only slowly hydrolyzed. The intravenous administration of this substance in a dose of 31.5 mg produced only a slight but fairly prolonged increase in metabolism (from minus 41 to minus 35 per cent). When administered subcutaneously suspended in 10 per cent dextrose the effect was greater, 10.5 mg producing an increase in metabolism from minus 38 to minus 29 per cent in one patient and 21.0 mg an increase from minus 29 to minus 17 per cent in another. In both instances the effect was prolonged and in this respect resembled that of thyroxine. The prolonged calorogenic action of thyroxine and

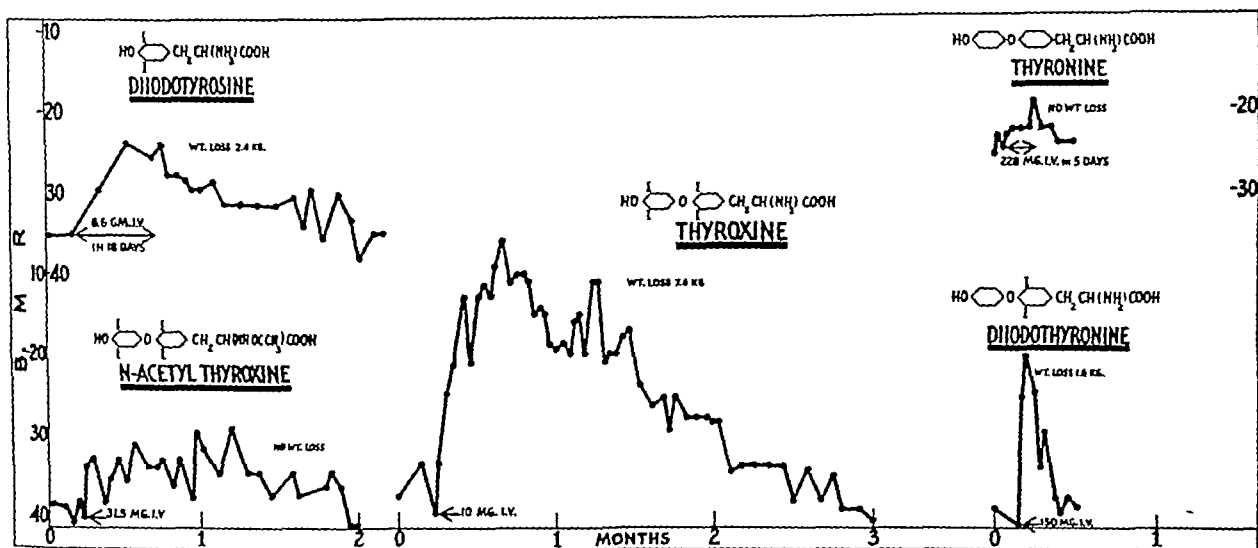


Chart 1—Effect of alterations in the thyroxine molecule. All four iodine atoms, amino and diphenyl ether groups essential for maximum activity; removal of two iodine atoms completely alters nature of metabolic response.

patient with myxedema 100 mg intravenously raised the metabolism from minus 36 per cent to minus 21 per cent and, in another, 150 mg raised it from minus 42 per cent to minus 22 per cent. This suggests that the presence of the diphenyl ether group is important. It is of interest to note the rather rapid return of the basal metabolism to the premedication level following the administration of diiodothyronine (seven and eight days respectively in two patients) compared with the slow return following the administration of thyroxine (from seventy to eighty days). Thus the removal of two atoms of iodine from the thyroxine molecule not only greatly reduces the efficacy of the compound in raising metabolism but also appears to alter the nature of the metabolic response.

If the remaining two atoms of iodine are removed to form thyronine or desiodothyronine, the calorogenic activity is still further reduced. We have given 228 mg intravenously over a period of five days to one patient with myxedema and 400 mg intravenously in two days

N-acetyl thyroxine (each containing four iodine atoms) compared with the much shorter action of diiodothyronine (containing only two) suggests that the prolonged effect of thyroxine may be dependent on the presence in the molecule of all four iodine atoms. It would also appear that substitution of one hydrogen atom of the amino group of thyroxine with a stable acetyl group yields a product (N-acetyl thyroxine) possessing very much less calorogenic activity.

These observations with various derivatives of thyroxine emphasize the importance of preserving the integrity of the thyroxine molecule if its maximum effect is to be produced.

DINITROPHENOL

Observations on the calorogenic action of alpha-dinitrophenol (1-2-4) ($C_6H_3(NO_2)_2OH$) have recently been reported by Cutting, Tainter and others⁸ in this country and by Magne,

7 Kendall E. C. and Osterberg A. E. The Chemical Identification of Thyroxine, *J. Biol. Chem.* **40**: 265 (Dec.) 1919.

8 Cutting W. C. and Tainter M. L. *Proc. Soc. Exper. Biol. & Med.* **29**: 1268 (June) 1932. Cutting W. C., Mehrtens H. G. and Tainter M. L. Actions and Uses of Dinitrophenol, *J. A. M. A.* **101**: 193 (July 15) 1933. Tainter M. L., Stockton A. B. and Cutting W. C. Use of Dinitrophenol in Obesity and Related Conditions, *ibid.* **101**: 1472 (Nov. 4) 1933.

6 Thompson W. O., Alper J. M., Thompson Phebe K. and Dickie J. M. F. The Effect of Diiodothyronine on the Basal Metabolism in Myxedema, *J. Clin. Investigation* **13**: 29 (Jan.) 1934.

Mayer, Plantefol and others⁹ in France According to Dodds and Pope,¹⁰ 3 5 dinitro-orthocresol is about three times as effective in the guinea-pig In chart 2 it may be seen that after a single large dose of dinitrophenol the effect on metabolism becomes maximum in a few hours, in comparison with from three to ten days after a single large dose of thyroxine After a single intravenous injection of 150 mg of diiodothyronine the effect becomes maximum in about two days, but, as in the case of dinitrophenol, the effect on metabolism disappears in a few days, although the effect is slightly more prolonged than that of dinitrophenol Unlike thyroxine, dinitrophenol appears to have about the same effect on metabolism regardless of the level before treatment There is only a slight effect on the pulse rate and a virtual absence of the initial period of intoxication that follows the administration of thyroxine In patients with myxedema in doses sufficient to raise the basal metabolism to normal there is little effect on body weight or clinical condition, although a few notice a slight increase in their sense of well being and slight muscle pain Thus a patient may continue to be myxedematous although the metabolism is raised from minus 40 per cent to normal When the rate is raised to about 50 per cent above normal there is some flushing of the

is about 63 per cent as great as its effect when given intravenously in the same form¹² It was thought that this well marked effect of an alkaline solution might be due to the formation of the disodium salt This salt was therefore made by one of us (S B N) according to the method of Kendall¹³ and had much less effect than an alkaline solution, possibly because of partial hydrolysis into sodium hydroxide and thyroxine¹⁴ Its effect was, indeed, about the same as that of the monosodium salt in crystalline form, which in turn was about 25 per cent as great as that of thyroxine given intravenously The free amino acid suspended in distilled water has only about one one hundred and fiftieth as much effect as thyroxine given intravenously

This augmentation by the action of alkali seen in the case of thyroxine is also noted in the case of a peptide of thyroxine¹⁵ prepared by proteolytic digestion of desiccated thyroid according to the method of Harington and Salter¹⁶ When suspended in distilled water and administered by mouth it produced only about 28 per

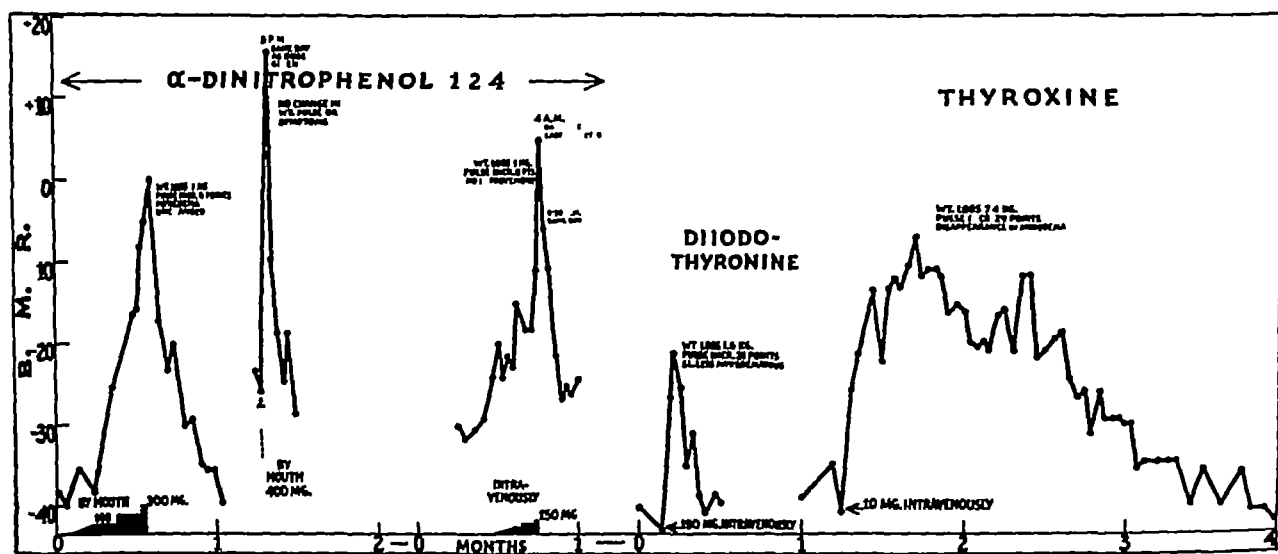


Chart 2—Dinitrophenol compared with diiodothyronine and thyroxine. Rapid rise and fall of metabolism after dinitrophenol somewhat similar to that after diiodothyronine but in marked contrast to slow rise and fall after thyroxine

skin, an increased sense of warmth and often the patient feels better, whereas an equal increase in metabolism produced by thyroxine would make the patient very uncomfortable The increased urinary excretion of nitrogen that follows the administration of thyroxine is said to be absent following the administration of dinitrophenol¹¹ From these observations it is apparent that the increased metabolism produced by thyroxine is different from that produced by dinitrophenol It is interesting that the latter exerts its marked calorogenic effect in spite of the fact that its molecule contains only one benzene ring and no iodine Although dinitrophenol may produce pharmacologic rather than physiologic effects, its marked action in the absence of thyroid function suggests that the basal metabolism may be altered by more than one mechanism

THE EFFECT OF ADMINISTERING THYROXINE IN VARIOUS FORMS BY MOUTH

Until recently it was thought that thyroxine had no effect by mouth, but it is now known that while it has only a slight effect as the free amino acid, it has a well marked effect when given in an alkaline solution, which

cent as much increase in basal metabolism as thyroxine given intravenously, or almost exactly the same effect as monosodium thyroxine This means that the peptide had nearly forty times as much effect per milligram of iodine as thyroxine given in the form of the free amino acid, suggesting that the combination of thyroxine with another amino acid in some way increases its absorption, possibly by facilitating the ease with which it forms a soluble salt in the small intestine When the peptide was given by mouth in alkaline solution, its effect was approximately three times as great as when it was given in suspension and slightly greater than that of thyroxine in alkaline solution In contrast to these

⁹ Vague H, Mayer A, Plantefol, L. and others. *Ann de physiol* 8: 1 1932

¹⁰ Dodds E C, and Pope W J. *Dinitro Cresol as a Stimulator of Metabolism* *Lancet* 352 (Aug 12) 1933

¹¹ Cutting W C, and Tainter M L. *Metabolic Actions of Dinitrophenol with the Use of Balanced and Unbalanced Diets*, *J A N A* 101: 2099 (Dec 30) 1933

¹² Thompson W O, Thompson, Phebe K, Dickie Lous F N, and Alper J V. *Effect of Alkali on the Absorption of Thyroxine from the Gastro-Intestinal Tract with a Note on the Comparative Effects of Synthetic and Natural Thyroxine Injected Intravenously*, *Arch Int Med* 53: 809 (Nov.) 1933

¹³ Kendall, E C. *Chemistry of the Thyroid Secretion* *Harvey Lectures Series* 15: 1919-1920, p 41

¹⁴ Thompson, W O, Nadler, S B, Taylor S G and Thompson, Phebe K. *Recent Observations on Thyroxine and Allied Compounds* *Proc Soc Exper Biol & Med* 31: 1000 (May) 1934

¹⁵ Thompson, W O, Nadler, S B, Thompson Phebe K, and Dickie Lous F N. *The Effect of Alkali on the Absorption of a Peptide of Thyroxine from the Gastro-Intestinal Tract* *J Clin Investigation* 13: 933 (Nov.) 1934

¹⁶ Harington C R and Salter W T. *The Isolation of a Peptide from the Thyroid Gland by the Action of Proteolytic Enzymes* *Biochem J* 24: 456 1930

results with thyroxine and thyroxine peptide alkali did not have a clear-cut effect on the absorption of an acid-insoluble precipitate from a peptic digest¹⁷ of desiccated thyroid. Thus the effect of thyroxine was augmented most, that of the peptide less and that of the acid-insoluble precipitate not significantly. In other words as the complexity of the molecule increased the effect of alkali decreased.

IODINE IN RELATION TO THE CALORIGENIC ACTIVITY OF DESICCATED THYROID

Hunt and Seidell,¹⁸ Means, Lerman and Salter¹⁹ and we ourselves² reported observations which suggested that the activity of desiccated thyroid was proportional to its total iodine content. On the other hand, Harrington and Randall²⁰ isolated diiodotyrosine from the thyroid by alkaline hydrolysis and by the action of proteolytic enzymes and concluded that at least 50 per cent of the total iodine was present in this form. Since diiodotyrosine possesses little calorogenic activity, there was a discrepancy between clinical observations on the one hand and chemical on the other. It is possible that the finding on the part of all three groups of investigators that activity is proportional to total iodine may have been a coincidence and that the problem may be more complex.

Our original conclusion was based on the observation that in each of two patients with myxedema the amounts of desiccated thyroid and of thyroxine that had to be given orally and intravenously respectively every day in order to hold the basal metabolism at normal contained the same total amounts of iodine. When we began to compare the effects of single large doses of the two substances we noticed that the effect of a certain lot of desiccated thyroid was on the average only 62 per cent as great as that of thyroxine given intravenously and that the ratio of the effects of the two substances varied greatly from patient to patient.²¹ Moreover comparison of the maintenance doses in the same patient showed that certain lots of sheep and beef thyroid had less effect than a lot of hog thyroid in doses containing the same total amounts of iodine.

The next logical step was to attempt to isolate from desiccated thyroid an iodine fraction that would possess most of the calorogenic activity. After digestion of desiccated thyroid with pepsin for seventy-two hours, most of the calorogenic activity is possessed by the acid insoluble portion which represents (in the lot used) only about 45 per cent of the total iodine. Data thus far collected suggest that, per milligram of iodine the effect of the acid-insoluble precipitate is greater than that of the desiccated thyroid from which it was prepared, but because of the disproportionate effects of increasing doses it is impossible at the present time to make quantitative comparisons.²²

The activity of a given amount of desiccated thyroid is usually slightly greater than that of the acid-insoluble portion derived from it, a discrepancy that may be explained by a slight calorogenic activity of the acid-soluble portion²³ which has been reported by Lerman and Salter²⁴ to possess no calorogenic activity. The curves denoting the changes in metabolism following single large doses of the acid-soluble portion appear to

be different from those for the acid insoluble portion, being characterized by a more rapid return to the level before treatment. Lerman and Salter²⁴ report that after digestion with pepsin for seventy-two hours desiccated thyroid loses about half of its activity and that the effect of the acid-insoluble portion is the same per milligram of iodine as that of the desiccated thyroid from which it is prepared. They therefore conclude that although diiodotyrosine is inert it "exerts calorogenic action when given in its natural chemical combination with thyroxine in the form of whole gland." It is impossible to state at the present time whether different methods of assay account for the differences in results.

EFFECT OF HEATING WITH ALKALI ON DESICCATED THYROID AND THYROXINE BEARING ON METHODS OF STANDARDIZATION OF DESICCATED THYROID

We have observed²² that, after heating with approximately normal sodium hydroxide on a water bath for four hours, desiccated thyroid loses more than two thirds of its calorogenic activity. No activity is lost if the mixtures are not heated. When thyroxine is heated with alkali in the same manner, its effect is not altered. Cameron and Carmichael,²⁵ on the basis of the rate of growth and hypertrophy of organs in rats, concluded that hydrolysis with sodium hydroxide destroyed at least two thirds of the activity of iodothyroglobulin. Regardless of the explanation of these observations, it becomes apparent at once that the method used by all investigators for isolation of the active principle from the thyroid, namely, hydrolysis with alkali, destroys most of the gland's activity. Indeed, the low yield of crystalline thyroxine from desiccated thyroid has always been one of the most serious handicaps to a systematic study of its properties and may be attributed either to destruction of thyroxine or to the presence of only a small quantity of iodine in the form of thyroxine to begin with.

The effect of heating desiccated thyroid with alkali has an important bearing on the suggestion advanced by Harrington and Randall²⁰ and by Gutman, Benedict, Baxter and Palmer²⁷ that for pharmaceutical purposes desiccated thyroid should be standardized in terms of thyroxine iodine rather than in terms of total organic iodine. Using guinea-pigs for assay, Gutman and his co-workers found calorogenic activity proportional to thyroxine rather than to total iodine. The assay methods of Hunt¹⁸ and Gudernatsch,²⁸ which depend on the effect of thyroid on the susceptibility of white mice to acetonitrile and on the metamorphosis of tadpoles respectively, are certainly no more accurate than the total iodine method and have indeed led to the conclusion that activity is proportional to total iodine. Biologic assay on patients with myxedema is accurate but too time consuming to be practical, requiring as it does many months to standardize a single preparation. In many instances the determination of total organic iodine is probably satisfactory for clinical purposes. At present the glands used by several American manufacturers for the preparation of their desiccated thyroid

17 We are indebted to Dr Klein of the Wilson Laboratories for enzymes and desiccated hog thyroid supplied for these experiments.

18 Hunt, Reid and Seidell. A. Studies on Thyroid. I. Relation of Iodine to the Physiological Activity of Thyroid Preparations. Bull. 47 Hyg. Lab. U. S. P. H. S. October, 1908. Washington Government Printing Office, 1909.

19 Means, J. H., Lerman, J. and Salter, W. T. The Role of Thyroxine Iodine and Total Organic Iodine in the Calorogenic Action of Whole Thyroid Gland. J. Clin. Investigation 12: 683 (July) 1933.

20 Harrington, C. R. and Randall, S. S. Observations on the Iodine Containing Compounds of the Thyroid Gland. Isolation of di 3,5 Diiodotyrosine. Biochem. J. 23: 373 1929. Isolation of di 3,5 Diiodotyrosine from the Thyroid Gland by the Action of Proteolytic Enzymes. ibid. 25: 1032 1931.

21 Thompson, W. O., Thompson, P. K., Taylor, S. G. and Dickie, L. F. N. The Calorogenic Action of Single Large Doses of Desiccated Hog Thyroid Compared with That of Thyroxine Given Orally and Intravenously. Arch. Int. Med. 54: 888 (Dec.) 1934.

22 A preliminary report of this work was made at the meeting of the American Society for Clinical Investigation in Atlantic City, N. J., April 30, 1934, by Thompson, W. O., Nadler, S. B., Taylor, S. G. and Thompson, P. K. J. Clin. Investigation 13: 690 (July) 1934.

23 Thompson, W. O., Thompson, P. K., Taylor, S. G. III, Nadler, S. B. and Dickie, L. F. N. Compounds That Affect the Basal Metabolism in Man. Endocrinology to be published.

24 Lerman, J., and Salter, W. T. The Calorogenic Action of Thyroid and Some of Its Active Constituents. Tr. Am. A. Study of Goster 1933 p. 169.

25 Cameron, A. T. and Carmichael, J. An Attempt to Evaluate Thyroid Preparations Utilizing Their Effect on Growth Rate and Production of Organ Hypertrophy in the Young White Rat. Tr. Roy. Soc. Canada 20, sect. 5 1926 p. 1.

26 Harrington, C. R. and Randall, S. S. The Chemical Assay of Thyroid Gland. Quart. J. Pharm. & Pharmacol. 2: 501 (Oct. Dec.) 1929.

27 Gutman, A. B., Benedict, E. M., Baxter, B. and Palmer, W. W. The Effect of Administration of Iodine on the Total Iodine, Inorganic Iodine and Thyroxine Content of the Pathological Thyroid Gland. J. Biol. Chem. 97: 303 (July) 1932.

28 Gudernatsch, J. F. Feeding Experiments on Tadpoles. I. The Influence of Specific Organs Given as Food on Growth and Differentiation. A Contribution to the Knowledge of Organs with Internal Secretion. Arch. Entwicklungsmech. d. Organ. 35: 457 1912.

contain fairly high concentrations of iodine, and in normal glands with high iodine contents Gutman and his associates have found the relation between total organic iodine and thyroxine iodine to be fairly constant. They have also shown that the relationship between the two is much more constant in preparations of desiccated thyroid that conform to United States Pharmacopeia requirements than those which do not.²⁹ As long as the U S Pharmacopeia requirements are adhered to, similar results may frequently be obtained whether total organic iodine or thyroxine iodine is used for standardization. Nevertheless there is still room for a method of standardization that meets the most rigid chemical and metabolic standards. Such a method may depend on the determination of a certain fraction of the total iodine which possesses nearly all the calorigenic activity, but it must not destroy activity. Until such a method is adequately worked out and its reliability proved beyond question, it would probably be unwise for the United States Pharmacopeia to change its requirements

and 12 mg, although the exact figure is still to be determined. Other pertinent facts about the iodine reaction are that 1 The reaction may be reversible,³² i e, the metabolism may rise and the severity of the disease increase during the administration of inadequate doses of iodine (from 0.75 to 3 mg daily) and show a well marked reduction during the immediate subsequent administration of much larger doses (250 mg daily). 2 The iodine must be administered at a certain minimum rate in order for the effect to be maximum, i e, administration of 3 mg daily for fourteen days will not produce the same amount of reduction on the average as the administration of 6 mg daily for seven days. 3 Patients may be initially refractory to iodine or may become refractory after an initial response during its continuous administration.³³ 4 The same patient may show remissions and relapses in the disease when iodine is administered³⁴ continuously and when it is not administered at all. 5 Refractoriness to iodine may disappear after iodine has been omitted for four weeks.³⁵ 6 During the development of refractoriness, the minimum amount of iodine necessary to produce a maximum reduction in basal metabolism may increase.³⁶ 7 A dose of iodine which in itself is too small to cause a reduction in the rate of basal metabolism may interfere with the

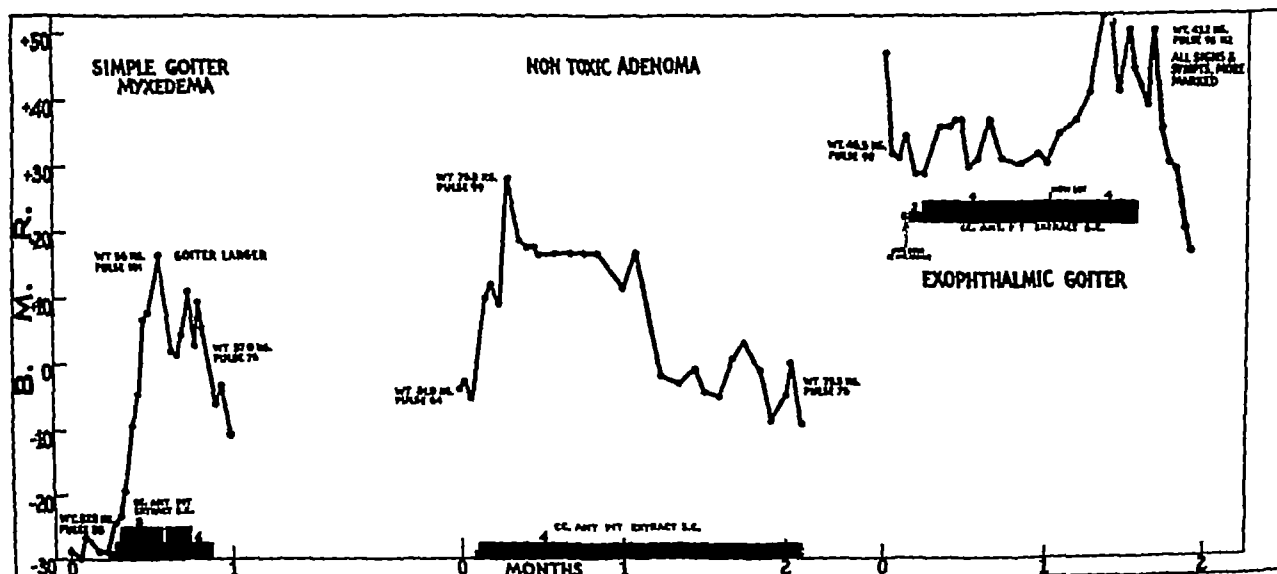


Chart 3—Calorigenic action of anterior pituitary. Mild myxedema improved, nontoxic adenoma made toxic, exophthalmic goiter made worse.

Since no method has been demonstrated to yield with certainty the percentage of iodine present as thyroxine, the adoption of the thyroxine content as a method of standardization by the British pharmacopeia may seem a little premature. The need for an accurate method is obvious. It is hardly necessary to stress what Hunt has already pointed out, namely, that the statement that a patient has had a certain number of grains of thyroid in a given time is of little value.

IODINE REACTION

The precise nature of the iodine reaction³⁰ in exophthalmic goiter still remains a mystery. We have found that, in exophthalmic goiter in Boston, 6 mg of iodine a day is about the minimum amount that will produce a maximum reduction in basal metabolism,³¹ and in Chicago the amount is between 6

and 12 mg, although the exact figure is still to be determined. Other pertinent facts about the iodine reaction are that 1 The reaction may be reversible,³² i e, the metabolism may rise and the severity of the disease increase during the administration of inadequate doses of iodine (from 0.75 to 3 mg daily) and show a well marked reduction during the immediate subsequent administration of much larger doses (250 mg daily). 2 The iodine must be administered at a certain minimum rate in order for the effect to be maximum, i e, administration of 3 mg daily for fourteen days will not produce the same amount of reduction on the average as the administration of 6 mg daily for seven days. 3 Patients may be initially refractory to iodine or may become refractory after an initial response during its continuous administration.³³ 4 The same patient may show remissions and relapses in the disease when iodine is administered³⁴ continuously and when it is not administered at all. 5 Refractoriness to iodine may disappear after iodine has been omitted for four weeks.³⁵ 6 During the development of refractoriness, the minimum amount of iodine necessary to produce a maximum reduction in basal metabolism may increase.³⁶ 7 A dose of iodine which in itself is too small to cause a reduction in the rate of basal metabolism may interfere with the

29 Gutman A B, Benedict E M, and Palmer W W. Assay of Thyroid by Chemical Estimation of the Thyroxine Content, *Proc Soc Exper Biol & Med* 29 1198 (June) 1932.

30 Plummer H S, and Boothby W M. The Value of Iodine in Exophthalmic Goiter, *J Iowa M Soc* 14 66 (Feb) 1924.

31 Thompson W O, Brailey A G, Thompson Phebe K, and Thorp, E G. The Range of Effective Iodine Dosage in Exophthalmic Goiter. I. The Effect on Basal Metabolism of Rest and of the Daily Administration of One Drop of Compound Solution of Iodine, *Arch Int Med* 45 261 (Feb) 1930.

32 Thompson W O, Cohen A C, Thompson Phebe K, Thorp, E G, and Brailey, A G. The Range of Effective Iodine Dosage in Exophthalmic Goiter. III. The Effect on Basal Metabolism of the Daily Administration of One Quarter Drop of Compound Solution of Iodine and Slightly Smaller Doses with a Summary of Results to Date, *Arch Int Med* 45 430 (March) 1930.

33 Thompson W O, and Thompson, Phebe K. Exophthalmic Goiter. The Development of Refractoriness to Iodine, *Arch Int Med* 48 351 (Sept) 1931.

34 Thompson W O, Thompson Phebe K, Brailey, A G, and Cohen, A C. Prolonged Treatment of Exophthalmic Goiter by Iodine Alone, *Arch Int Med* 45 481 (April) 1930.

35 Thompson, W O, Thompson, Phebe K, Brailey, A G, and Cohen, A C. Myxedema During the Administration of Iodine in Exophthalmic Goiter, *Am J M Sc* 179 733 (June) 1930.

36 Thompson, W O, Morris A E, and Thompson Phebe K. Thyrototoxicosis Following Subtotal Thyroidectomy for Exophthalmic Goiter, *Arch Int Med* 46 946 (Dec) 1930.

festations of the iodine reaction in exophthalmic goiter are of great interest, but the mechanism of their production will be understood only when the nature of the chemical changes in the thyroid is known

RELATION BETWEEN THE PITUITARY AND THE THYROID³⁷

Attempts to reproduce in man the effects that have been observed in animals during the administration of extracts of the anterior lobe of the pituitary have proved disappointing. Within the past six months we have had the good fortune to receive two extracts of the anterior lobe that produce an increase in metabolism in man. The extracts used were the growth hormone of E. R. Squibb & Sons and an extract of the anterior lobe manufactured under the name of Phylene by the Wilson Laboratories, Chicago.³⁸ We have administered these extracts subcutaneously to twenty-eight patients of various types. In eighteen of them the metabolism has shown an increase, which has always been temporary in spite of continued administration.

In ten of twelve patients who suffered from a moderate depression of the basal metabolism (minus 15 to minus 30 per cent) but whose clinical picture was not typical of hypothyroidism, the rate rose to normal or higher during the administration of the extract in association with clinical improvement. One of these patients has a pituitary tumor and another we believe to have Simmond's disease.

In two patients with marked myxedema no change was observed, although the extract was not given in sufficiently large doses to make this observation conclusive. In three patients with goiters and low basal metabolisms (minus 25 to minus 30 per cent) that we have attributed to an underfunction of the thyroid, the rate showed a well marked increase, and there was clinical improvement during administration of the extract. In one the goiter increased in size. In another the rate at which the basal metabolism dropped on omission of the extract was similar to the rate at which it drops from its point of maximum increase following a single large dose of thyroxine.

In three of six patients with normal basal metabolism and nontoxic goiters, and in one of four patients with normal basal metabolism but no goiter, the rate rose during the administration of the extract. In one of the patients with a nontoxic adenomatous goiter and a basal metabolism of minus 7 per cent the rate rose to plus 25 per cent in association with the development of tachycardia, weakness and increased sweating—clinical changes seen in mild cases of toxic adenoma.

In a patient with exophthalmic goiter, in association with an increase in basal metabolism from plus 28 per cent to plus 50 per cent there was marked increase in muscle weakness, nervousness, sweating and precordial pain, a slight increase in the pronouncement of the eyes and an increase in the size and firmness of the thyroid. During the injections a mild case of exophthalmic goiter became a moderately severe one. This observation must, of course, be confirmed in many other cases, but it coincides with the observations of Schockaert and Foster³⁹ and of Friedgood⁴⁰ in animals and

naturally raises the question of the role of the pituitary in exophthalmic goiter.

SUMMARY

It has been calculated that in a normal man the thyroid forms thyroxine or its equivalent at the rate of about 0.3 mg a day and that there are about from 10 to 14 mg in the body outside of the thyroid gland.

Following the intravenous administration of a single dose of 10 mg of thyroxine to a patient with myxedema there is a marked lag in the clinical improvement behind changes in the metabolic rate, the period of highest metabolism being characterized by intoxication and the period of falling metabolism by improvement.

Observations on the calorogenic action of diiodotyrosine, thyronine, diiodothyronine and N-acetyl thyroxine show that the amino group, the diphenyl ether group and all four iodine atoms are essential for the maximum effect of thyroxine. Of special interest is the rather rapid return of the metabolism to the level before treatment following a single dose of diiodothyronine (from seven to eight days respectively in two patients with rates of minus 35 per cent and minus 40 per cent) compared with the slow return following a single dose of thyroxine (from seventy to eighty days at a level of minus 40 per cent).

The increase in metabolism produced by dinitrophenol in myxedema, with little or no clinical improvement, suggests that there may be different types of altered metabolism that cannot be differentiated by changes in the rate of oxidation alone.

As the complexity of the molecule of various thyroxine compounds increases, the greater will be their absorption from the gastro-intestinal tract and hence the less the effect of alkali in augmenting the absorption.

As a result of digestion with pepsin, data have been obtained which suggest that nearly all the calorogenic activity of the whole gland is possessed by less than half of the total iodine (acid-insoluble precipitate). The acid-soluble portion does possess slight calorogenic activity and after a single large dose the metabolism appears to return to its level before treatment more rapidly than after an equal change produced by the acid-insoluble precipitate. This finding has an important bearing on the United States Pharmacopoeia method of standardizing desiccated thyroid by a determination of the total organic iodine.

After heating with approximately normal sodium hydroxide for four hours, desiccated thyroid loses more than two thirds of its calorogenic activity, whereas thyroxine is unaffected by the same treatment. This finding has an important bearing on the proposed standardization of desiccated thyroid by a determination of its thyroxine content.

The subcutaneous administration of extracts of the anterior lobe of the pituitary produced an increase in basal metabolism in eighteen of twenty-eight patients of various types, including two with hypopituitarism, ten with low basal metabolism of unknown cause, several with nontoxic goiters, including three patients with mild myxedema, and one case of exophthalmic goiter. During the injections in the patient with exophthalmic goiter, a mild case of the disease became a moderately severe one.

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³⁷ Aided by a grant from the Squibb Foundation.

³⁸ We are indebted to Drs. Anderson and Morrell and to Dr. Klein respectively for supplying these extracts.

³⁹ Schockaert, J. A., and Foster, G. L. Influence of Anterior Pituitary Substances on the Total Iodine Content of the Thyroid Gland in the Young Duck. *J. Biol. Chem.* 85: 89 (Feb.) 1932.

⁴⁰ Friedgood, H. B. Experimental Exophthalmos and Hyperthyroidism in Guinea Pigs. *Clinical Course and Pathology*. *Bull. Johns Hopkins Hosp.* 54: 48 (Jan.) 1934.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRs COLLIP AND ANDERSON, MILANS
AND LERMAN, AND W O THOMPSON, PHEBE A.
THOMPSON, TAYLOR, NADLER AND DICKIE

DR GEORGE W CRILE, Cleveland We have listened to three very significant papers. The point I wish to make is that exophthalmic goiter is due to a pathologic physiology in the suprarenal-sympathetic system. If this is a fact, it is easy enough to put it to a test, and this my associates and I have done. In fourteen cases of typical primary hyperthyroidism and in twenty-four cases of recurrent hyperthyroidism, in each of which all the symptoms were present, we found that as the result of denervation of the suprarenal glands, without any operation at all on the thyroid gland, the disease as a whole disappeared. These results would suggest that the thyroid gland in and of itself is incapable of acquiring a hyperplasia or an excessive activity but that these are imposed on the thyroid gland most probably by the suprarenal-sympathetic system. A second interesting thing to me is a fact that bears on the pituitary. If it is a fact that division of the sympathetic system alone will completely arrest hyperthyroidism, these cases of basophilism of the pituitary should be controlled equally by denervation, because if the thyroid cannot acquire hyperplasia and develop exophthalmic goiter within itself or independently of the sympathetic nervous system I have a doubt whether the pituitary gland can acquire a basophilism by itself and independently of the sympathetic nervous system. We have tested this conception in a most interesting way. In one case presenting the whole symptom complex of polyglandular disease, denervation of the suprarenal glands cured the patient completely. All the symptoms disappeared. This would suggest that perhaps the possibility hasn't been sufficiently thought of that the sympathetic system itself governs the activity of all these glands, and that they, in turn, act on each other secondarily, just as the thyroid does on the body as a whole. Drs Means and Lerman spoke about the resistance of certain patients to iodine. It is obvious that if compound solution of iodine should be given to a patient with neurocirculatory asthenia or any form of hypermeticism not due to increased thyroxine, that patient would not be benefited. Furthermore, if a patient in whom neurocirculatory asthenia or some other form of pathologic stimulation of the suprarenal-sympathetic system was present, but whose symptoms in some degree were produced by an increased activity of the thyroid gland, then that patient's symptoms could not be entirely relieved by compound solution of iodine, because it is effective only against thyroxine, and, when thyroxine is not the sole cause of the disease, compound solution of iodine cannot offer complete relief.

DR E C KENDALL, Rochester, Minn. In regard to the important paper of Drs Collip and Anderson, it will be of great interest to see whether they can produce an antihormone for all the rest of the hormones of the pituitary. It will be of still greater interest if they can produce an antihormone to insulin, to thyroxine, to the cortical hormone of the suprarenal, to epinephrine, and finally to ascorbic acid. If they do this, they are going to cause a great deal of trouble to present-day endocrinologists and clinicians and much more trouble to future medical students. I feel sure that the conclusions of Drs Means and Lerman are in accordance with what is known of the effect of iodine. It certainly is not through its effect on the tissues, its effect is on the thyroid gland alone and is therefore variable under different conditions. The paper of Dr Thompson and his co-workers was particularly interesting. Thyroxine was isolated twenty years ago this year. During the twenty years it has been found that there is no effect produced by desiccated thyroid that cannot be duplicated by pure crystalline thyroxine. I think it may safely be said that it is the sole active agent of the gland. I am inclined to believe that their conclusions concerning the acid insoluble fraction after enzyme action is best explained by small amounts of thyroxine that were not broken off by the enzyme action. When thyroxine is injected, a certain quantitative response is produced. If desiccated thyroid is administered, a certain quantitative response is produced. The response based on iodine in desiccated thyroid and iodine in thyroxine can therefore be

compared. In all cases there is more effect from desiccated thyroid than would be expected from its thyroxine content. Analysis of desiccated thyroid shows that, on the average, 25 per cent of the total iodine is in the form of thyroxine, but the effect produced by the administration of desiccated thyroid indicates the presence of about four times this amount of thyroxine. This raises the question: Is the thyroxine in desiccated thyroid more active than crystalline thyroxine because of an enhanced activity due to its peculiar form of combination within the protein or is there another explanation that is based on the fact that all of the crystalline thyroxine which is injected is not retained and utilized? I believe the simplest explanation is that only about 25 per cent of the crystalline thyroxine is retained in the body and held in the form that can function. The fact that the effect on the basal metabolic rate is in proportion to the total iodine in desiccated thyroid and not to 25 per cent of the total iodine is a mere coincidence.

DR HERRMANN L BRUNGART, Boston. Drs Collip and Anderson stated that increased activity of a hormone may be due, not to an increased amount or concentration of the hormone itself, but to a decrease in its antistubstance. Of interest in this connection are certain patients with the characteristic clinical features of thyrotoxicosis, the thyroid gland nevertheless appearing normal macroscopically and microscopically. I have observed two such patients this past year. Stricker reported a similar case in 1930 and other cases likewise have been observed. It is to be hoped that the work of Drs Collip and Anderson may eventually make possible a lowering of thyroid activity in patients with chronic heart disease, making complete thyroidectomy unnecessary. Dr Thompson and his co-workers referred to the differences in the metabolic actions of dinitrophenol and thyroid. My observations have been in accord with his. After removing the entire normal thyroid in patients with angina pectoris, feeding amounts of thyroid sufficient to bring the metabolic rate back to its preoperative level resulted in recurrence of attacks in five of six patients. Angina pectoris was precipitated after the same amount of effort that caused attacks before operation. When dinitrophenol was given instead of thyroid, the return to the preoperative metabolic level was not usually followed by a reappearance of angina. This, I believe, was due in large part to the fact that moderate metabolic rises after dinitrophenol do not entail a great increase in cardiac work. After dinitrophenol the increased oxygen is derived from each unit of blood, rather than, as in thyrotoxicosis, by an increase in the volume and velocity of blood flow. In using the term "basal metabolic rate" as an index of the amount of thyroid active principle within the body, one must recognize that other dissimilar agents may cause changes in the metabolic rate without necessarily influencing the work of the heart to the same degree. Measurements of the metabolic rate reflect only the calorogenic action of such substances. In the absence of dinitrophenol and certain unusual disease states, however, basal metabolic rate measurements still afford the best single index of either thyrotoxicosis with overactivity of the gland or of myxedema with underactivity of the gland.

DR A C IVY, Chicago. The suggestion of Drs Collip and Anderson that antihormones may be regarded as antibodies interests me because I have recently reported the experimental production of cretinism in rabbits by the injection of a thyrocytotoxic serum. This serum was prepared by injecting chickens with a saline extract of a rabbit's thyroid. Now having in mind their hypothesis concerning hormones and antihormones, I should like to ask how they would distinguish between a chalone and an antihormone. Until more is known about the nature of the material that Drs Collip and Anderson are injecting and the nature of the reactions that they are obtaining, I do not warm up to the term "antihormone" and have the same criticisms concerning it that Dr Kendall has pointed out. The point of this work, however, from a practical standpoint, is that when the physician injects an impure hormone product over a period of time he may observe an inhibitory or reversed reaction. Maybe the impurity in the product acts on the cells of the particular glands and destroys or inhibits them. Drs Means and Lerman have expressed skepticism concerning the clinical existence of iod-Basedow disease. Experimentally, I believe that there is a basis for thinking that it may occur. I have in mind

the work of Webster and his co-workers in which they produced diffuse hyperplasia of the thyroid by feeding certain types of cabbage. Given this marked diffuse hyperplasia, the administration of iodine to these rabbits caused marked increase in basal metabolism, and if large doses of iodine were given the animals died. I think this to be a good indication that a certain state of the thyroid may occur in which the administration of iodine, particularly in large doses, may produce toxic effects. In the same connection, I should like to ask Drs Means and Lerman this question, primarily for my own information. What happens to basal metabolism in those cases of colloid goiter in which, when iodine is given, a decrease in the size of the gland results? It is reported that in these cases histologic examination indicates that the colloid is thinned and then is absorbed from the acini into the blood. Theoretically, if the colloid in the gland is active the basal metabolic rate should go up, at least occasionally. The papers of Drs Means and Lerman and of Dr Thompson and his co-workers clear up a number of points in regard to the role of iodine in exophthalmic goiter, but the mechanism of "refractoriness to iodine" and some of the apparent paradoxical effects of iodine on the thyroid remain to be elucidated. Some physiologists used to say that the action of thyroid extract is due primarily to its stimulating action on metabolism and that if some other substance would stimulate metabolism to the same extent that thyroid extract does, this substance would have the same effects on the body that thyroid extract does. The work that has been done by Dr Thompson and others with dimethylphenol renders such a statement no longer tenable. That is, thyroid extract has specific effects on the body other than raising the metabolic rate.

DR. GEORGE M. CURTIS, Columbus, Ohio. In the work presented, the main evaluation of thyroid function has been based on the basal metabolic rate. My studies indicate that two other factors are as important, perhaps more so, in judging thyroid activity. I refer to the blood iodine and the urinary excretion of iodine. During the past ten years, and particularly since the work of von Fellenberg and his pupils Sturm and Lunde, considerable information has become available concerning the blood iodine and the daily loss of iodine in the urine. The blood iodine is an index of thyroid function. Following total thyroidectomy for cardiovascular disease, the blood iodine decreases to one-third its normal level. The two-third decrease corresponds to the alcohol insoluble fraction, which has been designated "organic" and which presumably contains the thyroid hormone. The loss of sugar in the urine is significant in evaluating the activity of the pancreatic islets. The loss of calcium in the urine is significant in evaluating parathyroid function. In the same manner the daily loss of iodine in the urine becomes of significance in evaluating thyroid activity. The thyroid hormone, as thyroxine or in whatever form it exists in the circulating blood, has a high iodine content. I have found an increased loss of iodine in the urine in patients with hyperthyroidism. The investigation of Drs Collip and Anderson has raised a new point of view concerning thyroid function, and particularly regarding the extrathyroidal factor of exophthalmic goiter. I would suggest three methods of determining the resultant changes in thyroid function: the basal metabolic rate, the blood iodine and the daily urinary loss of iodine. Drs Means and Lerman "doubt but do not deny" the existence of "iod-Basedow," that is, of iodine induced hyperthyroidism. This is in accord with my experience. It is not possible to produce readily "iod-Basedow." I have seen the blood iodine rise from 12 to more than 7,000 micrograms per hundred cubic centimeters subsequent to high iodine administration, without any evidence of hyperthyroidism. This is the common experience. There would appear to be an iodine deficiency factor in the genesis of hyperthyroidism. It is difficult to harmonize this with refractoriness to iodine. Further investigation is necessary. The demonstration of Dr Thompson and his co-workers of other than thyroxine iodine in the thyroid gland is in accord with my studies. I have even gone so far as to inquire whether iodine has another function in the human body, outside of the formation of the high iodine containing thyroid hormone.

DR. HAROLD T. HYMAN, New York. I would like to corroborate what Drs Means and Lerman have said about the therapeutics of iodides in the treatment of the diseases of the

thyroid gland. In 1920, with my late colleague Dr Kessel, I demonstrated the spontaneous course of exophthalmic goiter, showing that it was subject to exacerbations and remissions. It was our belief that the effect of the iodides would vary depending on whether the patient was treated in an up-hill phase of the disease or whether the patient was in a remission. Obviously the iodide effects would be more dramatic if the patient was seen during a remission. Obviously, too, if the patient received iodides during the exacerbation of the disease or an up-hill phase the amount of iodide effect might not be sufficient to overcome whatever it is that is the fundamental pathogenic factor in exophthalmic goiter. In consequence of this, one may have the spectacle of a therapeutic measure that is of value with the patient actually being worse for the time being. Under such circumstances the iodide should not be stopped but should be persisted in and the dosage increased. In a few instances in which patients were brought to us desperately ill with thyrotoxic storms, we had the temerity to treat them with thyroxine and in a few instances we thought we observed a genuinely specific effect. That point of view has been unpopular and has not been accepted even by our colleagues in our own institution, and for many years we have begged them to show us iod-Basedow when it appeared. Our experiences have been that the patients who had exacerbations of their disease when iodides were administered were either those who were caught in an up-hill phase or those in whom some extraneous factor was operating. I remember a woman who became very much worse while on iodide, and we discovered that the increase in her symptoms and her basal metabolic rate was due to the fact that next bed to her a patient was admitted with pneumonia. When her bed was moved to another corner of the room, her basal metabolic rate fell. The importance of these observations cannot be over-emphasized, because the majority of clinicians have been frightened about the use of iodine. In the first place, they were frightened because of the dictum that with adenomatous thyroid the iodide was of less value than in true hyperthyroidism. Then they were frightened into the belief that in simple goiter, true exophthalmic goiter might be produced by iodide administration. All of these fears should be put to rest permanently. The contribution of Drs Means and Lerman will be a great step forward in the intelligent use of iodides by the general practitioner.

DR. D. ROY McCULLAGH, Cleveland. Dr Crile has suggested that on account of the research on iodine which we have been doing in the biochemical department at the Cleveland Clinic, I might wish to comment on some of the papers. Most of the remarks that I would have attempted to make have already been made. As Dr Curtis has said, the test for blood iodine is now relatively simple and accurate and is unquestionably of valuable diagnostic assistance. I think, however, that Dr Curtis will agree that frequently the blood iodine, although elevated, does not seem to be as high as one would expect, as indicated by the general symptoms. This ultimately may have some important bearing on the explanation of the nature of exophthalmic goiter. I think possibly there may be substances other than thyroxine which alter metabolism in that condition. I should like to comment also on the startling reports from the group at Montreal. The natural thought, as Dr Ivy has mentioned, is that the observations reported by Drs Collip and Anderson might be due to immunologic phenomena. Certain observations have been reported elsewhere by Dr Collip that lead one to question this assumption. The final proof of whether or not there are real physiologic antihormones will be the isolation of these substances from normal animals or persons that have not been injected with hormone. The latter has already been reported and furnishes suggestive evidence that the antihormone theory is tenable. Our work at the clinic in collaboration with Dr Walsh is also suggestive. Working with the testicular hormone, we were unable to replace completely the functions of the testes when injecting this hormone. For this reason, we felt that there was a possibility that there was some other active internal secretion, and our work led us to postulate the existence of a chalone in the testes which apparently has the property of decreasing the size of the prostate, that is, the opposite property of the recognized testicular hormone. This, if true, would be an example and a truly physiologic example, of the conception that Drs Collip and Anderson have presented.

DR. WALTER M. BOOTHBY, Rochester, Minn. I agree with Drs. Means and Lerman that, so far as is known, no patient with exophthalmic goiter has ever been made worse by the proper use of iodine. The aggravation of the symptoms that frequently occurs when iodine is stopped or used intermittently must be differentiated and these patients cannot be considered as being made worse by its use. The use of iodine as a test for exophthalmic goiter has its limitations as well as its advantages and requires an accurate knowledge of the normal course of the disease as well as a thorough understanding of the effect of iodine. A fact usually not recognized is important in this connection, namely, the beneficial effect of iodine does not usually appear until ten days or two weeks after its administration has been started, and the beneficial effect thus produced lasts usually about the same length of time, the intermittent administration of iodine is bad and when used is frequently based on alternate weeks or alternate two weeks and therefore the effect of its action can easily be misinterpreted. Drs. Means and Lerman say that they believe there is no such thing as "iod-Basedow." If the term is used to indicate that true Basedow's disease (true Grave's disease, true exophthalmic goiter), then their statement is correct. However, there is some evidence in this country and more evidence in the endemic goitrous districts of Europe that a certain number of patients with endemic goiter are rendered hyperthyroid by the administration of iodine. Plummer has always insisted that the hyperthyroidism of adenomatous goiter is a separate clinical entity and should be chiefly differentiated from true exophthalmic goiter—the failure to do so has prevented the earlier recognition of when iodine is and is not beneficial in the treatment of various thyroid conditions.

DR. J. B. COLLIP, Montreal. I do not think it is the time and place to enter into a defense of the theory that we have suggested. We have presented certain facts which we feel will stand the test of further investigation, but our theoretical presentation may be wrong, it may be partially true or it may all be true. We were interested in this theory primarily as a basis for directing our own future work. Already, as Dr. McCullagh has said, we have suggested evidence supporting certain phases of the theory. In regard to the use of the word "chalone," I do not think that the point of view which we have presented in our theoretical discussion is such that it is right to use the word "chalone" for the group of substances we are calling antihormones for lack of a better word. The terminology is in rather a bad shape, it is true. One may question rightly the use of the word "hormone" at all. A hormone, as it was thought of years ago, is supposed to act on the body as a whole. All of these pituitary principles which we have been dealing with lately act on another organ and there is, as Dr. Kendall has pointed out in private discussion, a real point of difference between this group of pituitary principles and other hormones. I was interested in the remarks of Dr. Curtis with regard to the possible use of iodine values of blood and urine as indicating the state of thyroid functioning, Dr. McCullagh has now available a method that will make it quite simple apparently for a number of workers to apply this method.

DR. J. H. MEANS, Boston. I doubted the existence of iod-Basedow, I don't deny its existence, but I have never seen it. What Dr. Boothby says is important. The endemic in Switzerland is much more intense than anything known in this country. That may be the explanation. However, I was interested in Bern last summer to talk to Professor Dautrebande of Liege. He told me he also thought there was no such thing as iod-Basedow, in the sense the term is used today, namely, thyrotoxicosis produced by the giving of iodine. He said the cases he had seen, that had been called by his European brethren iod-Basedow, in his hands had responded to iodine therapy just like other cases of thyrotoxicosis. I am very grateful to Dr. Curtis. I think his work is of extraordinary importance, and in following lines of the sort that he is lies the solution of some of these complicated problems about the thyroid. I was asked a question by Dr. Ivy. I can't answer it. I haven't the faintest idea how colloid gets out of the thyroid. I have seen colloid being put into the follicles but I have been unable to discover that anybody knows how it gets out. I don't even know whether

it gets out, when iodine is given in colloid goiter. Of course, we have very little endemic goiter in Boston, so that I am not an authority on colloid goiter. But it does occur to me that if there is a reduction in size, and generally we don't get any reduction when we give iodine to people with sporadic colloid goiter, it may be because of differences in vascular engorgement. I didn't quite follow Dr. Ivy's comment on the nature of the calorogenic action of thyroxine in relation to dimetrophenol. I think they are totally different. I think thyroxine has a calorogenic action, and a whole lot of other actions, which dimetrophenol does not possess, and that the effect of thyroxine on the body is peculiar to thyroxine and can be imitated by nothing else that is available today.

DR. W. O. THOMPSON, Chicago. With regard to the acid soluble fraction which Dr. Kendall said probably depended for its activity on thyroxine, I want to point out that we have not said what its activity depends on because we do not know. Dr. Kendall has suggested that the discrepancy between the effect of thyroxine and desiccated thyroid may be more apparent than real because of relatively greater utilization of desiccated thyroid. He has wisely pointed out that one of the chief criticisms of our work is that we do not know how much of the active principles of the various substances administered was excreted unused. Nevertheless, I think that it has not yet been definitely proved that desiccated thyroid is utilized better than thyroxine, and in different patients the same dose of desiccated thyroid may produce very different effects. It is difficult to see how greater utilization of desiccated thyroid than of thyroxine would explain the great reduction in the calorogenic activity of the former as a result of heating with alkali.

MENINGOCOCCIC MENINGITIS

A NEW FORM OF THERAPY

ARCHIBALD L. HOYNE, M.D.

CHICAGO

Weisselbaum,¹ although not credited with priority² in observing the meningococcus, isolated and cultured it in 1887, thus he laid the foundation for the present etiologic conception of the disease. Jochmann³ initiated the clinical intrathecal use of an antiserum evaluated earlier by animal experimentation by Kolle and Wassermann.⁴

Flexner in 1907-1908⁵ reviewed the entire subject of meningococcic meningitis and as the result of extensive laboratory and clinical investigations demonstrated the value of an antimeningitis serum in the treatment of the disease. He attributed the benefits of the serum clinically to its antibacterial qualities.

This work has stood unquestioned, and very little change has been made in methods of preparation of serums, largely because the ability of the meningococcus to elaborate a toxin was not recognized. None of the more important articles on the subject, including the comprehensive reviews of Gordon⁶ in 1920 and Murray⁷ in 1929, admit the possibilities of the production of a

1 Weisselbaum, A. Ueber die Aetologie der akuten Meningitis cerebrospinalis, Fortsch. d. Med. 8: 573, 1887.

2 Cited by Park, W. H. and Williams, Anna W. Pathogenic Microorganisms Philadelphia, Lea & Febiger, 1933, p. 371.

3 Jochmann, G. Versuche zur Serodiagnostik und Serotherapie der epidemischen Genickstarre, Deutsche med. Wchnschr. 35: 783, 1906.

4 Kolle, Wilhelm, and Wassermann, August. Versuche zur Gewinnung und Vertheilung eines Meningococcenserums, Deutsche med. Wchnschr. 32: 609, 1906.

5 Flexner, Simon. Experimental Cerebrospinal Meningitis in Monkeys, J. Exper. Med. 9: 142, 1907. Concerning a Serum Therapy for Experimental Infection with Diplococcus Intracellulans, ibid., p. 168. Flexner, Simon, and Jobling, J. W. Serum Treatment of Epidemic Cerebro Spinal Meningitis, ibid. 10: 141, 1908. An Analysis of Four Hundred Cases of Epidemic Meningitis Treated with the Anti Meningitis Serum, ibid., p. 690.

6 Gordon, M. H. Cerebrospinal Fever. Medical Research Council special report series No. 50, 1920.

7 Murray, E. G. D. The Meningococcus, Medical Research Council, special report series No. 124, 1929.

soluble toxin but do agree to the elaboration of an endotoxin Murray states that "no one has yet succeeded in demonstrating a soluble toxin in meningococcus cultures and all are ready to admit that such a toxin is not produced"

Efforts to associate any one type of the meningococcus or any particular strain with various epidemics have not been successful⁸ Clinicians generally agree that the present polyvalent antibacterial serums and methods of standardization are not wholly satisfactory, and this was well demonstrated in 1929 by Wright,⁹

TABLE 1—Reasons for Discarding Cases from Report

Reason	Number of Cases
Received both antitoxin and antiserum	16
Questionable diagnosis	17
No serum given	7
Incorrect diagnosis reported	11
Miscellaneous	20
Records absent from file	5
Total	76

who showed in an outbreak observed by him that "a serum uniformly of the highest titer was not effective clinically" I have made somewhat similar observations in the contagious disease department of the Cook County Hospital

In an attempt to clarify the perplexities of the situation in regard to antimeningococcus serum, Ferry¹⁰ recently succeeded in demonstrating soluble exotoxins in bouillon filtrates of the four recognized Gordon types of the meningococcus These toxins, when injected individually into animals, developed specific antitoxins Convalescent serums were shown to possess neutralizing properties toward homologous soluble toxins Less extensive, but corroborative, work on the toxin¹¹ and antitoxin¹² has been recorded

Ferry concludes from his observations that the symptoms of meningococcic meningitis in laboratory animals (guinea-pig^{12a} monkey¹³ and rabbit¹⁴) result from a selective action of the toxin toward the cerebrospinal nervous system He found that animals receiving lethal doses of toxin intracisternally or lethal doses of viable culture intraspinally could be protected by intraperitoneal injections of antitoxin^{12b} but not by standard antimeningococcus serum,^{12c} and that animals immunized by sublethal intracisternal doses of toxin were resistant to lethal doses of live culture Ferry¹⁵ reports elsewhere in this issue that susceptible human beings

can be immunized against meningococcus toxin as revealed by subsequent skin test

The experimental antitoxin¹⁰ used in the present clinical study was of the same lots reported on by Ferry¹⁷ This antitoxin was prepared by injecting horses subcutaneously with increasing doses of the individual soluble toxins of the four types of meningococci¹⁰ The antitoxin property of the serum was determined by its ability to neutralize toxin, as shown by intradermal injection in susceptible human beings and by its ability to protect laboratory animals from lethal doses of toxin and culture Concentrated antitoxin was used in a few of the cases in my series This was prepared by standard concentration methods

Three hundred and seventy-two patients¹⁸ were discharged from the Cook County Hospital, Contagious Disease Department, from November 1932 to June 1934, with the diagnosis "epidemic meningitis" Of these, the records of 296 have been included in this report, the remaining being discarded for various reasons (table 1)

The 296 patients have been separated into a series of eighty-five receiving meningococcus antitoxin and a series of 211 receiving two well known standard brands of antimeningococcus serum The clinical diagnosis of all but forty cases was verified by smear or cultural identification of the specific micro-organism in the spinal fluid

Approximately every fifth to seventh patient received the experimental antitoxin during the early studies and every third patient during the latter half of the period Patients to receive the antitoxin were selected only by reason of their not having had previous antimeningococcus serum therapy It was the general impression among the hospital personnel that the patients treated with antitoxin were as a group more severely ill and had less hopeful prognosis on admission than those treated with the standard serums This was undoubtedly true during the latter half of the period as the efficacy of the antitoxin became more apparent The resident staff was specifically instructed not to withhold

TABLE 2—Comparison of Fatality Rates of Cases of Meningococcic Meningitis in Which Meningococcus Antitoxin and Standard Antimeningococcus Serum Were Given

Therapy	Number of Cases	All Deaths	Excluding Cases Fatal Within		
			24 Hours	36 Hours	48 Hours
Antitoxin	85	23.5%	17.6%	10.6%	9.0%
Antiserum	211	43.0%	40.9%	35.0%	29.0%
All cases	296	39.0%	34.2%	28.0%	22.6%

antitoxin when an untreated case presented itself, regardless of the prognosis All fatalities have been analyzed on the basis of their relation to the date and hour of admission without reference to complications or instances of delayed treatment All antitoxin deaths that occurred are classed as therapeutic failures and any factor that might show a lower and more favorable death rate for the antitoxin series has been studiously avoided The patients in many instances were police patrol pickups without family or friends, on several

8 Wadsworth A Meningococcus Meningitis The Results of Recent Investigation in Relation to Serum Therapy Am J Hyg 14 630 (Nov) 1931

9 Wright I S De Sanctis A G, and Sheplar Adele The Determination of the Value of Serum in the Treatment for Meningococcus Meningitis Am J Dis Child 38:730 (Oct.) 1929

10 Ferry N S, Norton J E, and Steele A H Studies of the Properties of Bouillon Filtrates of the Meningococcus Production of a Soluble Toxin J Immunol 21 293 (Oct.) 1931

11 Sédallian P and Naussac H Recherches sur la toxine méningococcique, Compt. rend. Soc. de biol 111:393 (Oct 28) 1932
Branham S E, and Lillie R D Experimental Meningitis in Guinea Pigs J Bact. 25 90 (Jan.) 1933
Sickles Grace M The Standardization of Antimeningococcus Serum The Titration of Its Neutralizing Potency by the Phenomenon of Local Skin Reactivity Am J Hyg 17:412 (March) 1933
Krestownikowa W Belkina A Dossier E and Lasowsky I Ueber das Meningokokkentoxin Ztschr f Immunitätsforsch u exper. Therap 78:451 1933

12 (a) Ferry N S Meningococcus Antitoxin I Prophylactic and Therapeutic Tests on Guinea Pigs J Immunol 23 315 (Oct.) 1932
(b) II Therapeutic Tests on Monkeys ibid p 325
Meningococcus Toxin and Antitoxin III Further Tests on Monkeys ibid 26 133 (Feb) 1934

13 Ferry (references 12b and 12c)

14 Ferry N S and Schornack, P J Meningococcus Toxin and Antitoxin IV Further Tests on Guinea Pigs and Rabbits J Immunol 26 143 (Feb.) 1934

15 Ferry N S and Steele A H Active Immunization with Meningococcus Toxin this issue p 983

16 Meningococcus antitoxin prepared by Dr N S Ferry was supplied through the courtesy of Parke Davis & Co Detroit

17 Ferry¹² Ferry and Schornack¹⁴

18 I am indebted to other members of the Contagious Disease Hospital Staff (Cook County) for permission to treat patients assigned to their service while conducting this study and to the resident staff and the nursing service for their helpful cooperation

occasions, identification could not be established prior to death or convalescence. Very frequently adequate history could not be elicited and therefore statistical figures for cases entering this hospital cannot be compared with other institutions in the city.

The fatality rate for the combined series is 39.5 per cent, with 53 per cent of the deaths occurring within forty-eight hours after hospital admission. The efficacy

TABLE 3—Cases and Deaths by Ten-Year Age Groups

Age Group	Cases	Deaths	Fatality Rate
1 to 10	89	18	20.3%
11 to 20	99	23	23.3%
21 to 30	51	15	29.4%
31 to 40	34	18	53.0%
41 to 50	22	16	72.7%
51 to 60	14	12	85.7%
61 to 70	4	4	100.0%
71 to 80	4	4	100.0%
Unknown	9	7	77.7%

of the antitoxin over antimeningococcus serum is apparent by comparison of the respective fatality rates of treated cases occurring at the same time, in the same hospital and under the same supervision. Consequently seasonal variations that might influence virulence of the meningococci are eliminated from the contrasted figures of table 1. Twenty deaths occurred in the series of eighty-five patients treated with meningococcus antitoxin, 117 deaths were recorded in the group of 211 patients treated with antimeningococcus serum. The percentage death rate was 23.5 for the antitoxin and 45.9 for the antiserum.

The age of patients included in the entire series ranged from 3 months to 80 years, averaging 22.7 years. The cases treated with antitoxin averaged 18.1 years and the antiserum-treated group 24.7 years. From a study of table 3, arranged in ten-year age groups and respective fatality rates, it appears that the antitoxin was given to the most favorable subjects.

Seventy-three antitoxin treated patients and 138 antiserum treated patients were 30 years of age or younger. These cases are arranged in ten-year age groups in table 4 and show that, regardless of age, the antitoxin resulted in a lower fatality rate. Above the age of 30 the ratio is more favorable, but the number of antitoxin treated cases is not sufficient to warrant comparison.

TABLE 4—Influence of Age on Antitoxin and Antiserum Therapy

Age	Cases		Deaths		Fatality Rates	
	Anti-toxin	Anti-serum	Anti-toxin	Anti-serum	Anti-toxin	Anti-serum
1 to 10	33	58	4	15	12.0%	26.7%
11 to 20	32	48	6	17	18.8%	35.4%
21 to 30	19	34	2	13	10.5%	38.2%
Totals	73	133	12	45	16.4%	33.8%

The period of hospitalization for all recovered patients averaged 17.3 days. It is notable that those receiving antitoxin averaged 16.2 days as compared to the antiserum treated group, which averaged 18.0 days per case. The average hospitalization time for 338 cases at the Cook County Hospital recently reported by Borovsky¹⁹ was twenty-three days.

Table 5 shows the cases discharged from Cook County Hospital diagnosed "epidemic meningitis,"

1915-1933 inclusive, with respective fatality rates. An improvement in the fatality rate during 1933 over other comparable years is seen. During 1933 in approximately 20 per cent of the cases reported the patients received antitoxin, and its effect on the death rate for that year is significant.

The average total amounts of experimental antitoxin and standard serum given to a patient who had recovered was approximately 161.7 cc and 123.5 cc respectively. The largest amount of antitoxin and standard serum administered in recovered patients was 360 cc for the former and 245 cc for the latter, and the smallest amount 75 and 40 cc respectively. Allergic manifestations occurred in 17.7 per cent of the antitoxin treated cases as compared to 28.9 per cent of those in which standard serum was given. In no instance did an ocular or auditory complication develop after the institution of antitoxin therapy, nevertheless, large doses of antitoxin were sometimes given in unsuccessful efforts to overcome such conditions when present at the time of the patient's admission.

Of eighty-five patients receiving the antitoxin, cisternal puncture was resorted to on only five occasions.

TABLE 5—Epidemic Meningitis Annual Reports of Librarian, Cook County Hospital, Chicago

Year	Cases	Deaths	Fatality Rate
1915	24	16	66.6%
1916	21	14	66.6%
1917	178	92	51.7%
1918	145	69	47.6%
1919	40	20	50.0%
1920	21	19	90.4%
1921	20	10	50.0%
1922	9	6	66.6%
1923	20	7	35.0%
1924	44	36	81.7%
1925	5	0	0.0%
1926	13	9	69.2%
1927	83	48	57.8%
1928	187	85	45.4%
1929	233	138	59.2%
1930	134	78	58.2%
1931	224	112	50.0%
1932	116	56	48.2%
1933	237	111	46.8%
Total	1,813	919	50.6%

on as many patients. In only three instances and on the same number of patients were spinal drainage and treatment done twice during the same calendar day. The average number of lumbar punctures per case was not materially reduced except in a group of patients receiving antitoxin intravenously and intramuscularly.

In twenty-eight extremely severe but uncomplicated cases, 20 cc or more of meningococcus antitoxin was given intravenously or intramuscularly, of these patients eight died, with a fatality rate of 28.6 per cent. The twenty patients who recovered received an average of 173.6 cc of antitoxin per patient, of which an average of 58.5 cc was given intravenously and/or intramuscularly and 115.1 cc per patient intraspinally. The period of hospitalization for this group averaged 13.6 days per case as compared to 17.5 days for the combined series.

SUMMARY

My experiences during the past one and one-half years seem to justify certain conclusions regarding the treatment of meningococcic meningitis. Meningococcus antitoxin has reduced by approximately 50 per cent the deaths from meningococcic meningitis at Cook County Hospital.

For many years it has been customary in the Contagious Disease Department of the Cook County

¹⁹ Borovsky, M. P. Clinical Study of Meningococcus Meningitis. Illinois M. J. 64: 532 (Dec.) 1933.

Hospital to administer antimeningococcus serum intrathecally not oftener than once in twenty-four hours. This plan was adhered to when meningococcus antitoxin was given. Lumbar punctures when made every twelve hours or at eight hour intervals, as sometimes recommended, are extremely disturbing to many patients and seem to be of no added value in lowering the fatality rate.

Although cisternal punctures are much more easily performed by one with experience than lumbar punctures and are often preferred by the patient, this procedure should not be encouraged in a public hospital in which interns and residents are frequently changed. I do not believe that cisternal puncture is necessary in the treatment of meningococcic meningitis in order to secure the most efficient results. It is not essential to adopt this route for the purpose either of drainage or of administration of serum except in case of block in the spinal canal. In no instance among the entire series of 372 patients was an intraventricular puncture required.

In the brief report²⁰ of a meningococcic meningitis patient treated at Cook County Hospital in 1918, the value of giving antimeningococcus serum intravenously was emphasized. Since that time it has been customary to resort to intravenous serum therapy for all adult meningococcic meningitis patients admitted to my service. The value of this procedure is still more apparent when antitoxin instead of antimeningococcus serum is the remedy. As our experience with the antitoxin increased, larger and larger amounts of meningococcus antitoxin were given intravenously. The dose ranged from 20 cc. among the earlier cases up to 100 cc. and more during recent months. These large amounts of antitoxin intravenously explain chiefly the greater average dose of antitoxin as compared with antimeningococcus serum. On the other hand, the greater the quantity of antitoxin given intravenously, the smaller the average amount required for intrathecal injection. The most outstanding feature of intravenous and intramuscular antitoxin treatment is the prompt response of the infection and a more than 20 per cent reduction in the period of hospitalization. In fact, it is my impression that eventually it may be regarded as entirely unnecessary to administer any serum intrathecally if sufficient antitoxin is injected intravenously. Under such circumstances lumbar puncture would be done only for the purpose of diagnosis and for drainage.

A problem is now under way to compare the efficacy of intravenous and intramuscular methods of administration supplementing intrathecal antitoxin. One young woman with a fulminating type of meningococcemia whose child died of meningococcic meningitis was treated only by large doses of antitoxin intravenously. Meningeal infection did not progress and she was discharged completely recovered on the seventh hospital day.

For the treatment of meningococcic meningitis with meningococcus antitoxin the following plan may be followed:

1 Intravenously from 60 to 100 cc. of the antitoxin is administered in from 120 to 200 cc. or more, respectively, of physiologic solution of sodium chloride or 10 per cent dextrose solution. The smaller amount may suffice for a child, the larger quantity for an adult.

This form of treatment may be repeated daily if the condition of the patient seems to require it. As a rule, one large dose intravenously when therapy is started will prove sufficient by this route.

2 Intraspinaly the amount of antitoxin, undiluted, and given by the gravity method, will be governed by the volume of spinal fluid withdrawn. Usually the quantity of antitoxin administered should be less than the amount of spinal fluid released. The initial dose of antitoxin intraspinaly will usually vary from 20 to 40 cc. Daily punctures should be made until the fluid is clear and free from organisms. At such a time the cell count of the spinal fluid will generally be less than 100.

3 Intramuscular administration of serum in an initial dose of from 30 to 60 cc. is of value, but because of the serious nature of the disease the intravenous route is to be preferred.²¹

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ACTIVE IMMUNIZATION WITH MENINGOCOCCUS TOXIN

N S FERRY, MD

DETROIT

AND

A H STEELE, MD

NORTHVILLE, MICH

In 1931 it was shown¹ that bouillon filtrates of young cultures of the four recognized Gordon types of the meningococcus contain soluble or extracellular toxins specific to the individual types, as well as a toxin common to all types, and that animals injected with these toxins develop antitoxins specific to their homologous toxins and an antitoxin more or less common to all types (a clinical study of this antitoxin will be found elsewhere in this issue of *THE JOURNAL*²).

It was also shown that a certain proportion (about 50 per cent) of children are susceptible to one or more of these toxins, following intracutaneous injections of the diluted toxin, the test being carried out in a manner similar to the Schick and Dick tests for susceptibility to diphtheria and scarlet fever, respectively.

It was later demonstrated³ that this soluble toxin has a specific action on the central nervous system of laboratory animals, especially the monkey, and that when injected intracisternally it produces symptoms similar in nature and approaching in severity those

21 Since the preparation of this paper, twenty three additional patients with meningococcic meningitis have been treated in the contagious disease department of the Cook County Hospital. Six of this number received standard makes of antimeningococcus serum. The other seventeen were treated with the experimental meningococcus antitoxin. In the first group three of the six who received the standard antimeningococcus serum died. The youngest of the three who died was 7 months old and the eldest 5 1/2 years. Of the three who recovered one was treated with the experimental antitoxin after he failed to respond to the standard serum. In the antitoxin group of seventeen there was but one death—that of a man aged 38, with a history of alcoholism who died the third day after admission. Of the remaining sixteen who recovered the youngest was 5 months of age and the eldest 35 years. By adding the seventeen antitoxin cases mentioned here to the eighty five previously analyzed it is found that of the 102 patients with meningococcic meningitis who were treated with experimental antitoxin there were twenty-one deaths, or a fatality rate for the entire series of 20.5 per cent.

From the Research Laboratories Parke Davis and Company Detroit, and the Wayne County Training School Northville Mich.

1 Ferry N S, Norton J F, and Steele A H. Studies of the Properties of Bouillon Filtrates of the Meningococcus. Production of a Soluble Toxin. *J Immunol* 21: 293 (Oct.) 1931.

2 Hayne A L. Meningococcus Meningitis. A New Form of Therapy this issue p 980.

3 Ferry N S. Meningococcus Toxin and Antitoxin. III. Further Tests on Monkeys. *J Immunol* 26: 133 (Feb.) 1934. Ferry N S and Schornack P J. Meningococcus Toxin and Antitoxin. IV. Further Tests on Guinea Pigs and Rabbits, *ibid* p 143.

20 Hayne A L, Arkin H S and Sherman M J. Treatment of a Severe Case of Epidemic Meningitis by Combined Intravenous and Intraspinal Injections of Antimeningococcus Serum. *J A M A* 72: 22 (Jan. 4) 1919.

resulting from intraspinal inoculations of live meningococci. It was discovered at that time that recovery from previous intracisternal injections of the toxin induced a state of active immunity in those animals against an intraspinal inoculation of a fatal dose of live organisms, similar to that immunity, following recovery from the disease, shown previously in one of these studies.⁴

The meningococcus, therefore, produces a true soluble toxin that will stimulate an active immunity in laboratory animals against the live organism as well as its toxin.

The present work was carried out to determine whether active immunity against the toxin, or at least the skin test dose of toxin, could be induced in man by a series of subcutaneous injections of the undiluted toxin. Accordingly, a large number of children, ranging from 12 to 18 years of age, were skin tested and those showing positive reactions to one skin test dose of the toxin were injected subcutaneously with the undiluted material.⁵

The method of procedure was as follows. A toxin was prepared from type I-III culture of the meningococcus and diluted according to a standard toxin, so that 0.1 cc contained a skin test dose. This dose was previously determined to be that amount of toxin which, when injected intracutaneously in a dose of 0.1

being 0.1 cc, 0.5 cc, 1 cc and 1.5 cc, equivalent to 13,500 skin test doses. As the immunizing toxin contained approximately an equal amount of each individual toxin, it is evident that the toxin homologous to the test material represented but from one fourth to one third of the whole, depending on the amount of toxin common to all types present in the mixture. In other words, the children injected with the four doses did not receive more than the equivalent of 4,000 skin test doses of any one of the type toxins.

At the end of eight weeks all children were retested with a skin test dose of toxin to determine the number of those who had become immune to the toxin.

Three types of reaction to the injection of undiluted toxin were observed. First, local reactions. About 50 per cent of the children showed local reactions mostly of a mild character, which caused the child to complain only of slight soreness or stiffness of the arm. Second, general or systemic reactions. Approximately 10 per cent of the group exhibited mild systemic reactions, following the second or third injection, the symptoms of which were headache, dizziness, gastro-intestinal upsets and a slight elevation of temperature. These reactions invariably disappeared within eighteen hours. Third, allergic reactions. In four instances immediate reactions after the second injection, consisting of generalized urticaria and, in one case, abdominal cramps accompanied by mild prostration. These symptoms were promptly controlled by an adequate dose of epinephrine. Further injections were discontinued in these cases as a precautionary measure.

Out of the 285 positive reactors fifty-three, for one reason or another, did not receive full treatment and were not retested.

Of the 232 who were given the full number of injections and were retested, including both groups, 155, or 66.8 per cent, gave negative reactions on retesting. Had the amount of toxin been increased, or had only the homologous toxin been given, the percentage of negative reactors would undoubtedly have been higher.

COMMENT

This work has demonstrated two facts: first, that certain individuals who are susceptible to the skin test dose of meningococcus toxin can be made immune to this dose of toxin by at least three subcutaneous injections of the undiluted toxin in graduated doses, and, second, that this immunity can be produced against the toxin of one type by injections of a mixture of toxins of all types.

While the results of these tests indicate certain facts in regard to the stimulation of active immunity in man against meningococcus toxin, they do not necessarily signify that an immunity against the organism can be produced at the same time, although such a condition is true of some soluble toxins and it is not unreasonable to expect the same of this toxin. This method of immunization, however, does suggest a possible means of active protection against the disease itself and is worthy of consideration and further study, especially since it was shown in a previous paper in this series that active immunity against infection with the virulent meningococcus can be stimulated in laboratory animals following prophylactic injections of this toxin. The answer to this question, while of great importance, must of necessity be deferred until such a time as more conclusive clinical data are available.

Results

	Number tested	605	
	Number positive	285	47.1%
	Number injected	232	
Three Dose Group—Number in Group 149			
Negative reactors on retest	93	62.4%	
Reactions smaller than original	38	25.5%	
Reactions same size as original	11	7.3%	
Reactions larger than original	7	4.7%	
Four Dose Group—Number in Group 83			
Negative reactors on retest	62	74.6%	
Reactions smaller than original	7	8.4%	
Reactions same size as original	7	8.4%	
Reactions larger than original	5	6.0%	
Reactions very large	2	2.4%	

cc into an individual susceptible to the toxin, will produce a local skin reaction at least 10 mm in diameter. The diagnostic test toxin used in this work contained 5,000 skin test doses per cubic centimeter. All individuals were injected intracutaneously with 0.1 cc of this test toxin. Those showing a skin reaction of 10 mm or over in diameter were considered susceptible and were later injected with the immunizing toxin. Since it was believed that skin tests with one toxin should be sufficient to demonstrate the point in question, the children were not subjected to tests with toxins of all four types. The immunizing toxin, on the other hand, was composed of an equal mixture of toxins of the four types and contained, in all, 5,000 skin test doses per cubic centimeter, approximately 1,250 skin test doses in each of the four toxins. The susceptible children to be immunized were divided into two groups. One group was given three injections of the following doses of the mixed toxin one week apart: 0.1 cc, 0.5 cc, and 1 cc equivalent to 8,000 skin test doses in all. The other group was given four injections, also one week apart, the doses

⁴ Ferry, N. S. Meningococcus Antitoxin. II. Therapeutic Tests on Monkeys. *J. Immunol.* 23: 325 (Oct.) 1932.

⁵ This work was carried out at the Wayne County Training School through the courtesy of Dr. Robert H. Haskell, superintendent.

VERRUGA PERUANA (CARRION'S DISEASE)

BASED ON PERSONAL EXPERIENCE IN PERU

HOWARD FOX, MD
NEW YORK

My principal object in a recent visit to Peru was to obtain first hand information of the cutaneous lesions of the disease known in that country as verruga peruana. To understand fully its eruptive phase it is necessary to give a general description of this fascinating and unique disease.

Before the causative organism was successfully cultivated, there was some doubt about the relationship of what was called Oroya fever and the cutaneous eruption known as verruga. As it has now been proved beyond any possibility of doubt that these two supposedly different disorders are in reality the same disease, it is perhaps best to characterize the entire process as Carrion's disease, in honor of the young student who lost his life after a voluntary inoculation.

HISTORY OF THE DISEASE

Carrion's disease probably existed in remote times and is generally thought to have been known to the

Spanish conquerors of Peru. According to Maldonado,¹ however, the condition described by the conquerors as *herruga* was in reality not verruga but yaws and its first authentic mention should date from 1630.

Previous to 1870 little was known of the disease. At that time the transandean railway to the town of Oroya was begun and this was followed by a disastrous epidemic. It has been estimated that there were at least 7,000 deaths among those engaged in this railroad construction, most of the laborers being Chileans. The term Oroya fever by which the disease was known is not appropriate, as it has never been seen in Oroya.

Opinions differed regarding this terrifying disease. Some thought it an entirely new disease, others a modified

The view that Oroya fever and verruga were the same disease gained ground until 1885, when the question was apparently settled in its favor by the experiment of Daniel A. Carrion. In his desire to study the symptoms and sequelae of the disease, Carrion insisted on being inoculated from a case of verruga. Unfortunately he contracted the serious type (Oroya fever) and died thirty-nine days after inoculation. Carrion is rightly regarded by his fellow countrymen not only as a most courageous man but also as one of considerable scientific attainments. He proved that verruga was inoculable in human beings and that in all



Fig. 2 (case 1).—Variation in size of lesions and tendency for older ones to be pedunculated.

probability verruga and Oroya fever were different phases of the same disease. As Odriozola² says, the case was similar to "*variola sine variolis*" or "*rubeolae sine rubeolis*."

In arriving at the important conclusion that Oroya fever and verruga were independent conditions Strong and his co-workers³ of the Harvard expedition to South America were doubtless influenced by their failure to find the record of Carrion's experiment. The detailed account of Carrion's illness and autopsy were, however, published by Alcedan⁴ in 1903. The opinions of the members of the Harvard expedition, consisting of four Americans and one Peruvian, all of the highest reputation, carried great weight, though their main conclusion was later proved to be erroneous.

GEOGRAPHIC DISTRIBUTION

Carrion's disease is unique in its geographic distribution, being in all probability confined not only to Peru but to certain restricted areas in that country. It occurs between 8 and 13 degrees south latitude and at an altitude varying from 2,800 to 9,000 feet. The coastal and high mountainous regions are free. The disease appears only on the western slope of the Andes, in certain narrow ravines or canyons with luxuriant vegetation and considerable heat during the day. The small towns and villages where the disease is prevalent are sheltered from strong winds (which would affect insect life), as the ravines are at right angles to the prevailing winds.

SYMPTOMS OF MALIGNANT TYPE (OROYA FEVER)

It is convenient to describe separately the symptomatology of the malignant type (formerly known as



Fig. 1 (case 1).—Profuse miliary eruption of three months' duration preceded by fever and joint pains, in a man, aged 21. Lesions show a slight tendency to coalesce. Many are covered with blood crusts. The lesions are mostly yellowish red, some being bright red.

form of malaria or other disorder. Some concluded that Oroya fever was a severe form of verruga.

Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the author's reprints.

Read before the Section on Dermatology and Syphilology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

¹ Maldonado A. La *herruga* de los conquistadores del Peru. *Cronica med* (Lima) 48:313 (Oct.) 1931.

² Odriozola E. La *maladie* de Carrion. Paris: Carre et Naud, 1898.

³ Strong R. P., Tyzzer E. E., Sellards A. W., Brues C. T., and Gastaburu J. C. Harvard School of Tropical Medicine. Report of First Expedition to South America. Cambridge, Mass.: Harvard University Press, 1913.

⁴ Alcedan M. *Enfermedad* de Carrion. *Crón. méd.* Lima 3:381 (Oct. 31) 1886.

Oroya fever) and the benign eruptive type (verruqa), although there are innumerable gradations between them

The incubation period is not definitely known, Odriozola estimating it to vary between fifteen and forty days. In the experimental infection of Carrion it was twenty-one days. After a prodromal period of malaise, headache and muscle pains there is a sharp rise of temperature accompanied by chills. Fever is most often of the remittent type. It may disappear for several days and be followed by subnormal temperature, profound weakness and death. When it lessens proportionately with amelioration of all symptoms, the outlook for recovery is almost certain.



Fig. 4 (case 2)—Miliary eruption with scaling and a few blood crusts

A striking feature is the rapidity with which profound anemia appears. There is probably no condition except hemorrhage that can cause severe anemia so quickly. The red cells may decrease to one million per cubic millimeter within three or four days, though this usually takes place in from one to two weeks.

The blood change is a combination of pernicious anemia and leukemia. The anemia is due, as Monge⁵ states, to a disturbance in the regenerative capacity of the blood rather than to its destruction, as there is neither hemorrhage nor any sign of hemolysis in proportion to the diminution of the red cells. Both normoblasts and megaloblasts are numerous in the peripheral blood and have a prognostic as well as a diagnostic importance, the prognosis being better with a decrease of the megaloblasts compared with the normoblasts. The blood also shows in severe cases all the bizarre forms of pernicious anemia. The leukocytes are increased at first and may reach 20,000 per cubic millimeter. The eosinophils disappear and there may be myelocytes and myeloblasts in the peripheral blood. The red cells in addition show large numbers of Bartonella bacilliformis, the causative organism.

Fever and anemia are accompanied by severe anorexia, unquenchable thirst, muscle and joint pains, vomiting, hiccups, attacks of syncope and delirium. Epistaxis and petechiae are common, the latter being the earliest stage of verruga papules. Estimates of mortality vary from 30 to 98 per cent.

SYMPTOMS OF BENIGN TYPE (VERRUGA)

The symptoms of benign (eruptive) type also vary greatly. In infants and young children they are mild or often trifling, as I had occasion to observe on my trips to the Rimac valley.⁶

The period of incubation is not known precisely. According to Arce it is usually between twelve and forty days. In experimental inoculations in animals it varies from eight to sixty days. Two periods of

evolution of the disease are described: (1) invasion (preruptive) and (2) eruptive.

The period of invasion begins with malaise, gastrointestinal disturbances and fever, with more or less intense pain in the muscles and joints, especially of the extremities. Fever, according to Odriozola, is always present and is usually of intermittent or tertian type, stopping a few days before the cutaneous outbreak. Pain and edema are in direct proportion to the severity of the eruption. The blood shows simple anemia and may contain the causative organism in considerable numbers. The average duration of this period is stated by Odriozola to be from three to four months.

Before discussing the eruption of verruga it should be said that the Spanish word verruga is the equivalent of the Latin word verruca, meaning wart. Verruga is an unsatisfactory term, as the lesions seldom have any clinical and never any histologic resemblance to ordinary warts. The word verruga, in common use by the public, corresponds, I should say, to the English word pimple.

The cutaneous lesions are of two main types: (1) miliary, which are situated in the cutis, and (2) nodular, which arise in the subcutaneous tissue. A subvariety of the nodular type is spoken of as "mula" or mular, to anglicize the word, derived from the fact that mules suffer from the same disease.

Miliary Type of Eruption.—The term miliary is not very suitable, as the lesions vary in size from a small pinhead to a good sized split pea. The eruption, for instance, hasn't the remotest resemblance to the miliary papular syphilid. In general it is symmetrical, particularly when it is profuse.

The favorite sites are the extensor surfaces of the extremities and next in frequency the face and neck. The trunk is usually spared unless the eruption is very profuse. The palms and soles are usually free, and the genitalia are infrequently attacked, though I photo-



Fig. 6 (case 3)—A large nodule appeared over the first metacarpal bone of three months duration, not preceded by any constitutional symptoms in a girl, aged 10 months. The nodule was hemispherical, hard and painless and covered by normal skin freely movable over it. There were also a few miliary lesions on the face and two on the forearm as shown in the illustration.

graphed one patient with numerous papules on the penis and scrotum. There is a great variation in the number of lesions. Some infants and young children whom I saw in the Rimac valley had only a half dozen papules, while two cases studied in the Dos de Mayo Hospital in Lima (through the courtesy of Drs. Gonzales Oleachea and Voto Bernales) presented profuse eruptions (figs 1 to 5).

As a rule, the lesions are discrete and often closely aggregated, but at times they show a slight tendency to coalesce. They are said to arise on tiny petechial spots and to increase gradually in size. It is also stated

⁵ Monge, C. M. Verruga peruana o enfermedad de Carrion. *Beisette & Arch. f. Schiffs u. Tropen Hyg.* 29: 244, 1925.

⁶ Through the kindness of Dr. E. A. MacCormack, who aided me in every possible manner, I was able to motor up the Rimac valley and visit the towns of Matucana, Surco and St. Bartolome.

that they occasionally begin as minute vesicles or even pustules. Some of them do not attain full pea sized development, and in all cases a striking feature is the difference in the size of the lesions. This is due to their appearing in crops at varying intervals. At the outset they are all sessile, hemispherical or rounded elevations, some of them eventually becoming more or less pedunculated.

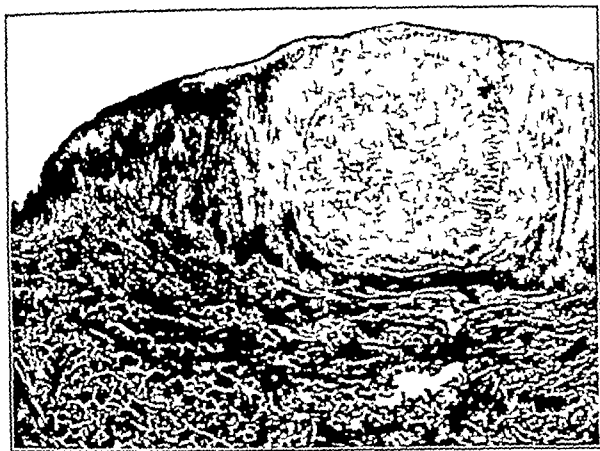


Fig 7 (case 2)—Section of early military lesion in upper corium almost entirely encircled by acanthotic rete under low power. Shows proliferation of capillaries many of which are dilated.

The color is also extremely variable, many of the lesions having a faint pinkish hue while others stand out in bold relief from the pronounced reddish color of varying shade. Some are bright red like little senile angiomas. Their vascularity is evident from the number of blood crusts that are noted, bleeding readily taking place from slight trauma or scratching. From some descriptions and a colored illustration in Odriozola's monograph one would get the impression that all the lesions were bright red. This was certainly not so in my limited experience. The skin between the individual lesions is normal in appearance.

The consistency of the military verrugas is hard at the outset and in many small lesions could I think, be properly described as shotty. As the lesions increase in size and age they become distinctly softer. The overlying skin is smooth and tense in the small lesions, but later in the stage of retrogression it may appear wrinkled or covered with blackish blood crusts.

Subjective symptoms are not a feature of the disease. At the outset a pricking sensation may accompany the appearance of petechiae and in the stage of retrogression an annoying amount of itching may be present.

The duration of the eruption is variable. Odriozola estimates it to be from four to six months on the average, though he states that he has seen a case in which the eruption lasted more than two years. The lesions eventually disappear with or without desquamation and leave no scarring or pigmentation.

Nodular Type of the Eruption—The nodular type is less frequent and the lesions are much less profuse than those of the military type. They originate in the subcutaneous tissue as little hard rounded bodies, which at first cause no elevation of the skin. They can be palpated before they are visible. It is said that they are somewhat tender, though this was not apparent in cases that I observed. The lesions may disappear without enlarging or may increase in size and cause

a varying degree of elevation covered by skin that is normal or somewhat reddish. The favorite sites are the extensor surfaces of the extremities. An example of a well developed large nodule is shown in figure 6.

The so-called mule lesion is merely a large nodule that has broken through the overlying skin and in which secondary infection often takes place. Such lesions are either sessile or pedunculated, are firm and elastic, bleed easily and vary in size from a small nut to a small apple. They occur especially on the knees, though also on other regions including the face and may be accompanied by severe hemorrhage, which endangers the patient's life. These lesions are uncommon and I had no opportunity to see them.

In addition to the skin, the mucous membranes of the conjunctiva, nose, mouth, pharynx and gastrointestinal tract may be the sites of verruga nodules.

The prognosis of the eruptive type of Carrion's disease is nearly always favorable, especially when a generalized eruption appears rapidly and disappears slowly, accompanied by an improvement in the general condition.

Differential Diagnosis of Cutaneous Lesions—The diagnosis is usually easy when one has seen a number of undoubted cases. The eruption as a whole is unique and unlike any disorder of the skin with which I am familiar. Some individual lesions look precisely like granuloma pyogenicum, but I think the eruption as a whole is rather suggestive of multiple sarcomatosis,

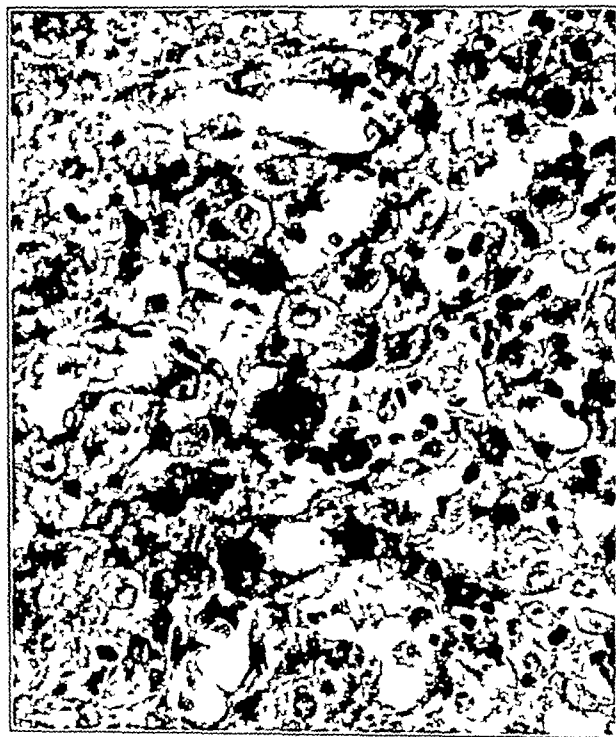


Fig 8 (case 2)—Appearance under high power showing increase in number of capillaries of small caliber, marked proliferation of cells of the reticulo-endothelial system and hemorrhage (erythrocytes in the lumens and dispersed among the cells of the infiltration).

especially in the earlier stages before any of the papules have become pedunculated. Jadassohn saw a Swiss guide in Bern who had contracted the disease while climbing in the Andes and stated that the eruption suggested multiple angioma, hemorrhagic sarcoma or telangiectatic (pyogenic) granuloma. Needless to say,

mistakes in diagnosis are made by the public in the verrugous districts and even by physicians. A patient whom I saw at Surco stated that he was suffering from verruga. If I had seen this man in the United States I would have considered his eruption to be a typical molluscum contagiosum. I still feel doubtful about this case.

EPIDEMIOLOGY

Carrion's disease occurs in both sexes, in all races and at all ages. It may appear in the newborn, when it is usually of severe type. Odriozola quotes a single case of apparent intra-uterine infection. The disease is, however, not hereditary in the strict sense of the word. It is inoculable but not contagious.

In the verrugous zones practically all natives are infected in infancy or early childhood and are thereafter immune. Gomez⁷ from an extensive epidemiologic study, concludes that in the first years of life (up to ten or more years) the disease is almost always of the benign type, tending to acquire extreme severity in adolescence and adult life. In the Rimac valley I saw five infants from 8 to 9 months of age all of whom presented sparse but typical eruptions and appeared in perfect health. In no case was there a history of any but the mildest constitutional disturbance before the appearance of the eruption. A day or two of malaise or fever had been noted by some of the mothers. Most of the well marked cases of the disease are seen in strangers who visit the verrugous regions and remain there during the night. While one attack confers lasting immunity, there are occasional recurrences. Odriozola refers to cases in which this took place three and five years respectively after infection. In a personal communication Dr. Edmundo Escobel states that he has recently seen a malar type of lesion on the great toe of an individual who had been infected with verruga eighteen years previously. The verrugous nature of the lesion was proved histologically. While the disease may be acquired at any time of year the majority of infections occur between the months of December and March.

BACTERIOLOGY

Alberto Barton⁸ in 1909 expressed the view that bacillus-like bodies which he had previously described in the erythrocytes of cases of the malignant type of Carrion's disease were the probable cause of the disease. These bodies were later named *Bartonella bacilliformis* by Strong and his co-workers, and they have been definitely proved to be the causative organisms. They are thought to be bacteria by Noguchi⁹ and by Aldana.¹⁰

The organisms are best seen in smears stained by the Giemsa method and appear as rounded or rod shaped bodies, the rodlike forms measuring from 1 to 2 microns in length and from 0.2 to 0.5 micron in width. They appear singly, in pairs and in end to end chains and frequently assume a V or Y form. The round bodies measure from 0.3 to 1 micron in diameter and occur isolated or in groups. A red cell may contain one or many organisms.

According to Aldana, *Bartonella bacilliformis* is not an endoglobular parasite, as has formerly been considered. In his opinion it is merely adherent to the

red cell, its situation on the cell being accidental and due to breaking up of endothelial cells of the blood capillaries. Bartonella, he says, does not destroy the red cell, nor does it require these cells for its multiplication.

Bartonella bacilliformis is seen not only in the peripheral blood but in most of the tissues and organs of the body. It has doubtless been observed in the cutaneous lesions a fact of great importance as another proof that so-called Oroya fever and verruga are the same disease. At least it can be said that bodies indistinguishable from *Bartonella* have been found in the verruga lesions. These were first described in 1913 by Mayer, da Rocha Lima and Werner¹¹ as inclusion bodies closely resembling parasites of the chlamydozoa group. Their presence was later confirmed by Mackehenie and Battistini,¹² and in experimentally produced lesions by Mackehenie and Weiss¹³ and by Marques da Cunha and Muniz.¹⁴

Cultures—In his most recent and excellent article on Carrion's disease, da Rocha Lima¹⁵ states that *Bartonella bacilliformis* was first cultivated by Noguchi and Battistini in 1926. This is not entirely correct as the records show that Battistini¹⁰ reported successful cultures in 1925. It is also stated that Herceles cultivated the organism in the same year.

Bartonella bacilliformis is a gram-negative, obligate aerobe, which is usually nonmotile. It grows in solid or liquid mediums containing whole blood, plasma or serum (Aldana) and only below 37°C. The organism may be isolated by blood cultures from patients in both anemic and eruptive stages and even at times after the disappearance of the eruption.

HUMAN INOCULATIONS

Mention has already been made of the experiment practiced on himself by the young student Carrion. The inoculation was made under protest by his friends, who realized his danger. Thinking that this memorable experiment settled the question of unity of the two types of the disease and realizing the danger of human inoculations, Peruvian physicians have refrained from carrying out further experiments on man.

Strong and his co-workers inoculated a volunteer Chilean with material taken from two cases of verruga. On the sixteenth day cherry red papules appeared at the site of the inoculation and were histologically "similar to other early human lesions of the disease." There was no appreciable anemia and the blood showed no *Bartonella*. From this experiment they concluded that "direct inoculation of the verruga virus from man to man does not produce Oroya fever." As a matter of fact, it merely showed that inoculation of verruga material could produce verruga.

An accidental inoculation of a Peruvian physician furnished another proof of the identity of so-called Oroya fever and verruga peruana. The procedure in this case was the reverse of Carrion's experiment. This physician (O. G. R.) gave me the following description:

11 Mayer, Martin da Rocha Lima H. and Werner, H. Untersuchungen über Verruga peruana. München und Wehrnachr. 60 739 (April) 1913.

12 Mackehenie D. and Battistini T. S. Contribucion al estudio de la Verruga Peruana, Bol. Soc. Peruana Para el Progreso de la Ciencia. August 1912.

13 Mackehenie D. and Weiss P. Contribucion al estudio de la Verruga Peruana, Behefte z. Arch. f. Schiffs u. Tropen Hyg. 20 211 1925.

14 Marques da Cunha A. and Muniz J. Untersuchungen über die Verruga Peruana. Mem. do Inst. Oswaldo Cruz. 22 167 1928.

15 da Rocha Lima H. Verruga Peruana oder Carrionische Krankheit (Oroya Fieber). Handb. d. Haut u. Geschlechtskr. 22 215 1932.

16 Battistini T. S. Contribucion al estudio de la Verruga Peruana. Nota Preliminar. An. Fac. de med. Numero Extraordinario Oct. 1 1925 p. 27.

7 Gomez M. E. Epidemiologie del enfermedad de Carrion en las Provincias de Lauro y Canete, Cron. med. Lima 31 53 (Feb.) 1914.

8 Barton Alberto. Cron. med. Lima 26 7 1909.

9 Noguchi Hideyo. The Etiology of Verruga Peruana. J. Exper. Med. 45 175 (Jan.) 1927.

10 Aldana G. L. Bacteriologia de la enfermedad de Carrion. Cron. med. Lima 46 235 (Aug.) 1929.

of his infection. He was accidentally inoculated in February 1931 by a needle prick while giving a blood transfusion to a patient with the malignant type of Carrion's disease. Fever appeared eight days later without premonitory symptoms and rose to 40.4 C (105 F). During the following three weeks it continued with slight remissions between 38 and 39 C (100.4 and 102.2 F). The blood showed four million red cells and 4,800 leukocytes. Ten days after the disappearance of the fever he suffered from intense pains in the extremities. Several days later there was an eruption both of miliary and of nodular type, which disappeared at the end of ten months and did not recur.

ANIMAL INOCULATIONS

It is the consensus in Peru that many animals suffer spontaneously from the eruptive type of verruga, though little study of this question has been made. The fact that various animals can be artificially infected is, as has been said, no proof that they acquire the disease naturally.

The first undoubted transference of the disease to animals was made by Jadassohn and Seiffert,¹⁷ who in 1910 inoculated monkeys and carried the infection through three generations. Subsequent successful inoculations in monkeys were made by Mayer, by da Rocha Lima and Werner, by Arce, Mackehenie and Ribeyro,¹⁸ by Strong and his co-workers, by Noguchi, and by others. Other animals that have been successfully inoculated include the dog, sheep, goat, ass and rabbit (intratesticularly).

Further proof that Oroya fever and verruga are the same disease is shown by the following animal experiments. In two monkeys inoculated locally from verrugous lesions by Mayer and Kikuth¹⁹ there were severe fever and anemias with changes precisely like those in man, with swarms of Bartonella in the blood and a fatal termination. Noguchi²⁰ also showed that Rhesus monkeys that have recovered from infection with the Oroya strain of Bartonella are completely immune to the verruga strain.

Experimental animal infections have usually been obtained by direct inoculation of verrugous material in the skin, less often by cultures and almost never with blood, even when it swarms with Bartonella. Mayer and Kikuth observe in this regard that "further cultural experiments and inoculations should show whether all the developmental stages of the virus are communicable and whether various diseases or conditions are necessary (condition of the reticulo-endothelial system and injury from other infections)."

TRANSMISSION BY PHLEBOTOMUS

The first suggestion that Carrion's disease might be transmitted by some blood sucking insect was made by Arce in 1889. The first extensive investigations were made by Townsend,²¹ who worked for two years (1912-1914) in the Rimac valley. He demonstrated conclusively that the disease is transmitted by a species of phlebotomus, which he named *P. verrucarum*. He was

able to exclude mosquitoes, flies, fleas, lice, bedbugs, ticks and mites as possible vectors.

Shannon²² later corroborated Townsend's views regarding transmission and added another new species of phlebotomus as a vector, which he named *P. Noguchii*.

The following ecologic evidence that phlebotomus is the vector of verruga was stated by Shannon. As the disease is contracted only in certain zones, during the night (with possible exceptions) both indoors and far from habitation, at any time of the year, he concluded that the vectors must be common blood suckers of man restricted to verruga zones, nocturnal in habits and able to breed in unrestricted situations. In order that the adults (which have a very restricted flight) may be practically omnipresent, they must continue active throughout the year.

According to Shannon, *P. verrucarum* and *P. Noguchii* conformed to all these requirements, while all other blood sucking arthropods could be excluded. *P. verrucarum*, he stated, appeared to be predominantly a domestic species, while *P. Noguchii* occurred consistently outdoors. This probably explains, Shannon stated, why the disease may be contracted indoors and outdoors, at times miles from any habitation.

POSSIBLE RESERVOIR OF VIRUS

As certain native and domestic animals in the infected zones are susceptible to the disease, Townsend thought there was apparently no need of a natural reservoir and possibly, he said, none exists. He then made the following significant statement: "It seems curious that man becomes so quickly infected when there is such a comparatively sparse animal and human population existing in most parts of the region." He added "Possibly there are other sources from which they obtain the infectious material." The possible sources may be certain lactescent plants, as indicated in the following paragraphs.

After a careful study of the plant life in certain verruga canyons, Maldonado²³ in 1930 found that certain plants were characteristic of these zones and that they did not exist in nonverrugous areas. This suggested that they might play some causative role, first as a reservoir of the virus and secondly as food for the insect vector. The plants in question were the lactescent ones commonly known as huanarpo macho (*Euphorbiaceae* family) and the huancayo (*Julianaceae* family). He subsequently²⁴ (1932) affirmed that the conditions necessary for the lactescent vegetation and the phlebotomus are the same in whatever part of Peru they may be studied.

Mackehenie and Coronado²⁵ in January 1933 found in the juice of specimens of huanarpo macho bodies very similar to Bartonella, when using appropriate stains. Under aseptic precautions, cultures were obtained from the latex of the plant showing the characteristics of Bartonella. Cultures from another species of euphorbia, when injected into the anterior chamber of a white rabbit, caused an iridocyclitis, from which the organisms were cultivated and found pathogenic.

17 Jadassohn J and Seiffert G. Ein Fall von Verruga Peruviana. Celungene Übertragung auf Affen. Ztschr f Hyg u Infektionskr 66 247 (July) 1910

18 Arce J N, Mackehenie D and Ribeyro R E. Estudio Experimental de la Enfermedad de Carrion. Crón med Lima 30 394 (Oct) 1913

19 Mayer Martin and Kikuth Walter. Zur Aetiologie und Einheit der Verruga Peruviana und des Oroya Fiebers. Arbeiten über Tropenkrankheiten u deren Grenzgebiete Hamburg 1927 p 319

20 Noguchi Hideo. Experiments on Cross Immunity Between Oroya Fever and Verruga Peruviana. J Exper Med 45 781 (May) 1927

21 Townsend C H T. Two Years Investigation in Peru of Verruga and its Insect Transmission. Am J Trop Dis 3 16 (July) 1915

22 Shannon R C. Entomological Investigations in Connection with Carrion's Disease. Am J Hyg 10:79 (July) 1929

23 Maldonado A. Probable rol de algunas plantas lactescentes características de las Quebradas Verrucogenas y utogenas. Crón med Lima 47 381 (Dec) 1930

24 Maldonado A. Nuevo Criterio para explicar la distribución geográfica de la enfermedad de Carrion. Crón med Lima 50 41 (Feb) 1933

25 Mackehenie D and Coronado D. Plantas reservorios de Virus. Contribución al conocimiento de la fitopatogenesis Peruana. Rev med peruana 5 803 (May) 1933

for guinea-pigs. The authors also observed small insects on the trunks of these plants belonging possibly to the family of psocidae. Organisms found in the digestive tract of these insects were easily cultivated and were virulent to a guinea-pig that suffered from nervous symptoms, including paralysis. Agglutination was obtained by the plant virus and that from the insects in contact with serum from a convalescent verruga patient in two cases at a dilution of 1 to 1,600. The authors concluded that the organisms obtained from the latex of the plants and from the insects could be placed in the genus *Bartonella* based on their morphology and experimental reactions. Monkeys were unfortunately not available at the time for experimentation.

PATHOLOGY

According to Hercelles,²⁶ hemorrhage and thrombosis are the principal changes that are constantly present in the malignant type. Most of the tissues and organs may be affected. *Bartonella* has been cultivated from many of them, notably the kidneys, lymphatic glands, spleen and bone medulla.

Weiss²⁷ speaks of the two types of the disease as hematic and histoid. The former is characterized by the presence of *Bartonella* in the circulating blood. In the histoid type the organisms limit their activity to the reticulo-endothelial system and cause degenerative-exudative reactions. He considers the formation of verrugous (eruptive) lesions to be an allergic reaction to the virus. It is interesting to note that in the histoid stage Weiss was able to show verrugous changes in the skin microscopically before they were macroscopically visible.

Histopathology of Verruga Lesions—Opinions about the histologic structure of verruga lesions have varied some of the earlier investigators considering them to be a fibrosarcoma or suggestive of either sarcoma or angioma. Hercelles²⁸ thought that they were of vascular origin due to periarteritic proliferation. Escomel²⁹ considered the process to be inflammatory rather than neoplastic and thought what he termed "verruca cells" to be the characteristic element and that they arose from connective tissue cells.

Cole³⁰ thought that the lesions were granulomas with special histologic changes, characterized by dilatation of lymph vessels and choking of their lumens with mononuclear and polymorphonuclear leukocytes. There was also perivascular infiltration of plasma cells, fibroblasts, mononuclear and relatively few polymorphonuclear leukocytes and the formation and dilatation of many blood capillaries with marked edema and extravasation of red cells in the tissue.

Strong and his co-workers summarize the changes as follows: "The verruga nodule constitutes a special form of granuloma characterized in the early stages by the formation of new blood vessels in edematous connective tissue and by marked proliferation of the angioblastic cells forming masses or islands of closely placed cells, by the invasion of the connective tissue by lymphocytes, plasma cells and leukocytes and as the lesion progresses by the formation of fibroblasts and the deposit of collagen fibrils." They stated that the

verruca tissues may have at times a sarcomatous, at times a myxomatous or at times an angiomatous (cavernous) appearance.

Rocha Lima, who has written extensively on this subject, summarizes the histogenesis of the verruga lesion in saying that the "basic process in the formation of verruga tumors is a growth of vascular elements."

HISTOLOGIC EXAMINATIONS

Three biopsies were obtained from two patients, the histologic examinations being made by Dr. T. J. Riordan.^{30a}

TREATMENT

Treatment is purely symptomatic, no specific drug or vaccine having been found to be of real value, though Arce³¹ (quoted by Noguchi) recommended small doses of arsphenamine. Blood transfusions have proved to be very disappointing and in the opinion of some Peruvian physicians are contraindicated. Blood from a nonimmune donor, according to Weiss, acts like a culture medium for the organisms. It would be interesting, he says, to try the effect of blood from an individual in the histoid (eruptive) stage.

Prophylaxis is all important and consists chiefly in remaining away from verruga zones from sundown to sunrise. According to Townsend, no one has ever been known to acquire the disease unless he has spent one or more nights in infected districts.

SUMMARY

The diseases formerly known as Oroya fever and verruga peruana have been definitely proved to be phases of a single process, conveniently called Carrion's disease. They are restricted to certain parts of Peru and present several unique features. The malignant type (Oroya fever) shows a profound anemia occurring more rapidly than in any condition except hemorrhage, and the eruptive stage (benign type) differs from all known skin diseases. The causative organism (*Bartonella bacilliformis*, Strong) has been demonstrated morphologically and by culture in the circulating blood, inner organs and eruptive (verrugous) lesions. Infection with one type is followed by immunity to the other, both in human and in experimental animal infections. Human and animal inoculations of one type may produce the other type of the disease. The insect vector (certain species of *phlebotomus*) has been discovered and possibly the existence of a plant reservoir. There is no specific treatment.

In addition to help from physicians mentioned in the text, I received advice and assistance from Drs. Monge, Barton, Escomel, Hercelles, Mackehene and Weiss.

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ABSTRACT OF DISCUSSION

DR. HAROLD N. COLE, Cleveland. There will probably not be many cases of verruga peruana encountered in the United States, but once in a while one of them wanders into Panama or somewhere in the Southern states. There is no question about the condition being a very characteristic granuloma in its clinical and also its histologic appearance. One who has studied a case will never forget the formation of new vessels, the hemorrhage into the tissues, the eosinophilic fibroblast and plasma cell infiltrations in the focal tissues. I think it is well that Dr. Fox has brought out the change in conception since

26 Hercelles O. *Enfermedad de Carrion*. Cron. med. Lima 31: 67 (March) 1914.

27 Weiss P. *Contribucion al estudio de la verruga peruana o enfermedad de Carrion*. Rev. med. latino-am. 18: 1121 (July) 1933.

28 Hercelles O. *La anatomia patologica de la verruga*. Quinto Congreso Med. Latin Amer. Lima, Peru. Vol. 2, No. 9, 1913.

29 Escomel Edmundo. *Anatomie pathologique du verrucomie de Carrion*. Ann. de dermat. et syph. 2: 961 (Nov.) 1902.

30 Cole H. N. *Verruga Peruana Its Comparative Histological Study in Man and the Ape*. J. Cutan. Dis. 31: 38- (June) 1913.

30a The report of these examinations will appear in the author's reprints.

31 Arce T. *Ann. Fac. de med. Lima*, No. 4, 24: 52, 1918.

the report of the Harvard commission After the Harvard commission came back, Dr Strong kindly sent me a copy of its monograph, and apparently it had drawn some wrong conclusions and felt that the diseases were separate, while it seems that they actually are the same condition I was interested in Dr Fox's remarks in regard to the mild type of the disease in little children I was wondering whether possibly these children, owing to the influence of the mother's blood, because all the inhabitants in that neighborhood have had the disease, might show a certain resistance to the disease and therefore contract it simply in a mild form It is a most interesting problem for the immunologist, and I predict that one of these times another commission is going to be sent down there and it will work out some method of taking care of the population and ridding it entirely of this disease

Dr. HOWARD FOX, New York In the time at my disposal I could only touch on the more important points The eruption of verruga peruana is unlike anything I have ever seen Some of the lesions look like angioma and some like granuloma pyogenicum, but taken as a whole it suggests a generalized sarcomatosis in many ways Dr Cole's question as to why children have such a mild attack is one that I cannot answer I had previously asked the same question of some Peruvian physicians, who could give no answer to it

EPIDEMIOLOGIC FACTORS IN MEASLES
PROPHYLAXIS

SAMUEL KARELITZ, M.D.
AND
BELA SCHICK, M.D.
NEW YORK

In using immune adult blood serum in the prophylaxis of measles, we observed that the interpretation of our results depended largely on whether certain epidemiologic factors were taken into account Under relatively constant conditions the results obtained in institutional exposures seemed good, the percentage of complete protections was high, whereas under similar conditions, with the exception that the children were exposed to their sick siblings at home after prophylactic treatment, the percentage of protections was very much smaller We have therefore divided 263 cases treated with immune adult serum according to the circumstances of their exposure to measles in an attempt to answer the following questions

- 1 How do the results obtained with serum injected prophylactically into children exposed to measles in institutions compare with those obtained under similar conditions in private homes, that is, in children exposed to their sick siblings and treated at home?
- 2 Can this difference be obviated or reduced by increasing the size of the dose or the potency of the serum?
- 3 Are the results in all homes the same, or do they vary with the hygiene?

INJECTION OF SERUM IN HOSPITAL AND
IN HOME

The cases treated with the serum obtained from five blood donors are charted (chart 1) according to whether they were exposed to measles while in institutions or to sick siblings at home It is evident that, with the same dosage of serum injected in children of comparable ages and exposed to measles for similar periods, the percentage of presumably protected cases was

greater in hospitals than in homes This was true for each of the five donors Compositely of 134 cases there were 87 per cent protections in hospitals against 29 per cent in homes, the modifications were 13 per cent in hospitals and 22 per cent in homes, and the failures were 0 per cent in hospitals and 49 per cent in homes (chart 2, columns 1 and 2)

A few specific experiences may serve well in illustrating the point just made In an outbreak of measles among the 3 year old children at the S V Hospital, eighteen children were each injected with 6 cc of serum obtained from donors Q and R All remained free of measles In one control case the disease developed At the B J Hospital ten out of twelve children, each injected with 6 cc of K serum, remained well, in one child typical measles developed and in one the modified type of the disease Although the results seem excellent and although in previous outbreaks of measles at the B J Hospital there were usually 100 per cent cross infections, comparison of these results with those obtained with the same serum injected in patients exposed at home (chart 2, columns 1 and 2) shows a striking difference the percentage of protections being very much less in the latter group

We may infer corroboration of our results from the report of Park and Freeman,¹ which reveals that of 652 patients exposed from one to six days in institutions and injected (chart 2) with 6 cc of convalescent serum, 91 per cent were protected 7 per cent of the

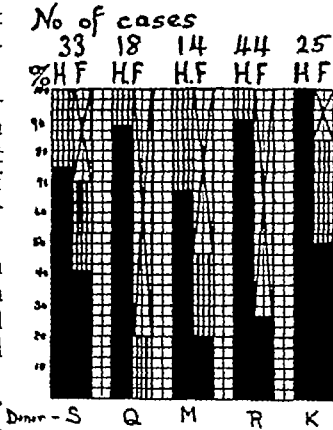


Chart 1—Results of use of serum of individual donors in homes as compared to hospitals conditions otherwise similar In these charts the solid black column indicates protected cases vertical lines indicate modified cases and the crossed column indicates un protected cases, H hospital cases and F familial or home cases

TABLE 1—Results of Use of Serum of Individual Donors in Homes as Compared to Hospitals Conditions Otherwise Similar

Donor	Protected		Modified		Failed	
	Hospital	Home	Hospital	Home	Hospital	Home
Sacks	12	7	4	5	0	5
Quinn	7	0	1	2	0	8
Messer	2	2	1	3	0	6
Robinson	26	4	3	0	0	11
Karelitz	13	0	0	4	0	2
Total	60	19	9	14	0	32
	87%	29%	13%	22%	0%	49%

cases were modified and only 2 per cent were unaided, whereas of 226 patients treated at home under otherwise similar conditions, only 52 per cent were protected, but 42 per cent of the cases were modified The data of Levinson and his co-workers² for convalescent serum used in homes are very similar to those of Park and Freeman

1 Park, W H and Freeman R G Jr Prophylactic Use of Measles Convalescent Serum J A M A 87 556 (Aug 21) 1926
2 Levinson S O McDougall C and Thalling W The Use of Convalescent Serum for the Prevention and Attenuation of Measles Illinois M J 63 258 (March) 1933

This work was aided by a grant from the Emilie Fries Fund. From the Department of Pediatrics of the Mount Sinai Hospital

SIZE OF DOSE OR POTENCY OF SERUM

It seemed reasonable to expect that by increasing the dosage of the serum employed an amount would be reached at which practically no difference would be observed in the percentage of protected cases in hospitals and in homes. Chart 2, columns 2, 3 and 4, demonstrates that this prediction was warranted. The first two columns indicate that in 134 cases, quite similar to the group referred to in chart 1, the results were very much alike, 83 per cent of the cases treated with 6 cc of serum in hospitals were completely protected and 17 per cent were modified. In homes with similar dosage the completely protected were 29 per cent, the modified 22 per cent and the failures 49 per cent of the cases. When the dosage of serum was increased to 8 cc (column 3) and was tested only in homes, there was a rise of protected cases from 29 per cent to 46 per cent and in modified cases from 22 per cent to 43 per cent. The failures dropped from 49

Number of cases

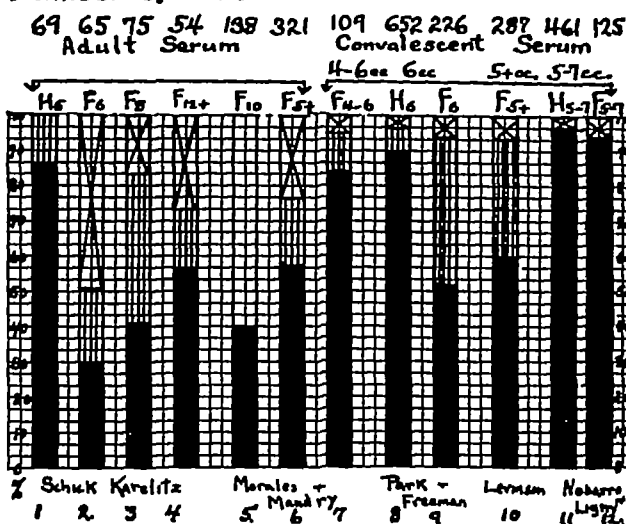


Chart 2—Diminution in the discrepancy between the percentage of complete protections in homes as compared to hospitals with increasing dosage of serum. In this chart H indicates hospital exposed cases, F cases exposed at home.

per cent to 11 per cent. When dosages of from 12 to 25 cc of adult serum were used for a group of children treated at home (column 4) of somewhat greater age range, from 2 to 12 years, but otherwise under similar conditions, there was a rise in the complete protections that were obtained from 46 per cent (with 8 cc dosage) to 57 per cent.

Corroboration of these statistics may be deduced from the results reported by Morales and Mandry³ (chart 2, columns 5, 6 and 7). They show a striking agreement with our results. With 10 cc of adult serum they obtained 41 per cent against our 46 per cent with 8 cc. With 15 to 30 cc they had 58 per cent protections against our 57 per cent with almost similar serum dosages. Morales and Mandry show 82 per cent protection with 30 cc of adult serum and 85 per cent with 40 cc of serum. When from 4 to 6 cc of convalescent serum was used, they had 84 per cent protection.

Few reports have shown similar results in hospitals and homes, but only when convalescent serum has been

employed in adequate dosage. Nabarro and Signy⁴ (chart 2, columns 11 and 12) reported 97 per cent protected in hospitals and 94 per cent in homes when from 5 to 7 cc of serum was used.

INFLUENCE OF HYGIENE

The fact that disease seems to spread more rapidly in congested districts and, above all, in those in which the

TABLE 2—Diminution in the Discrepancy Between the Percentage of Complete Protections in Homes as Compared to Hospitals with Increasing Dosage of Serum

Author	Age	Exposure	Serum	Cases	Protected	Modified	Failed
Schick and Karelitz	2-10 yrs	5 days or less	Hosp 6 cc	80	83%	17%	0
			Home 6 cc	63	29%	22%	49%
			8 cc	73	46%	43%	11%
			12-25 cc	54	57%	20%	23%
Morales and Mandry	0 mo-10 yrs	6 days or less	Home 6 cc	138	41%	22%	37%
	10 yrs less than 3 yrs		15-30 cc	321	58%		
			30 cc	34	82%		
			40 cc	28	85%		
			Conv. serum 4-6 cc	120	84%	11%	5%
Park and Freeman		5 days or less	Conv. 8 cc	632 Hosp	91%	7%	2%
			0 cc	220 Home	52%	43%	5%
Levinson et al	1-15 yrs	5 days or less	3 cc / 3 yrs plus 0.5 cc per 6 mos	237 Home	60%	33%	7%
Nabarro and Signy			Conv. 5-7 cc	401 Hosp	97%		3%
			Conv. 8 cc	12, Home	94%		6%

A S, adult serum Conv. S convalescent serum

TABLE 3—Results in 106 Cases of Infection under Standard Conditions Except for Exposure

	Cases	Protected	Modified	Failed
Home hygiene good	72	76%	23%	19%
Home hygiene bad	34	0	27%	73%
Hospital	46	83%	17%	0

TABLE 4—Data of Attempt to Increase Existing Measles Immunity of Adults by Reinfection

Author	Age, years	Exposure, days	Serum	Number Cases	Protected No.	Protected %	Modified No.	Modified %	Failed No.	Failed %
Schick and Karelitz	2-10	2-3	6 cc	B 36	14	39	5	15	17	46
				A 38	23	61	11	29	4	11
				A 33	22	65	7	20	4	11
Schick and Karelitz Hospital and home exposures	2-10	2-3	6 cc	B 8	6	75	2	25	0	0
			Hosp	A 40	34	85	6	15	0	0
			6 cc	B 28	8	28	3	11	17	61
			Home	A 31	12	39	11	35	8	26
Schick and Karelitz Donors M and B	2-10	2-3	8 cc	B 33	14	40	17	49	4	11
			Home	A 40	17	43	17	43	6	14

hygiene is very poor suggested further analysis of our statistics with the hope of answering question 3, must we qualify our results according to the type of home in which the exposure takes place? If one considers a home of good hygiene in which the sick child is quickly isolated after the illness is discovered, and compares it to one in which the hygiene is poor (one in

3 Morales E G and Mandry O C. Relative Prophylactic Value of Convalescent and Immune Adult Measles Serum, Am J Dis Child 38: 1214 (June) 1930

4 Nabarro, D N and Signy A G. Convalescent Serum in the Prophylaxis of Measles, Brit M J 1 12 (Jan 3) 1931 2 599 (Oct 3) 1931

which the sick and well children continue to be together after discovery of the illness) a striking difference in the results is demonstrable. Thus, if 106 children of from 2 to 6 years of age, exposed for from two to five days and injected with 6 cc of serum are divided into those exposed in homes of good hygiene in those of bad hygiene and in the hospital, the percentages of completely protected cases are respectively 58, 0 and 83 (chart 3).

The difference in the results in homes of good and of bad hygiene is almost as striking as the results of patients treated with adult serum when tested in hospitals as compared to homes. In the home of poor hygiene the exposed child obtains the infection not only from one to five days before the serum is injected but throughout the period of infectivity of the sick sibling. Such a child may receive so great an infection that complete protection can be obtained only if a large dose of serum is given. This was apparently borne out by the fact that with increasing dosage of serum there was a progressively greater percentage of protected cases.

COMMENT

This influence of epidemiology in measles prophylaxis has been emphasized before. Jordon,⁵ realizing that contact is much more intimate in home life than in hospitals, recommended larger doses of convalescent serum (from 6 to 18 cc).

Park and Freeman, using 6 cc of convalescent serum in institutions and at home, found striking differences in the percentage of children who were completely protected. The relation of hospital to home protection was 91/52.

Freeman and Freeman⁶ stated that "in judging the results of a series of institutional children, the definiteness of exposure can never be accurately determined and it is safe to say that a good many of the children recorded as completely protected were never exposed."

The data of our 263 cases, when studied from the point of view of epidemiology showed strikingly how different the results were with serum tested in the wards of hospitals or institutions as compared to familial exposures. The excellent results obtained in hospital wards were just as striking as were the poor results obtained in homes, under otherwise comparable conditions. Our results probably explain the high percentage of completely protected cases usually obtained with relatively small doses of serum when injected into susceptible children exposed to measles in schoolrooms, play groups, nurseries, asylums and especially children's hospitals.

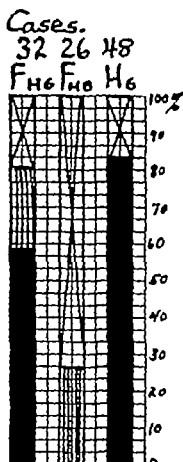
Although it is true that, in such institutional epidemics of measles, all exposed susceptible children may develop the disease after the first exposure, it is far more common for only a few to come down with it after the first exposure and others after the second or

third exposure. Under such circumstances it is doubtful whether a prophylactic procedure can be evaluated very accurately. It is safe to presume that in hospitals many of the so-called exposed children escaped infection entirely, while some may have been slightly infected and others infected intensively and repeatedly throughout the period of exposure. In pediatric institutions where there is a cubicle system or where isolation technic is observed, this difference in exposure must be evident.

A brief description of an experiment, a preliminary report of which has been published,⁷ will serve to illustrate the importance of the epidemiologic factors pointed out in this paper. We undertook a study attempting to increase immune antisubstances of adults by reexposing them frequently and intimately to patients in the first few days of severe measles. Four volunteers were bled before, and eight and twenty-one days after the last of thirteen exposures to the disease of from thirty to sixty minutes. One hundred and eighty-two susceptible children exposed to measles for from two to five days were treated with serums of the four volunteers. Serum B refers to that obtained before reinfection, and A₈ and A₂₁ to serums obtained eight and twenty-one days after the last exposure. The latter were so similar in their results that they will be generally considered together as A. The results with the serum of donors M, K, S and R are reported compositely and represented in columns 1 and 2 of chart 4. One hundred and seven children from 2 to 6 years of age who were exposed for from two to five days received 6 cc of serum obtained from one of the four donors. Of the thirty-six

injected with B serum, 39 per cent were completely protected, 15 per cent had modified measles and 46 per cent had unaltered measles. Of the seventy-one who received serum A, 63 per cent were protected, 26 per cent had modified measles and only 11 per cent developed ordinary measles.

If these statistics are accepted at face value they indicate a marked increase of measles immunity following repeated reexposure to the disease. If, however, the epidemiologic factors discussed are applied to this study, the striking improvement that seemed to have been noted becomes much less evident, almost doubtful. Thus, if the 107 cases previously referred to are separated into hospital exposures and family exposures, we note that in the hospital group there were no failures in forty-eight cases, whereas the unprotected cases of the home (familial) exposures were numerous, twenty-five out



Schick Karelitz

Chart 3—Results in 106 cases of injection of serum under standard conditions except for exposure. F indicates homes of good hygiene, F_h homes of bad hygiene and H hospital.

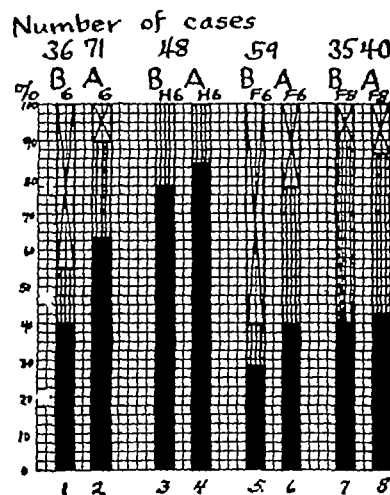


Chart 4—Data of attempt to increase existing measles immunity of adults by reinfection. B indicates before reinfection, A eight or twenty-one days after reinfection. H₆ patients injected with 6 cc of serum in hospitals, F₆ patients injected with 8 cc of serum in homes.

⁵ Jordon H P B Measles Immunization Rhode Island M J 9 71 (May) 1926

⁶ Freeman R G and Freeman R C Jr Measles in Private Practice as Modified by Use of Immune Serum Arch Pediat 43 563 (Sept.) 1926

⁷ Karelitz, Samuel and Schick, Bela Masernschutzimpfung mit Erwachsenserum reaktiviert durch Exposition zu Masern Wien med Wchnschr 82 1395 (Nov 5) 1932

of fifty-nine, or 42 per cent. The difference between the percentage protected with serum A over that with serum B is thus greatly reduced. If, therefore, the conditions of the experiment were alike in all details except that the exposure to measles occurred at home rather than in the hospitals, we noted a striking difference in our results. The same observation was true for each donor studied, as demonstrated in chart 1. Furthermore, when the dosage of serum was increased from 6 to 8 cc (chart 4, columns 7 and 8) and was tested in homes only, the number of completely protected cases increased but there was almost no difference in the results obtained with serums A and B. The latter experiment again demonstrates the necessity of considering the epidemiologic factors in studies of measles prophylaxis.

We believe that the evidence presented indicates clearly that the degree and frequency of repetition of exposure to measles within a few days determines in large measure whether the susceptible patients will develop the disease. In this respect it is not unlike tuberculosis and perhaps other infectious diseases.

The inadequacy of most hospitals and institutions for study of the prophylactic value of an antimeasles serum has been demonstrated. We would suggest that a serum may be declared effective only if it has been proved to be so after it has been tested under the severest conditions, namely, thorough and repeated exposure to sick siblings at home, or under comparable epidemiologic circumstances.

CONCLUSIONS

1 Hospital and institutional wards are usually inadequate for study of measles prophylaxis because of the uncertainty and difference of the intensity and duration of the exposure of the susceptible children.

2 The percentage of completely protected cases in homes varies with the hygiene, the greater number of protections being recorded in homes of better hygiene or in those in which facilities make possible isolation of the sick child at an early stage of the disease.

3 The percentage of complete protections in homes of poor hygiene increased progressively with corresponding increase of the serum dosage.

4 We believe that the evidence presented indicates rather clearly that the degree and frequency of infection with measles within a few days determines in large measure whether the disease will develop in the susceptible children. In this respect it is not unlike tuberculosis and other infectious diseases.

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Lengthening the Prime of Life—It was coming to be thought that longevity was determined only by heredity, and that "while there are many ways in which you can shorten your life, the only way to lengthen it is by the selection of a longer-lived ancestry." We now know that this was a too fatalistic view and that, important as is the inheritance, the life cycle can also be extended by simple improvement of food habit such as is easily within individual and family control. And it is important to realize that this increased length of adult life induced by taking a larger proportion of the needed calories in the form of the protective foods means a longer prime of life, not merely a longer old age. The prime of life is in fact extended in considerably greater ratio than the life cycle as a whole, and it is extended in both directions, development being expedited and old age deferred in the same individuals by the same improvement in an already adequate food supply—Sherman, H. C. Food and Health, New York, Macmillan Company, 1934.

Clinical Notes, Suggestions and New Instruments

GRAPHIC METHOD OF INTERPRETING BLOOD VESSEL DISEASE OF THE LEGS. PRELIMINARY REPORT

BERTRAM M. BERNHHEIM, M.D., BALTIMORE

From the Surgical Department of the Johns Hopkins Medical School

When one sits with the legs crossed there is an almost invisible but natural swing of the foot that is synchronous with each heartbeat. If one attaches a short rod¹ to the side of the shoe of an individual sitting thus and lets the pointed tip of this rod rest lightly against the revolving drum of a sphygmograph, one will get a normal reading such as those in figures 1 to 5.

These graphs, as will be noted, show a dicrotic wave and correspond very closely to the sphygmogram tracings of the

F. L. R. T.



L. T.

F. L.



Fig. 1—Control man, aged 40, normal circulation

B-T



B-L



Fig. 2—Control man, aged 54, normal circulation

T-R



Fig. 3—Control man aged 33, normal circulation

M. S. G. R. T.



M. S. G. L. T.



Fig. 4—Control woman aged 26, normal circulation

radial artery. There are slight variations, as one would expect, and many more control readings will have to be taken in order to get a clear idea as to just what they are and what they mean. They are being taken right along and there will be more to say on the matter later. Cardiac conditions and other factors must naturally be of some influence.

In making the tracings the one leg should be crossed over the other in such a way that the upper ends of the heavy calf

¹ So far as the observations go—and of course this is subject to change—the length and character of the recording rod does not seem to be of great importance other than that the very tip should be fairly delicate and flexible. At present a rod is being used made of a light narrow rigid piece of wood 8 inches long to which by adhesive tape an ordinary thin strip of tin is attached on the end of which, again by adhesive tape, there is attached a short piece of pointed x-ray film the whole affair being about 11½ inches long. This contraption is attached to the inner side of the shoe at the sole by adhesive tape in such a manner that it projects about 6 inches beyond the tip of the shoe.

muscles rest on the patella. If the leg is crossed over too far the foot may have, and usually does have, a swing that gives a normal reading, but this swing is not as wide as is the case if the leg rests on the patella and consequently the peaks of the curve are not as high or as definite. Naturally, the individual should be as relaxed as possible and let the foot hang

H.L. RT



H.L. LT



Fig 5—Control boy aged 13 normal circulation

W—RT



W—LT



Fig 6—Thrombo-angitis obliterans of both legs and intermittent claudication in S W, a man aged 33. Both femoral pulses felt. Both popliteals absent. No pulses in feet. The graph indicates that the patient has a very precarious collateral circulation. It is better in the left than in the right leg.

S LT



S RT




Fig 7—Thrombo-angitis obliterans of both legs and intermittent claudication in S S, a man, aged 39. Both femoral pulses felt. Left popliteal felt but no pulses in left foot. Right popliteal absent, right dorsalis pedis absent, right posterior tibial present. The collateral circulation is poor in the left leg and better in the right leg but not very good in either.

REV S RT



Fig 8—Raynaud's disease in L S, a man aged 33. All four extremities were involved. The left leg had been amputated. The popliteal pulse of the right leg was present but not good. No pulsation in dorsalis pedis. Questionable in posterior tibial. The patient had a fair circulation. Periarterial sympathectomy was done on the right leg four years before.

free. It is also best for him not to look at the drum as the tracing is being made.


In the case of those who are suffering from blood vessel disease of the legs it has been found that the swing is much less than normal, even entirely absent, depending on whether the popliteal artery is partially or totally obliterated, and the status of the collateral circulation. It has further been found that many of these legs when crossed and placed for a reading have more or less of a tremor, very fine in some, rather gross in others, which gives an irregularity to the line of the graph. Certain normal individuals present a similar phenomenon, but it seems to be more commonly found in the diseased.

Before the test was tried on those with diseased blood vessels, it was felt that, if the popliteal artery was pulsating, a normal reading would be obtained, but this has proved to be far from true. Many patients whose popliteal artery can be felt—as in the case of Mr G D—even well felt, present a very sad looking graph, so that the conclusion is reached that this test reveals very accurately the state of the leg's circulation, both natural and collateral. The less the swing, the more serious the condition, the greater the swing the more positive and regular, the better the condition.

Curiously enough, though, no matter how good the circulation of a leg presenting vascular disease may be, the graph of

that leg never seems to approach the normal with its dicrotic wave. Certain ones have suggested it but could not be considered truly normal and one wonders whether a leg the normal blood channels of which have become obliterated can ever show such a thing. In every instance thus far in which a dicrotic wave has appeared constantly, palpation has revealed pulsating arteries in the entire leg and foot. Indeed, it would appear that—aneurysms possibly excepted and perhaps, to a certain extent, vasospasm—a plainly visible, regular foot swing indicates a normal circulation. One need not make tests, take graphs or palpate the vessels.

G—RT




G—LT



Fig 9—Thrombo-angitis obliterans of both legs in M G, a man aged 37. Intermittent claudication. Ulcer on right big toe. Both popliteal pulses present but only fair. No pulses felt in either foot. Circulation fair.

F RT



F LT



Fig 10—Thrombo-angitis obliterans of both legs in S F, a man aged 31. Intermittent claudication. Neither popliteal pulse felt. Periarterial sympathectomy done on left leg (popliteal artery) seven years before. Collateral circulation is only fair.

Mr P RT



Mr P LT




Fig 11—Arteriosclerosis, myocarditis and intermittent claudication, both legs in D P, a man aged 61. Femoral pulses present in both legs. No other pulses. Collateral circulation precarious.

G D



LT



G D



RT



Fig 12—Arteriosclerosis and gangrene of left big toe in G D, a man aged 70. Pain in the left leg. Threatened gangrene of the left foot. Intermittent claudication. Both femoral pulses felt. Both popliteal pulses are felt but the left is only fair. No pulses in either foot. Circulation poor in both legs better in the right than in the left which is the one affected. The patient was a thin man with blood pressure of 200 systolic, 95 diastolic, and the popliteal pulses were better felt than in any of the other cases reported yet the graph shows that the circulation is anything but good thus indicating that pulsation in the popliteal arteries is not necessarily a guide to the true state of the circulation below.

For the time being, opinion must be reserved as to the explanation of the phenomenon, but it has been suggested that it is due not to the pulsating popliteal artery itself but to the synchronous spread of the calf muscles consequent on the amount of blood sent to them.

It is thus apparent that here is a very simple and inexpensive method of graphically determining the state of the arterial circulation of the legs in both health and disease. And not only that, but by this method it will be possible by successive readings over a period of months or years to keep a pictorial record of such increase or decrease of the circulation as may take place.

This is a preliminary report and further work is in process, but it may be permissible to say that there are rather wide implications to this finding and much that is of interest awaits future studies. A further report will be made.

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HYPERSENSITIVENESS TO PITUITARY EXTRACT

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The continual increase in the administration of various biologic products by the several parenteral routes warrants an occasional word of caution with regard to the development of hypersensitiveness.

It is well known that this artificially produced hypersensitiveness is usually not of the strong, atopic type. Atopic hypersensitiveness may, however, under certain conditions, be produced artificially by injection. These conditions are for the most part unknown at the present time.¹ Hypersensitiveness of varying degrees results from injections of horse serum preparations. Sensitization to insulin is a well recognized condition.² Pituitary extracts, however, judging from reports in the literature, very rarely produce clinical hypersensitiveness. Hasson³ in 1930 and Wang and Maxwell⁴ in 1933 each report a case of general reaction following the injection of pituitary extract.

REPORT OF CASE

H. F., an American housewife, aged 28, in good general health, without personal or family history of allergic diseases, has had seven children. Following the birth of two of her first five children she was given a subcutaneous injection by her private physician (presumably pituitary extract). Her sixth baby was born in November 1933. Following delivery the usual subcutaneous injections of pituitary extract and ergot were given. There were no untoward symptoms following any of these injections. Her seventh child was born Nov. 8, 1934, and again the usual subcutaneous injections of pituitary and ergot were given. About thirty minutes later massive swelling

TABLE 1—Results of Skin Tests

Pituitary extract (Obstetrical), Merrell	Strongly positive
Pituitrin (Obstetrical) P. D. & Co.	Strongly positive
Posterior Pituitary, B. W. & Co.	Strongly positive
Pituitary whole Armour	Slightly positive
Anterior Pituitary, B. W. & Co.	Negative
Pitressin, P. D. & Co.	Moderately positive
Pitocin, P. D. & Co.	Negative
Insulin Squibb	Negative
Physiologic solution of sodium chloride	Negative

of the lips and face was noted and the patient complained that her tongue felt tremendously swollen. She began to have difficulty in breathing, which was evidently due to obstruction in the upper respiratory tract. The edema of the larynx increased rapidly and she had more respiratory difficulty. The administration of epinephrine relieved the situation and she recovered completely. The puerperium was uneventful until six days after delivery, at which time a generalized urticarial rash occurred with considerable itching and discomfort. This lasted five days and gradually subsided, leaving the patient feeling very well.

Skin tests on the patient, done by the scratch method, gave the results recorded in table 1.

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¹ Coca, A. F., Walzer, Matthew, and Thommen, A. A. Asthma and Hay Fever in Theory and Practice, Springfield, Ill., Charles C. Thomas, 1931, p. 56.

² Davidson, M. T. Insulin Allergy. *J. Allergy* 6: 71 (Nov.) 1934.

³ Hasson, James. Anaphylaxis Following Injection of Pituitary Extract. *Brit. M. J.* 1: 242 (Feb. 8) 1930.

⁴ Wang, P. W., and Maxwell, J. P. Protein Shock After the Administration of Pituitrin. *Chinese M. J.* 47: 66 (Jan.) 1933.

The preparations listed in table 2 were made by emulsifying the fresh gland or other material in phenolized buffered saline solution (Alice Evans' solution). Tests were made by the scratch method.

Extracts of the following human tissues gave negative tests: pancreas, adrenal, liver, thyroid, spleen, brain (pons) and kidney.

Forty-five common foods, pollens, danders and other inhalants all gave negative tests. All tests, both positive and negative, were done in duplicate. All substances giving positive tests were applied in the same way to a normal person with negative results.

Skin tests done on the baby thirteen days after birth were entirely negative to the same pituitary extracts used in testing the mother.

Local passive transfer (Prausnitz-Kustner) with the patient's serum was strongly positive in each of the two recipients. The

TABLE 2—Tests with Various Preparations

Pituitary, cattle	Strongly positive
Pituitary, hog	Strongly positive
Pituitary, human	Strongly positive
Cerebral cortex, cattle	Negative
Cerebral cortex, hog	Negative
Cerebral cortex, human	Negative
Skeletal muscle, cattle	Negative
Skeletal muscle, hog	Negative
Skeletal muscle, human	Negative

reaction in the prepared areas of these recipients could be elicited very well by the scratch method and also by the intradermal method. The controls were negative.

COMMENT

The development of a specific hypersensitiveness with local passive transfer of antibodies to the injected substance, pituitary extract, in a patient without personal or family history of allergy and with negative tests to the common allergens is worthy of note. This is particularly interesting in view of the fact that pituitary extract is used so extensively and allergic manifestations from it are reported so rarely.

No one particular brand is responsible, since positive skin tests were obtained with four different brands.

Pitressin, containing the vasoconstrictor principle, gave a positive test, but pitocin, containing the oxytocic factor, gave a negative test.

The specificity is not directed toward some species specific factor distributed throughout the various tissues of some particular animal, or even toward the brain tissue of a particular species of animal. It is apparently directed toward some constituent of the posterior lobe of the pituitary gland of several animal species, including man himself. So far as I know this is the first recorded instance of a definitely established hypersensitiveness in man to a product of the human body. The late Bruno Bloch, for several years preceding his death, sought unsuccessfully to find a case of hypersensitiveness to a product of human metabolism.⁵ Considerable theoretical importance attaches to this problem, since, if it could establish that a man could be sensitized to a product of his own body, it might offer a possible explanation for the existence of certain possibly allergic diseases which appear to be of intrinsic origin, such as certain types of asthma, eczema, urticaria and migraine.

In the case reported here, however, it is not established that the patient is sensitive to a product of her own body but merely that she is sensitive to a product of the body of some other human being, which may or may not be identical with the analogous product of her own body. It is well known that the tissues of one individual, skin for example, when grafted on the body of another person, seldom survive, while autogenous transplants are nearly always successful. It is obviously impossible to solve this problem in this particular case, since it is not possible to test this woman with an extract of her own pituitary gland.

Brown Building

⁵ Personal communication to the author. Schürch, O. Reaktionen mit physiologischen Substanzen auf der Haut von Normalen und Ekmastikern. *Klin. Wchnschr.* 4: 11 (Jan.) 1925. (Only experimental hypersensitiveness studied by means of patch tests was investigated.)

SENSITIZATION PHENOMENA FOLLOWING THE USE OF SODIUM MORRHUATE FOR THE CHEMICAL OBLITERATION OF VARICOSE VEINS

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Untoward reaction in the form of a cutaneous eruption or a nitritoid crisis was observed in seven out of 176 patients who received 783 injections of 5 per cent sodium morrhuate (Searle) in the Dermatology Clinic for the chemical obliteration of varicose veins. Two patients received further sodium morrhuate injections without recurrence of the eruption so the connection is not proved in these two instances.

The reactions were: urticarial eruption on leg, two cases; urticarial eruption on leg and arm, one case; urticaria on arms one case; pruritus, erythema and edema of arms one case; pruritic erythematous eruption on leg, one case; weakness for two days, one case. Injections were continued in one patient with urticarial wheals at sites of previous injections and a nitritoid crisis appeared after six injections, accompanied by cutaneous reaction only. The reaction seen most frequently consisted of grouped urticarial wheals at the sites of previous injections which can be attributed with certainty to sensitization to sodium morrhuate.

EXPERIMENTAL WORK

The skin was tested with 5 per cent solution of sodium morrhuate (1) by the scratch method, (2) by intracutaneous injection of 0.03 cc (intra-dermal test), followed (3) in one week by a second intra-dermal injection of the same amount (for the Arthus phenomenon) and (4) in twenty-four hours by intravenous injection (for the Schwartzman phenomenon). Interpretation of results was difficult owing to the irritating nature of the solution. The scratch test was interpreted as negative in nine patients and positive in two patients both of whom showed signs of hypersensitivity to the drug. Intra-dermal injection was made in twenty patients with slightly increased reaction in most of the patients who were hypersensitive. The difference was not sufficient to be used as a guide. Repeated injection for the Arthus phenomenon was negative in ten cases. The Schwartzman reaction was not seen in fifteen cases, repeated attempts four and six weeks later in sensitive patients did not produce it. Passive transfer was attempted with the serum of one hypersensitive patient. Subsequent intra-dermal injection of 0.03 cc. of sodium morrhuate into the skin of the recipient at the site of the injection was followed by a reaction more marked than that following any intra-dermal test, so that it was interpreted as positive. In two other recipients of the same serum, subsequent application of sodium morrhuate by the scratch method produced no abnormal reaction.

Since the 5 per cent sodium morrhuate solution is irritating it was diluted with sterile water and it was found that 0.03 cc of a 1:640 dilution produced a visible wheal in a presumably nonsensitive patient. Further study is being made with diluted material. The solution was analyzed to determine the presence of protein and the total nitrogen content. The protein was too small in amount to be determined in a 20 cc sample. Total nitrogen was 0.037 Gm per liter. If one assumes that it is all protein nitrogen the protein content would be 0.25 Gm per liter, not enough to produce sensitization.

COMMENT

Cutaneous and nitritoid reactions followed the administration of sodium morrhuate in about 3 per cent of cases. Zimmermann reported similar reactions from the drug. He also emphasized the difficulty in interpreting cutaneous tests but suggests the performance of intracutaneous tests on a patient who has lapsed (presumably from ten to fourteen days) in order to determine the development of hypersensitivity. The irritating nature of the solution suggests the advisability of using diluted material or other material, such as cod liver oil itself. This problem is being studied in this clinic. Animal

experiments are being performed which may shed some light on the method of production of sensitization. The protein content is not sufficient in itself to produce sensitization, but the sodium morrhuate may act as a haptene and sensitize susceptible individuals. The eventual production of a nitritoid crisis in one of our patients emphasizes the desirability of changing to some other substance at the first sign of hypersensitivity. It is also advisable, as stated by Zimmermann,¹ to begin with 0.5 cc of sodium morrhuate for the first injection.

INSTRUMENTS TO FACILITATE THE INSTILLATION OF PROPHYLACTIC MEDICATION OF THE EYES OF THE NEW-BORN

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The occasional development of ophthalmia in the new-born is probably not due to the omission of the conventional prophylactic means employed but rather to faulty instillation of the bactericide instilled.

In order for the antiseptic solution used to be effective it is essential that contact be made with all parts of the conjunctival sac. Simply, as so often occurs to expose the membrane about the palpebral fissure, is by no means sufficient. By the customary manual retraction of the eyelids, free and full exposure of the conjunctival membrane is rarely afforded.

By this method only partial exposure of the sac to the germicidal solution is as a rule attained.

Manual retraction, moreover, with the gloved fingers or the gloved fingers enveloped with gauze is more or less cumbersome and often proves inadequate in assuring that the antiseptic medication is properly instilled. By this method, furthermore, the antiseptic solution used may partially be absorbed by the gauze wrapped fingers, or owing to the struggles of the infant, the material may simply fall on the lid margins and fail to reach thereby the important areas beyond.

In order to overcome the difficulties inherent in digital retraction of the eyelids of the new-born, the simple implements presented herewith have been designed.

One of us (Castallo) devised the instrument shown in figure 1. A description of this has appeared elsewhere.¹

The implement shown in figure 2 is a modification of figure 1 and was designed by the senior author. In practice it is found to provide certain advantages. The small serrations on the edges of the blades of the instrument prevent slipping and, when properly placed in or rather under the orbital plates, owing to the special springlike action, it is more or less self retaining.

The blades of both instruments are so shaped that, when placed over the closed eyelids and gently separated, the eyeball with the conjunctival sac is exposed without the slightest trauma. Hence, free instillation of the antiseptic solution is assured.

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¹ Zimmermann, L. M. Allergic like Reactions from Sodium Morrhuate in Obliteration of Varicose Veins. J. A. M. A. 102:1216-1217 (April 14) 1934.

From the Department of Obstetrics, Jefferson College Hospital.
1. Castallo, M. A. Am. J. Obst. & Gynec. 26:451 (March) 1933.

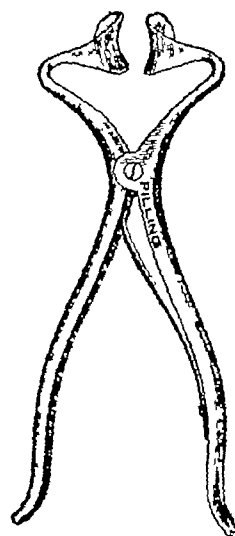


Fig. 1—Instrument to facilitate the instillation of medication of the eyes of the new-born

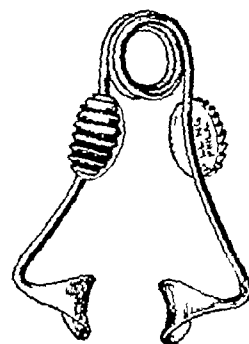


Fig. 2—Modification of instrument

Special Article**GLANDULAR PHYSIOLOGY AND THERAPY****ANTERIOR PITUITARY AND ANTERIOR
PITUITARY-LIKE SUBSTANCES****THERAPEUTIC APPLICATIONS**

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BALTIMORE

NOTE—This article and the articles in the previous issues of THE JOURNAL are part of a series published under the auspices of the Council on Pharmacy and Chemistry. Other articles will appear in succeeding issues of THE JOURNAL. When completed, this series will be published in book form—Ed

Up to a few years ago, efforts at anterior pituitary therapy were limited to the use of oral or hypodermic preparations, either of the anterior lobe alone or of the whole gland, in conditions of supposed deficiency, such as adiposogenital dystrophy, pituitary obesity or amenorrhea, dwarfism or infantilism. In this respect the common practice was almost analogous to the early methods of ovarian therapy in conditions of supposed ovarian hypofunction. Just as the clear differentiation of the ovarian hormones has completely changed the complexion of ovarian therapy, so have the recent advances in anterior pituitary hormonology changed the points of view and methods in pituitary organotherapy. The tendency now is to aim at hormone therapy rather than at mere gland treatment.

The important physiologic advances to which reference has been made have been fully reviewed in previous articles of this series. The present paper, like the one on estrogenic therapy, makes no pretense of being an exhaustive review, being offered rather as a brief summary and appraisal of the present status of the subject, and including only a minimum of references to the extensive and somewhat bewildering literature.

As a basis for the discussion of the therapy of the anterior lobe, the following hormones have been enumerated¹ as having their source in this structure:

- 1 The growth hormone, commonly accepted as being the product of the eosinophilic cells
- 2 The gonadotropic hormone or hormones, generally believed to be formed by the basophilic cells
- 3 The lactogenic hormone, shown by Riddle² to be the cause of lactation, but only when the mammary gland is previously subjected to the action of the estrogenic hormones
- 4 The thyrotropic hormones on which the activity of the thyroid is dependent
- 5 The fat metabolism hormone
- 6 The blood sugar raising hormone.
- 7 The adrenotropic hormone

Of all these, only the first two would seem, in the present state of knowledge, to merit any discussion from the standpoint of organotherapy. The lactogenic hormone (prolactin) may perhaps prove of clinical value as a galactagogue, but only one brief report,³

based on a very small series of cases, has so far been made on this subject. Encouraging results are said to have been obtained.

**CLINICAL CONDITIONS INVOLVING GROWTH
HORMONE**

Growth Abnormalities—The best known of these, gigantism and acromegaly, are due to excessive production of the growth hormone, most often by adenomas of the acidophilic cells. Here the problem is not one of organotherapy but of correcting the endocrine excess by means of surgery or irradiation.

As types of deficiency of the growth hormone may be mentioned the growth deficiencies characterizing the various types of pituitary dwarfism and infantilism, especially the so-called Lorain-Levi and Brissaud types. While these are believed most often to be due to adenomas of the chromophobe cells, the obvious growth deficiency would seem to justify the use of preparations containing the growth hormone. Simmonds' disease⁴ (cachexia hypophyseopriva), a rare disorder due to destructive disease of the entire anterior lobe, and characterized by emaciation, a prematurely senile appearance, amenorrhea and other symptoms, has in a few cases been treated by anterior pituitary preparations, either orally or hypodermically, but the results have not been striking.

Preparations Available—No commercial preparation of the growth hormone has as yet been recognized by the Council on Pharmacy and Chemistry of the American Medical Association, which is not surprising in view of the present inability of manufacturers to prepare it in pure forms, and the meagerness and unconvincingness of clinical reports. In this country only three commercial preparations, so far as I know, are available, viz, the "Antutrin G" of Parke, Davis & Co, the "Phyone" of the Wilson Laboratories and Anterior Pituitary Extract Squibb. These extracts all contain other active principles of the anterior pituitary in addition to the growth promoting factor. The more purified form of the growth hormone with which Evans has achieved such striking results in animals is not yet available commercially, although the manufacturers to whom it has been entrusted have been able to furnish small amounts for a few clinical and experimental studies. Engelbach⁵ in 1930 reported satisfactory growth results in a pituitary dwarf of 9 years in whom treatment with the Evans purified growth hormone was carried out, with daily injections of the substance, for nine and a half years, 27 inches (7 cm.) in height being gained during this period. Engelbach and Schaefer⁶ have recently reported encouraging results in seven cases of dwarfism. In these the growth hormone preparation (antutrin G) was combined with thyroid, which Smith⁷ has shown to increase the effect on skeletal growth. Both Evans and Reichert⁸ emphasize the importance of having such growth hormone extracts free of gonadotropic principles, which might result in excitation of sex maturity, with epiphyseal closure and the cessation of growth.

1 Evans H M. Present Position of Our Knowledge of Anterior Pituitary Function. J A M A 101 425 432 (Aug 5) 1933

2 Riddle O and Bates R W. Endocrinology 17 689 698 (Nov Dec) 1933. Riddle O. Bates R W and Dykorn S W. Am J Physiol 108 191 216 (July) 1933. Proc Soc Exper Biol & Med 29 1211 (June) 1932.

3 Kurzrok R. Bates R W. Riddle O and Miller E. Endocrinology 18 18 19 (Jan Feb) 1934.

4 Simmonds, Morris. Deutsche med Wchnschr 40 322, 1914. Calder R M. Bull Johns Hopkins Hosp 50 87 114 (Feb) 1932. Pituitary Cachexia (Simmonds Disease) Treated with Anterior Pituitary Extract. J A M A 98 314 315 (Jan 23) 1932.

5 Engelbach W. Endocrine Medicine Springfield, Ill, C C Thomas, 1933. Endocrinology 18 119 (Jan Feb) 1932.

6 Engelbach W and Schaefer R L. Endocrinology 18 387 392 (May June) 1934. Engelbach W. Schaefer R L and Brosius W L. Endocrinology 17 250 262 (May June) 1933.

7 Smith P E. Proc Soc Exper Biol & Med 31 301 303 (Nov) 1933.

8 Reichert F L and others. Am J Physiol 100 157 161 (March) 1932. Reichert F L. Pencharz R I. Simpson M E. Meyer K and Evans H M. Proc Soc Exper Biol & Med 28 843 (May) 1931.

There are a few clinical reports by Cushing⁹ and others of the use of preparations of the growth hormone in cases of pituitary growth deficiency, but, on the whole, the results have not been impressive. The chief hope for the future seems to lie in the preparation of the growth hormone in a purified form. If this is accomplished, there would be reason to expect far better results than those obtainable with the admittedly uncertain preparations now available. The recommended dosage of antuitrin G is 1 to 3 cc two or three times a week.

CLINICAL CONDITIONS INVOLVING GONADOTROPIC HORMONES

An enormous impetus to anterior pituitary organotherapy was given by the discovery in 1926, by Smith and Engle in this country and Zondek and Aschheim in Germany, of the remarkable effects produced on the gonads of experimental animals by anterior pituitary implantations (see article on physiology of anterior pituitary, in this series). Because of the impracticability of implants for clinical use, and also because of the difficulty of preparing satisfactory extracts for clinical purposes this discovery in itself would not have had much therapeutic significance had it not been for the further discovery by Zondek that the urine of pregnant women, even in the earliest phases of gestation, contains large quantities of "prolan," a substance believed by Zondek to be identical with the gonad-stimulating hormones produced by the anterior lobe. It is on the presence of this factor in early stages of pregnancy that the now universally employed pregnancy tests (Aschheim-Zondek, Friedman, Schneider, Brouha and the like) are based, the principle producing in the sex glands of the injected animal changes that in most respects are similar to those produced by the pituitary hormones from the gland itself. As to the actual identity of the latter and the urinary factors, there has arisen much discussion, although this has no bearing on the reliability of the pregnancy test.

Likewise there has been much discussion as to the unity or the duality of the pituitary gonad stimulating principle. Zondek early differentiated two principles one ("prolan A") having a follicle ripening effect and having to do with the production of estrogenic substance, while the other ("prolan B") is responsible for luteinization and the production of the corpus luteum factor, "progesterin." There are many excellent investigators, however, who look on these two different effects as merely different phases in the activity of a single principle. This question, as well as that of the identity or lack of identity of the urinary and the pituitary gonad stimulating hormones, has been discussed in a previous article and need not be elaborated on here.

The practical point is that anterior pituitary-like extracts made from the urine of pregnant women have been made available commercially and have achieved wide clinical vogue in disorders in which there is a supposed deficiency of the anterior pituitary gonadotropic hormones.

Preparations Available—The chief American preparations of this type are the following (1) "Antuitrin S" (Parke, Davis & Co) prepared from the urine of pregnant women by a modification of the Zondek-Aschheim technic. It is put up in 10 cc rubber diaphragm-capped vials, each cubic centimeter containing 100 rat units. The rat unit is described as the

minimum quantity of hormone that will cause the formation of one or more corpora lutea within 96 to 100 hours when injected subcutaneously in six doses, twice daily for three days, into female white rats 30 days of age and taken from a colony the members of which become sexually mature normally in from fifty to sixty days. "Follutein" (Squibb) is described as a "sterile glycerin solution of the anterior pituitary-like gonadotropic hormone found in pregnancy urine." It is prepared from the latter by a technic essentially that described by Zondek and Aschheim. "It is then dissolved in glycerin, physiologically assayed, herkefelded and filled into 1 cc syringe containers. Each cubic centimeter contains 1,250 rat units. Before administration the content of the syringe is added to 9 cc of sterilized water, thus making 10 cc, each cubic centimeter having a potency of 125 rat units." The rat unit is described as "the minimum amount which, given in six injections on three consecutive days, produces mature follicles, hemorrhagic follicles and corpora lutea in the ovary within 100 hours after the first injection in 30-day old female rats."

It is quite possible that if the actual pituitary hormones, as obtained from the anterior lobe itself, are made available, they may prove to be much more effectual than the anterior pituitary-like principles of pregnancy urine now supplied commercially, for there seems to be much difference of opinion among investigators as to the exact source and nature of these principles, while their effect on the human ovary is certainly not what would be expected from the pituitary hormones themselves. One or two firms are now, I understand, engaged in efforts to produce the gonadotropic hormones from the gland itself, but there has as yet been no opportunity for worth while clinical investigation with them.

Functional Menorrhagia—In this very frequent and very troublesome disorder, encountered at any age during the reproductive epoch, not infrequently during puberty or adolescence, and most often at or near the menopausal phase, clinical evidence indicates the definite value of therapy with anterior pituitary-like principle from the urine of pregnant women. This plan, suggested by Novak and Hurd¹⁰ in 1931, was based on the fact that corpora lutea and progesterin are lacking in this disorder and that there is presumably a lack of the luteinizing principle of the anterior lobe.

It was thought that the injection of a luteinizing principle obtainable from the urine of pregnant women would supply this deficiency. Since such a substance produces marked luteinization of the ovaries of mice and rats, it was even at first thought that the human follicle could be luteinized and progesterin thus be produced, with a completion of the cycle and cessation of the bleeding. Opportunities to study the ovaries of patients who had received this substance have shown that the response is not at all similar to that of experimental animals and that luteinization is not produced. And yet the abnormal bleeding, in a large proportion of cases, is controlled. What the mechanism is one can only speculate, though it is obviously in some way dependent on the reciprocal functions of the anterior lobe and the ovaries.

The chief indication for such therapy is found in the cases of functional bleeding in younger women, in whom any form of radiotherapy is undesirable. In

⁹ Cushing, Harvey. Disorders of the Pituitary Gland. J. A. M. A. 70: 1871 (June 18) 1921.

¹⁰ Novak, Emil and Hurd, G. B. Am. J. Obst. & Gynec. 22: 501 512 (Oct.) 1931.

women approaching the menopause, once the diagnosis is established, radiotherapy is the method of choice, yielding success in practically 100 per cent of cases. In younger women and children, on the other hand, the frequent and often alarming recurrences of functional bleeding must be treated either by curettage, often repeatedly or by organotherapy. Transfusion is not infrequently necessary.

No method of organotherapy yields as large a proportion of successes as follows the employment of the hypophyseal-like preparations, though there are many failures. Why the treatment is so strikingly successful in some cases and so unsatisfactory in others one cannot say, but certainly a proportion of the failures must be due to the uncertainties of the preparations used, for they are notoriously prone to deterioration, even with refrigeration. For this reason some clinics prefer to prepare their own material freshly from the urine of pregnant women, while some have utilized the serum of such women. Even the rectal infusion of the urine of pregnant women has been resorted to with apparent success.

When the commercial preparations are employed, as is commonly the case, a good plan is to withhold them until the onset of the bleeding, or, if this is not too free, until it can be determined whether it is actually to be abnormally long or profuse. Daily intramuscular injections are then begun, in doses of from 100 to 200 units, depending on the severity of the bleeding. In a few cases the hemostatic effect is remarkably prompt, bleeding being checked within a matter of hours. In others the injections may have to be given for four or five days, and the bleeding may be only markedly lessened instead of being checked entirely. In still others, as already stated, there may be little or no effect on the bleeding, so that other measures may be necessary. There is no objection to the plan of beginning the injections several days before the expected bleeding, although irregularity is so common in these cases that the patient cannot usually be sure of the date of onset.

Endocrinopathic Amenorrhea—The anterior pituitary-like preparations (antuitrin S or follutein) are apparently of little or no value in the treatment of endocrinopathic amenorrhea, although, when combined with estrogenic substances (given either together or in sequence, the gonadotropic factor being administered last) they sometimes produce uterine bleeding (see paper on therapeutic applications of estrogenic substances). This method of ovarian therapy is usually combined with the administration of thyroid extract.

Adiposogenital Dystrophy (Frohlich's syndrome).—This extremely common clinical picture with its adiposity of characteristic distribution (heavy girdle about the abdomen, hips and buttocks, large busts, shoulder pads) together with amenorrhea or scanty menstruation, undoubtedly has its chief source in a functional disturbance of the anterior lobe. Whether this may be a purely functional disorder or whether there is always present a chromophobic adenoma is a question that cannot be answered at the present time. Certainly there are many adenomas which, because of their small size and their position, cannot be demonstrated by any clinical or laboratory procedure at present. It seems certain, too, not only that in most cases of adiposogenital dystrophy, the gonadotropic hormones and the fat metabolism hormones of the anterior lobe are concerned but that the metabolic disturbance involves also, and perhaps chiefly, the immediately adjoining hypo-

thalamic regions of the brain. This is indicated by the investigations of Smith and others.

The organotherapy of this condition is very unsatisfactory. The common plan utilizes various combinations of pituitary preparations, thyroid extracts, and ovarian preparations. The oral administration of pituitary preparations is looked on by most clinicians, and practically all laboratory investigators, as having no value. Other clinicians, however, employ these preparations quite extensively. Some, again, believe that while of no value in the usually advised dosage of 5 or 10 grains (0.32 or 0.65 Gm.) a day, they are effective in extremely large doses (from 60 to 100 grains [4 to 6.5 Gm.] daily). As the preparations are expensive, and as their use must be kept up for periods of many months and even years, this method would be prohibitive to most patients.

Thyroid therapy is probably of much greater value and may be used even when the basal metabolism is normal or only slightly subnormal, as is the usual rule. Comparatively small doses, for example $1\frac{1}{2}$ or 2 grains (0.09 or 0.13 Gm.) of desiccated thyroid daily will usually suffice. When there is any noteworthy loss of weight from combined pituitary and thyroid therapy, it seems likely that it is the latter which is chiefly responsible.

As for the use of the anterior pituitary-like and the ovarian hormones in an effort to correct the amenorrhea and the genital hypoplasia, the indications and the results are not different from those pertaining to the treatment of endocrinopathic amenorrhea in general (see article on therapeutic applications of estrogenic substances).

Undescended Testicle—An interesting clinical application of laboratory investigations is seen in the recent employment of the gonad stimulating preparations from the urine of pregnant women in the treatment of undescended testes. A scientific basis for this has been furnished by the observation by Engle,¹¹ in 1932 that the injection of these substances in immature monkeys brought about a descent of the testes, although this form of therapy had been employed before this (Shapiro, 1930). Goldman and Stern¹² have reported two cases of undescended testis, in which the use of injections of antuitrin S (100 units three times a week) was followed in a short time by descent of the gonads.

In a series of six boys suffering with the same condition, Sexton¹³ obtained successful results in four. A very recent paper by Cohn¹⁴ reports that similar treatment (with antuitrin S) was successful in five of six cases. In some of these the descent of the testis seems to have occurred with amazing rapidity. For example, in a boy of 11 the undescended right gonad previously palpable at about the middle of the inguinal canal, "descended six hours after the injection of anterior pituitary-like substance and remained well down after four months." Finally, reference may be made to the very recent study by Aberle and Jenkins¹⁵ of the effects of this form of organotherapy in both human beings and monkeys. In two of four boys receiving the treatment the testes descended but in

¹¹ Engle, R. T. *Endocrinology* 18: 506-512, 513-520 (Sept. Oct.) 1932.

¹² Goldman, A., and Stern, A. *New York State J. Med.* 33: 1095 (Sept. 15) 1933.

¹³ Sexton, D. L. *Endocrinology* 18: 47-58 (Jan. Feb.) 1934.

¹⁴ Cohn, Samuel. *Anterior Pituitary Like Principle in the Treatment of Maldevelopment of the Testis*. J. A. M. A. 103: 103-104 (July 14) 1933.

¹⁵ Aberle, S. B. D., and Jenkins, R. H. *Undescended Testes in Man and Rhesus Monkeys*. J. A. M. A. 103: 314-318 (Aug. 4) 1934.

only one was the descent complete. In immature monkeys complete descent occurred in one animal and only partial descent in four although Engle had obtained complete descent in eight of ten monkeys.

In view of the frequent failure of surgery to correct this condition, the endocrine treatment as outlined, would seem to be indicated in cases of undescended testis before operation is resorted to, although a far larger experience with the method is necessary before one can draw conclusions as to its degree of dependability. The recent report by Geschickter, Lewis and Hartman¹⁶ that the anterior pituitary-like gonadotropic factor produced hypertrophy of the prostate in a monkey to a degree that urethral obstruction resulted, indicates the necessity for caution in the clinical use of this principle.

Other Indications—Habitual abortion, which often presents a baffling problem, has not infrequently been treated with the anterior pituitary-like factor, in the form of either antuitrin S or follutein. The cause of this condition cannot in many cases be determined, and it is believed that some at least are due to a deficiency of the corpus luteum secretion so important for implantation and for the maintenance of fixation of the ovum in the early stages of pregnancy. Since no active preparation of the corpus luteum hormone (progesterin) is available, it is not surprising that the pregnancy urine preparations have been employed as the next most rational means of treating this condition. Failures are common, though they are not usually reported. On the other hand, some successes have been reported, and the treatment seems a justifiable one to employ, but more needs to be known of the underlying cause or causes of this condition.

Primary dysmenorrhea, another *bête noire* of gynecologists, is a disorder of protean etiology. Many causes have been advanced and the methods of treatment suggested have been legion. The psychogenic factor is unquestionably the important one in many cases, the constitutional one in others, while in still others it seems probable that an endocrine imbalance may be concerned. No gynecologic disorder, therefore, makes greater demands on the knowledge, thoroughness and common sense of the gynecologist. A summary of the general plan of treatment is given elsewhere.¹⁷

The physiologic investigations of Reynolds¹ and many others indicate that, just as estrogenic substance is the natural stimulant of the normal rhythmic uterine contractility, so progesterin and the anterior pituitary-like principle contained in pregnancy urine are inhibitors of this contractility. This fact, together with the fact that the immediate factor in the pain of primary dysmenorrhea seems to be a spasmodic contraction of the uterine musculature, has led to the suggestion that a part of the treatment in some cases—but only a part—should consist of the administration of antuitrin S or follutein beginning several days before the onset of the painful periods.

The dose suggested is from 100 to 200 units each day until the first or second day of the flow, after which most patients ordinarily suffer little pain with or without treatment. Because of the ever-present psychic factor which must be considered in the evaluation of results in such a subjective disorder, it is difficult to appraise the effect of this addition to the therapeutic

armamentarium. At times the results seem brilliant, in other cases only improvement without disappearance of the pain is reported by the patient, and in still others the results are disappointing. However, in the treatment of a disorder in which there is so much therapeutic floundering as in that of primary dysmenorrhea, the plan suggested is worthy of trial, especially as it is far more rational than most others which have been suggested. It should again be emphasized, however, that in all cases of this group there should be a comprehensive survey of the constitutional, pelvic, psychic and even sociologic status of the patient.

In 1933 Brosius and Schaefer¹⁸ reported a case of complete aspermia in which the intramuscular injection of antuitrin S (2 cc twice a week) was followed by spermatogenesis, so that at the end of nine weeks numerous motile spermatozoa were found in the semen, while the testes showed a definite increase in size. Needless to say, this observation, interesting as it is, needs confirmation through trial in a large number of cases. In two recent cases of sterility in my practice in which the responsible factor was the husband's aspermia, the method suggested here failed to produce spermatogenesis.

In 1931 Bengtson¹⁹ reported striking results in sixteen cases of alopecia treated by anterior pituitary substance. He recommended the hypodermic use of a pituitary gland preparation as preferable to the oral route, although the combination of the two methods gave the most rapid response. While he considered that all these cases belong to the category of glandular alopecias, he suggested that possibly other common types of baldness might also respond to the treatment. In spite of the author's own conservatism in this regard, the paper was taken up rather sensationally by the daily press. There has been no confirmation of his observations, and Lord²⁰ and others have reported unsuccessful results from the method. There seems to be no reason to expect benefit from it except perhaps in cases of genuine hypopituitarism in which the alopecia is a part of the general picture. Even here the usual limitations and uncertainties of pituitary therapy would prevail.

SUMMARY

The employment of the growth hormone preparations is indicated in the various types of pituitary growth deficiency. The results are usually not striking and will probably not be improved until biochemists isolate the hormone and produce more potent preparations.

The anterior pituitary-like preparations are probably of no value when used alone in the treatment of amenorrhea, and even when combined with estrogenic substance the results are very little improved.

The anterior pituitary-like preparations made from pregnancy urine have appeared to give excellent results in many, though not by any means all, cases of functional uterine bleeding, so that, when this disorder is encountered in young women, in whom radiotherapy is undesirable, the method should certainly be tried.

The comparatively small group of cases thus far reported in which undescended testis has been successfully treated by the anterior pituitary-like preparations make this method seem promising and worthy of more

16 Geschickter C F, Lewis Dean and Hartman C G. *Am. J. Cancer* 21: 828 (Aug.) 1934.

17 Novak Emil. *Am. J. M. Sc.* 175: 237-244 (Feb.) 1933. Novak Emil and Reynolds S R. *The Cause of Primary Dysmenorrhea*. *J. A. M. A.* 99: 1466-1472 (Oct. 29) 1932.

18 Brosius W L and Schaefer R L. *Spermatogenesis Following Therapy with the Gonad Stimulating Extract from the Urine of Pregnancy*. *J. A. M. A.* 101: 1227 (Oct. 14) 1933.

19 Bengtson B. *N. Pituitary Therapy of Alopecia*. *J. A. M. A.* 97: 1353 (Nov. 7) 1931. *Clin. Med. & Surg.* 41: 76 1934.

20 Lord L W. *Anterior Lobe Pituitary Extract in the Treatment of Alopecia*. *Arch. Dermat. & Syph.* 28: 381-383 (Sept.) 1933.

extended trial, especially as the surgical treatment of this condition is not as satisfactory as might be wished.

There is no objection to a trial of the anterior pituitary-like preparations in the occasional mysterious and baffling cases of habitual abortion, although the results are not much more clearly defined than is the etiology of the condition.

These preparations appear rational as adjuvants in the treatment of primary dysmenorrhea, although correction of constitutional and psychic factors is often much more important, and should never be overlooked.

As to other conditions, such as aspermia and baldness, the clinical data thus far available are much too meager to draw conclusions as to the results of treatment with the anterior pituitary-like preparations and there are physiologic reasons to make one question the value of this plan.

It is possible that the results of organotherapy in various forms of anterior hypopituitarism may be improved with preparations of the gonad stimulating hormones obtained from the anterior lobe itself.²¹

26 East Preston Street

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE

HOWARD A. CARTER, Secretary

AIDS IN MUSCLE TRAINING

WITH SPECIAL REFERENCE TO SLING SUSPENSION AND UNDERWATER EXERCISES

F. J. GAENSLEN, M.D.
MILWAUKEE

Of the many varieties of physical therapy, active exercise probably deserves first place because of its wide applicability and because it calls into play the entire neuromuscular units in a manner approaching normal physiologic action.

SLING SUSPENSION EXERCISES

Some ten years ago I described the "sling suspension" method of exercise as an aid in restoration of muscle power in infantile paralysis. The method has been employed for this condition ever since and has also

been found useful in many other conditions. Briefly, the method consists in supporting the arm or leg to be treated in a sling suspended from overhead, thus eliminating the weight of the extremity as a hindrance during movement. The adaptability to the upper and lower extremities, as well as the fact that the method can readily be taught to nurse or mother, makes further mention of the method worth while. These exercises are helpful in allowing the patient to translate even minimal and scarcely appreciable muscle power into

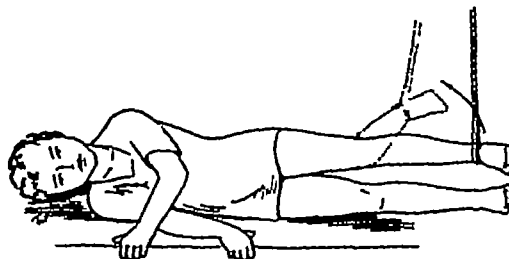


Fig. 1—Sling about ankle to allow flexion and extension at the knee, the hip being fixed in extension by patient or instructor. With an additional sling about the knee and releasing the fixation at the hip the patient may execute movements in flexion and extension of the hip and knee simultaneously.

active and readily demonstrable motion through a fair arc. The fact that even slight gains are recognized by the increase in range of motion is of great importance in spurring on the instructor and the patient to continued efforts in the long and tedious process of restoration of muscle power.

The method is so simple that it can be employed to advantage in the case of even very young children. Resistance may be added, as indicated, in carrying out the exercises.

It is well at the outset to have the power of the muscles, or muscle groups, of the upper and lower extremities charted, the values being roughly estimated on the basis of 100 per cent, or listed respectively as normal, good, fair, poor, trace and zero, so that on comparison, at suitable intervals, some information may be obtained as to the rate of progress or perhaps cessation of progress.

If, after a period of gradual improvement, the condition remains stationary for a period of six months or more, it is reasonable to assume that no further note-

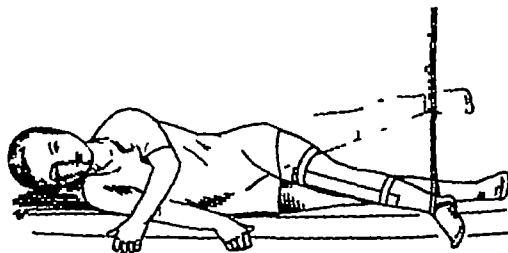


Fig. 2—Patient on the side to allow flexion and extension at the hip the knee being splinted to prevent buckling.

worthy improvement is likely. Continuance of efforts under such conditions is not likely to be rewarded with marked benefit.

After it has been determined which muscles are to be exercised, the mother or attendant is instructed in the proper arrangement of the slings and overhead supports, and in carrying out the exercises as prescribed for the individual patient. The physician, or physical therapy technician, if one is available, should have no difficulty in a few short interviews and demonstrations

21. Following are additional references relating to this subject:
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in teaching the mother or nurse the maneuvers necessary in the particular case. Occasional checking and supervision of exercises by the physician are desirable.

In the average case of infantile paralysis, because of the long duration of treatment, it is not practicable to have the child brought to institutions daily or several times daily for treatment by skilled physical therapy technicians. Neither is it practicable to have the skilled workers visit the children in their homes as often as treatment is indicated. The solution for the case of this type lies in the enlistment of the services of some one in the household, usually the mother. Exercise periods, for the most part, should be brief to avoid fatigue, but they may be, and usually should be, repeated frequently during the day, with proper rest periods intervening. The mother therefore is the one logical person to carry this out. I have found that the average lay mother requires but a few practical lessons in order to acquaint her with the relatively small number of special procedures applicable in the case at hand. She can be taught to carry this out fairly satisfactorily, even though she does not understand the physiologic

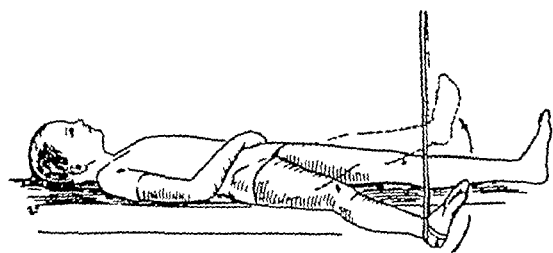


Fig 3—Sling about ankle to allow abduction and adduction at the hip

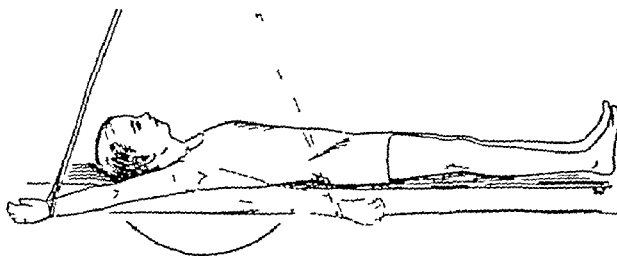


Fig 4—Patient lying supine with the sling about the wrist allowing abduction and adduction at the shoulder

principles involved. Such a program of course, requires occasional supervision and correction of errors, and also modification from time to time.

In the case of the lower extremity the use of the roller skate, ball-bearing device attached to a shoe has been found an advantage in facilitating early motion. This contrivance has been found very helpful in fractures of the lower extremity. With the ball-bearing under the heel and the lift under the knee, regulated by the patient himself, the gentlest movements in flexion and extension can be executed, just as much assistance being given as the case may require and without danger of injury, if ordinary care is used. Resistance in the shape of push and pull by the mother or attendant may be added. This arrangement provides for flexion and extension of both knee and hip as well as for abduction and adduction of the hip. Abduction and adduction are provided for by turning the wheels, fixed to the shoe, at right angles. This type of exercise will be found useful in practically all types of fracture of the lower extremity, including especially fracture of the patella and fracture of the neck of the femur where special care is indicated. There is prob-

ably little doubt that some potentially good results, after fracture of the neck of the femur, are ruined by too early removal of apparatus in bed. The strain at the fracture site, from the constant tendency of the thigh and foot to rotate out, represents a force that probably results frequently in a gradual giving way of the soft callus, with the result of a fibrous union. The directions to move the leg in bed in the sense of abduction and adduction, or, worse still, to try to lift the heel from the bed with the knee extended, cause tremendous force to come into play, which tends to angulate the neck into a position of *coxa vara*. In a leg slightly edematous, still greater caution is indicated because of increased weight. This internal stress on the bone, due to muscle pull, is very considerable, as

Carey has demonstrated. It is more than likely that attention to details of this character would help cut down the percentage of failure in fractures of the neck of the femur, and to reduce the healing period in this as well as other fractures of the lower extremity.

Other conditions in which sling suspension may be employed with benefit include spastic paralysis, especially of the lower extremities, and atrophic arthritis, as well as in cases of weakness and stiffness after fracture or injury. In spastic paralysis it has frequently been found of advantage to attach a heavy weight to the sling, transforming it essentially into a pendulum with heavy weight. The patient's arm or leg is placed in the sling and the pendulum is put into motion by the instructor, the patient being taught to continue the swinging with and without resistance. It is felt that a good start may be made in this manner in developing the sense of rhythm and in the teaching of gentle coordinate movement.

In arthritis, active motion within the pain-free range is without doubt a factor of considerable importance in the maintenance of normal physiologic joint activity. The alternate contraction and relaxation of muscle groups and their antagonists must be of help in improving the circulation. As the muscles contract, the lymph vessels and veins are compressed, the blood and lymph being hurried in the proximal direction. As the muscles relax, these vessels are filled from the capillary side, the capillary system in turn drawing on the arterial supply. In this manner capillary stasis is overcome, and definite acceleration of the blood stream results.

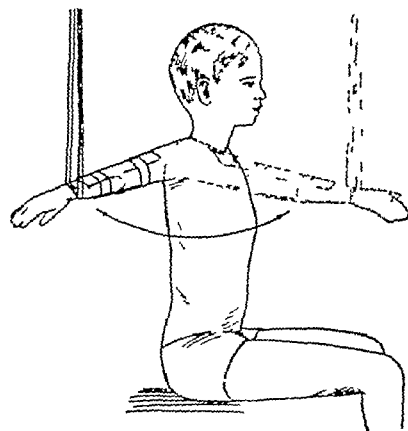


Fig 5—Patient in sitting posture with sling about the wrist the elbow being splinted to prevent motion at this joint the arm may be swung forward and backward from the shoulder



Fig 6—Patient seated with arm at the side the wrist again supported with the sling to allow rotation movements at the shoulder

All the tissues of the part, including those of the joint, are benefited by the improved circulation. Cell growth, repair and defense, as well as elimination, are enhanced. It is felt that the use of the ball-bearing apparatus in atrophic arthritis is of special value, since, with the apparatus in place, the patient can exercise frequently for brief periods, always in the pain-free range. Practically all the joints of the lower extremity, and those

of the upper extremity as well are brought into play, the latter through the rope and pulley hand control.

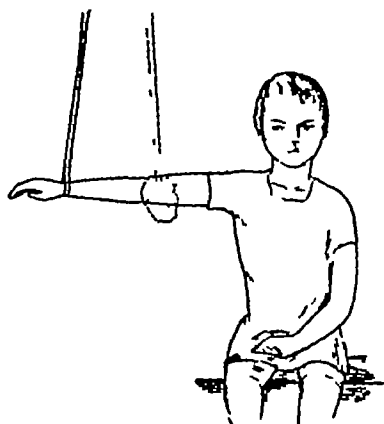


Fig. 7—Patient seated with arm abducted to horizontal level the sling supporting the wrist allowing flexion and extension of the elbow

UNDERWATER EXERCISES

Of perhaps equal importance as an aid in muscle training are underwater exercises. While suitable for infantile and other types of paralysis atrophic arthritis, and weakness and stiffness of the extremities after injury, this type of exercise will be found

useful as well in many instances in the field of internal medicine, neurology and psychiatry.

The advantages of underwater exercises are that (1) the buoyancy of water eliminates gravity and (2) the warmth of the water relaxes the muscles and accelerates the blood flow. The steady, gentle resistance of the water is readily overcome even by feeble muscles. The degree of resistance varies with the speed of motion.

The large pools, indoor and outdoor, are used mostly in the treatment of infantile paralysis and spastic paralysis. The most desirable temperature for infantile paralysis is about 91 F. For spastic cases a slightly higher temperature, about 95, is desirable to produce greater relaxation. It is doubtful whether the great sacrifices, financial and otherwise, made in many instances to provide pool treatment are justified by the results. The ordinary tub or small home-made tank in the average home will answer very well except in unusual cases. They have the advantage that the temperature can be regulated to suit the individual and that the water is renewed for each bath.

While the best results can probably be obtained by specially trained instructors, it is believed that the physician or competent physical therapy technician can teach a mother or attendant the necessary exercises in the individual case with a minimum of expense and with results that will probably compare very favorably with treatment in the large pool.

I have found the so-called Hubbard tub,¹ which is finding favor in many hospitals, of great help. I would be loath to do without this important part of physical therapy equipment. Such a tub installed in a room in a general hospital will be found very helpful in all cases in which wide abduction movements of the arms or legs are very desirable.

OVERHEAD TROLLEY SYSTEM

By means of an overhead pulley, the patient is gently hoisted on a hammock from the bed and carried by trolley to a position directly over the tub, and then

gently lowered into the water. Underwater massage and active and passive exercises, as well as resistance exercises, are then readily administered according to the needs of the individual case. Aside from the facilitation of motion due to the warmth and buoyancy of the water, nervousness is allayed and patients frequently drop off after the bath into a sound sleep. The need for narcotics is diminished and the patient is spurred on to increased effort by the realization that definite and rapid progress is being made.

Caution must be exercised to avoid fatigue both general and local. There is perhaps a natural tendency to err in this respect, because it is more or less of a chore to get a patient into the pool or tub and, when the patient is once in the water, both patient and instructor are apt to overstep safe limits. No general rules can be laid down. Careful observation of the patient while in the tub as well as the first few hours following will be necessary to detect evidence of fatigue.

In infantile cases, muscles will often be found to show signs of fatigue after four or five efforts, therefore, frequent rest periods are indicated. In cases of injury it will rarely be advisable to keep the patient in the tub more than twenty or thirty minutes. Special care should be exercised also to prevent chilling. Warm blankets and towels should be in readiness after removal from the tub to avoid this danger. It is felt that both sling suspension and underwater exercises are of particular value, because they permit early active function. This ranks first along physical therapeutic measures because it calls for function of the neuromuscular unit as a whole. This unit is composed of the motor cell in the brain cortex sending its axon down the pyramidal tract to make contact with the lower motor neuron in the spinal cord. The axon of the latter in turn makes contact with the contracting muscle cell. In addition the inhibitory mechanism is called into play, so that finely graduated precise movements are possible. Again every voluntary muscle contraction is accom-

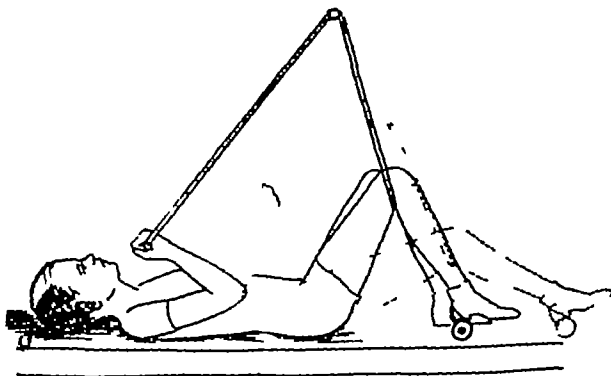


Fig. 8—Sling under the knee suspended from a pulley attached to an overhead bar and controlled by the patient. The roller attached to the heel may be rotated through 90 degrees. A large piece of board may be placed on the bed to provide a smooth surface.

panied by a corresponding relaxation of antagonistic muscles. The voluntary effort automatically calls into play every portion of this complicated mechanism, which cannot be claimed for other agencies.

While the beneficial effects of such simple exercises for normal as well as injured parts are readily appreciable to the patient, as well as to the physician and attendants and presumably attributable to improvement of circulation it is desirable to have some scientific explanation for this improvement. Moving pictures of

¹ Blount W. P. A New Hydrotherapy Tub. J. Bone & Joint Surg. 10: 506 (July) 1928.

the circulation in the rabbit's ear and the effect of a rise of surrounding temperature on the circulation prepared by Drs Eliot R. Clark and E. A. Swenson of the anatomy department of the University of Pennsylvania are of interest in this connection. These show that while at ordinary temperature the circulation through the capillaries is slow one may say sluggish, a moderate rise in temperature is accompanied by a very marked increase in the rate of flow. That exercise exerts a similar influence is indicated graphically in the charts prepared at the Mayo Clinic, based on the work of Goldschmidt and Light. These show that the number of open capillaries in a given area of skin surface is more than doubled by exercise and that heat also increases their number while cold decreases their number in marked degree. In this connection, too, the work of Wright and Marquardt is of interest. They studied the capillaries in the nail bed of the finger and found that while in a normal active individual the

dental to invalidism. There is little danger, except in infantile paralysis, of the patient overtaking his strength during recumbency, because he can interrupt the exercises on the slightest signs of fatigue and resume them after suitable rest periods.

It must be emphasized that every case, of whatever type, must be studied carefully and a physical therapeutic program mapped out to meet the individual requirements, and also that the simple measures outlined here are merely aids in the rehabilitation program.

425 East Wisconsin Avenue

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. THE COUNCIL'S CONSIDERATION OF BAYER ASPIRIN WAS BEGUN PREVIOUS TO THE HEARINGS OF THE FEDERAL TRADE COMMISSION IN THIS MATTER AND COMPLETED WITHOUT KNOWLEDGE OF THE CONTENT OF THE COMMISSION'S PUBLISHED DECISION. THIS REPORT REPRESENTS THE COUNCIL'S INDEPENDENT ACTION AND WAS NOT INFLUENCED BY THE GOVERNMENT'S ACTION.

PAUL NICHOLAS LEECH Secretary

THE PRESENT STATUS OF ASPIRIN-BAYER

Aspirin-Bayer was omitted from New and Nonofficial Remedies in 1917 because of objectionable lay advertising of the product. The attention of the Council on Pharmacy and Chemistry was again called recently to the present character of the lay advertising promulgated by the manufacturers of Bayer Aspirin. An inquiry was received from the National Better Business Bureau, Inc., asking information as to the validity of the claims for curative value in colds made in this advertising. In the interest of the public, the Council therefore made a new survey of the advertising for Bayer Aspirin and found it more flagrant and insidious than that for which the product was long ago omitted from New and Nonofficial Remedies.

During the past decade, but more particularly within the past five years, Bayer Aspirin has been the subject of extensive lay promotion by advertising in newspapers in periodicals and by radio. A wide variety of therapeutic claims has been made ranging from mere statements of alleged superior solubility to outright and unqualified claims for actual prophylaxis and cure of the common cold. A number of claims, intermediary to these two extremes, relating to the relief of aches and pains of indiscriminate anatomic distribution also occur. Likewise may be found many statements pertaining to the alleged endorsement by the medical profession of Bayer Aspirin in preference to other brands to absolute safety in the use of the product irrespective of dosage, to its harmlessness on the heart (with the implication that such harmlessness is characteristic only of the Bayer preparation), and to its alleged greater rapidity of action. Probably no better idea concerning the general nature of the advertising can be conveyed than by the presentation of a number of selected and oft repeated quotations which have appeared in one or another newspaper or periodical from 1929 until the present.

See These Pictures If You Take Aspirin. They Show Why Genuine BAYER ASPIRIN is Rated the Fastest Safe Relief From Pain. the fastest safe relief it is said ever known for pain —Chicago Tribune Oct 13 1933

It is safe in anybody's hands, it has no ill effects. It always helps, it never harms. —Chicago Herald and Examiner Feb 10 1929

Buy the genuine Bayer Aspirin is made carefully. It has the endorsement of the medical profession. —New York Sunday News (date not stated)

They don't depress the heart and may be taken freely. That is medical opinion. It is a fact established by the last twenty years of medical practice. —New York Sun Oct 15 1931

Take some Bayer Aspirin. Take enough to bring complete relief. Genuine aspirin can't hurt anybody. They aren't just for head aches or colds! Read the proven directions covering a dozen other uses: neuritis, sciatica, lumbago, muscular pains. —New York World Telegram Oct 15 1931

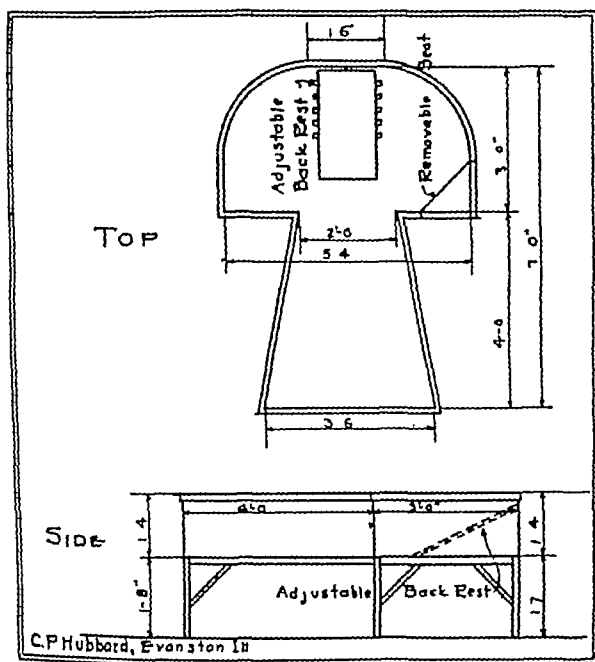


Fig 9—A plan of tub with dimensions. From Blount A. P. J. Bone & Joint Surg. 10: 506-508 (July) 1928

capillaries were rather closely packed in hairpin-like loops, those of the crippled arthritic hand were much less numerous and narrower, indicating that the little used, crippled hand was receiving a minimum of blood.

One is too apt to think of physical therapy in connection with injuries when, as a matter of fact, there is a large field for this branch of therapy in internal medicine, neurology and general surgery as well as in the specialties. I recall visiting the clinic of Professor Bardenheuer in Cologne in 1912. He had all his fracture cases in one large ward and made it a rule that when he entered the ward the patients immediately started carrying out certain exercises, not for the fractured limbs which may have been encumbered by splints or plaster casts, but for the uninjured limbs for the purpose of keeping up their general muscle tone and nutrition as well as the function of the heart and lungs.

One is also still too apt to forget that the body as a whole suffers with the injury of the part and that attention to these self-evident facts will do much to shorten convalescence and reduce the economic burden inci-

"Any doctor will tell you they are harmless. They don't hurt the heart. They don't upset the stomach. So take them as often as you have the least need of their quick comfort."—*Collier's* magazine, Feb. 27, 1932

"Bayer Aspirin does not depress the heart."—*Chicago Tribune*, April 28, 1931

"Take two or three tablets when you've caught a cold, and that's usually the end of it. From a grumbling tooth to those rheumatic pains which seem almost to bend the bones, Bayer Aspirin is ready with its quick relief. Any nagging, needless pain."—*Chicago Tribune*, May 5, 1932

"Take Bayer Aspirin at the first sign of a cold and you can ward it off."—(Reference unknown but clipping on file)

"You can head off a headache by taking these tablets, or nip a cold in the bud. But read the proven directions, and be ready to end more serious suffering."—*Los Angeles Times*, Nov. 8, 1931

If you have a cold—don't take chances with cold killers and nostrums. A cold is too dangerous to take chances on. The simple method pictured above [reference to picture of a man taking one or two Bayer Aspirin tablets with a full glass of water] is the way doctors throughout the world now treat colds. It is recognized as the QUICKEST, safest, surest way. For it will check an ordinary cold almost as fast as you caught it. That is because the real BAYER Aspirin embodies certain medical qualities that strike at the base of a cold almost INSTANTLY.

If throat is sore, gargle with 3 BAYER Aspirin Tablets crushed and dissolved in a half glass of warm water, repeating every 2 or 3 hours as necessary. Sore throat cases this way in a few minutes are healed as this may seem. Ask your doctor about this. —*Chicago Tribune*, Nov. 11, 1932

Bayer Aspirin has been actively promoted from coast to coast in a variety of publications as an utterly harmless sedative for symptomatic mitigation in a variety of conditions, and as a specific remedy for the prevention, abortion or cure of the common cold. Many other questionable statements might have been cited, but a critical discussion of those just quoted should suffice to illustrate their general unreliability. It should first be pointed out that Bayer Aspirin is merely a commercial proprietary name for the U. S. P. acetylsalicylic acid (from which it differs solely by its extensive advertising to the laity). For this reason it is classified in the general group of coal-tar antipyretics, which group, by reason of the similar therapeutic properties of its constituents, is useful in alleviating certain of the symptoms attendant upon the common cold. It has been contended that a threatening cold may be "aborted" by compounds of this group before it has become fully established, but to prove this it would be necessary to compare adequate series of threatening colds, one given the drug and the other not. No report of such a study can be found. Though the fever, headache and malaise may be minimized, there is no reason to believe that the usual course or duration of the common cold is in any way altered by the administration of acetylsalicylic acid of any manufacture. Physicians use these coal-tar antipyretics for the alleviation of symptoms of colds, not in any sense as a cure. Few, if any, competent physicians would subscribe to the claim, express or implied, that Bayer Aspirin, or any chemically identical or similar substance, is a specific remedy for colds and sore throats, or that it will cure such disorders.

The following claims are more explicitly considered.

Concerning greater solubility. Though it may be true that tablets of Bayer Aspirin disintegrate more quickly in a tumbler of water than do some other brands, there still is no evidence to show it any more rapid in the production of its effect in the patient. Regardless of the consistency of the original preparation, the drug must pass into the intestine before absorption in therapeutic quantity can take place, and the time ordinarily required for passage from stomach to intestine would probably be ample to allow of the disintegration of practically any preparation of acetylsalicylic acid, so that rapid disintegration of a tablet on contact with water does not appear pharmacologically significant.

Concerning medical endorsement. Here the burden of proof properly devolves on the firm. In 1917 (at about the time the patent expired on Aspirin) when the firm decided to adopt frank "patent medicine" methods in promoting the product, the Council published its first adverse report omitting the product from New and Nonofficial Remedies. Since that time, THE JOURNAL has, on a number of occasions, commented adversely on the product.

Concerning use as a gargle. The claim that "sore throat" is eased in a few minutes by gargling with a solution of Bayer's Aspirin, three tablets in half a glass of warm water, has not

been proved by convincing evidence. Some observations indicate that the warm water is as effective as the Aspirin.

Claim of harmlessness. The claims thus far discussed, though unfounded, do not embody any serious direct menace to individual or public health such as is unquestionably involved in the statements concerning the absolute harmlessness of Bayer Aspirin. Acetylsalicylic acid may be and has been repeatedly shown to be potentially harmful, directly or indirectly, when taken indiscriminately. Indirectly, its use may mask symptoms which, instead of being those of an approaching cold, a simple headache or a mild lumbago, might represent the prodromal stages of an acute infectious disease, pneumonia, brain tumor, brain abscess, tuberculosis, cancer of the spine, or any number of serious diseases too numerous for specific citation. It is only too obvious that an inestimable amount of harm will be done by treating an early pneumonia with aspirin until too late, or maltreating scarlet fever until the delay has inaugurated a community epidemic. It is quite true that it would be impractical, even if it were desirable, that people should "run to the doctor," every time that they are a little out of sorts, or think that they are. It is the physician's function to instruct his patients as to what they individually may with reasonable safety undertake in the way of self treatment, adapting the advice to the common sense, intelligence, education and temperament of the individual. It is not safe, either for the individual or for the public, to rely on advertisements for this instruction.

There is also the possibility of direct harm to the individual from the drug itself. On this score a number of reports of serious reactions appear in the literature. Mann¹ reports a case of myocardial impairment secondary to aspirin poisoning. Kraus² as early as 1914 reported a series of cases exhibiting allergic manifestations (urticaria, acute edema, either local or general, erythema, and pruritus) following the ingestion of as little as from 5 to 10 grains of acetylsalicylic acid. Roch³ has reported the production of some gastric irritation. Block⁴ has shown the toxic effects in animals to be identical with those of other salicylates, while Hanzlik⁵ has demonstrated acetylsalicylic acid to be one and one-fifth times as toxic as sodium salicylate in man. Stiel⁶ recorded chronic poisoning with symptoms of conjunctival catarrh and urticaria following a daily dose of 20 grains over a period of six years. The most serious reported reactions in recent years were observed by Lamson and Thomas.⁷ They record four cases of severe sensitivity to aspirin contained in a patent asthma powder. One patient died in acute air hunger within half an hour following the self administration of but one half of the recommended dose. The three other cases exhibited a prompt induction, or marked aggravation of asthmatic symptoms, requiring epinephrine for relief. One of these patients was rendered unconscious by the reaction and required the constant attendance of her physician for several hours thereafter. These authors conclude that "an abnormal response to acetylsalicylic acid is probably more common than to any other drug." The paucity of reports in the literature would not appear to substantiate such a conclusion. It is certain, however, that there are many more such instances which do not find their way into print and that there is always the possibility of injury to the individual. The fact that abnormal response is uncommon provides no solace for the victim, who has been assured of the absolute harmlessness of aspirin of any brand.

Finally, it should be emphasized that practically all American brands of acetylsalicylic acid are of pharmacopeial standard, to which all legally sold products must conform. The claims that there exist radical differences between Bayer Aspirin and other brands of acetylsalicylic acid manufactured by reputable concerns are unsubstantiated. Actually, the only impurity likely to occur in any reputable brand is salicylic acid (in mere traces only), which is of identical action and of no practical significance whatever as a contaminant.

1 Mann, W. Secondary Impairment of Cardiac Muscle Caused by Aspirin Poisoning, *Med. Klin.* 28: 85 (Jan. 13) 1933.

2 Kraus, A. D. Aspirin. *Arch. Dermat.* 118: 1 1914.

3 Roch, M. Salicyl. *Bull. gen. de therap.* 163: 218, 1912.

4 Block, Salicyl. *Inaug. Diss.*, Giessen 1909.

5 Hanzlik, P. J. A Study of the Toxicity of the Salicylates Based on Clinical Statistics, *J. A. M. A.* 60: 957 (March 29) 1913.

6 Stiel, W. F. Chronic Aspirinism. *Fractitioner* 99: 293 (Sept.) 1917.

7 Lamson, R. W., and Thomas, Roy. Some Untoward Effects of Acetylsalicylic Acid. *J. A. M. A.* 99: 107 (July 9) 1932.

The Council has authorized the publication of this report and has confirmed its rejection of Bayer Aspirin for inclusion in New and Nonofficial Remedies because

1 The unrestrained advertising of the Bayer product has given it an unfair advantage over other brands the manufacturers of which have adhered to the code which the Council has established in the interest of public health

2. It is expected that this unfair advantage will be reduced in the degree that the misleading advertising of Bayer Aspirin is restricted

3 The indiscriminate use of Bayer Aspirin, as urged in the advertising, is inimical to public and individual health, both directly and indirectly

4 Aspirin (acetylsalicylic acid) is potentially a dangerous drug and its unqualified use as a home remedy should be undertaken, originally in any case, under the guidance of the family physician, whose knowledge of the personal characteristics of the individual patient can alone render such use safe and advisable

MENINGOCOCCUS ANTITOXIN

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
PAUL NICHOLAS LEECH Secretary

A review of recent studies convinced the Council that meningococcus antitoxin shows a promise that makes it worthy of more extended clinical trial, the evidence, however, not being sufficient to warrant unlimited acceptance, the Council voted to accept the product submitted by Parke, Davis & Co for one year only, in the hope that this acceptance may result in a clearer evaluation of its usefulness. At the end of that period the Council will give the product further consideration. A general description of meningococcus antitoxin, with a description of the accepted brand, appears in the New and Nonofficial Remedies Department of this issue

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION

PAUL NICHOLAS LEECH Secretary

MENINGOCOCCUS ANTITOXIN—An antitoxin prepared by the immunization of animals to polyvalent filtrates of six to eight day hormone broth cultures of the four Gordon groups of meningococcus, after the method of Ferry, Norton and Steele.

Actions and Uses—The published studies on the effect of the antitoxin in experimental meningococcal septicemia in guinea pigs and rabbits, in experimental meningomyelitis in monkeys and in clinical epidemic meningitis in man suggest (1) that the symptomatology of the disease is attributable at least in part to the effects of a toxin produced by the organism and (2) that the clinical manifestations of the disease, its commoner complications and its mortality rate may all be favorably affected by the timely and proper administration of the antitoxin. The antitoxin should be used only in specific infections with the meningococcus, and the usual precautions concerning the administration of horse serum should be observed.

Dosage—Dependent on the condition of the patient, the degree of toxemia and the occurrence of complications, from five to ten thousand units of antitoxin may be administered intraspinally, intracisternally or intravenously, at twelve to twenty four hour intervals. The usual case is said to require a total of from 50,000 to 100,000 units

Parke, Davis & Co, Detroit

Meningococcus Antitoxin P. D. & Co—An antitoxic serum prepared by immunizing horses to bacteria free meningococcus toxin preserved with 0.1 per cent of tricresol. The antitoxin is standardized by human skin tests, the skin test dose of meningococcus toxin being that which when injected intradermally into a susceptible individual will produce a local skin reaction at least 10 mm in diameter. The unit of meningococcus antitoxin is ten times that amount of the antitoxin which when mixed with one skin test dose of meningococcus toxin will produce a negative reaction or a reaction appreciably less than 10 mm in diameter provided the controlled toxin reaction is appreciably more than 10 mm in diameter. The final product is standardized to contain not less than 350 units of meningococcus antitoxin per cubic centimeter. It is marketed in packages of one vial having a diaphragm stopper at each end and containing 10 thousand units of antitoxin.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION



RAYMOND HERTWIG Secretary

ARROW BRAND SWEETENED CONDENSED MILK
LION BRAND PURE SWEETENED CONDENSED MILK

NESTLE'S BRAND SWEETENED CONDENSED MILK

SILVER BRAND SWEETENED CONDENSED MILK

Manufacturer—Nestle's Milk Products, Inc., New York and San Francisco

Description—Sweetened condensed milk prepared from milk and sucrose

Manufacture—Fresh milk from dairies under the company's supervision is strained, cooled and delivered to the condenseries in clean cans and tested for cleanliness, freshness and flavor. The milk is standardized as to fat and solids content, heated to 85 C and sucrose is added. The mixture is held at 85-90 C for five minutes, is concentrated in a vacuum pan at 55 C to somewhat less than one third of its original volume to conform to the United States Department of Agriculture standard for sweetened condensed milk, cooled to 18 C, and sealed in cans

Analysis (submitted by manufacturer) —	per cent
Moisture	26.0 27.0
Total solids	73.0 74.0
Ash	17 18
Milk fat	8.0 8.1
Protein (N X 6.38)	7.6 8.2
Sucrose	44.0 45.0
Lactose	11.0 11.9
Carbohydrates (by difference)	56.7 54.9

Calories—3.3 per gram 94 per ounce

Claims of Manufacturer—Conforms to U S Department of Agriculture definition and standard for sweetened condensed milk.

WARRANTY SIEVED PEACHES

Manufacturer—The Nielsen Corporation, Ltd., Oakland, Calif

Description—Sieved peaches prepared by efficient methods for retention in high degree of the natural mineral and vitamin values. No added sugar or salt

Manufacture—Fresh peaches are pitted by hand, passed through a lye peeling machine to remove skins, thoroughly washed to remove any adhering lye, and sorted to separate fully ripe from slightly underripe fruit. The former is either sieved immediately, as in the case of Warranty Sieved Spinach (THE JOURNAL, Feb 2, 1935, p 399), or canned and used later as needed for sieving

Analysis (submitted by manufacturer) —	per cent
Moisture	87.4
Total solids	12.6
Ash	0.6
Sodium chloride	trace
Fat (ether extract)	0.2
Protein (N X 6.25)	0.5
Reducing sugars as invert sugar	3.4
Sucrose	4.7
Crude fiber	0.6
Carbohydrates other than crude fiber (by difference)	10.0
Titratable acidity as malic acid	0.7

Calories—0.4 per gram 11 per ounce

Vitamins—The method of preparation and processing insures the retention in high degree of the natural vitamin values

Claims of Manufacturer—Specially intended for infants, children and convalescents, and for special smooth diets. Only warming is required for serving

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MARCH 23, 1935

VARIATIONS IN BEHAVIOR OF VITAMIN D

In 1919 Huldschinsky announced his observations on the efficacy of artificial ultraviolet irradiation in rickets. Four years later, Goldblatt and Soames demonstrated that irradiation of rats resulted in the development of antirachitic potency in the livers of these animals. The next year both Hess and Steenbock showed that when many food materials are exposed to these short wavelengths they exhibit antirachitic potency. In the course of the search for an explanation of the antirachitic activation, it has been demonstrated that the potency always follows the nonsaponifiable fraction of the lipids that the activated material is rather resistant to ordinary laboratory manipulation, and that over-irradiation results in the destruction of the effective compound. Naturally attempts were made to activate crystalline cholesterol, it is rendered highly potent by exposure to ultraviolet rays and retains this potency after a great many recrystallizations. Because activated cholesterol lost its potency when subjected to bromination and subsequent regeneration, it was concluded that a contaminant of cholesterol was responsible for the response to ultraviolet rays. Through studies based on fractional crystallization and on the absorption spectrums, ergosterol was identified as an accompaniment of cholesterol and was shown to be subject to intense activation by ultraviolet rays.

Once the fact was established that ergosterol is a precursor of vitamin D, there were reported many experimental studies which demonstrated the enormous potency of irradiated ergosterol solutions when compared to other recognized antirachitic substances such as cod liver oil and egg yolk. These comparisons were based on the official biologic assay in which the healing of the epiphysis of the femurs of rachitic rats is taken as the criterion of efficacy. After a time it was observed that, in tests of the toxicity of irradiated ergosterol, chickens were extremely resistant to overdoses of this material. When a comparison of viosterol (irradiated ergosterol) dissolved in oil with cod liver

oil was made on the basis of the prevention of leg weakness in chickens, the latter was enormously more effective. Addition of vitamin A to viosterol failed to increase its efficacy in preventing leg weakness in chicks. The same superiority of cod liver oil over viosterol and irradiated yeast was demonstrated when the proportion of ash in the leg bones of chickens was the criterion. Russell, Taylor and Wilcox¹ have recently shown that a higher percentage of bone ash and superior egg production were secured with cod liver oil than with many times the number of "rat units" of vitamin D given in viosterol but that superior storage of this vitamin resulted in liver and egg yolk when viosterol was employed. Again, rats were used in assaying the organs. A still more striking instance of discrepancy between these two widely used sources of the antirachitic factor has been cited by Bills, Massengale and Imboden.² They compared cod liver oil with about 100 units per gram with blue fin tuna liver oil with 40 000 units per gram (both oils assayed with rats) on the basis of the behavior in chicks, the blue fin tuna oil was only a sixth as effective as was the cod liver oil.

Similar comparisons between the various sources of vitamin D have been made in cases of human rickets. The question has become particularly pertinent with respect to milk that has been enriched in the antirachitic factor by various methods. Earlier studies indicated a discrepancy in the results with infants between cod liver oil and viosterol when the two were fed in amounts containing the same number of "rat units," the former, as with chickens, being more effective. More recent investigations of activated milks indicate that milk irradiated directly is superior to cod liver oil when fed in amounts providing the same number of "rat units." One suggestion for the enhanced antirachitic value of irradiated milk attributes peculiar efficacy to the protein-sterol combination that has been demonstrated in milk.³

There is accumulating a mass of experimental evidence which, when correlated, will inevitably result in a change in current views regarding the interrelationships between the various dietary factors providing what is now called vitamin D. It is evident that man, the chick and the rat each exhibits what appears to be a specific quantitative response (but which really may be a qualitative one) to various sources of vitamin D. It has been suggested that the antirachitic factors from different sources are not identical.⁴ Furthermore, the view that ergosterol is the provitamin D of cholesterol has been challenged recently by Waddell,⁵ who has presented evidence indicating that, when irradiated, cholesterol itself, apart

¹ Russell, W. C., Taylor, M. W., and Wilcox, D. E. *J. Biol. Chem.* 107: 735 (Dec.) 1934.
² Bills, C. E., Massengale, O. N., and Imboden, Miriam. *Science* 80: 595 (Dec. 21) 1934.
³ Sterols in Milk, editorial J. A. M. A. 103: 190 (July 21) 1934.
⁴ Steenbock, Harry, Kletzen, S. W. F., and Halpin, J. G. *J. Biol. Chem.* 97: 249, 1932.
⁵ Waddell, J. *J. Biol. Chem.* 103: 711 (July) 1934.

from the contaminating ergosterol, is rendered active in curing rickets. As inevitably happens, examination in closer detail of a collection of apparently well integrated circumstances has brought out some disturbing contradictions. However, this is part of the greater sweep of progress.

ASPIRIN-BAYER

Elsewhere in this issue (p. 1005) the Council on Pharmacy and Chemistry publishes a report on "The Present Status of Aspirin-Bayer." The methods employed by the exploiters of this brand of acetylsalicylic acid make desirable a recapitulation of the history of this product.

The original home of Aspirin-Bayer was Germany. Neither that country nor any others of importance would grant a patent either on the product acetylsalicylic acid or on the process of making it. The United States patent office granted both. As a result, for seventeen years—the life of a patent—it was impossible for any one in our country to manufacture or sell acetylsalicylic acid except the Bayer Company. Neither was it legal to import the substance. The monopoly thus granted the Bayer concern under the patent made it possible for the company to exploit the American medical profession and the public by charging an exorbitant price for aspirin.

More than twenty years ago THE JOURNAL collected data from American consuls abroad regarding the price at which acetylsalicylic acid was sold in foreign countries. At the time American druggists were paying 43 cents an ounce for aspirin. The American public was, of course, paying still more for it. During the same period acetylsalicylic acid was being sold to druggists in France, Germany, Holland, Denmark, Sweden and other countries in continental Europe for 4 cents an ounce, and in Great Britain for 6 cents an ounce. The American had to pay nearly eleven times as much for his acetylsalicylic acid as did the citizens of most other civilized countries.

In February 1917 the patents on aspirin expired. Then the company that had reaped the benefit of its monopoly attempted to continue the monopoly by claiming it had the exclusive right to the use of the trademark "Aspirin" under which the public had purchased the Bayer brand of acetylsalicylic acid. Fortunately the courts would not sustain this claim. Any pharmaceutical house may now manufacture acetylsalicylic acid and sell it under the name aspirin.

There followed a period during which the Bayer concern carried on an advertising campaign which led the public to believe that the only "genuine aspirin" on the American market was the Bayer product. The same campaign also stressed the alleged harmlessness of Aspirin-Bayer. As the company, like most of those employed in the "patent medicine" business, was shrewd enough to take advantage of the weakness of the pres-

ent national Food and Drugs Act, which cannot control claims made elsewhere than on or in the trade package it was not possible to reach the concern through the Food and Drug Administration. In June of last year, however, the Federal Trade Commission served a complaint against Bayer Co., Inc., of New York City, charging misrepresentation in the sale of aspirin tablets. The company was given until July 13, 1934, to file its answer, showing cause why the commission should not issue an order requiring it to cease and desist from the practices complained of.

The company, through its counsel, filed an answer asking that a hearing on the charges be waived and consenting to the commission serving an order to cease and desist. The commission thereupon ordered the company to cease and desist from representing in newspaper and magazine advertising or over the radio that aspirin is the trademark of the Bayer brand of acetylsalicylic acid and from making such claims as

"It does not depress the heart"

"It cannot harm the heart"

"Bayer aspirin is always safe"

"Perfectly harmless"

"You could take it every day without harm"

and many other similarly false and misleading claims. It was also ordered to cease claiming or representing that aspirin not made by the Bayer company is spurious or counterfeit.

This order was issued in September 1934. In the interim between the serving of the complaint and the issuing of the cease and desist order the Bayer Company brought down the retail price of its aspirin tablets to a price more nearly comparable with competing brands. It thus appears that exorbitant prices were first and foremost based on the monopoly granted through the patent law and, secondly, that an artificial price level was maintained by means of misleading claims to superiority together with the unjustified charges against its competitors.

IS THERE A "MORAL CENTER" IN THE BRAIN?

The cerebral localization of some peripheral actions is well established. The localization of others is merely a matter of speculation and debate, thus the status of sleep and heat regulation is still uncertain. When applied to more complicated phenomena such as the so-called moral sense, evidence for or against a "center" is even more difficult to assess.

Yawger¹ has recently discussed the possibility of a "moral center" in the brain based on the dissociation of social morality and certain intellectual or artistic qualities. Among the "idiot savants," he says, was "Blind Tom," a Negro musician of great talent. He was born a slave, and when he was 7 years old the family of his master, hearing strange music, found him

¹ Yawger, N. S. "Is There a Moral Center in the Brain?" *Am J Sci* 189: 265 (Feb.) 1935.

at the piano. He could at once reproduce the tunes he heard and repeat them after long intervals. Some of his music was from the classics and, if it had been played nervously when first heard, that too was included in the rendering. He could play a different tune with each hand at the same time, yet he was so foolish he would rise and, with his audience, applaud his own accomplishments. His intelligence was about that of a child of 4 years. There is room here for a reasonable doubt as to what quality might be localized.

Yawger refers also to Jesse Pomeroy, whose criminal career began at 13 with crimes of an especially brutal character. Pomeroy spent about forty years in solitary confinement, yet he read extensively, studied law and acquired some knowledge of several languages. Wainwright, another noted criminal, had an artistic temperament and was a poet, art critic, antiquarian and prose writer as well as a gifted forger and as subtle and secret a poisoner as has been known in almost any age. His known murders were numerous, but there were probably many that never received judicial notice.

Gilles de Rais, the original of Bluebeard, serves as another illustration of the combination of exceptional intellectual with exceptional criminal attainments. He could speak three languages and manifested great interest in military matters. His crimes were atrocious—apparently mostly of a sadistic type—and it was proved that he kidnapped or enticed to his castle at least 140 children.

Through disease, injury and shock, the mind may be strangely affected. There are many instances on record of persons whose intellectual characters have been markedly altered by such traumatism.

This evidence as to a "moral center" in the brain is unconvincing. If "morality" is a purely human trait, however, there can be no other source of evidence than by observation of human behavior. Moral sense is more closely allied to emotion than to intellect. The frequent dissociation of emotion and intellect may be nothing more than the alternating control of action by the lower and higher nervous centers.

Current Comment

TRACK ATHLETICS AND MUSCLE PHYSIOLOGY

Records in track athletics have gradually improved, notwithstanding the fact that men predicted twenty years ago that the height of ability had been reached. The human mind is ingenious. Improvements in style of running and in training have permitted records to be lowered again and again. Previous to 1888 it was customary for runners to start standing up. In that year a Yale athlete, C. H. Cherrill, first used the crouching start. He won his race and since that time almost all sprinters have used the crouch in their start. It is said that the starting blocks were invented by Bresnahan, the track coach of Iowa. These were origi-

nally designed to keep athletes from digging holes in the track for their feet. A study of their value, however, indicates that they permit a faster start because of their firmness, the average advantage being about one foot. Coaches are still working for ways of permitting athletes to start faster. According to Thomas K. Cureton they are now working on some system of ropes or grip handles that will permit the runner to stand in the running position, or really to get a running start while standing still. Some studies made by Japanese and recently confirmed by American investigators show that the amount of time runners are held in position while crouching ready to start is important. The fastest start is secured when they are held in this position one and a half seconds. The Iowa coach showed that left-handed athletes should start with the right foot, and right-handed athletes with their left foot forward. The best sprinters take a long breath and hold it just after the command "Get set." Holding the breath allows them to focus their attention better and perhaps aids the drive from the legs through fixing the abdominal muscles. The extensive studies that have been made indicate how science is able to help the runner in improving his speed. It is important for runners not to start cold. A famous record holder found that he started fastest in the sixth to the ninth start when twenty starts were made in a row. The investigations of physiologists show that the muscles change in their constitution during exercise and that the internal thickness of the muscle may be relieved by rubbing the legs, by the application of heat or by repeated starting before the final start is made.

A CANCER FUND FOR CANADA

To commemorate the twenty-fifth anniversary of the accession of King George V to the throne, the governor general of Canada is inaugurating the raising of "the King George the Fifth Silver Jubilee Cancer Fund for Canada." When completed, the fund will be administered by a board of trustees set up for the purpose. The Canadian Medical Association has authorized the establishment of a department of cancer control, and it is hoped that the fund will provide the necessary financial aid to enable it to carry out its program. A study committee has been developed within the Canadian Medical Association under the leadership of Dr. Alexander Primrose to work out the plan of attack. The plans include the securing of funds, the propagation of knowledge concerning cancer and the methods of attacking it, the establishment of a library of cancer, and the making of grants to aid cancer study and research. In outlining the plan of attack, the following points are given special consideration: (a) The attack against the cancer cell and the chemical reactions that occur within it. (b) Cancer-producing substances—petroleum in various forms, the hormone estrin, and so on. (c) Facts regarding anticancer serum. (d) Hereditary factors in cancer. (e) Chemical substances that destroy the cancer cell without being harmful to the normal cell, e. g., lead salts. (f) Cobra venom. (g) Biochemical investigation, in particular the metabolism of carbohydrates as sources of energy. The bio-

chemical results of radiation on the living cells (h) Immunity (i) Grading of malignant tumors (j) The cancer-producing properties of commercial lubricating oils (k) The serum test for cancer (l) Radium proper dose and legitimate field for employment The bomb X-rays This type of intensive effort should lead to considerable advancement in cancer control in Canada It is believed that both the public and the medical profession will aid in the development of funds and in the promulgation of the work The place of cancer on the list of causes of death emphasizes the necessity for more intensive activity than has thus far been developed in relationship to its control

Medical Economics

COLLECTION AGENCIES

At various times in THE JOURNAL, physicians have been warned repeatedly to use extreme care in the selection of collection agencies and methods It has frequently happened that the physician is duped by suave salesmen, whose promises cannot be substantiated, into signing an apparently innocent paper, which later is found to be a contract Many of these contracts are in the nature of assignments which relieve the physician of all control and ownership of the accounts

During a recent broadcast, a representative of the Better Business Bureau of Chicago presented some of the Better Business Bureaus ideas and experiences with collection agencies and methods The principal parts of this broadcast talk are given below

"It has been said on good authority that a creditor is his own best collector, and, in the case of debts owing to doctors, dentists and other professional men, this is undoubtedly true However, whether you are a professional man or a merchant, it would be indeed unusual if you could personally find time to collect all your outstanding debts The task would be almost impossible

"The alternate followed by most business men today is to turn over to a professional collection agency the job of collecting his past due accounts Ordinarily, this service is rendered for a fee, sometimes a flat rate, but usually on a commission or contingency basis

"About three years ago Chicago was overrun by a small group of crooked collection agencies, which took many thousands of dollars from the community before their activities were terminated by the State's Attorney's office They were openly operating against the law but were enabled to collect these large sums of money through a clever trick, which might be characterized as 'collecting from the creditor'

"The procedure was usually about as follows You would be approached by a salesman of one of these companies, who would tell you in glowing exaggerations what unusual success his company had experienced in collecting money You need not pay the company anything until the collections had been remitted to you and there was no necessity for you to sign any contract or other written agreement No doubt this type of presentation would appeal to almost any business man, most of whom had large numbers of outstanding accounts three years ago

You can see no objections to turning over to this man some of your accounts as a trial—and, of course you picked out your oldest accounts and usually the ones which you had long since given up hope of ever collecting Perhaps you smiled inwardly as you gave these accounts to the salesman, but the salesman was also smiling inwardly because he received a liberal commission for obtaining every one of your accounts These salesmen's commissions were, in fact, so liberal that the offices of these gyp concerns were besieged every morning by men and women anxious to work for these companies Little did they know of the reputation and methods of doing business of these fly-by nights—all they knew was that their friends were making substantial commissions and why shouldn't they?

On the day following the visit of the salesman you receive a neatly typewritten letter from the company acknowledging

receipt of your accounts and assuring you that they would receive prompt attention The 'prompt attention' was usually forthcoming about three weeks or a month later in the form of a telephone call from the company's office It went something like this 'Mr Jones, we have just located a substantial bank account in the name of one of your debtors, and we would like to "tie it up" immediately to prevent his withdrawing any funds until your debt is paid If you will advance \$17.50 for legal expense we will proceed immediately to collect your debt of \$450 I will send our messenger to your office within the next few minutes to pick up your check, as no time should be lost'

'While somewhat bewildered, you are so astonished to learn that this particular party from whom you had been trying to collect your debt for the past several years was clever enough to conceal a bank account outside the city that you give little thought to the possibility of the entire matter being a trick to obtain your money Neither is there much opportunity given you to reflect, because the company's messenger is in your office within a few minutes after you have hung up the receiver You reason that if you can collect \$450 by sending \$17.50, that certainly is good business, so the messenger receives your check This same procedure may be repeated once or twice more before you come to the conclusion that the company is not acting in good faith Usually, however, the average business man will hesitate before giving the company another check until he sees the results from the first one.

"Nothing further is heard from the company and your telephone calls are greeted by the various evasions popularly known as buck-passing 'Mr So-and-So is out of the office and will call you back or 'he is no longer with the company because we found he was crooked' Personal calls at the office of the company result in nothing because you can never find any one in authority—he is always 'out'

"When the State's Attorney's officers raided one of these fly-by-night concerns, the records of the company showed more than \$1,000 a day was being collected by this means The only substantial expense of the company was commissions paid to solicitors, for no trace of any actual collection efforts in the form of letters, garnishments, wage assignments or other legal procedure was found when the company's records were examined The only money collected was taken from the creditors—not the debtors

'Needless to say, there are no such companies operating in Chicago at the present time However, there are a large number of collection agencies which are today operating on what is known as a shoe string' These companies are operated by individuals who might make some effort to collect your debts When they are successful, they usually retain most of what they collect for various fees, legal charges, and the like It is a rare occasion when you can obtain a statement from the agency showing the status of your accounts, and if such a statement is ever forthcoming it will probably set forth collection charges far in excess of actual collections, so that you owe the company money

'Examination of your written agreement will disclose a confusing mass of 'ifs, and buts' Of course, you never read the agreement before you signed it, so that you have nobody to blame but yourself If you take the trouble to dissect the various conditions in your contract, you will undoubtedly discover that the company has protected itself in every possible legal way and the various charges levied are all within the company's rights Obviously, such collection service is of no value to you The high pressure methods used by such companies in collecting your debts will invariably destroy your customers' good will and render them valueless as a future source of business At the same time, you gain absolutely nothing and your debts must eventually be written off your books as a dead loss, even though the collection agency has collected in full

'If you must employ the services of a collector, be certain that he is reliable Regardless of whether he is a lawyer or a member of some association of collection agencies investigate his past record and ascertain whether he has any satisfied clients—not clients who have just recently employed his services, but those who have been dealing with him for several years Any reliable collection agency will gladly furnish you with such references"

Association News

THE ATLANTIC CITY SESSION

Section Hotel Headquarters

The Section on Obstetrics, Gynecology and Abdominal Surgery has designated the Hotel Dennis as its headquarters during the Atlantic City session of the American Medical Association, June 10 to 14. Members of the Section on Obstetrics, Gynecology and Abdominal Surgery are invited to make their reservations at the Hotel Dennis for the session.

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next three broadcasts will be as follows:

March 28 This Is No April Fool W W Bauer M D
April 4 Negro Health Week W W Bauer M D
April 11 Sickness Insurance, R G Leland, M D

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next three broadcasts will be as follows:

March 26 Tonics and Sedatives Morris Fishbein M D
April 2 Sickness Insurance, R G Leland M D
April 9 Crying for the Moon, W W Bauer M D

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

State Medical Meeting at Mobile—The sixty-eighth annual session of the Medical Association of the State of Alabama will be held in Mobile, April 16-18, with headquarters at the Battle House, under the presidency of Dr. William M. Cunningham, Jasper. The Mobile County Medical Society will be host to the society, and the following guest speakers will be included on the program:

Dr. Arthur Neal Owens, New Orleans, Skin Grafting Its Relation to General Surgery
Dr. Edward Nicholas DeWitt, Bridgeport Conn. The Detached Retina
Dr. Edgar Burns, New Orleans, Renal Calculi
Dr. William B. McGee, New Orleans, Treatment of Severe Pre-eclampsia and Eclampsia with Ephedrine

Dr. George Henry Semken, New York, will deliver the Jerome Cochran Lecture, Wednesday morning, his subject will be "A Consideration of Tumors of the Breast." On the same day, Dr. James S. McLeister, Birmingham, President-Elect, American Medical Association, will speak on "Trends of Medical Practice." At a public meeting, Wednesday evening, Dr. Austin A. Hayden, Secretary of the Board of Trustees, American Medical Association, Chicago, will show a motion picture demonstrating the activities of the Association. Other physicians on the program include the following:

Theron K. McFatter, Dothan, Safety of Low Cesarean Section in the Obstetric Emergency
Eugene Thames, Mobile, Chronic Undulant Fever
Colvin C. Perdue, Mobile, Foreign Bodies in the Food and Air Passages
William Hill McCaslan, Union Springs, The Nervous Child
Thompson F. Wickliffe, Jasper, Deep Surgical Infections of the Neck
Gordon C. Usary, Roanoke, Status of Hysterectomy in Rural Surgical Practice
Dan C. Donald, Birmingham, Acute (Hemorrhagic) Pancreatitis
William W. Harper, Selma, The Enlarged Thyroid
Claudius O. Lawrence, Clanton, Value of Local Applications in Diseases of the Respiratory Tract
Amos C. Gipson, Gad-den, Treatment of So Called Colitis in Infants and Children

H. Earle Conwell, Fairfield, Problems Frequently Encountered in Recent Fractures
Marion T. Davidson, Birmingham, Some Little Known Manifestations of Allergy
Crawford H. Cleveland, Anniston, Chronic Hoarseness
Gilbert F. Douglas, Birmingham, Ovulation, Menstruation, and Finding the "Safe Periods"
Cabot Lull, Birmingham, The Doctor and Life Insurance
John L. Branch, Montgomery, Infections of the Hand

The tenth annual meeting of the woman's auxiliary will be held at the Battle House, April 16-17. There will also be a symposium on pulmonary tuberculosis by Drs. Reuben Alec Brown, Montgomery, and James Otis Lisenby, Atmore.

ARIZONA

Bill Passed—H 88 has passed the house, proposing to create a board of naturopathic examiners and to regulate the practice of naturopathy. Naturopathy, which, the bill states, includes all forms of physiotherapy, is hereby defined to be a system of treating the abnormalities of the human mind and body by the use of drugless and nonsurgical methods, and includes the use of physical, electrical, hygienic, and sanitary measures incident thereto.

Bills Enacted—The following bills have become laws: S 15, repealing the laws regulating the distribution and possession of narcotic drugs and enacting what apparently is the uniform narcotic drug act, and H 19, enacting a new pharmacy practice act which seems to prohibit physicians from dispensing drugs and medicines but permits them to administer personally "drugs and medicines carried or kept for emergencies in order to supply the immediate needs of their own patients."

ARKANSAS

Bill Passed—H 218 has passed the house and senate, proposing to amend the medical practice act so as to authorize the boards of medical examiners, in their discretion, to license without examination diplomates of the National Board of Medical Examiners.

CALIFORNIA

Health Insurance—The house of delegates of the California Medical Association, at a special meeting in Los Angeles, March 3, voted its approval of health insurance. A committee was appointed to cooperate with a committee of the state senate now studying the problem in framing legislation to establish a health insurance system, mandatory as to certain population groups and voluntary as to certain groups. The resolution set forth the following principles to be followed in the framing of the measure: (1) The patient shall have absolutely free choice of physician and hospital, (2) the medical profession shall determine the scope, extent, standards, quality, compensation paid for and all other matters and things related to the medical and medical auxiliary services rendered under the system, (3) there shall be no provision for cash benefits, and (4) the patient shall receive adequate treatment and his physician shall receive adequate compensation.

COLORADO

Bill Introduced—S 277 proposes to make it unlawful for any person to receive hospital care with intent to defraud the hospital of the amount due it for such care. It is to be prima facie evidence of intent to defraud for a patient to leave a hospital without paying his bill.

DISTRICT OF COLUMBIA

Memorial Service for Dr. Theobald Smith—A memorial service was held at George Washington University School of Medicine, February 19, in honor of the late Dr. Theobald Smith, Princeton, N. J., director emeritus of the Department of Plant and Animal Pathology, Rockefeller Institute for Medical Research. Dr. Earl B. McKinley, dean of the medical school, reviewed the life and work of Dr. Smith. Following this service, the third lecture in the Smith-Reed-Russell series was presented by Dr. Thomas R. Boggs, associate professor of medicine, Johns Hopkins University School of Medicine, Baltimore. His subject was "Mycotic Infection of the Lung."

Medical Bills in Congress—H R 6685, introduced by Representative Quinn, Pennsylvania, proposes to provide for the examination and registration of those who desire to engage in the occupation of beauty culture, which is defined to include, among other things, "the removal of superfluous hair, and the massaging, cleansing, stimulating, manipulating, exercising, or similar work upon the scalp, face, arms, or hands, or the upper part of the body, by the use of mechanical or electrical apparatus or appliances or cosmetics, preparations, tonics, antiseptics."

tics, creams, or lotions " H R 6735, introduced by Representative Norton, New Jersey, proposes to provide for the prevention of blindness in infants born in the District of Columbia

GEORGIA

Bill Enacted—S 60 has become a law, repealing the laws regulating the possession, sale or distribution of narcotic drugs and enacting what apparently is the uniform narcotic drug act

Fischer Prizes Awarded—Drs W Frank Wells and Stacy C Howell, Atlanta, were awarded the L C Fischer Prizes of the Fulton County Medical Society for 1934 at its annual banquet, January 3 Dr Wells received the prize for the most original paper, his subject was Modern Surgical Advances Dr Howell's paper on "Epinephrine—A Drug for Treatment of Glaucoma" was considered the best written The prizes are awarded annually

IDAHO

Personal—Dr Norando G Logan, American Falls has been appointed health officer for Power County—Dr Harwood L Stowe, Kimberly, has been appointed coroner of Twin Falls County to succeed the late Dr Frank A Dwyer, Filer

ILLINOIS

Bill Introduced—S 238, to amend the medical practice act, proposes to create a board of chiropractic examiners

Heart Disease Leads in Mortality—Heart disease accounted for 21,034 deaths in the total of 87,195 in Illinois for 1934, according to the state health department A general mortality rate of 111 per thousand was noted for the year a figure slightly higher than the average since 1929 but substantially lower than that for any previous year on record The report stated that although the birth rate, 14 per thousand of population, was slightly higher last year than in 1933, the rise in mortality offset the gain, leaving an excess of only 23,000 births over deaths, the lowest on record The maternal mortality rate (48 per thousand births) was the lowest on record but the infant death rate of 53.2 per thousand births was noticeably higher than for 1933 A new low level was reached for mortality from tuberculosis, 4,102 deaths giving a rate of 52 per hundred thousand of population There were sharp advances in mortality from infantile diarrhea and pneumonia Second to heart disease was cancer, accounting for 9,638 deaths, nephritis, 8,156 accidents, 6,919 cerebral hemorrhage 5,600 pneumonia, 5,901, and tuberculosis 4,102 These seven causes accounted for substantially more than half of all mortality last year, and all but tuberculosis and cerebral hemorrhage were responsible for marked increases

Chicago

Dr Cort to Give Gehrmann Lectures—William W Cort Ph D, professor of helminthology, Johns Hopkins University School of Hygiene and Public Health, Baltimore will deliver the Gehrmann Lectures of the University of Illinois College of Medicine, April 8-10 The titles of the three lectures are

Studies on Ascariasis in Children in the United States
Epidemiology and Control of Schistosomiasis (Bilharziasis) in Egypt
Present Status of the Hookworm Problem in the United States

Society News—Dr George W Crile, Cleveland discussed shock before the Englewood Branch of the Chicago Medical Society, March 5—Speakers at the meeting of the North Side Branch of the Chicago Medical Society, March 7 were Drs Andrew C Ivy and Anton J Carlson on "Anterior Lobe of the Hypophysis—Function and Clinical Pathology" and

Physiology of the Ovaries respectively—Speakers before the Chicago Pathological Society, March 11, included Drs Frank M Cochems and Theophil P Grauer on 'Squamous Cell Carcinoma Leukoplakia and Concretions in a Megalo-Ureter'

—Dr Henry Kennon Dunham, Cincinnati among others addressed a joint meeting of the Chicago Roentgenological Society, Chicago Tuberculosis Society and the Chicago Tuberculosis Institute, March 14, on emphysema—The Chicago Gynecological Society was addressed March 14 by Drs Edward H Richardson, Baltimore, on 'Abdominal Hysterectomy' and Noble Sproat Heaney on 'Vaginal Hysterectomy'—The Chicago Ophthalmological Society was addressed, March 18 among others, by Dr Leo L Mayer and H W Magoun Ph D on Effects on the Pupillary Reaction of Lesions in the Posterior Commissure—Dr Samuel L Gabby Elgin discussed "Dermatitis Probably Due to Dyes" before the Chicago Society of Allergy, March 18 and a review of recent literature on urticaria was presented by Drs Francis L Foran, Tell Nelson Samuel J Taub, Leon Unger, William L Beecher and Samuel M Feinberg

INDIANA

Bill Enacted—H 490 has become a law, providing that on the commitment of a person to an institution for the insane he or she be rendered sterile

Course in Otolaryngology—The tenth annual two weeks course in otolaryngology of the Indiana University School of Medicine, Indianapolis, will be conducted April 15-27 The course will consist of complete and minute dissection of the head and neck with practical applications by Dr John T Barnhill, and twelve mornings of clinical instruction and surgery by Dr Barnhill and members of the staff in otolaryngology of the medical school Further information may be obtained from Dr Willis D Gatch, dean of the medical school

Society News—Dr Walter A Foreman, Rockville, addressed the Owen County Medical Society in Spencer, February 21, on 'Early Diagnosis of Tuberculosis'—At a meeting of the LaPorte County Medical Society in Michigan City, February 21, Dr Charles Marshall Davison, Chicago, discussed Recurrent Cholecystitis Following Cholecystectomy

—Dr Virgil H Moon, Philadelphia, discussed "The Shock Syndrome in Medicine and Surgery" before the Indianapolis Medical Society, March 19 A symposium on diseases of the thyroid gland will be given, March 26, speakers will be Drs Harold F Dunlap Cleon A Nafe and Harold C Thornton A speakers' bureau is being organized for the society, its activities to be confined to Marion County

Correction—Reciprocity with New York—THE JOURNAL reported the establishment of reciprocity relations of Indiana with New York March 16, page 929 Inadvertently, this item was taken from a column in the *Journal of the Indiana State Medical Association* containing news of twenty-five years ago

IOWA

Bills Introduced—S 168, to amend the osteopathic practice act proposes (1) to eliminate the provision of the present law which specifically denies osteopathic physicians and osteopathic physicians and surgeons the right to prescribe or give internal curative medicines, (2) to permit osteopathic physicians to practice obstetrics and minor surgery, and (3) to define osteopathic practice as "that method of rehabilitating, restoring and maintaining body functions by and through manual stimulation or inhibition of nerve mechanism controlling such body functions, or by the correction of anatomical maladjustment, and/or by other therapeutic agents, methods and modalities used supplementary thereto, but such supplementary agents, methods or modalities shall be used only preliminary to, preparatory to and/or in conjunction with such manual treatment, and to declare that such osteopathic practice is not the practice of medicine within the meaning of the medical practice act S 177 proposes to include marihuana within the scope of the laws relating to the sale, distribution or possession of narcotic drugs

KANSAS

New County Health Officers—The state department of health announces the following new appointments of county health officers

Dr Francis D Kennedy Norton, Norton County
Dr James H A Peck St Francis Cheyenne County
Dr Frederick E Dargatz Kinsley Edwards County
Dr William F Schroeder Newton Harvey County
Dr Ernest J Beckner Goodland Sherman County
Dr Charles E Gaston Frankfort Marshall County

Personal—Dr Marjorie G Eberhart has resigned her position on the student health department staff at Kansas State Agricultural College, Manhattan, to become head of the physical education department at Central Normal College, Danville, Ind She has been succeeded by Dr Osee May Dill—Dr Joseph R Betthausen Hays, was elected president, recently, of the newly organized Ellis Doctors' Club which is composed of the thirteen physicians in Ellis County Dr Harry R Bryan, Hays is secretary The club, which holds monthly meetings, was created to cooperate with the county commissioners in the care of indigent sick

LOUISIANA

Bill Enacted—H 16-XXXX has been enacted as Act No 16, Acts, 1934, amending the penalty section of the uniform narcotic drug act, enacted recently by the second special session of the legislature, by making a violation of the act punishable by imprisonment at hard labor for not less than twenty months nor more than five years

Society News—Dr W Russell MacAusland, Boston, addressed the Orleans Parish Medical Society, January 21, on

"Mobilization of Ankylosed Joints by Arthroplasty" Speakers before the society, March 11, were Drs James D Rives and Laurence H Strug on "Treatment of Hirschsprung's Disease by Spinal Anesthesia", Emmerich von Haam and Louis Lichtenstem, "Incidence and Clinical Manifestations of Lymphogranuloma Inguinale in New Orleans," and Isidore Cohn, "Diagnosis and Treatment of Some Vascular Disturbances of the Extremities"

MARYLAND

Advisory Board for Department of Welfare—An advisory committee was recently appointed for the newly created municipal department of welfare of Baltimore Dr Wmford H Smith, medical director, Johns Hopkins Hospital, was named chairman of the committee, and Dr George Walker, vice chairman. Other members include Drs Esther L Richards and Harry S McCarr

Additional DeLamar Funds—The Johns Hopkins University School of Medicine, Baltimore, has received an additional gift of \$150,000 from the estate of Joseph Raphael DeLamar, who died in 1918. A fund of \$4,706,450, which has been paid to the medical school over a period of years under Mr DeLamar's will, supports many activities, including the DeLamar Lectures in Hygiene at the Johns Hopkins University School of Hygiene and Public Health. The will provided that, after other bequests had been made, the residue was to be divided so that one third went to the medical school and another third to Columbia University College of Physicians and Surgeons. This is the authorization for the recent gift. The DeLamar Lectures were established "to give to the people of the United States generally the benefits of increased knowledge concerning the prevention of sickness and disease and also concerning the conservation of health by proper food and diet"

MASSACHUSETTS

Dr Lord Becomes Professor Emeritus—Dr Frederick T Lord, since 1930 clinical professor of medicine, Harvard University Medical School, was retired from the faculty as professor emeritus, January 1. Dr Lord, who is 60 years of age, graduated from Harvard in 1897 and received his degree in medicine in 1900. He has been associated with the institution in a teaching capacity since 1905, when he was named assistant in clinical medicine. He was a member of the American Red Cross Commission to Serbia in 1917. He is president of the Massachusetts Tuberculosis League and a former president of the American Association for Thoracic Surgery.

Bills Introduced—H 1157 proposes to create a board of chiropractic examiners and to regulate the practice of chiropractic defined by the bill as "the science of spinal examination, the adjusting of the segments and articulations of the human spinal column by hand only." Chiropractors are to be prohibited from practicing obstetrics, from prescribing or administering drugs or medicines, and from performing surgical operations with the use of instruments. H 1894 proposes that a commission composed of two senators, five representatives and four citizens be established to investigate and study the subject of health insurance and to report its findings to the general court.

MICHIGAN

Graduate Conferences—The Wayne County Medical Society, Detroit Tuberculosis Sanatorium and Detroit Department of Health are sponsoring a series of graduate conferences in acute communicable diseases and tuberculosis at the Herman Kiefer Hospital, which began March 5. The conferences are presented by Dr Bert U Estabrook and associates in acute communicable disease and Dr Bruce H Douglas and associates in tuberculosis.

Personal—Dr Hubert M Heitsch has resigned as director of public health of the city of Pontiac to accept a position on the medical staff of the new combined Chevrolet and Fisher Body plant at Baltimore, newspapers report.—Dr Perry V Wagley has been named acting medical superintendent of Pontiac State Hospital, succeeding the late Dr Edmund A Christian, who retired the day before his death.—Dr Frederick McD Harkin has been appointed health officer of Marquette to succeed Dr Thurman R. Laughbaum, resigned. Dr Harkin held the position in 1893.—Dr Howard P Blake, Bergland, has been appointed full time physician at the Marquette branch prison. He succeeds Dr Foster A Fennig, resigned, who held the position on a part time basis.—Dr Frank P Bohn, Newberry, was honored at a celebration March 1, commemorating his completion of forty-five years in the practice of medicine.

MINNESOTA

Bill Introduced—H 1075, to amend the workmen's compensation act, proposes to add to the list of compensable occupational diseases "poisoning by carbon monoxide fumes or its sequelae"

Personal—Mr James H Baker has been employed as executive secretary of the Hennepin County Medical Society, Minneapolis. Mr Baker was formerly engaged in newspaper work.—Dr Carl Gustaf Arvidson, Minneapolis, has been knighted by King Gustav of Sweden. Later he will receive the Order of Vasa.—Dr Chauncey A McKinlay, Minneapolis, has been named assistant editor of *Minnesota Medicine*.

Extension Course in Refraction—The University of Minnesota School of Medicine will offer an extension course in refraction, April 1-28, designed especially for rural medical practitioners who wish to supplement their general practice by work in refraction and physiologic optics. The work will be under the supervision of the department of ophthalmology and has been arranged to furnish the elements of ophthalmology, the elementary physiology of vision, physiologic optics and testing and recording of vision. The mechanical problems of neutralization of lenses and different methods of determining refractive errors and muscle imbalance will be taken up. The theory of and practice in skiascopy and postcycloplegic refraction are also included.

MISSOURI

Bill Enacted—S 28 has become a law, prohibiting the cultivation, curing, preparation, distribution or possession of marijuana. It is not to be unlawful, however, for any licensed pharmacist to possess and to dispense the drug on the written prescription of a physician, osteopath, dentist or veterinarian.

Bills Introduced—S 148 proposes to authorize the sterilization of insane, idiot, imbecile, feebleminded or epileptic inmates of state institutions. H 300, to supplement the workmen's compensation act, proposes to make it a misdemeanor for any person having charge of any medical or hospital record of any injured workman to refuse to permit such record to be inspected or copied by the workmen's compensation commission, the employer, the workman or his dependents, or any other party to any proceedings for compensation under the act.

Clinical Meeting—The spring meeting of the Kansas City Southwest Clinical Society was held at the Hotel President, Kansas City, March 11. Guest speakers included Drs Frederick W Bancroft, New York, on "Clinical Deductions in the Handling of Fractures Obtained from the Study of Bone Repair", Alfred W Adson, Rochester, Minn., "Surgical Consideration of Essential Hypertension" (round table luncheon), Irvin Abell, Louisville, Ky., "Diagnosis and Treatment of Diverticulosis and Diverticulus", and Charles L Scudder, Boston, "Treatment of Fractures of the Neck of the Femur".

Society News—Dr Oswald P J Falk discussed "Management of the Heart in Hypertensive Disease" before the St Louis County Medical Society, March 13.—Speakers before the St Louis Medical Society, March 12, were Drs Leonard T Furlow on "Chronic Subdural Hematoma", Park J White Jr, "Prevention of Respiratory Infections in Children," and Harry W Lyman, "Relation of Upper Respiratory Infections to the General Condition of the Patient in Infancy and Childhood".—A joint meeting of the Jackson and Wyandotte County medical societies was addressed, among others, February 12, by Dr Carroll M Pounders, Oklahoma City, on pediatric therapy.

NEBRASKA

Bill Enacted—H 147 has become a law, repealing the laws regulating the sale, possession or distribution of narcotic drugs and enacting what apparently is the uniform narcotic drug act.

NEW JERSEY

Enforcing the Medical Practice Act—The state board of medical examiners reports numerous prosecutions during the past few months. Among several irregular practitioners who pleaded guilty and paid the penalty were the following:

Jules F Blondan of the Modern Medical Associates, Jersey City
Oliver L Schreibeiss Plainfield a nurse
Alfred W Reid unlicensed chiropractor
Irvin W Kirk whose license was revoked in 1933
Simon Noveck owner of a drug store but not a registered pharmacist
William Carl Hirsch of the Church of Inner Truth Secaucus
Anthony Zurawski of the Modern Medical Associates of Newark
Jerry Giffune of the Men's and Women's Medical Office Newark

Personal—Dr Henry H Kessler, Newark, delivered the Hunterian Lecture before the Hunterian Society of England, in London, January 14, on "The Contribution of John Hunter

to Rehabilitation of the Crippled and Disabled"—Dr Paul Keller has resigned as executive director of Newark Beth Israel Hospital, Newark, to engage in private practice.—Dr Louis Klein, Detroit, has been appointed to assume direction of all medical activities of the firm of Hoffman-La Roche, Nutley. Dr Klein has occupied a similar position with Parke, Davis & Co in Detroit, where he was on the medical staff of Harper Hospital and was also consulting endocrinologist to the Wayne County Juvenile Court.—Dr William M Brien, Orange, has resigned as first assistant medical examiner of Essex County, to become health officer of Orange. His successor is Dr George P Olcott Jr, East Orange.—Dr John F Hagerty, Newark, was the guest of honor at a dinner at St. Michael's Hospital, January 30, marking his retirement as medical director after forty years' service with the institution.

NEW YORK

Internships at Letchworth Village—One year residencies for the study of mental deficiency are offered by Letchworth Village, Thiells, one of the New York state schools for mentally deficient persons, beginning July 1. Requirements include graduation from a class A medical school and a year's general internship. Applications should be sent to Dr Charles S Little, superintendent, Letchworth Village, Thiells, N Y.

Bills Passed.—The following bills have passed the assembly. A 195, proposing to amend the provisions of the vital statistics law which requires that the personal particulars called for in a certificate of birth shall be authenticated by the signature of the informant, who may be any competent person acquainted with the facts, by providing that such personal particulars shall be obtained from a competent person acquainted with the facts, and A 445, proposing to safeguard the distribution of "dangerous caustic or corrosive substances" as defined by the federal caustic poison act, by requiring their labeling as "poison." S 344 has passed the senate, proposing to amend that provision of the vital statistics law which requires that the personal particulars called for in a certificate of birth shall be authenticated by the signature of an informant, who may be any competent person acquainted with the facts by providing that such personal particulars shall be obtained from such a person.

Bills Introduced—S 1556, A 1935 and A 2197 propose to prohibit any state, county or city hospital or any hospital supported in whole or in part by public funds to employ nurses or other employees for more than eight hours in any one day. S 1593, to amend the medical practice act, proposes to make it unlawful for any one other than a licensed physician to conduct, direct, supervise or control the work or reports of a clinical laboratory, which is defined as a laboratory in which tests are made on individual persons their secretions, excretions, blood and tissues to aid in the diagnosis, prognosis, or treatment of the individual's physical or mental state or states. The provisions of the bill, however, are not to apply to the qualitative or quantitative analysis of urine by a licensed and registered pharmacist, or to a clinical laboratory director duly licensed to conduct direct or supervise a clinical laboratory within the city of New York, or to any person who has conducted directed or supervised a clinical laboratory in the state for a period of at least six months prior to the date this bill may become enacted.

New York City

Personal—Dr Paul Mazzuri, assistant medical director of the New York Life Insurance Company, retired February 28, having reached the age of 70. Dr Mazzuri has been on the insurance company's staff since 1903.

The Janeway Lectures—Dr Gleb V Anrep, professor of physiology, Egyptian University, Cairo, Egypt will deliver the Edward Gamaliel Janeway Lectures at Mount Sinai Hospital, March 25 and 26. His subjects will be "The Duodenopyloric Mechanism in Relation to the Sympathetic Nervous System" and "The Coronary Blood Flow in Relation to Pulse Pressure."

Symposium on Scientific Education—The science forum of the New York Electrical Society will present a symposium entitled "Scientific Education—What Is Wrong With It?" at its regular meeting March 27. Speakers will be Harry Woodburn Chase, LL.D., chancellor of New York University, William E. Wickenden, Sc.D., president Case School of Applied Science, Cleveland, Colin G Fink, Ph.D., head of the division of electrochemistry, Columbia University, and Dr Alan Gregg, director for the medical sciences Rockefeller Foundation.

NORTH CAROLINA

Bill Passed—H 293 has passed the house and senate, proposing to amend the workmen's compensation act by making some twenty-five occupational diseases compensable, included among them are anthrax, compressed air illness, chrome ulceration, silicosis, asbestosis, tenosynovitis, bursitis, miners' nystagmus and poisoning from arsenic, brass, zinc, manganese, lead, mercury, phosphorus carbon bisulphide, methanol, naphtha hydrogenated hydrocarbons, benzol, nitro amido derivatives of benzol, radium, carbon monoxide, sulphuric, hydrochloric and hydrofluoric acid.

Personal—Dr Bennie B Dalton Rockingham, has recently been appointed health officer of Richmond County.—Dr Wyman Plato Starling Roseboro, has been appointed health officer of Sampson County, succeeding Dr Stephen Glenn Wilson Clinton who resigned to engage in private practice at Angier.—Dr John W Williams, Monroe, La., has been appointed health officer of Asheville to succeed the late Dr Dan E Sevier.—Dr Aldert S Root was recently elected president of the Raleigh Academy of Medicine.—Dr James B Bullitt, professor of pathology, University of North Carolina School of Medicine, Chapel Hill, was elected president of the local chapter of the American Association of University Professors recently.—Dr Addison G Bremizer Charlotte, was recently elected commander of the Charlotte Post of the American Legion.

NORTH DAKOTA

Bills Enacted—The following bills have become laws. H 8, amending the chiropody practice act by defining a chiropodist as one who examines, diagnoses and treats abnormal nail conditions, excrescences occurring on the feet including corns, warts, callosities, bunions and arch disorders, or one who treats medically, mechanically or by physiotherapy in a chiropodic manner the human foot, S 75, granting hospitals, supported in whole or in part by private charities and treating persons injured through the negligence of others, liens on all rights of actions, claims, judgments, compromises or settlements accruing to the injured persons because of their injuries.

OHIO

The Rachford Lectures—Dr Roy G Hoskins, director of the Memorial Foundation for Neuro-Endocrine Research, Boston, delivered the fifth annual series of Benjamin Knox Rachford Lectures at the University of Cincinnati College of Medicine, March 21 and 22. His subjects were "Endocrinology of Today" and "Endocrine Factors in Personality."

Graduate Program at Akron—The Summit County Medical Society held the first of four "Post-Graduate Days" planned for this year, February 20, at the Akron City Hospital. Sessions occupied the afternoon and evening and were attended by 180 physicians from fifteen towns. Among the presentations were the following:

Treatment of Tuberculosis in the Home Dr Clarence L Hyde
Nontuberculous Pulmonary Infections Dr Joseph A Weiler
Traumatic Conditions of the Bladder and Urethra Dr Charles E Jelm
Skull Fractures and Injuries to the Head Dr Walter A Hoyt
X Ray Diagnosis of Gastric Ulcers Dr Arthur H Stall

Dr Charles E Updegraff was chairman of arrangements for this program. The next will be held at People's Hospital in April.

Dr Tuckerman Honored—The Cleveland Academy of Medicine at its meeting February 18 awarded the title of honorary secretary for life to Dr Jacob Edward Tuckerman in recognition of thirty-three years of continuous service to the academy in various capacities. Dr Howard Lester Taylor, president, presented to Dr Tuckerman an illuminated parchment on which was inscribed the action of the society, and Dr George E Follansbee paid tribute to his long service. Dr Tuckerman became a member of the academy in 1903 and was appointed an alternate delegate to the Ohio State Medical Association the same year. From that time he has constantly maintained an official position, ranging from committee membership to the presidency of the academy.

OKLAHOMA

Bill Enacted—H 126, proposing to create a board of chiropody examiners and to regulate the practice of chiropody has become a law.

Bill Passed—H 46 has passed the house and the senate proposing to require every hospital or physician treating a patient suffering from an injury caused by the discharge of a gun to report the facts to the proper police authorities.

Medical Assembly in Muskogee—The Muskogee Academy of Medicine sponsored a two day medical assembly, Feb-

ruary 26-27, with the following guest speakers, among others Drs Ernest Sachs, St Louis, William T Pride, Memphis, John O McReynolds, Dallas, Arthur G Schoch, Dallas, Barton A Rhinehart, Little Rock, Ark, and Sidney J Wolfermann, Fort Smith, Ark. A public meeting was held in the evening of February 27, at which Dr McReynolds and Dr Leroy Long, Oklahoma City, president, Oklahoma State Medical Association, were the speakers on care of the eyes and medical care of the indigent, respectively. Dr Long made an address at a dinner given by the academy for the guests, on "Medical Integrity."

OREGON

Bills Passed—H 440 has passed the house and senate, proposing to amend the law requiring a male applicant for a license to marry to present a physician's certificate showing freedom from venereal disease and from mental illness or defect, by requiring such certificate from both parties to a proposed marriage. H 373 has passed the house and the senate, proposing to authorize the state board of health to make such rules and regulations as it deems necessary for the operation of laboratories in which human or animal body fluids, secretions or excretions are examined for the determination of the presence or absence of an infectious agent. Every person, corporation or municipal corporation maintaining such a laboratory is to be required to register annually with the state board of health.

PENNSYLVANIA

Bills Introduced—S 490 proposes to authorize the sterilization of certain socially inadequate inmates of state institutions. H 1262 proposes to make the records of any hospital concerning the stay and treatment of patients therein admissible in evidence in court for all intents and purposes without further proof thereof than their authenticity.

Society News—Dr John A Kolmer, Philadelphia, addressed the Cambria County Medical Society, March 14, on "Syphilis from the Standpoint of the General Practitioner."—Drs James J Jefferson and Joseph P Replogle, Johnstown, addressed the Westmoreland County Medical Society, February 14, on "Infections of the Hand and Forearm" and "Causes of High Mortality in Appendicitis," respectively.—Dr Leon G Zerfas, Indianapolis, addressed the Harrisburg Academy of Medicine, March 19, on "The Anemias."

Philadelphia

Anders Lecture—Dr Milton J Rosenau, Charles Wilder professor of preventive medicine and hygiene, Harvard University Medical School, Boston gave a James M Anders Lecture before the College of Physicians of Philadelphia, March 6. His subject was "Specific Treatment and Prevention of Pneumonia."

Personal—Dr Ella B Custer, who has practiced medicine for more than fifty years, was designated the outstanding citizen of the twenty-first ward in 1934 with the presentation of a silver plaque by the Roxborough-Manayunk Lions Club, February 25. The honor was the first of its kind and is to be an annual event hereafter.

SOUTH DAKOTA

Bill Passed—H 213 has passed the house and senate, proposing to repeal the laws regulating the sale, distribution or possession of narcotic drugs and to enact what apparently is the uniform narcotic drug act.

New Plan for Relief Administration—South Dakota physicians and the state relief committee have inaugurated a new plan of budgeting federal relief money to the separate counties according to the number of families on relief. As conditions change each month, the amount will fluctuate, the *Journal-Lancet* reports. Two physicians and one dentist have been appointed in each county to audit all bills and recommend to the county relief directors the amount due each physician, dentist, nurse and pharmacist each month. When the bills for medical service exceed the budget, the amount available will be distributed pro rata.

TEXAS

Bill Introduced—H 640 proposes to make it the duty of parents or legal guardians of a child between 6 and 18 years of age to have the child examined to determine whether or not he has a defect in either sight or hearing such as to prevent him from receiving the full benefit of school work.

Society News—Speakers at the meeting of the Dallas County Medical Society, March 28 will be Drs John L Goforth, on "Cancer of the Uterus from the Pathologist's View-

point", Charles Frank Brown, "Hypothyroidism in Pregnancy" and James G Poe, "Convulsions During Operation Under General Anesthesia."

VERMONT

Bill Introduced—H 288 proposes to accord to physicians, hospitals and nurses treating persons injured through the fault of others liens on all rights of action, claims, judgments, compromises or settlements accruing to the injured persons by reason of their injuries.

Bills Passed—H 264 has passed the house, proposing to supplement the chiropractic practice act, by permitting the board of chiropractic examiners to revoke the licenses of licensees or to refuse licenses to applicants who have been convicted of criminal abortion or who have been guilty of professional or dishonorable conduct, which the bill states is (1) advertising which has a tendency to deceive the public, (2) conviction of any offense involving moral turpitude, (3) habitual intemperance and (4) habitual use of habit-forming drugs. H 162 has passed the house, proposing to limit to licensed physicians and registered pharmacists the retail sale or distribution of articles or medicinal preparations that may be used as prophylactics or contraceptives.

WASHINGTON

Bills Introduced—H 580 proposes to establish a state hospitalization board to provide for the construction, operation and maintenance of experimental hospitals, clinics and outstations in King County, in Clallam County, and in the eastern part of the state. Apparently, all types of medical and dental services are to be available without cost to the public in the hospitals, clinics and outstations just noted. Establishment of these experimental units is to be conditioned, however, on the receipt from the Federal Emergency Relief Administration of \$500,000 and the expenses of the experimental units are to be financed entirely from this fund. The state hospitalization board is also to propose to the 1937 session of the legislature a complete plan for dividing the state into hospital districts and for establishing and maintaining an adequate public hospital system within each of the districts to be established. H 583 proposes to create a social service department of the state of Washington to render free medical, hospital and dental services "of all kinds known to science in all cases of sickness, accident, and childbirth to all residents of the state." The department is to have the power to take over all hospitals, public and private, in the state. All physicians in the state are to treat under the direction of the department and are to be paid an annual salary in accordance with the number of years during which they have been licensed to practice medicine. Every person "earning a living" is to be obliged to make monthly contributions to the state of from \$2.50 to \$5, depending on the number of persons dependent on the individual. S 331 proposes to regulate the practice of naturopathy and to create an independent naturopathic examining committee. Licensees are apparently to be permitted to practice obstetrics, "traumatic" surgery and minor surgery, and to use anesthesia in obstetric and traumatic and minor surgical cases.

WISCONSIN

Bills Introduced—A 414 proposes that any person declared by the state board of health to be a typhoid carrier, who does not conduct himself in the manner required by the board, may be committed to any institution where proper care and maintenance can be provided and may be confined until the board consents to discharge. If a typhoid carrier is prevented from engaging in any gainful occupation, he may be awarded up to \$30 a month to compensate him for loss of earning power. A 421, to amend the laws relating to the practice of chiropractic, proposes to provide that the provisions of the basic science act shall not apply to applicants for licenses to practice chiropractic. The bill proposes that the chiropractic board, instead of the basic science board, examine such applicants in anatomy, physiology, pathology and diagnosis. A 422 proposes to amend the laws relating to the practice of chiropractic so as to raise the annual registration fee required of chiropractors to \$5 and to make the annual registration of a chiropractor contingent on his attending within the preceding year at least one of the two-day "educational" programs conducted by the Wisconsin Chiropractic Association. A 451 proposes to create a board of naturopathic examiners and to regulate the practice of naturopathy. All present practitioners are to be issued a certificate of registration in the basic sciences without examination and are to be licensed by the naturopathic board also without examination.

GENERAL

Early Diagnosis Campaign—The National Tuberculosis Association is sponsoring its annual early diagnosis campaign beginning April 1. The campaign will be carried on this year with the slogan "Fight Tuberculosis with Modern Weapons" and will stress particularly the fact that "the treatment of tuberculosis in all cases must be based on diagnosis."

Admiral Grayson Named Chairman of Red Cross—Admiral Cary T. Grayson, Washington, D. C., has been named chairman of the American Red Cross, succeeding the late John Barton Payne. Dr. Grayson is a graduate of the University of the South Medical Department, Sewanee, Tennessee, class of 1903. In that year he joined the U. S. Navy Medical Department, with which he was associated until his retirement in December 1928 with the rank of rear admiral. He was attending and consulting physician to the Naval Dispensary, Washington, during the Roosevelt and Taft administrations, and served as physician to President Woodrow Wilson. Admiral Grayson is 56 years of age.

Advisory Service on X-Ray Technic—The National Tuberculosis Association announces that a study on the standardization of x-ray technic which it has conducted for the past ten years has now reached the point at which effective advisory service can be offered to the x-ray departments of hospitals and sanatoriums. The research has been done at the Moore School of Electrical Engineering at the University of Pennsylvania under the direction of Mr. Charles Weir. The objectives are based on the following principles, according to the announcement:

1. That a standardized system of technic determined on scientific bases should be used for the making of all diagnostic films in order to obtain (a) films having characteristics conducive to maximum interpretability and (b) films of the same patient which will be comparable when taken at different times and also when taken in different laboratories.
2. That diagnostic roentgenography should be accomplished with a maximum of economy in cost of apparatus, technical apparatus, technical manipulation and supplies with especial emphasis on economy in the number of films.

Registry of Physical Therapy Technicians—With the acceptance of applications of qualified technicians for examination, the American Registry of Physical Therapy Technicians, in process of organization for more than two years, has begun to function. Applications will be issued only on written request to the registrar, Marion G. Smith, B.S. Examinations will be held May 4 and July 13 in New York, Philadelphia, Chicago, St. Louis, New Orleans, Los Angeles and San Francisco and on September 9 in Kansas City. The registry was promoted to register and certify those technicians who meet its requirements. It is directed by a board of registry, composed of seven members:

- Dr. William Bierman, New York, chairman
- Dr. Harold M. F. Behnenian, San Francisco
- Dr. John S. Coulter, Chicago, associate professor of physical therapy, Northwestern University Medical School, Chicago
- Dr. Frank H. Ewerhardt, St. Louis, assistant professor of physical therapy, Washington University School of Medicine, St. Louis
- Dr. John S. Hibben, Pasadena, Calif.
- Dr. Frank H. Krusen, Philadelphia, associate in medicine, Temple University School of Medicine
- Dr. Nathan H. Palmer, New Orleans, assistant professor of clinical medicine, Tulane University Graduate School of Medicine

In addition, there is an advisory board composed of representatives from national organizations interested in the work of physical therapy technicians and the physicians who use physical therapy in their specialties. This board is also composed of seven members. A regional board will comprise two or more members, according to the local requirements. There will be two classes of certification: physical therapy technicians and junior physical therapy technicians. A certificate may be revoked at the discretion of the board of registry, and all registered technicians and assistants will be required to comply with the code of ethics as defined by the American Congress of Physical Therapy.

Society News—The annual meeting of the American Association on Mental Deficiency will be held at the Palmer House, Chicago, April 25-27. Physicians are invited to attend all sessions. Complete information on the program may be obtained from Dr. Groves B. Smith, secretary, Godfrey, Ill.—Dr. Ralph C. P. Truitt, Baltimore, was elected president of the American Orthopsychiatric Association at the annual meeting in New York, February 22-23. Willard C. Olson, Ph.D., Ann Arbor, Mich., vice president and Dr. George S. Stevenson, New York, secretary.—The twentieth annual convention of the Catholic Hospital Association of the United States and Canada will be held at Creighton University, Omaha, June 17-21.—The twenty-third annual meeting of the Eugenics Research Association will be held at the American Museum of Natural History, New York, June 1.—The annual meet-

ing of the National Medical Association will be held in New Orleans, August 11-17.—The twenty-fourth annual National Safety Congress will be held in Louisville, Ky., October 14-18.—The Eastern Section of the American Congress of Physical Therapy will meet in Baltimore, March 29-30. The program will open in joint session with the Baltimore City Medical Society and will be presented by the following physicians, among others: Drs. Frank H. Krusen, Philadelphia, "Light Therapy"; Henry H. Ritter, New York, "Physical Therapy in Traumatic Surgery"; William Bierman, New York, "Short Wave Therapy"; Thomas P. Sprunt, Baltimore, "Physical Therapy from the Standpoint of the Internist," and Allen F. Voshell, Baltimore, "Treatment of Delayed Union of Fractures."

Medical Bills in Congress—Changes in Status H. R. 2827 has been reported to the House (Rept. No. 418). The bill proposes to direct the Secretary of Labor to provide for the immediate establishment of social insurance to provide compensation for all workers and farmers who are unable to work because of sickness, old age, maternity, industrial injury or other disability. H. R. 6718, the Agricultural Department appropriation bill, has been reported to the House (Rept. No. 385). This bill among other things, authorizes an appropriation of \$1,515,879 for the enforcement of the Pure Food and Drugs Act, an increase of \$354,402 over the appropriation for the preceding fiscal year. S. 2024 has been reported to the Senate (Rept. No. 333). This bill would authorize the President to designate Colonel William L. Keller, Medical Corps, United States Army, on his retirement from the active list, as consultant in surgery at the United States Army Medical Center. **Bills Introduced** S. 2214, introduced by Senator Thomas Oklahoma and H. R. 6625 introduced by Representative Rogers Oklahoma, both bills being introduced by request propose to confer jurisdiction on the United States District Courts over Osage Indian drug and liquor addicts. H. R. 6688 introduced by Representative Hennings, Missouri, proposes to prohibit the sale, possession and transportation of cannabis and its derivatives and compounds, except when sold, possessed or transported for medicinal and lawful uses by the producer or manufacturer thereof or dealer therein to licensed physicians, surgeons, dentists, pharmacists, druggists and veterinarians, under such rules and regulations as may be prescribed by the Commissioner of Narcotics. H. R. 6769, introduced by Representative Hoeppel, California, proposes to grant the benefits of veterans legislation to maimed, blind or helpless retired personnel of the Army, Navy, Marine Corps and Coast Guard, in the furnishing of artificial appliances and allowance for attendants.

Government Services

Acting Director of Division of Maternal and Child Health

Dr. Ethel C. Dunham, associate clinical professor of pediatrics, Yale University School of Medicine, New Haven, has been named acting director of the division of maternal and child health, U. S. Children's Bureau. Dr. Dunham graduated from Johns Hopkins University School of Medicine, Baltimore, in 1918. For the past eight years she has devoted much of her time to research on the diseases of new-born infants.

Examination for Entrance to Public Health Service

The U. S. Public Health Service announces that an examination will be held, April 8, for entrance into the regular corps of the service as assistant surgeon. Applicants must be graduates of class A medical colleges and under 32 years of age. They must have completed a year's internship or have had two years of private practice by July 1. Sub-boards will be appointed for the examination so as to eliminate travel as far as possible, which if necessary must be made at the candidate's expense. Physicians who wish to take this examination should make a request to the surgeon general, U. S. Public Health Service, Washington, D. C., for the necessary forms and other information.

CORRECTION

Nobel Prize Winners in Medicine—The name of Dr. William P. Murphy of Boston was inadvertently omitted in the Current Comment entitled "Nobel Prize Lectures on Anemia" in THE JOURNAL, March 9, page 838. The Nobel Prize for 1934 in medicine was awarded conjointly to Drs. Minot, Murphy and Whipple for their work on anemia.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb 23, 1935

A Salaried Service of Municipal Midwives

The Joint Council of Midwifery, which is representative of the important medical and nursing societies, has issued a report on the desirability of establishing a salaried service of midwives, under the local authority in all areas not already served by salaried midwives. The cost of the service, as far as practicable, is to be met by fees charged by the authority of local voluntary organization for the services of the midwife. The council holds that the nursing in every maternity case should be conducted by a qualified midwife and that unqualified persons should not be permitted to nurse in maternity cases for gain. It should be the duty of the local authority to provide that midwives are available as maternity nurses for any patient who has engaged a physician for her confinement but is unable to afford this additional expense. But it is not intended to interfere with the continuance in practice of independent midwives. Midwives entering this municipal service should receive adequate pay, allowances and pension rights and be accorded the same status in every respect as health visitors. The average number of cases that a midwife would be expected to attend should not exceed eighty a year. After this new act has come into operation the local authority should require that midwives in independent practice who, from age or physical or mental infirmity are unable to carry out satisfactorily midwifery practice, retire on receiving an adequate pension. Every midwife should be required to take a refresher course, including, if necessary, two months' residence in a training institution, at intervals not exceeding seven years.

THE INADEQUACY OF THE PRESENT REMUNERATION OF MIDWIVES

Owing to the large number of midwives in practice and the necessarily small fees paid by poor persons, the remuneration of midwives is entirely inadequate. The estimated number of salaried midwives now is 6,255 and of independent midwives 9,187. In 1929 a government committee, which reported on the training and employment of midwives, gave the average number of cases attended per midwife as slightly over forty and suggested that the average gross earnings varied from \$450 to \$600 a year. It is estimated that the position is much worse today, the average being estimated at \$400 and in some cases as low as \$250. Assuming that in future a midwife will attend every case, whether a physician is in charge or not, the number of municipal midwives likely to be required is estimated at 4,000. In addition, part time midwives or district nurses would probably have to be retained by means of a subsidy in semi-rural areas not covered by nursing associations.

Hugh Owen Thomas and an American Surgeon

In the months before his death in 1933, Sir Robert Jones discussed with his son-in-law, Mr Frederick Watson, the publication of a centenary volume on the life and principles of Hugh Owen Thomas, his uncle and teacher. A personal study of Thomas by Mr Watson has now been published, and a companion book on Thomas's surgical work by Mr McCrae Aitken, an orthopedic surgeon and colleague of Sir Robert Jones, is in preparation. Though this biography has been so long delayed—Thomas died in 1891—no man deserved one more and no achievement in the whole range of surgery is more interesting. A frail little man, who for thirty years carried on an arduous general practice among the poor of

Liverpool dockland without ever taking a holiday and without the advantage of a hospital appointment, revolutionized the treatment of tuberculous joints and laid a large part of the foundation of modern orthopedic surgery. The son of a Welsh bone setter and descended from a line of bone setters, he was regarded as one by the surgeons of his day and looked down on. It is interesting that an American surgeon, John Ridlon, was one of the first to appreciate Thomas's work. Mr Watson quotes Dr Ridlon's description of his first visit to Thomas in 1887: "I said 'Mr Thomas, I have read your book on hip, ankle and knee and I have come over 3,000 miles to find out whether I am a fool or you a liar.' There was a twinkle behind the thick lenses and he said 'I think we'll find that out in half an hour.' Thus began two wonderful days. He let me follow him to every patient." Later Dr Ridlon visited the clinics of all the well known orthopedic surgeons in Great Britain, and this is his verdict: "Not one of them had a kindly word to say of Thomas. But I was able to compare their work with his. One could gain more useful knowledge following Thomas around for an hour than elsewhere in Great Britain for months." In 1933 Dr Ridlon wrote: "To my mind one of the greatest things Robert Jones ever did was to make the main principles of Hugh Owen Thomas acceptable to the profession." It is interesting in this connection that the importance of Jones's work was appreciated in other countries and particularly in America earlier than in England. The same was true of Lister. It was not until the war that Jones reached the pinnacle of his fame.

Financing Hospitals by Sweepstakes

In previous letters, details were given of the immense sums obtained for Irish hospitals by taking advantage of the gambling spirit of the world. The latest estimate, given by Sir John Gilmour the home secretary, in parliament shows that approximately \$224,500,000 had been subscribed up to 1934 and that of this sum \$38,000,000 has been allocated to hospitals. The greater part of the difference between these two sums is due to prizes (about two thirds of the total subscribed), expenses and a considerable sum in the form of revenue charged by the Free State government. The greater part of the money comes from other countries than Ireland and the major part of this from Great Britain. An attempt is now being made to stop this drain by making the sale of sweepstake tickets illegal in Great Britain, with what success cannot yet be said. Evasion of course is not difficult.

Steel Hats for Miners

During the great war, steel helmets were introduced to prevent the many serious casualties of bullet wounds of the head. It is curious that the value of this device for coal miners, of whom thousands are injured every year in this country by the falling of rocks, has not previously been recognized. During the last few days the unfamiliar figures of miners in black steel helmets has been seen in the streets of the Derbyshire and Notts colliery towns. Insurance companies and mine owners are now making arrangements for the general use of these helmets. They recognize that this will mean fewer compensation claims. Experiments have been made to produce the lightest and most efficient head protection, and a helmet has been produced which weighs only 12 ounces and will withstand a weight of 9 pounds dropped from a height of 8 feet. The helmets have a shield to protect the neck and are covered with a special composition. The steel lining is of great strength. The helmets cost 66 cents, of which the miners pay 18 and the insurance companies and the mine owners 24 cents each. Other protective devices being introduced are specially made gloves to prevent hand wounds and reinforced boots to prevent foot injuries.

PARIS

(From Our Regular Correspondent)

Feb 15 1935

Transfusion of Refrigerated Citrated Blood

In Paris, the transfusion service is well organized. One of the many large public hospitals serves as a center from which grouped and adequately tested donors are available at all times. This service will be described in a future letter. In smaller cities such as Bordenx in the south of France, an effort has been made to utilize the blood of donors (universal group) which has been collected in flasks and kept liquid with the aid of a 10 per cent sodium citrate solution.

Jeanneney and Vicroz, at the Dec 5 1934, meeting of the National Surgical Society, reported the details of how such blood is kept in a refrigerator at 2 C (35.6 F). The blood can be utilized only during a period of twenty days after being placed in the refrigerator.

In only six of seventy cases were any reactions observed in the form of a severe chill with slight fever (one case), slight chills without fever (four cases) and a feeling of paresthesia (one case). The simplicity of the technique of collecting the blood and its administration renders it available for city hospitals, where much time may be lost in making the various tests, especially those for syphilis.

Examination of the refrigerated blood reveals no changes in its components.

Prevention of Tuberculosis with BCG Vaccine

As a tribute to the memory of his associate Professor Calmette, Professor Guérin reported, at the January 15 meeting of the Academy of Medicine, some statistics on the employment of the BCG vaccine in France.

During the first ten months of 1933 there were 110,486 primary vaccinations and 13,909 revaccinations, during a similar period in 1934 the number of primary vaccinations had risen to 136,544 and of the revaccinations to 20,819. Vaccination of children over 2 years of age and of adults who do not react to tuberculin was begun towards the end of 1933. It consists in giving, by mouth, one ampule of the vaccine, 1,516 cases have been treated by this method. Boisseau and Nodenot in France and Scheel in Norway have shown that over 50 per cent of adults become allergic after being given the vaccine in this way. No ill effects have ever followed use of the BCG vaccine. The mortality from all causes of infants between the ages of 1 and 12 months is one half less in the case of those who have been than in those who have not been vaccinated. In families in which tuberculosis exists, the morbidity is eight times less in infants who have been than in the case of those who have not been vaccinated. The distribution of vaccine has been authorized in thirty-four countries exclusive of France. With the exception of a few countries in which vaccination is limited to children born of tuberculous parents or obliged to live among tuberculous individuals, all these countries extend the vaccination to all children, whether they live in surroundings where there is danger of contagion or not.

Failures in the use of the BCG vaccine as a preventive measure against tuberculosis are due to three causes:

1. There are a certain number of individuals who are refractory to any type of vaccination, such as that against typhoid or smallpox. An explanation of why persons in this group do not develop immunity is still lacking.

2. It is essential to remove new-born infants, who have been vaccinated, for a period of at least six weeks from contact with tuberculous individuals.

3. The majority of pathogenic organisms are destroyed and carried away by phagocytosis. This is not true for the tubercle bacillus and can be demonstrated experimentally. Calmette and

Guérin have shown that in animals as well as in human beings the tubercle bacilli are excreted by the bile in both sexes and also by the mammary secretion in the female. In persons vaccinated with the BCG vaccine, and who then are subjected to virulent additional tuberculous infection, the bacilli are eliminated often without giving rise to macroscopic lesions. In the case however, of severe and prolonged infections, if the number of bacilli that are absorbed is a larger amount than the organism can normally eliminate there will be an "accumulation" of tubercle bacilli in the lymphatics and a possible production of genuine tuberculous lesions which however are usually of a character that do not develop.

The part played by these three causes of resistance to vaccination has been demonstrated by animal experiments, especially those of the bovine type. It is probable that the same processes explain the resistance in the human being.

Complications of Pregnancy

Some interesting cases were reported at the Nov 5, 1934 meeting of the Paris Obstetric and Gynecologic Society by Le Lorier and Levy-Solal.

Le Lorier reported a case of a woman, aged 40, in whom labor during her first pregnancy had been induced because of a severe influenzal bronchopneumonia. During a second pregnancy, severe pyelonephritis showed no improvement after the use of inlying ureteral catheters for fifteen days. The pregnancy was interrupted at the fifth month because of uremic symptoms and high blood urea. Spontaneous expulsion of the fetus occurred during the third pregnancy, complicated by recurrence of renal infection. Premature delivery during the fourth pregnancy was also accompanied by pyelonephritis of less intensity. Following this pregnancy, the blood urea gradually decreased during a period of three years from 279 mg per hundred cubic centimeters to practically normal, 45 mg. During the fifth pregnancy the blood urea was only 38 mg per hundred cubic centimeters. The patient was given a diet of vegetables, cereals, fruits and fermented milk. The pregnancy was without incident and she was delivered of a normal child at term. The case illustrates the gradual decrease in intensity of the renal infection in spite of evidence of an involvement, at an earlier period, of the renal parenchyma. The latter, although very marked during the fourth pregnancy, had also improved.

A similar case was reported by Levy-Solal, Sureau and Lauret. The patient was first seen during the sixth month of pregnancy during an attack of severe renal infection with a blood urea of 170 mg per hundred cubic centimeters. But little improvement followed the use of inlying ureteral catheters, although some retention had been found on both sides at the first ureteral catheterization. The blood urea rose as high as 250 mg per hundred cubic centimeters. The estimation of chlorides in the blood (globular and plasma) revealed a ratio only slightly below normal. To restore the ratio to its normal figure, rechloridation was instituted in the form of salt solution given both subcutaneously and intravenously. The persistent emesis ceased and the diarrhea decreased markedly but the general condition was so alarming that evacuation of the uterus seemed indicated, but labor occurred and a living child weighing 1,700 Gm was born. The blood urea, which was 250 mg on the day of the confinement, decreased to 38 mg on the tenth day. The use of inlying ureteral catheters was of no benefit in this patient. The high percentage of blood urea and its rapid recession seem to indicate that the renal parenchyma has not been seriously affected. The high blood urea was apparently only a temporary phenomenon, comparable to similar observations in postoperative cases. The rechloridation relieved the vomiting and diarrhea but had no influence on the high blood urea but such treatment is to be recommended whenever inlying catheters do not give relief and the blood urea remains

high. Emptying the uterus is indicated when neither urologic methods nor rechloridation result in a drop in the high urea content of the blood.

A third instructive case, which raises the question as to the existence of supernumerary ovaries, was reported by Levy-Solal, Sureau and Lauret. The patient was a primipara, aged 21, who was in the first stage of labor on admission to the hospital, without engagement of the head. A mass the size of a large orange could be felt in the posterior culdesac, independent of the uterus. A diagnosis of ovarian cyst obstructing the head from entering the pelvis was made, and laparotomy was decided on. It revealed the presence of a dermoid of the right ovary, the size of an orange, with a short pedicle. A similar cyst of the left ovary, the size of a child's head at term, was present, a portion extending into the culdesac of Douglas. Not the least trace of ovarian tissue was visible, even on microscopic examination of the two dermoids. Either the dermoids must have developed during the pregnancy or there had been a supernumerary ovary. Various authors estimate that these are present in 4 per cent of women. These supernumerary ovaries are found attached to the ovary or they occur somewhere along the line of migration of the ovary in the embryo. They may be multiple and of variable size. Their presence explains the persistence of menstruation after bilateral ovariectomy.

On account of the patient's age, a cesarean section was performed after removal of the bilateral ovarian dermoids and an infant weighing 3,000 Gm. was delivered.

In the discussion, Faure reported a similar case in a woman, aged 28. Following removal of the dermoid cysts on both sides in the sixth week of pregnancy, the woman was delivered at term.

BERLIN

(From Our Regular Correspondent)

Jan. 28, 1935

Reorganization of Student Activities in the Universities

A recent letter (THE JOURNAL, January 12, p. 132) gave an account of the struggles that have been going on in the student bodies of the universities. Since then, many changes have been made that will lead possibly to a greater stability. The struggle for supremacy, fought out between the German student body, as represented by certain student fraternities, and the national-socialist party, has been ended now by an executive order from the federal minister of public instruction (Rust). This decision releases the German student body from the duty of participating in the special training course designed to develop political insight and broader world views. This duty now need be fulfilled only by the members of the National-Socialist Student League. The purpose of this training is to create uniform political and world views to aid the students in forming their opinions. The general student body will not be compelled to enter a "kameradschaftshaus," as was originally planned. The fraternities have secured unquestionably greater liberty of action, although they are not permitted freely to air their political views. In keeping with this decision the director of the National-Socialist Student League has declared that the semester must be devoted primarily to scientific study and that he is opposed to the suggestion that "in the form of weekly political lectures the students receive from one to one and a half hours of instruction in national socialism, as such a plan might lead to a degeneration of our intellectual life and to false conceptions of the true aims of a university." This denotes a wide departure from previous uses. During the vacations, however, the students will be brought together in camps, where they will receive such training as will make of them "true champions of national socialism." This director makes then some interest-

ing confessions. "During the past year and a half, the student has been tossed about to such an extent that he has lost most of his faith in attempts to direct the thinking of students. A reawakening of this faith I regard as a necessity, since leadership without the confidence of one's followers is not true leadership but dictatorship."

The Deutsches Studentenwerk, a self-help organization for the aid of needy students, for whom the society procures opportunities to make a little extra money, has been reorganized by ministerial decree and placed under the control of the ministry. Its announced purpose now is "to provide every person possessing high intellectual gifts, irrespective of origin or financial status, an opportunity to attend a German university." The society receives now, in addition to voluntary contributions, certain sums from the students and from the government. It has, however, lost the right to administer its own affairs.

University Sports

With the beginning of the winter semester, the new university regulations pertaining to participation in sports went into effect in all the universities of the Reich. Compulsory participation in gymnastic exercises and various sports, during the first three semesters, deserves special mention. Only in exceptional cases will students be excused from such participation (time spent in the *arbeitsdienst*, or work service, may be taken into account). The fundamental training for both sexes, during the first semester, consists of general body building, work in the gymnasium, cross country runs (sometimes in groups), in the second semester, of the so-called *funfkampf-training*, and rifle practice, and, in the third semester, of group contests, swimming exercises and practice that will fit them for the rescuing of drowning persons. In the future, no student who has not met the requirements of the "fundamental training" will be permitted to continue with the studies of the fourth semester or become a candidate for any degree. After fulfillment of these conditions, a student will receive a badge. It is also planned to organize special sport events of the universities.

University Study Without Attendance at a "Gymnasium"

In a few special cases persons will be permitted to enter a university without having previously attended a "gymnasium." The minister of public instruction, in order to afford a few of the most talented sons of workmen an opportunity to attend a university, has consented, at the request of the German student organization, to allow twenty members of the "Hitler-Jugend" and of the *Arbeitsdienst* (work service) to be admitted to the student body without presenting a diploma of a "gymnasium." Under certain conditions they may be permitted, after two semesters, to matriculate as regular students. The intellectual training of these workmen's sons will be carried on with the cooperation of the student organization and the Deutsche Dozentenschaft, or association of faculty members. The funds for such university study will be furnished by the Deutsches Studentenwerk. For the training of these candidates the universities of Heidelberg and Königsberg are being considered.

University Entrance Requirements

According to an agreement between a Hitler-Jugend "führer" (leader) and the local school authorities, remission of the university entrance requirements, which for some time have been based on conditions quite apart from performance in school (THE JOURNAL, March 3, 1934, p. 710), is to be determined by considerations that concern the political usefulness, together with his type of character and his personal qualities. But the decision in such cases will not rest with the school but with

the fuhrer of the Hitler Jugend. Such an understanding would make it possible to help such fuhrer to make up their deficiencies even though their performance might be only barely "satisfactory." This agreement is in line with a tendency manifest in the Hitler-Jugend to make university distinctions a political football, and it throws a floodlight on certain endeavors to bring German youth entirely under certain definite influences. The university authorities, however, in spite of their sympathy for the cause of the people, will hardly be willing to accept any such provisions.

Selective Diets in Hospitals

The experiences with a uniform diet for most patients in hospitals have not been universally satisfactory. In some institutions of Berlin an experiment has been made with an à la carte service, which permits the patients to choose the food they desire or which is prescribed. The results of this experiment are considered satisfactory, for example in the Virchow Hospital, which has had a longer experience with the new system than some of the other institutions now using it. On an average, this hospital serves meals to 2,400 persons daily, including physicians and hospital personnel. Of this number from 1,400 to 1,600 persons are served diets I or II, which permit the use of all foods, except possibly a few of the vegetables that are hard to digest. Diets III and IIIa presuppose a certain amount of selection. The old plan of serving uniform meals to all patients gave rise to many complaints. At first, the experiment was tried of serving the tuberculous patients, who are particular about their food, a selective diet, allowing them the choice of one of two articles. The complaints in this department ceased immediately. The experiment was then tried in other departments with equal success. Hence the new system was extended to all departments and at the same time the number of meals at which a selective diet was permitted was extended to three a day. No complaints have developed since the introduction of the new system. There is no doubt that a diet satisfactory to the patients contributes to their recovery and influences their general well being. This selective system makes it possible to take some account of local peculiarities and special dishes, which are very marked in many parts of Germany. With the former uniform diet menus calling for large amounts of meat were very expensive. After introduction of the selective diet there was no difficulty in offering a diet rich in meats, for it was found in a short time that the selective diet entails much less expense than the uniform diet, for which fact several reasons may be assigned. Principally, with the introduction of the selective diet the expensive system of *zulagen* (certain side dishes) was abolished. Formerly the uniform diet was supplemented, if desired, by side dishes in the form of sweets, desserts, fruit, and the like, in order to give more variety to the meal. This system, however, added a great deal to the general expense. Now the patients have accepted the discontinuance of the side dishes as a system without complaint. Another source of economy is the fact that, under the new system, certain cheaper foods of high quality can be served more frequently than under the old system, since the patients do not need to select them unless they desire.

German Spanish-American Medical Academy

In order to foster better relations between the German reich and the South American countries the Deutsch-Ibero-Amerikanische Gesellschaft in Berlin is planning the creation of a medical academy. The idea is to establish in Berlin with the cooperation of well known physicians and institutions of the reich, a special center that, it is hoped, will be of a nature to induce more physicians and patients from foreign countries to visit German cities and health resorts.

JAPAN

(From Our Regular Correspondent)

Jan 26, 1935

Outbreak of 1,000 Cases of Dysentery

In the city of Kawasaki, between Tokyo and Yokohama, with a population of 141,800, 1,258 dysentery cases occurred from January 2 to January 21. There first appeared all over the city children with symptoms of influenza accompanied by slight digestive trouble. After January 6, this disease began to attack the adults. On investigation, the disease was found to be dysentery. There were 147 deaths, and there are now more than 800 persons ill, but there is no sign of a further increase. The cause of the outbreak was at first thought to be the water, but no bacteria were found in it.

An Investigation of Encephalitis

At a meeting of the Japan Science Society, January 21, in Tokyo Dr. Y. Imura of the committee on encephalitis made a report after one year of research. Encephalitis breaks out here in August and decreases gradually toward September, two thirds of the outbreaks in the last ten years have taken place in August. The cases are found mostly in the western provinces. Many of the victims are professional workers, and the heads of families more often than other members. More cases are seen in the better class houses in high and dry places than in the low and damp places. When it is hottest, this disease occurs mostly in the villages, but when it is cooler, more are found in factory towns. After hard labor, mental or physical, especially in a burning sun, many have taken sick. It is still obscure whether the disease is infectious or not. Of the deaths during the last ten years, 64.8 per cent were among old women. The disease causes death in five days on the average when it is very hot. The density of population seems to have little to do with this disease. The heat of the previous month appears to have a great influence, for instance, when August is especially hot in some district, many cases have occurred there in September, a tendency present almost everywhere throughout the country. A relation between the disease and the rainfall has been noted. Less moisture and a longer period of sunshine cause a greater number of cases.

Professor Kubo Retires

It is widely regretted that Prof. Dr. Ino Kubo of the Kyushu Imperial University has reached the age limit and has to resign. For the first time in this university, a ceremonial clinical lecture was given by him, December 13, at the otorhinolaryngology lecture hall, which was founded by him in 1907. His last lecture was demanded by students of the lower classes who had never heard him lecture. The hall was overcrowded with students and graduates an hour before the lecture began. Those who couldn't get in filled two other halls, where they heard his lecture through loud speakers especially installed for the purpose. His subject was "The Essentials in Clinicians." He said "To summarize my twenty-eight years of experience acquired in this room, I have examined during those years 133,539 outpatients and 16,941 inpatients. The spirit of my service to them will be described today.

The very first essential that we ought to have as clinicians is always to maintain a student-like attitude in diagnosing and treating patients. The second is that we should have the feeling of commiseration toward patients. Huefeland once said that the feeling of relieving a patient of his trouble is the principle of medicine. These I have had deeply implanted in my heart during these past years, trying ever to be faithful to them." He brought before the assembly eight persons who were cured of their trouble under his treatment recently. He explained each case, making a deep impression on every one present.

BELGIUM

(From Our Regular Correspondent)

Feb 4, 1935

Nephritis and Nephrosis

Prof Polak Daniels has called attention to the difficulty of distinguishing, from the anatomopathologic point of view, the diseases that attack the epithelium of the renal tubules (nephrosis) and the disorders that provoke changes in the glomeruli (nephritis). Belle and McGregor hold, on the basis of histologic observations, that chronic lipoid nephrosis should be regarded as a special type of glomerulonephritis. If one seeks to superimpose the clinical picture of nephrosis and the anatomopathologic manifestations of this disease, it will soon be found that such superimposition is difficult if not impossible.

The cardinal symptom of nephrosis is the edema. Can the typical anatomic lesion of nephrosis (cellular degeneration of the epithelium of the renal tubules) be considered responsible for the edema? If one takes account of the more recent views of renal physiology, the reply will be negative. It will be recalled that the glomeruli are ultrafilters and that the renal tubules are charged with the resorption of a part of the substance secreted by the glomeruli (concentration function). If the epithelium of the tubules is diseased, the resorption of the liquid will be impaired, and as a consequence diuresis will be increased. The edema associated with nephrosis cannot therefore be considered a direct consequence of the lesions found in the renal tubules. Daniels believes that it is much more logical to explain albuminuria as a glomerular lesion than as a degenerative lesion of the renal tubules.

Syphilis in Infants

At the ninth *Congrès nationale des œuvres de l'enfance*, which was held at Tournai, it was decided, following a paper presented by Dr Languy on "Syphilis in Infants: Diagnosis and Treatment," to apply all measures possible to intensify in Belgium the crusade against syphilis, which is an important factor in infant mortality. In this crusade there must be close and effective cooperation between the various organizations for detection, on the one hand (the prenatal consultation centers, the obstetric services, the consultation centers for infant care and the centers of preventive medicine in general), and, on the other hand, between the organizations on which the treatment develops, namely, the whole medical profession of Belgium, aided in its task by the antivenerical dispensaries.

International Congress of Accidents and Occupational Diseases

The seventh *Congrès international des accidents et des maladies du travail* will be held at Brussels in July 1935, under the chairmanship of Dr Glibert. The work of the congress will comprise official papers on the questions previously chosen for discussion.

Section A Surgery

I Remote results of traumatism of the cranium (a) etiology and symptomatology, (b) pathologic anatomy, (c) diagnosis, prognosis, evaluation and (d) treatment.

II Traumatism of the hand and the fingers (a) immediate treatment of wounds of the hand and the fingers, (b) infectious complications of such wounds, (c) reparative operations after these traumatism, (d) trophic and painful sequels, (e) estimation of disability caused by wounds of the hand and the fingers.

Section B Occupational Diseases

I The crusade against harmful dusts in industry (a) how to secure and to examine dusts in order to determine their quality and quantity, (b) the relative value of the different means of combating industrial dusts suspended in the air, (c) criteria for the selection, before hiring, of workmen to be

exposed to dangerous dusts, (d) the first alarming signs indicating an intolerance for a dangerous occupation.

II The pathologic action of gases escaping from fire-damp veins. Does the repeated inhalation of minimal amounts of gases escaping from fire-damp veins exert a pathologic action? (a) the nature of fire-damp, its detection and prevention, (b) the physiologic and pathologic effects of fire-damp.

Section C Miscellaneous

I (a) psychophysiology of pain, (b) pathologic changes in the sense of pain, (c) objective diagnosis of pain in traumatized persons.

II Electricity (a) pathologic disorders due to electricity, (b) hygiene of electricity, (c) pathologic anatomy, (d) injuries due to electricity.

Osteitis of the Pubis

Addressing recently the Belgian Surgical Society, Drs Jonckheere and Leclercq discussed the various forms of tuberculous osteitis occurring in the pubis. The two dominant factors in the evolution of osteotuberculosis of the pubis are the degree of gravity of the bone lesions and the stage (more or less advanced) of the abscess. They gave this therapeutic survey: 1 The nonsuppurative bone lesions may heal perfectly by the institution of a rational mobilization, combined with the general treatment of any tuberculosis. Unfortunately one seldom has an opportunity to apply such treatment, since tuberculous lesions of the pubis have at first a symptomatology that is obscure if not nonexistent. This method, however, should be borne in mind, for it may be advantageous to combine it with the surgical or orthopedic technique to which more serious clinical types are amenable. 2 Bone lesions with walled off collections require a different treatment, depending on whether or not there are sequestrums. The type without sequestrums, characteristic of diffuse or periosteal tuberculosis, should be subjected to modifying injections.

The typical form of circumscribed tuberculosis with sequestrums will necessitate a surgical intervention, which may be conservative or radical. If conservative, one will confine oneself to a curettage with removal of the pocket, in the second case one will undertake a symphyseal resection, which must be supplemented by an interpubic graft. 3 The bone lesions with fistulized collections constitute even to a greater extent a formal operative indication, consisting, as one may prefer, of a curettage or a pubic resection, either one of which will eliminate fistulous tracts.

Marriages

HELEN LA RUE WILLIAMS, Allentown, Pa., to Mr Frank Hollingsworth Hodgens of Philadelphia, February 2.

DANIEL EARL KAVANAUGH to Miss Elizabeth Marion Current, both of Belleville, N. J., January 26.

LEO L. JACOBS, Richmond, Va., to Miss Esther Bloom of Covington, Ky., in Norfolk, February 14.

ALLEN W. BARNES, Des Moines, Iowa, to Miss Elizabeth M. Early of Traer, Dec. 25, 1934.

JAMES S. McELROY, Indianapolis, to Miss Katherine Dillm of Washington, Ind., February 2.

DEWITT T. BOND, Danielsville, Ga., to Miss Elsie Quattlebaum of Statesboro, recently.

JOHN FRANCIS HAYMOND to Miss Louise Sellergren, both of Chicago, February 24.

ROBERT M. HARBIN, JR. to Miss Charlotte Dean, both of Rome, Ga., February 16.

GEORGE A. GRINDE, Cumberland, Wis., to Mrs. Helen Cole in December 1934.

WILLIAM J. MURPHY, Milwaukee, to Miss Virginia M. Dunn Dec. 27, 1934.

Deaths

Jabez North Jackson ♂ since 1912 director of health of Kansas City, Mo., died, March 18, aged 66. Dr. Jackson was born in Labadie, Mo., Oct. 6, 1868. After attending Central College in Fayette, Mo., where he received the bachelor of arts degree in 1889 and the master of arts degree in 1890, he graduated from the University Medical College of Kansas City in 1891 and later did graduate work at the New York Polyclinic. From 1891 to 1895 he was demonstrator of anatomy and from 1895 to 1898 professor of anatomy at his alma mater, professor of surgical anatomy and adjunct professor of surgery, 1898-1900 professor of principles and practice of surgery and clinical surgery, 1900-1911, trustee, 1891-1911, and at one time president. From 1893 to 1898 he was assistant surgeon and surgeon in the Third Regiment of the Missouri National Guard and was a major and brigade surgeon of the United States Volunteers in charge of the Second Division Hospital of the Second Army Corps during the Spanish American War. Dr. Jackson was chosen President-Elect of the American Medical Association at the Dallas session in 1926, was President of the Association in 1927-1928 and was a member of the House of Delegates in 1903-1904, 1906, 1919, 1930-1931 and 1933. He was president of the Medical Association of the Southwest in 1898, of the Kansas City Academy of Medicine in 1900, of the Missouri State Medical Association in 1904 and of the Western Surgical Association in 1913. Among the other organizations of which he was a member were the American Surgical Association, the Missouri Valley Medical Society, the Pan-American Medical Congress and the American College of Surgeons. He was surgeon to the Kansas City General Hospital, the Research Hospital and the Trinity Hospital. He was awarded the doctor of science degree from Park College in 1926 and the doctor of laws from the University of Missouri in 1927.

John Ruhräh ♂ Baltimore, College of Physicians and Surgeons of Baltimore, 1894, professor of pediatrics University of Maryland School of Medicine, member and past president of the American Pediatric Society, the American Academy of Pediatrics and the Medical and Surgical Faculty of Maryland, past president and secretary-treasurer of the Medical Library Association, past president of the Research Society and the Osler Historical Society, visiting physician to the Mercy Hospital and the Hospital for Women of Maryland, consulting physician to the Church Home and Infirmary and the Bay View City Hospital, commissioner of public schools in Baltimore, co-author of "Diet in Health and Disease," "Dietetics for Nurses" and "Polymyositis," author of "Manual of Diseases of Infants and Children" and "Pediatric Biographies," editor of "Pediatrics of the Past," and "William Cadogan His Essay on Gout," associate editor of *Annals of Medical History*, contributed articles on "Pediatrics in Art" to the *American Journal of Diseases of Children*, aged 62, died March 10, in the Mercy Hospital, of arteriosclerotic hypertensive cardiovascular disease and cerebral hemorrhage.

Ralph Walker McDowell ♂ Medical Director, Captain, U S Navy, Washington, D. C., Jefferson Medical College of Philadelphia, 1905, in 1934 Member of the House of Delegates of the American Medical Association, entered the navy as an assistant surgeon in 1908 and was promoted through the various grades to that of captain in 1931. He was awarded the *Distinguished Service Medal* and was made a *Chevalier of the Legion of Honor of France* for service during the World War, professor of surgery at the U S Naval Medical School, chief of the surgical service at the U S Naval Hospital, consulting surgeon for the navy in the District of Columbia, fellow of the American College of Surgeons, formerly editor of the *Naval Medical Bulletin*, aged 52, died, February 22, of coronary thrombosis.

Robert Abrahams ♂ New York, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1891, formerly associate professor of medicine, New York Post-Graduate Medical School and Hospital, at various times on the staff of the Unity Hospital, Brooklyn, Rockaway Beach (N. Y.) Hospital and the Manhattan State Hospital, aged 73, died, March 2, of heart disease, at Pass-a-Grille, Fla.

Albert Bernheim, Philadelphia, Albert-Ludwigs-Universität Medizinische Fakultät Freiburg Baden Germany, 1890, University of Louisville (Ky.) Medical Department, 1897, member of the Medical Society of the State of Pennsylvania and the American Gastro-Enterological Association, aged 66, died February 15, in the Jewish Hospital, of paralysis agitans and pneumonia.

Lucius Deyampert McGehee, Hammond, La., Tulane University of Louisiana Medical Department, New Orleans, 1904, member of the Louisiana State Medical Society, past president of the Tangipahoa Parish Medical Society, for many years member of the parish school board, health officer of Hammond, aged 53, died, January 30, of pneumonia.

Frank William Stevens ♂ Bridgeport, Conn., Yale University School of Medicine, New Haven, 1900, fellow of the American College of Surgeons, served during the World War, for eleven years member of the board of health of Bridgeport, aged 61, on the staff of the Bridgeport Hospital, where he died, February 16, of carcinoma of the stomach.

Hubert Carlyle Dixon ♂ Leaksville, N. C., University and Bellevue Hospital Medical College, New York, 1916, fellow of the American College of Surgeons, past president of the Rockingham County Medical Society, served during the World War, on the staff of the Leaksville Hospital, aged 43, died, February 11, of coronary occlusion.

Andrew Joseph Sullivan ♂ Brockton, Mass., Tufts College Medical School, Boston, 1909, member of the New England Otological and Laryngological Society, fellow of the American College of Surgeons, served during the World War on the staff of the Goddard Hospital, aged 49, died, February 9, of bronchiectasis and heart disease.

Mordecai Edward Doughty, Slocumb, Ala., Chattanooga (Tenn.) Medical College, 1903, member of the Medical Association of the State of Alabama, formerly health officer of Slocumb and county health officer, at one time member of the city council and board of education, aged 59, died, February 3, in a hospital at Dothan, of septicemia.

Walter Lewis Barber, Waterbury, Conn., Bellevue Hospital Medical College, New York, 1873, member of the Connecticut State Medical Society, for many years member of the state board of medical examiners and city board of health, on the staff of the Waterbury Hospital, aged 83, died, February 14, of cerebral hemorrhage.

John William Foley, Denver, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1894, member of the American Academy of Ophthalmology and Otolaryngology, served during the World War, aged 61, died February 17, in the Fitzsimons General Hospital, of cerebral hemorrhage.

Louis Andrew King, St. Joseph Mich., Saginaw (Mich.) Valley Medical College, 1903, member of the Michigan State Medical Society, served during the World War, formerly mayor of St. Joseph, on the staff of the Mercy Hospital, Benton Harbor, aged 65, died, February 1, of cerebral hemorrhage.

Foster Victor Brown, Sioux City, Iowa, Sioux City College of Medicine, 1905, member of the Iowa State Medical Society, past president and secretary of the Woodbury County Medical Society, on the staffs of the Lutheran and Methodist hospitals, aged 56, died, February 12, of cirrhosis of the liver.

Lee Jones, Blount Springs, Ala., University of Virginia Department of Medicine, Charlottesville, 1909, served during the World War, for many years on the staffs of the Goldsby King Memorial Hospital and the Selma Baptist Hospital, Selma, aged 53, died, January 11, of heart disease.

Lawrence G. Clayton, Central, S. C., University of Maryland School of Medicine, Baltimore, 1878, member of the South Carolina Medical Association, past president of the Pickens County Medical Society, aged 80, died February 17, of bronchopneumonia and acute dilatation of the heart.

James Edward Terry, Red Level, Ala., University of Alabama Medical Department, Mobile, 1902, member of the Medical Association of the State of Alabama, chairman of the school board, aged 59, died, February 5, in St. Margaret's Hospital, Montgomery, of strangulated umbilical hernia.

John H. Samuel, Maysville Ky., Medical College of Ohio, Cincinnati, 1877, mayor of Maysville, 1920-1924, formerly member of the state board of health and president of board of education, aged 79, died, February 18, of pneumonia following an operation for intestinal obstruction.

Harry Blatt Harris, Orange, N. J., Columbia University College of Physicians and Surgeons, New York, 1906, member of the Medical Society of New Jersey, health officer of Orange, aged 50, died, February 12, in the Beth Israel Hospital, Newark, of uremia, nephritis and heart disease.

Horace Elwood Bragdon, Winthrop, Mass., Harvard University Medical School, Boston, 1891, member of the Massachusetts Medical Society, for twenty years on the staff of the Chelsea (Mass.) Memorial Hospital, aged 67, died, February 17, of coronary thrombosis.

Edmund A. Christian @ Pontiac, Mich., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1882, member of the American Psychiatric Association, aged 77, medical superintendent of the Pontiac State Hospital, where he died, February 5, of heart disease.

Robert M. Kendrick, Selmer, Tenn., St. Louis College of Physicians and Surgeons, 1897, member of the Tennessee State Medical Association, formerly a druggist, for many years bank president and chairman of the school board, aged 64, died, February 20, of pneumonia.

John Hamilton Small, Montclair, N. J., Medico-Chirurgical College of Philadelphia, 1902, formerly assistant, adjunct and associate professor of bacteriology at his alma mater, aged 69, died, February 23, in the Memorial Hospital, Miami, Fla., of diabetes mellitus and carbuncle.

Oscar Suttle Justice, Central, Ala., Medical College of Alabama, Mobile, 1885, member of the Medical Association of the State of Alabama, formerly member of the state legislature, at one time county health officer, aged 74, died, February 10, of cerebral hemorrhage.

Horace Lee Simpson, Pensacola, Fla., College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1886, member of the Florida Medical Association, on the staff of the Pensacola Hospital, aged 71, died, February 4, of cerebral hemorrhage.

Stephen Livingston Taylor @ Sherrill, N. Y., College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1894, for many years health officer of Sherrill, aged 66, died, January 29, in the Faulkner Hospital, Boston, of heart disease.

William T. Short, Stonington, Ill., Marion-Sims College of Medicine, St. Louis, 1897, member of the Illinois State Medical Society, formerly district health superintendent of the state department of health, aged 62, died, February 10, of acute dilatation of the heart.

Frederick Jacob Korthals, Milwaukee, Marquette University School of Medicine, Milwaukee, 1914, member of the State Medical Society of Wisconsin, served during the World War, on the staff of St. Joseph's Hospital, aged 46, died, February 4, of colitis.

George Wallace Rawson, Amherst, Mass., Dartmouth Medical School, Hanover, N. H., 1888, member of the Massachusetts Medical Society, member of the school board, aged 73, died, Dec. 26, 1934, of carcinoma of the stomach, myocarditis and arteriosclerosis.

Earl Gates Heaton, Baldwinsville, N. Y., Hahnemann Medical College and Hospital of Philadelphia, 1896, bank president, formerly village president and member of the board of education, aged 60, died, February 7, of coronary occlusion and arteriosclerosis.

Alvah Arlington Fisher, Providence, R. I., University of the South Medical Department, Sewanee, Tenn., 1895, member of the Rhode Island Medical Society, served during the World War, aged 63, died, February 15, in the Rhode Island Hospital, of leukemia.

Frank Eugene Guild @ Willimantic, Conn., Long Island College Hospital, Brooklyn, 1885, on the staff of the Windham Community Memorial Hospital, aged 81, died, February 3, in the Johns Hopkins Hospital, Baltimore, of infection of the urinary tract.

Francis Adams McClintock, Newcomb, Tenn., Tennessee Medical College, Knoxville, 1895, member of the Tennessee State Medical Association, secretary and past president of the Campbell County Medical Society, aged 73, died, February 18, of pneumonia.

Barney Ferrell, Bend, Ore., Northwestern University Medical School, Chicago, 1904, veteran of the Spanish-American War, on the staffs of the Lumbermen's and St. Charles hospitals, aged 59, died, January 15, of pulmonary tuberculosis.

Henry Holliday Stromberger, Los Angeles, Columbian University Medical Department, Washington, D. C., 1899, aged 68, died, February 1, in the Santa Monica (Calif.) Hospital, of a skull fracture received when he was struck by an automobile.

Lawrence Edward Zuley @ Oak Park, Ill., Loyola University School of Medicine, Chicago, 1932, on the staffs of the West Suburban Hospital and the Oak Park Hospital, aged 28, died, February 14, of appendicitis, general peritonitis and pneumonia.

De Witt Clinton Wilson, Los Angeles, Bellevue Hospital Medical College, New York, 1870, formerly member of the state legislature of Ohio, member of the city council and school board of Ironton, Ohio, aged 87, died, February 1, of cystitis.

Samuel Corley Ball, Fort Worth, Texas, Kentucky School of Medicine, Louisville, 1887, member of the State Medical Association of Texas, served during the World War, aged 69, died, January 23, in Texarkana, of hypertensive heart disease.

William Timothy Cannon, Brooklyn, Baltimore Medical College, 1901, formerly resident physician in the Brooklyn Home for Consumptives, aged 59, died, January 19, in the Swedish Hospital, of heart disease, following an operation.

George Hartnagel, Delphos, Ohio, Northwestern University Medical School, Chicago, 1910, member of the Ohio State Medical Association, served during the World War, aged 55, died, February 8, of acute coronary occlusion with infarct.

Walter S. Zorns, Taylor, Texas, Vanderbilt University School of Medicine, Nashville, Tenn., 1920, member of the State Medical Association of Texas, health officer of Taylor, aged 43, died, February 22, of acute lymphatic leukemia.

William Andrew Crooks @ Wahjamega, Mich., Hahnemann Medical College and Hospital, Chicago, 1899, formerly medical superintendent of the Michigan Farm Colony for Epileptics, aged 62, died, February 5, of carcinoma.

William David Tyrrell @ New York, Northwestern University Medical School, Chicago, 1899, on the staff of the Willard Parker Hospital, aged 64, died, February 26, when he fell from a nine story window of a hospital.

William Jennings Bauer, Indianapolis, State University of Iowa College of Medicine, Iowa City, 1933, aged 38, resident physician to the Methodist Episcopal Hospital, where he died, February 8, of subacute bacterial endocarditis.

Frank Scott Campbell, State College, Pa., Medico-Chirurgical College of Philadelphia, 1896, member of the Medical Society of the State of Pennsylvania, aged 66, died, February 12, of cardiovascular renal disease.

Augustus Orelme, New York, Julius-Maximilians-Universität Medizinische Fakultät, Würzburg, Bavaria, Germany, 1886, aged 72, died recently, in the Lenox Hill Hospital, of hypertrophy of the prostate and uremia.

Moses Gatlin Campbell, Atlanta, Ga., Atlanta Medical College, 1894, an Affiliate Fellow of the American Medical Association, on the staff of the Georgia Baptist Hospital, aged 73, died, February 8, of heart disease.

Millard Lafayette Stephens, Haleyville, Ala., Birmingham Medical College, 1909, member of the Medical Association of the State of Alabama, formerly mayor of Haleyville, aged 52, died, February 1, of pneumonia.

William M. Finley, Blountsville, Ala., Vanderbilt University School of Medicine, Nashville, Tenn., 1879, aged 77, died, January 24, in a hospital at Birmingham, of chronic myocarditis and hypertrophy of the prostate.

William E. Fisher, Portland, Conn., University of Pennsylvania Department of Medicine, Philadelphia, 1876, member of the Connecticut State Medical Society, aged 81, died, recently, of chronic myocarditis.

Samuel G. Miller, Chester, S. C., College of Physicians and Surgeons, Baltimore, 1879, member of the South Carolina Medical Association, aged 74, died, January 21, of arteriosclerosis and senile gangrene.

Antonino Scaturro @ New York, Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1899, on the staff of the Columbus Hospital, aged 59, died, February 6, of a self-inflicted bullet wound.

Hugh Smith Rowlett, Maryville, Mo., Louisville (Ky.) Medical College, 1894, served during the World War, on the staff of St. Francis Hospital, aged 65, died, February 18, of arteriosclerosis and uremia.

Bernard Miller, Chicago, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1900, aged 58, died, February 13, of angina pectoris and chronic myocarditis.

Melvin William Lilly, Grandview, Iowa, State University of Iowa College of Medicine, Iowa City, 1872, formerly member of the board of health of Chicago, aged 84, died, February 6, of heart disease.

Marion A. McClelland @ Aguilar, Colo., St. Louis College of Physicians and Surgeons, 1926, served during the World War, aged 39, died, February 18, in St. Mary's Hospital, Pueblo, of pneumonia.

William H Clegg, Philadelphia University of Pennsylvania Department of Medicine Philadelphia, 1891 aged 69, died January 30, in the Philadelphia General Hospital, of carcinoma of the prostate

William S Aldridge, Lake Worth, Fla Western Reserve University Medical Department, Cleveland, 1892 formerly health officer and city physician, aged 68 died, February 9, of heart disease

Leslie James Lynch, Columbus, Ohio College of Physicians and Surgeons Keokuk Iowa 1879 also a druggist aged 86, died, February 13, at the Grant Hospital, of cerebral hemorrhage

Samuel A Poague, Clinton, Mo Marion Sims College of Medicine, St Louis, 1892, member of the Missouri State Medical Association, aged 69, died February 17, of senile dementia

Thomas Benton Selman, Silsbee, Texas Atlanta (Ga) Medical College 1890, member of the State Medical Association of Texas, aged 79, died, February 1, of pellagra and senile dementia

Willis S Michael, Junior W Va, College of Physicians and Surgeons Baltimore, 1893 member of the West Virginia State Medical Association, aged 63, died recently, of angina pectoris

Frederick Huber Brumm, Coldwater, Ohio Medical College of Ohio, Cincinnati, 1907, member of the Ohio State Medical Association, aged 50, died February 10, of heart disease

Rush Kersey Morton, Juniata Pines N J, College of Physicians and Surgeons Baltimore, 1900 veteran of the Spanish American War, aged 72, died, January 10, of heart disease

Jesse S Driver, Coolidge, Texa, Memphis (Tenn) Hospital Medical College, 1891 member of the State Medical Association of Texas, aged 68, died, January 18 of tuberculosis

Marie Burnadette Lucas, Washington, D C, Howard University College of Medicine Washington 1914 aged 60 died, February 23, of purpura haemorrhagica and pulmonary edema

Fred Bowers Taylor, Concord N H, Tufts College Medical School, Boston 1909, member of the New Hampshire Medical Society, aged 53, died, January 24 of cerebral hemorrhage.

William L Bowers, Vada, Ga, Chattanooga (Tenn) Medical College, 1899, member of the Medical Association of Georgia, aged 68, died, February 8, of cerebral hemorrhage

Charles Fleet Scudder, Northport N Y, Cornell University Medical College, New York, 1911 served during the World War aged 49, died, February 3, of heart disease

William Beardsley Wilkinson, Staten Island N Y, Bellevue Hospital Medical College, 1896 aged 66 died, February 2 in the Staten Island Hospital, of lobar pneumonia

Charles F Adams, Springfield Ohio, Medical College of Ohio, Cincinnati, 1884, member of the Ohio State Medical Association aged 73, died, February 15, of heart disease

Spurgeon Campbell, Winnipeg, Manit, Canada Manitoba Medical College, Winnipeg, 1904, served during the World War, aged 64 died, February 10, of coronary thrombosis

James N Downs, Atkinson, Ill, Homeopathic Hospital College, Cleveland, 1880, member of the Illinois State Medical Society, aged 80, died, February 3, of coronary occlusion.

William Beringer Marcusson, Oak Park Ill, Rush Medical College, Chicago 1885, aged 74, died February 17, of cerebral arteriosclerosis, thrombosis and pneumonia

James T Gibson & Lynchburg, Ohio, Medical College of Ohio, Cincinnati 1897, member of the board of education, aged 66, died, February 14, of heart disease.

John Inman Smith, London, Ky Hospital College of Medicine, Louisville, 1892, served during the World War aged 68, died, February 17, of heart disease

Oran D McCray, Marshall Mo, University Medical College of Kansas City, 1901 aged 58, died Dec 12, 1934, of carcinoma of the liver and diabetes mellitus

Frederick Tracy Fitch & East Hampton Conn Yale University School of Medicine, New Haven 1904 aged 57, died suddenly, February 16, of heart disease

Richard Henry Houghton, Boston Tufts College Medical School, Boston, 1905 aged 58, died February 8 in the Peter Bent Brigham Hospital of arteriosclerosis

William Henry Foster, St Louis, St Louis University School of Medicine, 1905 aged 59, died February 9, in the Missouri Baptist Sanitarium, of pneumonia

John Wilford Stiers, Detroit, Northwestern University Medical School Chicago, 1914, served during the World War, aged 45 died, February 10, of pneumonia

Harley Heath & Comstock, N Y, Albany Medical College 1909 chief physician to the Great Meadow Prison aged 54 died February 12 of heart disease

August Blass Lacour, Batchelor Ia Memphis (Tenn) Hospital Medical College, 1909, aged 53, died, February 2 of heart disease and cerebral hemorrhage

Marcus Warland Laney, Birmingham Ala, Vanderbilt University School of Medicine 1893, aged 71, died, February 5, of cerebral hemorrhage following a fall

Perry Edgar Mitchell, Wetumka, Okla, University of Nashville (Tenn.) Medical Department, 1905, aged 54, died, February 16, of cerebral hemorrhage

Casper M Droste, Grand Rapids Mich College of Physicians and Surgeons of Chicago, 1885, aged 73, died, February 16 of heart disease, in St Louis

David M Bonham, Crawfordsville, Ind Eclectic Medical Institute, Cincinnati, 1875, aged 80, died, February 15 of carcinoma of the mouth and throat

William Clinton Seitz, Glen Rock Pa Hahnemann Medical College and Hospital of Philadelphia, 1888, aged 70 died February 4, of cerebral hemorrhage

Vincent Gialloreti, Chicago Regia Universita di Napoli Facolta di Medicina e Chirurgia, Italy, 1892, aged 69 died, March 6 of cerebral hemorrhage

William A Coldren, Uhrichsville, Ohio, University of Pennsylvania Department of Medicine, 1888, aged 75 died February 9 of diabetes mellitus

Sarah Alice Cohen May, New York Woman's Medical College of Pennsylvania Philadelphia 1879, aged 74, died Dec 10, 1934 of arteriosclerosis

Levi Willard Clough, Charlestown N H, University of Vermont College of Medicine, Burlington, 1887, aged 71, died, February 5, of arteriosclerosis

George Francis Goggins, De Pere, Wis Marquette University School of Medicine, Milwaukee, 1913, aged 49, died, February 16 of heart disease

Royal Woods, Omaha, Rush Medical College, Chicago 1889 served during the World War, aged 70 died, January 24 of carcinoma of the stomach

Joseph M Page, Dublin Ga University of Georgia Medical Department, Augusta, 1883, aged 74, died, Dec 14, 1934, of cerebral hemorrhage.

Joseph B McClure, Norman, Okla Hospital College of Medicine, Louisville Ky, 1894, aged 72, died, in February of coronary thrombosis

Walter Joseph Downs, Alfred Maine, Medical School of Maine, Portland, 1883 aged 79, died, Dec 14, 1934, of cerebral hemorrhage and pyelitis

Elis Corwin Cope & Barton Ohio, Ohio Medical University Columbus 1893 aged 65, died February 13, of erythema multiforme and uremia

Anson S Beckwith, London Ohio (licensed in Ohio in 1896) aged 70, died, February 20 in a hospital at Columbus of arteriosclerosis

Robert Wiener & New York, Eclectic Medical College of the City of New York, 1901, aged 58, died, January 1, of angina pectoris

Isabel Livingston, Needham, Mass, College of Physicians and Surgeons, Boston, 1903, aged 82, died, February 4, of carcinoma

Solomon Elswit, New York, Long Island College Hospital, Brooklyn, 1904, aged 52, died, Dec 27, 1934, of heart disease

Lee H Tully & Evansville Ind Louisville (Ky) Medical College 1890, aged 65, died February 21, of asthma and heart disease

H V Copenhaver, Rock Island Tenn (licensed in Tennessee in 1904) aged 72 died, January 29, of a malignant tumor

Homer M Calvin, Salmeville, Ohio Columbus Medical College 1891 aged 67, died, February 3, of carcinoma of the liver

Robert M Funkhouser, Fairfield, Ill (licensed in Illinois in 1879) aged 84, died, February 1, of arteriosclerosis

Correspondence

PHOTOGRAPHS OF DR WILLIAM H WELCH

To the Editor—It is proposed to print an iconography of the best extant photographs of the late Dr William H Welch at different periods of his life, as a joint publication of the Institute of the History of Medicine and of the Welch Medical Library, Baltimore. A large number of such pictures have been assembled from his estate and otherwise, but there are undoubtedly various snap shots taken by various hands of which we have no knowledge. If copies of these can be mailed to the undersigned, it will be much appreciated by those interested in the matter and due acknowledgment will be given whenever such pictures can be used.

F H GARRISON, M D,
1900 East Monument Street,
Baltimore

Librarian, Welch Medical Library

DISTINGUISHING B COLI AND AEROGENES TYPES

To the Editor—Since Dr A M Crance believes it very important to distinguish between B coli and "aerogenes types" in treating cases of bacilluria (THE JOURNAL, January 26, p 285), I should like to point out an error in his method of differentiating these two species. Dr Crance states that "Aerogenes produces gas within forty-eight hours in saccharose, whereas Escherichia does not." Bacteriologists have long recognized saccharose and nonsaccharose fermenting strains of B coli and have termed them B coli-communior and B coli-communis, respectively. Thus Dr Crance's test does not distinguish B coli-communior from B aerogenes. The importance of this distinction becomes apparent when it is realized, as Jordan (ed 10, 1931) states that "nearly one half of the colon bacilli that are isolated from various sources produce gas in saccharose broth." It is surprising that Dr Crance does not use the well recognized methods for differentiating these two groups, such as the methyl red, Voges-Proskauer, uric acid or citrate tests. Regarding the rationale on which Dr Crance bases his "four-point treatment," it appears that the treatment contains several mutually counteracting procedures. The difficulty with which B acidophilus is established and maintained in the colon is well known and it therefore seems rather useless to try to implant this organism by feeding while at the same time the colon is being washed out daily with enemas (for the purpose of removing B coli but presumably not B acidophilus). It is also recognized that a diet containing milk and lactose is essential for implanting B acidophilus in the colon, yet Dr Crance's treatment consists of "two weeks of high protein diet, two weeks of high fat diet, and two weeks of high carbohydrate," and "the daily use of a good acidophilus preparation, preferably not in milk."

THOMAS C GRUBB, PH D, Brooklyn

[This letter was referred to Dr A M Crance, who replies.]

To the Editor—For clinical and practical reasons it is less confusing if such terminology as B communis and B communior is omitted. The former should be termed Escherichia coli. The latter, or the communior, is one of the saccharose fermenting strains and, clinically speaking, may be treated the same as B aerogenes. Two methods are applicable in distinguishing B aerogenes from B communior. The indole test is positive for the communior, negative for the aerogenes. The Voges-Proskauer test is positive for the aerogenes, negative in the case of the communior. Neither of these tests, however,

is necessary in distinguishing Escherichia coli from B aerogenes. On referring to the Bergey Manual of Bacteriological Classification, one will find some seven or eight varieties of aerogenes and twenty-two varieties of Escherichia. Certainly one cannot expect to subdivide the groups to any such extent as this. There will be much less confusion if the two major types of Escherichia coli and Aerobacter aerogenes remain as the outstanding ones so far as clinical treatment is concerned. These two organisms are decidedly different in their clinical management. Work is now being carried out in order to determine whether there is any difference in the effect of certain methods of therapy as applied to the aerogenes and the communior. For practical reasons it seems best, for the present at least, to treat these two types as one and the same organism, although it is definitely known that they differ somewhat bacteriologically.

Regarding the rationale of the "four-point treatment," experience has shown that the results have been satisfactory. The effect of acidophilus is perhaps accomplished before it reaches the colon, and certainly these organisms continue to pour into the colon from higher up in the intestinal tract, regardless of the daily enemas.

In answer to the necessity of milk with acidophilus, the very fact that it has been successfully marketed in solution of pure whey, remaining culturally active, should be sufficient evidence that its presence in milk is not essential to its existence.

A M CRANCE, M D, Geneva, N Y

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

TESTS OF SYMPATHETIC NERVOUS SYSTEM

To the Editor—I am interested in knowing how to diagnose paralysis of the sympathetic nervous system in which there is involvement of the peripheral structures, as the skin and blood vessels. How frequently are these structures affected in poliomyelitis? Please omit name.

M D, New York

ANSWER—The methods of diagnosing lesions of the sympathetic nervous system in which there is involvement of peripheral structures include such tests as the histamine test, nerve blocking test and Brown fever test.

These structures are frequently affected in anterior poliomyelitis.

Operations have been performed on the sympathetic nervous system by Royle and Hunter, Davis, Pollock, Adson, Wade, and Morton and Scott.

The term "sympathetic" was introduced by Winslow in 1732. The autonomic nervous system is regarded as the division of the nervous system that includes all the neurons lying outside the central nervous system and cerebral spinal ganglions except those associated with the special sense organs.

Owing to the fact that the sympathetic nervous system serves as a connecting link between the spinal cord and the internal organs, peripheral blood vessels, erector muscles of the hair and sweat glands, which connection is accomplished by means of the rami communicantes, various tests have been made to determine its physiology and its lesions.

In the Landis test the forearm of the patient is immersed in water at a temperature of from 43 to 45 C for thirty-five minutes, which produces vasodilatation in the lower extremities. If the surface temperature of the toes rises above 36.5 C, significant obliterative structural disease of the arteries of the lower extremities is definitely absent. If the surface temperature fails to rise to this level, organic arterial obstruction is probably present. These results correspond fairly accurately with the results observed after intravenous injection of typhoid vaccine used in spinal anesthesia and anesthetization of the posterior tibial nerve.

In the vasomotor index of Brown, fever is induced with intravenous typhoid vaccine and the increase of surface temperature of the limb is measured at half hour intervals with a thermocouple galvanometer.

In the histamine test, a small area of skin on the wrist, ankle or knee is cleaned with alcohol, which is allowed to dry. A drop of 1:1,000 solution of histamine phosphate is placed on it and introduced into the epidermis by multiple needle punctures in a manner similar to that used for cowpox vaccination. The excess histamine is gently removed. The characteristic response is thus described by Caldwell and Mayo: 1 A reddish purple spot appears as the result of local capillary dilatation. 2 A local wheal succeeds, because of transudation of serum from increased permeability of the capillaries. 3 A flare results as the effect of dilatation of the arteries by the reflex of a local axon.

White suggested procaine block of the sympathetic nerve on the upper or lower extremities by paravertebral injection to the first and second thoracic sympathetic ganglions if the upper extremities are being tested. Following the successful block the rise in skin temperature is identical with the rise occurring after sympathetic ganglionectomy, as the temporary block creates conditions identical with those following the operation. It also imitates the effect of the operation in that pain of sympathetic origin will disappear and thus demonstrate what can be expected from the operation.

White, and especially Morton, advocate spinal anesthesia to determine whether there is a vascular spasm and occlusion of the lumen or whether a combination of the two exists. Spinal anesthesia blocks all motor sensory and sympathetic impulses and permits a maximal vascular dilatation. The vasomotor fibers to the blood vessels run in the peripheral nerves and are given off to the blood vessels segmentally. A block of the peripheral nerve should result in an increase in temperature of the innervated limb, because together with motor and sensory nerves the vasoconstrictors also will be paralyzed.

In describing the block of the brachial plexus, de Takits pointed out the hyperemia and rise in temperature of the arm that appears during a successful anesthesia.

The investigations of Royle and Hunter have opened up a relatively new field for surgical exploration. Some of the indications of sympathetic disturbances are Horner syndrome in the eye, circulatory disturbances of the extremities, arthritis, Hirschsprung's disease and spasticity of muscle.

According to Flothow it is on anatomic and functional knowledge that sympathetic surgery in the following lesions has been based: (1) Raynaud's disease, (2) thrombo-angitis obliterans, (3) generalized scleroderma, (4) Hirschsprung's disease and chronic constipation, (5) spastic paraplegia, (6) chronic arthritis.

According to Craig, surgery of the sympathetic nervous system has proved of extreme value in relieving the symptoms in diseases that are associated with hyperactivity of the vasoconstrictor influence on the muscles producing cold, clammy extremities.

The majority of patients with Raynaud's disease are immediately relieved from their symptoms following this operation. Certain selected cases of thrombo-angitis obliterans and chronic infectious arthritis are relieved in direct ratio in amount to the associated vasoconstriction present in the vessels of the extremities. Certain diseases of the colon and bladder are relieved also by interruption of the sympathetic nerve supply.

Diagnostic injection of the sympathetics may be used to determine the proper level for amputation when this operation is necessary, and the injection of alcohol will permit a low point of amputation and secure better healing of the stump.

Periarterial sympathectomy consists essentially in removing the adventitia with the nerve plexus contained in it from a segment of the vessel several centimeters in length.

Doppler proposed painting the femoral artery with a 7 per cent solution of phenol, thereby damaging the highly vulnerable fibers of the sympathetic nerves causing a marked vasodilatation. It is said to be simpler than the Leriche periarterial sympathectomy.

The following references give further details

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DERMATITIS HERPETIFORMIS

To the Editor—A boy aged 12 otherwise healthy and normal was stung or bitten by insects two years ago while the family was camping in the woods of Ontario. The insects appeared to be mosquitoes but the lesions have healed and recurred at intervals ever since. An intense itching and swelling results with a small central vesicle or pustule which is ruptured and serum exudes for a time and then heals for a while leaving very little evidence or mark to recur again. All the lesions are on the legs and arms. The parents took him to a physician who pronounced it the result of wood tick bites. His treatment however gave no relief and two or three crops have annoyed the patient for the past year.

W P LONG MD Weatherly Pa

ANSWER—An intensely itching recurrent vesicular and pustular eruption is most probably dermatitis herpetiformis. The wheals of urticaria rarely become vesicular, and a disease characterized by the recurrence of lesions that are consistently vesicular is not urticaria. While the distribution is not characteristic for dermatitis herpetiformis and nothing is said of grouped lesions, the disease in children is frequently atypical.

Whether the insect bites have any etiologic importance is a question. Dermatitis herpetiformis sometimes follows infection and in children frequently follows vaccination. The supposed insect bites may have been the first lesions of the disease.

A patch test made with a 50 per cent ointment of potassium iodide should bring out the eruption. Iodides given internally in full doses sometimes cause an exacerbation.

Arsenic internally usually as solution of potassium arsenite, in full dose usually clears up the eruption temporarily and abates the itching. Prescriptions should always bear the warning "not to be refilled," for the use of arsenic should always be under the control of the physician. Likewise roentgen rays in one-fourth erythema dose (75 roentgens) once a week may clear up the eruption, but they too may be harmful if carried beyond the sum of two erythema doses (600 roentgens) on any one area of the skin, no matter how long the interval is between doses.

The rules of hygiene, with regularity of sleep, exercise and food should be observed. Coffee, tea, cocoa, coca cola or anything conducive to nervousness should be avoided. Focal infections should be eradicated if found, and vaccines made from organisms isolated from these sources may be used. The stools should be examined for parasites.

Ultraviolet rays in a first degree erythema dose benefit some patients and when used over a long period may result in cure. Autogenous blood, from 5 to 10°C in a boy of 12 years, may be given intramuscularly every fifth day with great benefit in some cases.

Desiccated thyroid, iodides in small dosage, antipyrine, acetanilid, emetine in cases presenting pyrrhea, and salicin have all been credited with cures. Opening the vesicles may relieve the itching. Sulphur baths 60 Gm of sulphurated potash to the bath, or sulphur in ointment may give temporary relief.

PRURITUS OF SCROTUM

To the Editor—I have a patient with a subjective pruritus located on the scrotum which attacks with intense ferocity on one side or the other rarely on the two sides at the same time. He has received a great deal of treatment including x rays, radium, even extirpation of a certain itchy area and the eradication of a varicocele. A very careful study fails to reveal any pathologic lead on which one could go ahead with the exception that about ten years ago he had gonorrhea received treatment and made an apparently uneventful recovery. The Wassermann reaction is negative. Please omit name.

M D, Massachusetts

ANSWER—It is assumed from the description that the skin of the scrotum is normal. The case is therefore one of the fortunately rare ones of essential pruritus—a nervous ailment.

It is important that general and local hygienic measures be followed strictly. Coffee, tea, condiments, hot foods, alcohol and tobacco should be forbidden or at least limited as much as possible. Regularity of habits must be insisted on a generous amount of water ingested and whatever necessary done to insure adequate elimination by the bowels. Sleep must be secured if necessary by drugs—preferably bromides, chloral and cannabis, with care to avoid habit formation. Morphine and opium are to be avoided both because of the danger of habituation and because they are often harmful, actually increasing the itching.

The skin must be protected from the maceration of sweat by gentle washing with a sodium bicarbonate solution dabbed

dry and abundantly powdered. If necessary, flat gauze powder bags may be suspended between the scrotum and the thighs. If the skin is dry, soap should be avoided and cleansing done with oil. The habit of rubbing and scratching must be avoided, for this by itself can keep up the itching. Rough clothing must also be avoided.

A tragacanth lotion containing phenol (not over 0.5 per cent), menthol and camphor or chloral hydrate may be helpful. Potassium permanganate solution 2 per cent may be painted on the skin daily, or silver nitrate solution up to 10 per cent, changing to a bland ointment when fissuring occurs.

C. G. Andrews (*Diseases of the Skin*, Philadelphia, W. B. Saunders Company, 1930, p. 367) speaks well of the results of alcohol injection into the skin. After surgical preparation, 95 per cent alcohol may be injected into the skin with a hypodermic syringe under general anesthesia. The needle is directed perpendicularly to the skin surface and 0.15 cc (2 or 3 minims) of alcohol deposited just beneath the skin. These injections are spaced about 0.6 cm (one-fourth inch) apart over the whole itchy area. No dressing is necessary. This does away with itching for six months or more when the pruritus may recur, usually less intensely. The treatment may then be repeated if necessary.

TOXEMIA DURING POLLEN THERAPY

To the Editor—During the past summer I administered a complete series of injections of pollen extract (ragweed and related genera) to a woman, aged 37 and her son, aged 10 years. The prophylaxis against hay fever was entirely satisfactory. However, both patients claim that they have been rendered exceedingly nervous as a result of these treatments. In the woman this is said to manifest itself as inability to concentrate, impairment of memory, and a tendency to shun the society of other people. There is also said to be a feeling of trembling throughout the body. In the boy there is said to be an inability to grasp his lessons at school or to advance in his study of the piano. In regard to the mother, there seems to be no evidence that she is going through the menopause. There has been no basal metabolism test to rule out hyperthyroidism, but such signs as rapid pulse, tremor of the hands and the various ocular symptoms cannot be elicited. The patient states that she is acquainted with several other persons who have been affected in a similar manner by these treatments. In these two patients there were no disagreeable reactions following any of the injections. Do you have any information at hand that would suggest whether or not there is any frequent effect on the nervous system following these injections? Kindly omit name.

M D, Ohio

ANSWER—Occasionally a form of toxemia may occur during the course of pollen therapy. The patient may complain of general lassitude, lack of appetite and loss of weight. The symptomatology described by the inquirer has never been seen in the course of the care of many hundreds of hay fever patients, nor does the literature contain any clear-cut examples of it. The occurrence of the same clinical picture in both the mother and child should make one highly suspicious of a psychoneurosis. The further fact that the patient claims that she knows of several other acquaintances who are similarly affected by pollen treatments should cause one to be even more than suspicious of her mental state.

This opinion takes into consideration the following possible exceptions. A disturbance of the nervous system may result in consequence of repeated and frequent systemic reactions. The use of ephedrine or ephedrine-like preparations along with the pollen therapy may result in symptoms as described. If these conditions do not prevail, the patients may be considered psychoneurotic and it may be well to cease treatment because of the unstable mental state and because of the possibility of development of an even greater variety of symptoms of psychogenic origin.

INTERMITTENT CLAUDICATION

To the Editor—Will you please tell me the most recent explanation for the cause of pain in the leg of a patient with intermittent claudication? Should carbohydrates be restricted in such a case? Has insulin been used with benefit? What treatment is most beneficial? What is the prognosis in a case with onset one year ago at the age of 61? The general health of this patient has been good in other respects. Please omit name and address.

M D, Ohio

ANSWER—If the patient has claudication, it is attributable solely to obstruction of the main arteries of the affected extremity. If the claudication is in the calf muscles, closure includes levels as high as the popliteal artery. The pain of claudication results from an insufficient amount of arterial blood reaching an actively exercising muscle. Relief is always obtained by rest, and a definite amount of exercise always will bring on the distress in the same situation. The symptom always means that there is an obstructive lesion in the major arteries of the affected extremity.

Dietetic treatment is of no avail. Insulin has no effect on claudication. The most efficacious treatment known at the present time is the use of tissue extracts. There are various types of tissue extract that prepared from the pancreas (insulin free), and that prepared from heart or skeletal muscle. They all contain some substance that apparently affects the metabolism of actively exercising muscle that is receiving a deficient supply of arterial blood. Pancreatic tissue extract, given by intramuscular injections of from 3 to 5 cc, usually increases the exercise tolerance several fold. Administration can be repeated at varying intervals depending on how long the beneficial effects last. Of equal importance, if the peripheral arteries are obstructed, is extreme care of the feet to avoid the development of ulcers or gangrene.

HEADACHES DURING MENSTRUATION

To the Editor—Is there any treatment to prevent headaches and nervous upsets associated with the menses when during two pregnancies the symptoms were entirely relieved? Please omit name.

M D, California

ANSWER—In pregnant women, many changes occur throughout the course of gestation. Among these alterations are an increased production and excretion of estrogenic substance and gonad-stimulating principle. R. T. Frank has shown that in the great majority of normal nonpregnant women there is little follicular hormone in the circulating blood until the seventh day before the onset of the menstrual bleeding. At this time there is an abrupt rise in the amount of hormone but immediately after the onset of the menses a precipitous fall in the quantity of hormone regularly takes place. Hence, in the present case, it may be advisable to give estrogenic substance in the form of theelin, theelin Amniotin or other product by mouth or hypodermically or both. The exact dose cannot be stated but one may begin by administering 50 or 100 rat units daily during the menstrual period or as long as the headaches last (larger doses are required by mouth). Preparations of anterior pituitary-like gonadotropic hormone such as Antutrin S or Follutein may be tried if estrogenic substance fails. Recently some patients with headaches of the migraine type have been relieved by the hypodermic use of ergotamine tartrate (Gynergen). Some cases of headaches apparently not migraine have also been helped by this preparation, others do not respond to it. Ergotamine tartrate does not ordinarily prevent headaches, but it may produce fairly rapid relief from cephalalgia. Other patients with migraine and migraine-like headaches have been considerably relieved by chondroitin sulphuric acid. This drug is best taken in capsule form and about nine capsules of 0.6 Gm each are taken daily.

DANGERS OF DICHLOROBENZENE

To the Editor—Having noted in *Queries and Minor Notes* in *THE JOURNAL* Oct. 13, 1934, page 1174 a question as to the dangers of benzene dichloride, I thought it might be of interest to relate a personal experience. A patient of mine, a woman in her twenties, who was exceptionally strong, healthy and athletic spent almost an entire day packing away winter clothing and furs with the crystals of Dichloride. That night she slept in the same room as was the closet in which she had stored the clothes. The door did not close tightly, and hence the fumes from the Dichloride freely entered the room. In the morning there was noted marked swelling of the hands, feet and ankles. The young woman did not feel ill but was aghast to find that she had gained 6 pounds since the previous morning. This great increase of weight was evidently due to a retention of fluids. The urine was quite normal. She played golf on that and the following days and at the end of about three days the swelling had disappeared and the weight returned to normal. There seems no reason to doubt that the retention of fluids was due to the inhalation of the Dichloride fumes. It seems likely that this was due to some effect on the walls of the small blood vessels causing an unusual transudation of serum into the tissues. There appeared in *THE JOURNAL*, Feb. 10, 1934, page 461 an editorial entitled "Benzene as a Cardiac and Vasomotor Poison" which may throw some light on this case. I should be glad if you would give me your opinion on this subject.

THOMAS A. CLAYTON, M.D., Washington, D. C.

ANSWER—We have been unable to find any record in the literature of poisoning from paradichlorobenzene, although one case was recently reported of intoxication from monochlorobenzene. As the introduction of chlorine into the benzene molecule is said not materially to modify the toxicity of the substance, it is conceivable that poisoning could arise from paradichlorobenzene under special conditions. As was pointed out in the query and minor note in question the possibility of intoxication by this compound is ordinarily limited by the fact that it is a solid at ordinary temperatures, nevertheless the fumes must be active by reason of the fact that the vapors alone act as an insecticide. For this reason the edema reported by Dr. Clayton may well have been caused by this substance, though this is by no means certain.

RESIDUAL EFFECTS OF CARBON MONOXIDE
POISONING

To the Editor—I would appreciate some information with regard to the residual effects from carbon monoxide poisoning. Is it possible after an individual has apparently recovered from a single poisoning from this gas to be left with a damaged condition of the lungs and blood and to drag along for a couple of months showing very few symptoms? What is the usual length of time that it takes for the pneumonia that may result from such poisoning to manifest itself? Also what is the longest interval that may elapse between exposure and incidence of pneumonia? Is it necessary in order to have a condition of chronic carbon monoxide poisoning for one to come repeatedly in slight contact with the gas day after day or can a condition of chronicity result from one severe exposure to the gas? Any references on acute and chronic carbon monoxide poisoning will be appreciated. Please omit name.

M D Louisiana

ANSWER.—In the large majority of cases of carbon monoxide poisoning if the patient does not die in the gas, consciousness returns in, at most, a few hours and recovery from the ill effects of the gassing is complete within a few days. It is only after an exposure of many hours to a sublethal concentration of carbon monoxide that injuries to the nervous system and mentality, and occasionally to other organs and functions, develop and persist throughout the remainder of life. If pneumonia does not develop within a week, its subsequent development cannot well be charged to be due to asphyxia. Chronic carbon monoxide poisoning can occur only under conditions of frequent exposure, and not from one severe exposure other than the residual effects referred to. Further information regarding acute poisoning is given by Yundell Henderson in an article entitled 'The Dangers of Carbon Monoxide Poisoning and Measures to Lessen These Dangers' THE JOURNAL, Jan. 18, 1930 page 179 and 'Resuscitation' THE JOURNAL, Sept. 8, 1934 page 750 and September 15 page 834. Information on the more obscure subject of chronic poisoning is given by Dr. Alice Hamilton in 'Industrial Toxicology' New York, Harper and Brothers, 1934.

HEPATIC CIRRHOSIS

To the Editor—Are injections of liver extract in any way beneficial in treating hepatic cirrhosis (atrophic or alcoholic)? I should also appreciate information as to any new remedy or surgical treatment that would help in such a case of cirrhosis.

GLEROSO LOMBARDI M D Brooklyn

ANSWER.—Injections of liver extract are of value when an anemia is present possibly owing to the absence of the intrinsic substance in such a cirrhosis.

In some cases the ascites may be relieved and held in abeyance by medical treatment. The patient should receive daily doses of one of the acid base salts, as ammonium nitrate, 2 Gm four times a day, and be given an injection of one of the mercurial diuretics every third day until the ascitic fluid has disappeared when the mercurial diuretic may be discontinued but the acid base salts continued. At the first reappearance of the fluid the mercurial diuretic should be resumed.

The Talma-Morrison operation has given the best results. The percentage of cures is not available in any large series of cases. The operation consists in drawing large masses of the omentum into pockets made between the peritoneum and the anterior abdominal wall. The omentum may be rubbed or abraded, but this is not considered essential. The diaphragmatic surface of the liver may be rubbed with gauze and the same action carried out on the under surface of the diaphragm, if the patient is in good condition after the omentum has been placed in the peritoneal pouches. However, in some cases the abrasion of the upper surface of the liver and the lower surface of the diaphragm has caused serious shock. About one patient out of six will be fairly well for a number of years.

EXTRASYSTOLES

To the Editor—I am troubled much with extrasystoles. The condition is worse when I go to bed and often interferes with my falling asleep. Occasionally I am awakened with a severe attack usually toward morning. I am also troubled with severe hyperacidity of a nervous character, as no evidence of ulcer has been found. The size of the heart is normal compensation for my age (51) is good. A cardiogram shows nothing abnormal. What treatment would you suggest for the troublesome extrasystoles? Please omit name.

M D New York

ANSWER.—Extrasystoles in the absence of any other evidence of heart disease are unimportant except as they may cause troublesome sensations. Sir James Mackenzie's advice was, first, reassurance about the significance of extrasystoles in such cases; second, the omission of any toxic or irritating factor such as tobacco, indigestion or fatigue; third, exercise in the open air, and, finally, if necessary, the use of some sedative,

particularly bromides. Authoritative cardiovascular opinions at the present time agree with this old advice of Mackenzie's with the additional suggestion of trying quinidine sulphate from 0.13 to 0.2 Gm (2 to 3 grains) three or four times a day particularly at bedtime, when extrasystoles are more prone to occur or to be noticed.

Hence it is well to correct factors such as the overuse of tobacco, tea, coffee, heavy meals at night, long fatiguing hours and lack of exercise. If these measures do not suffice, a trial of bromides is advisable. 0.5 Gm (7½ grains) three or four times a day or of quinidine sulphate in the dosage mentioned, or of the two together for a week or two or three at a time as needed. If this additional measure does not suffice, the extrasystoles should be ignored so far as possible. One becomes accustomed to them in time and may not notice them at all eventually.

There is a relationship to hyperacidity in some patients. Digestive disturbances frequently act reflexly on the heart.

ABSORPTION BY RECTUM

To the Editor—I am interested in the new theories as to absorption of dextrose, saline, saline solution, coffee and so on when given by rectum. Could you send me literature concerning this or advise me where to find that information?

MALCOLM D. HARRISON M D Washington D C

ANSWER.—The following references might be of value to the inquirer.

- Bross W. and Kubikowski P. Hemodynamics as Test of Absorption of Alimentary Substances Introduced by Way of Rectum. *Polska gaz lek* 13:194 (March 11) 1934.
Collens W. S. and Boas L. C. Absorption of Dextrose by Rectum. *Arch. Int. Med.* 52:317 (Aug.) 1933.
Clement R. Advantages of Rectal Administration of Cod Liver Oil. *Presse med.* 41:1001 (June 21) 1933.
Lamond F., Guillonnet G., Nicholas and Chevalier. Therapeutic Action of Wine Injections and Enemas. *Progres med.* Aug. 12 1933 p. 1417.
Bauer J. and Mangula J. Sugar Metabolism in Relation to Resorption of Sugar Administered by Rectum. *Ann. Weinschr.* 11:1820 (Oct. 29) 1932.
Scott E. L. and Sweighart J. F. B. Blood Sugar in Man Following Rectal Administration of Dextrose. *Arch. Int. Med.* 40:221 (Feb.) 1932.
Julesz M. and Winkler E. Effect of Rectal Administration of Concentrated Dextrose Solution on Blood Sugar. *Ztschr. f. d. ges. exper. Med.* 80:823 1932.
Trabucchi E. Rectal Injections of Hydrogen Sulphide in Treatment of Poisoning with Mercuric Chloride. *Boll. de soc. Ital. di biol. sper.* September 1931 p. 893.
Julliard C. Use of Hypertonic Saline Enema in Treatment of Preoperative Flatulence Before Reestablishment of Normal Intestinal Conditions. *Schweiz. med. Weinschr.* 61:665 (July 11) 1931.
McNeely, R. W. and Willems J. D. Absorption of Dextrose from Colon. Effects of Chemical Excitants on Dextrose Enema. *Arch. Surg.* 22:649 (April) 1931.

NO RELATIONSHIP BETWEEN ALUMINUM IN DIET
AND FURUNCULOSIS

To the Editor—I am writing in regard to aluminum poisoning in relation to furunculosis. I have under my care at the present time a family of seven children and the father and mother with multiple furuncles. The history begins three years ago when they purchased a heavy aluminum cooking set. At this time the entire family had never had any skin eruption or furuncles. Six months after the aluminum set had been purchased two of the pots began to pit on the bottom. Six months after the pitting was noted the smallest child in the family, 7 years of age, began to have boils in the gluteal region. One by one the entire family has had furuncles in the gluteal region and neck. One boy aged 18 years was in the hospital with multiple furuncles on the lateral surface of his left leg from the knee to the ankle. The lesion did not penetrate beyond the fascia. The leg was treated with hot packs, and after draining two months and general supportive treatment the wound cleared up. The boy seemed to have no resistance to this low grade staphylococcal infection. I might mention that the family lives in a large house and has a married son living in the same house but cooking and eating separately. He and his wife and two children did not have furuncles although they were constantly together except for their meals. I should like to know whether there is any relationship between furunculosis and aluminum poisoning. Of course it is realized that aluminum should not pit.

CARL B. CONE M D Vancouver Wash

ANSWER.—So far as known, aluminum in the tissues exists only in minute quantities and has at the maximum amount no deleterious effect when the phosphorus content of the diet is normal (Schwartz, E. W., Cox, G. J., Unangst, R. B., Murphy, F. J., and Wigman, Helen B. The Extent of the Retention of Ingested Aluminum, THE JOURNAL, Nov. 25, 1933, p. 1722). The boils are due to some other factor common to the members of this family. It may be a fault in diet, poor choice of foods, bad cooking, contamination of food by some poison, the use of 'patent medicines,' or an infection to which the other family is not exposed.

ALLERGIC RHINORRHEA

To the Editor—I have a patient, aged 14 years, who has suffered from asthma for many years. Skin tests have been positive for foods and many other substances, all of which have been eliminated and at present the chest shows no sign of asthma. The patient now sneezes a great deal alternately with periods of "stuffed nose." Examination of the nose shows enlargement of the left inferior turbinate. Do you feel that cauterization will relieve or cure the nasal condition? What possible ill effects can cauterization have on the original asthmatic condition? Please omit name.

M D, New York

ANSWER—From the history as given, the attacks of sneezing and the periods of stuffed nose would lead one to make a diagnosis of vasomotor or allergic rhinorrhea. This diagnosis would be further substantiated if the mucosa of the nose has the characteristic waterlogged appearance seen in this condition, and if the secretions are thin and watery rather than thick and purulent.

Cauterization of a turbinate, such as described, will for varying periods and in a number of instances improve the airway. It frequently fails to do so. Cauterization in itself cannot cure the nasal condition, which rests, in all likelihood, on a sensitivity similar to the one that caused the asthma. It is hardly likely that the asthmatic condition will be made worse by the cauterization. In fact, from time to time, and for no apparent good reason, minor nasal interventions have been known to have a beneficial effect on asthma.

NEUROCIRCULATORY ASTHENIA

To the Editor—A man aged 42, has consulted me with complaints that are apparently due to neurocirculatory asthenia and nonspecific bronchitis. He attributes his subnormal health for more than fifteen years to being gassed with phosgene in the Argonne. He continued on active duty at the front until after the armistice a month later. Will you tell me what the probabilities are that a brief exposure to phosgene gas in October 1918 could have had such lasting effects? Particularly could it have caused the symptoms of cardiac neurosis? Please omit name.

M D, Georgia

ANSWER—There is not even a possibility that the symptoms are due to any organic effects of the phosgene gas. The gas or other war experiences may have constituted sufficient psychic trauma. The possibility of some mild infection causing enough physical trauma must be considered but, with a history of fifteen years, is most improbable. But underlying all such cases is the "constitutional inferiority" of McFee Campbell, and in the more extreme cases little if any activating factor is needed.

The bronchitis should be closely investigated and the results checked by roentgen examination if this has not been done.

LABORATORY DIAGNOSIS OF GLYCOSURIA

To the Editor—What is the most practical and efficient means of treating cases of diabetes mellitus with a high renal threshold while in the hospital, and later when discharged to the outpatient clinic? At the present time two ward patients have renal thresholds of 295 and 310 mg per hundred cubic centimeters. The daily check with urinalysis is almost useless for these tests are sugar free almost up to the onset of coma, and blood sugars every other day or so produce a secondary anemia as shown by a case treated here in the recent past. Please omit name and address.

M D, Pennsylvania

ANSWER—When the renal threshold for sugar in diabetes mellitus is as high as described in these cases, the treatment must of course be controlled by reference to the blood sugar level rather than to the glycosuria. Aside from the presence of the ketone bodies in the urine, which represents too great a disturbance in the metabolism to be clinically useful as the sole guide to proper treatment, there is no other laboratory criterion of the diabetic state that does not involve blood sampling.

There seems to be no reason to believe that the secondary anemia observed in the patient from whom blood samples were taken every other day was anything more than a coincidence. However, this contingency may be entirely avoided by employing one of the several micromethods for blood sugar estimation that are available.

EFFECTS OF BENZINE ON PLEURA

To the Editor—Will you please be kind enough to write me at your earliest convenience what action benzine would have on the pleura of the lungs as to adhesions and the like.

PAUL W. JOHNSON, M D, Winston-Salem, N C

ANSWER—It is presumed that the question refers to the introduction of benzene directly into the pleura. If such is the query, then benzene probably as a local irritant would produce adhesions. Its use, however, for this purpose should

not be encouraged, because benzene introduced in this way would be highly toxic and cause profound disturbance of the nervous system. It is also well known that benzene has a direct toxic effect on both lymphoid and myeloid tissues. There is, however, the question of the action of benzene on the inhalation of the volatile substance. Such action might irritate the bronchi and alveoli, cause cellular reactions that lead secondarily to pleural involvement. It is probable that such action might occur by benzene lowering the resistance of the tissues and causing secondary infection.

AUTONOMIC EPILEPSY (?)

To the Editor—A white school girl, aged 14, has insomnia, also nervous twitching or tremor of the hands and feet, preceded the day before attacks of vertigo. These attacks have come on every five to six weeks for the last five years. Birth was normal. She has had measles, mumps and whooping cough. The tonsils and adenoids were removed seven years ago. Her mental condition is good. Otherwise the history is negative. Menstruation is not established. She weighs 36 pounds (39 Kg), height is 59 inches (150 cm) and she is poorly nourished. The heart, eyes, ears, nose and throat are normal. There is no enlargement of the thyroid. The heart lungs and abdomen are normal. The blood pressure is normal and the blood Wassermann and spinal fluid Wassermann reactions are negative. Hemoglobin is 75, red blood cells number 3,700,000, white blood cells, 7,400. The urine is normal. When seen during an attack of so-called nervousness the child would sit up in bed, fully conscious, with some tremors of the upper and lower extremities, the pulse rising to 130 per minute. This was of short duration—about five minutes. Please give diagnosis and suggest treatment. Please omit name.

M D, Maine

ANSWER—The attacks described are not characteristic of epilepsy. Because of their recurrence in the same form they suggest some sort of periodic discharge corresponding in nature with migraine or with an autonomic variety of epilepsy. Careful neurologic examination, with special reference to the autonomic centers in the brain, is indicated. If this gives negative results a search for sources of allergic reaction should be made. Until these studies are made, therapeutic efforts can be directed only toward an improvement in the general state of nutrition.

READING DIFFICULTY AND OPHTHALMIC EXAMINATIONS

To the Editor—In the type of work in which I am engaged (child guidance clinic), I frequently have children referred to me who have some reading difficulty. The question of proper eye examination comes up particularly as it is related to the etiologic factors in the reading difficulty. More than an ordinary eye examination is required. I would much appreciate it if you would outline what would be considered an adequate examination in view of the most recent developments, and the chief factors to be taken into consideration in remedial work. Please omit name.

M D, Rhode Island

ANSWER—The first examination is of course a careful refraction under cycloplegia, preferably atropine. Possible heterotropia should then be ruled out, by the cover test. Heterophoria in a child is more difficult to determine until a mentality of at least 8 or 9 years has been reached. Binocular vision and fusion should be examined for with the amblyoscope and any of the standard stereoscopic charts. Predominance of one of the other eyes can be determined by the same methods. Mirror writing is of course self-evident. The examination of the central visual field areas is possible in some children but only a few, particularly when searching for a paracentral scotoma and when determining the size of the blind spot. With the knowledge given by these suggested examinations, any possible ocular factor in reading difficulty can be eliminated.

ZINC PREPARATIONS IN GONORRHEA—TRICHLOROETHYLENE IN NEURALGIA

To the Editor—1. Is zinc permanganate used in about the same percentage as zinc sulphate solution for urethral injection for gonorrhea? 2. Also, would you recommend the inhalation of trichloroethylene for facial neuralgia?

EDWIN O. SWANSON, M D, St. Paul

ANSWER—1. Zinc permanganate is a vigorous oxidizing agent. The strength of its solutions to be used for urethral injection must be patterned more after that of potassium permanganate than that of zinc. A strength of 1:2,000 might be considered average, with a range of from 1:1,000 to 1:4,000. Zinc permanganate is not official and it does not stand accepted by the Council on Pharmacy and Chemistry.

2. Trichloroethylene inhalation is worth trying in cases of facial neuralgia. It will give relief in some cases and fail completely in others.

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *Written (Group B candidates)* The examination will be held in various cities throughout the country April 29 *Oral (Group A and Group B candidates)* New York June 10 Sec Dr C Guy Lane, 416 Marlborough St, Boston

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Final oral and clinical examination (Group A and Group B candidates)* Atlantic City N J June 10-11 Sec, Dr Paul Titus, 1015 Highland Bldg Pittsburgh

AMERICAN BOARD OF OPHTHALMOLOGY Philadelphia June 8, and New York, June 10 *Applications must be filed before April 10* Sec Dr William H Wilder 122 S Michigan Blvd Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY New York, June 8 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha

AMERICAN BOARD OF PEDIATRICS Atlantic City N J June 10 and St Louis, Nov 19 Sec, Dr C A Aldrich 723 Elm St, Winnetka Ill

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY Philadelphia June 7-8. Sec. Dr Walter Freeman 1726 Eye St N W Washington D C

AMERICAN BOARD OF RADIOLOGY San Francisco May 10-12 and Atlantic City N J June 8-10 Sec Dr Byrl R Kirklin Mayo Clinic Rochester Minn

ARIZONA Phoenix April 23 Sec Dr J H Patterson, 826 Security Bldg, Phoenix

COLORADO Denver April 3 Sec Dr Wm Whitridge Williams 422 State Office Bldg Denver

CONNECTICUT *Endorsement* Hartford March 26 Sec Dr Thomas P Murdock, 147 W Main St Meriden

IDaho Boise April 2 Commissioner of Law Enforcement Hon Emmett Pfost, 203 State House Boise

ILLINOIS Chicago April 9-11 Superintendent of Registration Department of Registration and Education Mr Eugene R Schwartz Springfield

MINNESOTA *Basic Science* Minneapolis April 23 Sec Dr J Charley McKinley, 126 Millard Hall University of Minnesota Minneapolis. *Medical* Minneapolis April 16-18 Sec Dr E J Engberg 350 St Peter St, St Paul

MONTANA Helena, April 2 Sec Dr S A Cooney 7 W 6th Ave Helena

NATIONAL BOARD OF MEDICAL EXAMINERS The examination will be held in all centers where there are Class A medical schools and five or more candidates desiring to take the examination June 24-26 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia

NEBRASKA *Basic Science* Omaha, May 7-8 Dir Bureau of Examining Boards Mrs Clark Perkins State House Lincoln

NEVADA Carson City May 6 Sec, Dr Edward E Hamer Carson City

NEW MEXICO Santa Fe April 8-9 Sec, Dr P G Cornish Jr 221 W Central Ave., Albuquerque

RHODE ISLAND Providence, April 4-5 Dir Department of Public Health Dr Edward A McLaughlin 319 State Office Building Providence

TENNESSEE Memphis March 25-26 Sec Dr H W Qualls 130 Madison Ave Memphis

California October Examination

Dr Charles B Pinkham, secretary, California State Board of Medical Examiners, reports the written examination held in Sacramento, Oct 16-18, 1934 The examination covered 9 subjects and included 90 questions An average of 75 per cent was required to pass Forty-three candidates were examined, 38 of whom passed and 5 failed The following schools were represented

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists	(1934)	80.6	87.91
Stanford University School of Medicine	(1934)	86.1	89.1
University of California Medical School	(1934)	84.1	84.7
University of Southern California School of Medicine	(1934)		80.7
University of Colorado School of Medicine	(1927)		85.9
George Washington University School of Medicine	(1934)		82.9
Georgetown University School of Medicine	(1933)		77.3
Howard University College of Medicine	(1933)		85.3
Bennett College of Eclectic Medicine and Surgery	(1915)		90
Chicago Medical School	(1927)		78.4
Loyola University School of Medicine	(1932)		87.9
Northwestern University Medical School	(1934)	84.2	90.6
Rush Medical College	(1906)		78.4
Univ of Illinois College of Medicine	(1926)		82
Johns Hopkins University School of Medicine	(1934)		83.6
Cresighton University School of Medicine	(1934)	76.1	83.6
Columbia University College of Physicians and Surgeons	(1934)		88.9
Syracuse University College of Medicine	(1933)		86.1
University of Cincinnati College of Medicine	(1934)		82
University of Oregon Medical School	(1933)	82.9	85.3
Woman's Medical College of Pennsylvania	(1932)		81.4
University of Wisconsin Medical School	(1932)		85.6
McGill University Faculty of Medicine	(1933)		81
Johann Wolfgang Goethe-Universität Medizinische Fakultät Frankfurt-am-Main Prussia Germany	(1923)*		76.9
School	FAILED	Year Grad	Per Cent
Cresighton University School of Medicine	(1933)		73.4
Friedrich-Wilhelms-Universität Medizinische Fakultät Berlin, Prussia Germany	(1934)*		66.3
Ludwig-Maximilians-Universität Medizinische Fakultät München Bavaria Germany	(1927)*		62

Universität Leipzig Medizinische Fakultät, Saxony, Germany (1908)* 70
Regia Università degli Studi di Modena Facoltà di Medicina e Chirurgia (1932)* 57.2

Twenty-two physicians were licensed by reciprocity and 2 physicians were licensed by endorsement from October 4 to November 22 The following schools were represented

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Colorado School of Medicine	(1933 2)		Colorado
Howard University College of Medicine	(1933)		Maryland
Rush Medical College	(1933)		Illinois
Indiana University School of Medicine	(1925, 2)	(1930)	Indiana
State University of Iowa College of Medicine	(1932)		Iowa
Johns Hopkins University School of Medicine	(1933)		Maryland
Grand Rapids Medical College Michigan	(1902)		Michigan
University of Michigan Medical School	(1918)		New York,
(1927) (1929) Michigan			
University of Minnesota Medical School	(1930)		Minnesota
University Medical College of Kansas City Missouri	(1899)		Kansas
University of Nebraska College of Medicine	(1925)		Nebraska
(1932) Kansas			
Ohio State University College of Medicine	(1932)		Ohio
University of Oregon Medical School	(1932)		Utah,
(1933) Oregon			
Jefferson Medical College of Philadelphia	(1919)		Mississippi
University of Vermont College of Medicine	(1920)		Connecticut

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad of
Rush Medical College	(1927) N B M Ex	
Harvard University Medical School	(1930) N B M Ex	

* Verification of graduation in process

Michigan Endorsement Report

Dr J Earl McIntyre, secretary, Michigan State Board of Registration in Medicine, reports 51 physicians licensed by endorsement during 1934 The following schools were represented

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad of
University of Arkansas School of Medicine	(1928)	Arkansas
College of Medical Evangelists	(1934)	California
University of Colorado School of Medicine	(1928)	Colorado
George Washington University School of Medicine	(1930)	Penna
Emory University School of Medicine	(1932)	Georgia
Loyola University School of Medicine	(1928)	(1933) Illinois
Northwestern University Medical School	(1912)	
(1933 2) Illinois (1929), (1933) Ohio (1933)		
Colorado		
Rush Medical College	(1925) (1929 2), (1930)	Illinois
University of Illinois College of Medicine	(1933)	Illinois
Indiana University School of Medicine	(1928)	
(1932) (1933) Indiana		
State University of Iowa College of Medicine	(1932)	(1933) Iowa
University of Louisville Medical Department	(1909)	Indiana
University of Louisville School of Medicine	(1930)	
(1932) (1933) Kentucky		
Johns Hopkins University School of Medicine	(1924), (1932)	Maryland
St Louis Medical College	(1881)	Missouri
St Louis University School of Medicine	(1931 2), (1933 2)	Missouri
University of Nebraska College of Medicine	(1932 3)	Nebraska
Cleveland College of Physicians and Surgeons	(1891)	Ohio
Ohio State University College of Medicine	(1931)	Ohio
Western Reserve University School of Medicine	(1927)	
(1932) Ohio		
University of Oklahoma School of Medicine	(1932)	Oklahoma
Temple University School of Medicine	(1930)	Penna
University of Pennsylvania School of Medicine	(1913)	Penna
McBarry Medical College	(1933)	Tennessee
Vanderbilt University School of Medicine	(1932)	Tennessee
Marquette University School of Medicine	(1933) (1934)	Wisconsin
University of Wisconsin Medical School	(1928)	Mass.
University of Manitoba Faculty of Medicine	(1930)	Illinois
University of Edinburgh Faculty of Medicine	(1929)	Georgia

Pennsylvania Reciprocity and Endorsement Report

Mr W M Denison, director, Bureau of Professional Licensing, reports 8 physicians licensed by reciprocity and 4 physicians licensed by endorsement from Oct. 8 to Dec 26, 1934 The following schools were represented

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Michigan Medical School		(1930)	Michigan
University of Minnesota Medical School		(1930)	Minnesota
St Louis University School of Medicine (1927), (1933) Missouri	(1927),	(1930)	Minnesota
University of Missouri School of Medicine		(1904)	Missouri
Columbia University College of Physicians and Surgeons		(1931)	New York
Cornell University Medical College		(1932)	Ohio
School	LICENSED BY ENDORSEMENT	Year Endorsement Grad	Endorsement of
University of Maryland School of Medicine and College of Physicians and Surgeons		(1933) N B M Ex	
University of Oregon Medical School		(1929) N B M Ex	
University of Pennsylvania School of Medicine		(1931) N B M Ex	
Woman's Medical College of Pennsylvania		(1933) N B M Ex	

Book Notices

Synopsis of Pediatrics By John Zahorsky A.B. M.D. F.A.C.P. Professor of Pediatrics and Director of the Department of Pediatrics St. Louis University Medical School. Assisted by T. S. Zahorsky B.S. M.D. Assistant in Pediatrics St. Louis University Medical School. Cloth Price \$4. Pp. 359 with 83 illustrations. St. Louis: C. V. Mosby Company, 1934.

This is a compact, pocket sized volume, which has condensed modern pediatric knowledge into sixty chapters. It is suitable for the classroom teaching of the subject to the medical student and should be useful to the practitioner as a handy guide in general practice. The subject matter is carefully treated and, though condensed, the essential points in symptomatology, diagnosis and treatment are well covered. Theoretical discussion, when included, is brief and to the point, and diseases that concern more particularly other specialties have received short but adequate consideration. The volume well fills the gap that exists between the larger textbooks, with fuller theoretical discussions and references to the literature of pediatrics, and the small mimeographed manuals in use at some of the medical schools. It also allows the practitioner the chance to obtain a competent guide in a small volume. The senior author of this synopsis has long been a master in the teaching and practice of pediatrics. His experience has enabled him to condense the material so that there is no loss in value due to brevity, as is the case in many another synopsis. The book is well printed and the illustrations are excellent. It should find favor with medical students and practitioners alike because of its well arranged and condensed subject matter. It is probably within the range of the purse of the medical student so that ownership should not be prohibitive.

Suprarrenales y metabolismo de los hidratos de carbono Por Luis F. Leloir. Tesis de doctorado en medicina. Padrino de tesis: Prof. Dr. Bernardo A. Houssay. Universidad Nacional de Buenos Aires. Facultad de Ciencias Médicas. Paper. Pp. 188. Buenos Aires: Imp. A. Balocco y Cía. 1934.

Numerous experiments have been performed to throw additional light on the relationship of the adrenal glands to carbohydrate metabolism. From the data obtained, these experiments indicate that excision of the adrenals causes a diminution in blood sugar. Extirpation of the adrenal medulla or denervation of both adrenals does not result in any appreciable alterations in blood sugar. Excision of the adrenal glands produces a great decrease in liver glycogen, occasionally causing it to disappear completely. Muscle glycogen is also lessened and the intravenous injection of dextrose results in still greater diminution in contradistinction to the increase that is seen in normal animals. Injection of adrenal cortex extract restores the blood sugar to normal. It is believed that there is an antagonistic action between epinephrine and insulin and that denervation and extirpation of the adrenal medulla increase the animal's sensitivity to insulin, but that complete excision of the adrenal causes a still greater sensitivity to insulin.

The Physical and Mental Growth of Prematurely Born Children By Julius H. Hess M.D. Professor of Pediatrics College of Medicine University of Illinois Chicago. George J. Mohr M.D. Director Pittsburgh Child Guidance Center and Phyllis F. Bartelme Ph.D. Psychologist Cook County Juvenile Court Chicago. Cloth Price \$5. Pp. 440 with 90 illustrations. Chicago: University of Chicago Press. 1934.

The authors are well known for their current contributions on the subject of prematurely born children. This book probably contains more original research and statistical data than any other book on the subject. The senior author is well known for his previous authoritative book on premature infants, published some years ago for the physician. In this book, however, are correlated physical and mental development, with the result that it is perhaps unique of its kind. The question of what type of physical and mental progress the prematurely born infant makes is admirably answered. Several chapters on related medical aspects of premature children are contributed by other well qualified authors. The organization of the book is excellent, considering the amount of data utilized. There are numerous valuable tables and graphs which enable the reader to crystallize the descriptive material. The value of the book will be readily apparent to those charged with the medical care

of prematurely born children. It, however, will serve with almost equal value those interested in psychology and child welfare. The book is a distinct contribution to the literature on medical and social science and should be the property of every medical library.

"Ererbte Taubheit" Grundzüge zur Erkennung erblicher Hörstörungen sowie des Gesetz zur Verhütung erbkranken Nachwuchses betrefend. Von Prof. Dr. M. Schwarz. Oberarzt der Universitäts Hals-, Nasen- und Ohrenklinik Tübingen. Paper. Price 4 marks. Pp. 56 with 23 illustrations. Leipzig: Georg Thieme 1935.

This monograph includes a discussion of the laws of heredity and the incidence of dominant and recessive factors under a variety of combinations as well as a study of the various types of deafness in relationship to heredity. The forms of deafness considered are recessive as well as sporadic deafmutism, hereditary-degenerative inner ear deafness, endemic or deafness of cretinism, otosclerosis, and deafness, complete or partial, the result of chronic inflammatory processes of the middle ear in which a lessened resistance of the mucosa is the recurring factor. Each of these types is discussed rather fully as to incidence, mode of hereditary transmission, presence of other physical characteristics, diagnosis, method of examination and sociological implications. In line with the policy of the German state concerning defectives, the author recommends sterilization in all but the strictly middle ear types of deafness.

The 1934 Year Book of Radiology Diagnosis Edited by Charles A. Waters M.D. Associate in Roentgenology, Johns Hopkins University. Therapeutics Edited by Ira I. Kaplan B.Sc. M.D. Director Division of Cancer Department of Hospitals City of New York. Cloth Price \$4.50. Pp. 512, with 454 illustrations. Chicago: Year Book Publishers Inc. 1934.

As customary, this issue is divided into a diagnostic section and a section dealing with therapy. The literature has been well reviewed and condensed, with occasional footnotes expressing the author's point of view, which is valuable. Both authors apologize for the scarcity of original material, which is due to the economic condition. This attitude is a reflection of their modesty, because much of the material is quite valuable, as it represents variations in technique, amplification of many unusual conditions, and a reiteration of known experiences. Disease processes know no formulas, and it is just as important to become familiar with simulants, variants and heterotopic forms as to become acquainted with the classic forms and methods, which, after all, are infrequent. It can well be said that, should future editions be as informative as those of the past, a perpetual endorsement can be assured.

Kompandium der topischen Gehirn- und Rückenmarkdiagnostik Kurz gefasste Anleitung zur klinischen Lokalisation der Erkrankungen und Verletzungen der Nervenzentren. Von Robert Bing. ordentlicher Professor an der Universität Basel. Ninth edition. Paper. Price 9 marks. Pp. 227 with 127 illustrations. Berlin & Vienna: Urban & Schwarzenberg. 1934.

Twenty-five years has passed since Professor Bing published his first compend on diagnosis of brain and spinal cord diseases. In the present edition he has written a modern, excellent and detailed text despite the fact that the book is only a compend. Bing divides the subject matter into two parts: (a) the topical diagnosis of spinal cord disorders, (b) topical diagnosis of brain disorders. The topical diagnosis of spinal cord disorders takes up in detail the topographical anatomy of the spinal cord in regard to the diagnosis of lesions involving the various pathways that is, motor, sensory, trophic, vasomotor and pilomotor, both as separate and combined lesions. It further considers the anatomic and physiologic foundations for localization of the level of any lesion, central, radicular or peripheral. The topical diagnosis of brain disorders deals with the basic fundamentals of structure and the localization of lesions of the brain stem, cerebellum, brain, basal ganglia and hypophysis. Encephalography and ventriculography are discussed in relation to their indications and interpretations. The book is clearly written and contains an unusual amount of current anatomic and physiologic thought. His method of presenting the material of neurologic diagnosis is practical and easy to assimilate. This compend contains all that is needed for the student to get a thorough understanding and rationalization in the interpretation of neurologic signs and symptoms. It may be highly recommended.

The Cyclopedia of Medicine George Morris Herschel B.S. M.D. Editor in Chief and Edward L. Hertz A.B. M.D. Assistant Editor, Chief Associate Editors W. Wayne Babcock A.M. M.D. Conrad Berens M.D. P. Brooke Bland M.D. Francis L. Lederer B.S. M.D. and A. Crummo Mitchell M.D. Volume XI TEN ZONA Fabrikoid Price \$120 per set of 12 volumes and Index Pp 1004 with illustrations Philadelphia F. A. Davis Company 1934

This volume begins with the tendons, and after discussing such leading topics as tetanus, thermic injuries, the thorax, thrombosis, the thyroid and thymus, tobacco and the tongue tremors and tuberculosis, it goes on to tumors, typhoid urinalysis, urticaria, the uterus, the veins and the vitamins the vulva and vagina, and those limited medical topics which come under x, y and z. It is well up to the standard maintained by the previous volumes. Such leading authors as J. D. Barney, Victor Bonney, Lawrison Brown, Leo Buerger, George Crile, Allen K. Kruse, Matas, Musser, Penherton and Webb are included among the contributors. The book is exceedingly well illustrated and is printed two columns to the page in easily readable type. Each topic is fully outlined and much extraneous matter has been eliminated. The work is thereby made most practical. It will appeal especially to the general practitioner who wants a ready reference work with emphasis on treatment.

Handbook of Filterable Viruses By R. W. Fairbrother M.D. M.R.C.P., Lecturer in Bacteriology and Assistant Director of the Public Health Laboratory Manchester University. Cloth Price 7/6 Pp 193 London William Heinemann Ltd 1934

The first half of this small volume consists of a summary of the nature, methods of study and classification of viruses and the epidemiology and immunity of virus diseases. Current opinions are concisely expressed and controversial matters are reduced to a minimum. The author takes the view that viruses are biologic units. The second half of the book contains short descriptions of certain diseases of man and lower animals grouped according to whether they are "accepted," "probable" or "possible" virus diseases. Experimental studies are summarized in each case. The author has condensed much information into a few pages and is to be commended for the result. The style is direct and the book is easily read. A list of references is given with each section in some instances the choice of reference does not seem judicious. The experimental work in this field has proved exceptionally fruitful in recent years and a better acquaintance with the advances made is readily obtainable by the perusal of this handbook. For this reason it is useful to the acquiring student and inquiring physician.

Who Shall Survive? A New Approach to the Problem of Human Interrelations By J. L. Moreno M.D. Nervous and Mental Disease Monograph Series No. 38. Cloth Price \$4 Pp 437 with illustrations Washington D. C. Nervous & Mental Disease Publishing Company 1934

This highly technical work is an attempt to analyze the emotional relationships of human beings in the business and the social world, based on the feelings of human beings toward one another. The method of study is unusual. On the basis of this type of study the author attempts to analyze such racial difficulties as have developed in Germany, and to outline a plan for new types of social organization. In the series of supplements the author provides a study of children's reactions to one another in schools and of workers' reactions to one another in shops.

L'hypertrophocytose. Cancérisation et cicatrisation Par le Docteur Pierre Lemay docteur de l'Université. Paper Price 20 francs Pp 169 Paris Librairie E. Le François 1934

This work deals with the author's hypothesis based on the experimental research of Carrel concerning trephones. The author's conclusions, which he admits are only theoretical do not agree with conclusions drawn by Carrel. According to the author there are two antagonistic substances that control the life and proliferations of the cell the trephones which stimulate and antagonistic substances, which inhibit. In young individuals the trephones predominate, in older individuals the antagonistic substances predominate. A disturbance in the balance of these substances, which results in overactivity of the trephones causes (1) growth and general development of the embryo, (2) cicatrization and (3) cancerization. When the antagonistic substances predominate, the result is aging, death,

and cessation of cicatrization. According to this conception, general growth is looked on as hypertrephocytosis, aging as hypotrephocytosis, and cicatrization as localized momentary hypertrephocytosis. Cancerization is localized and uncontrolled hypertrephocytosis. Since in older persons the balance is in favor of inhibitory substances, tumor growth is slower than in young persons. The author believes that the action of the trephones is related to the activity of ferments. In support of his hypothesis he quotes a collection of his publications on this subject for the last ten years.

How to Practice Medicine By Henry W. Kemp M.D. Cloth Price \$2.00 Pp 106 New York Paul B. Hoeber Inc 1935

In this book a practitioner advises young men how to set themselves up in practice. He also offers practical information concerning their relationships to other practitioners, the etiquette of making calls, and their relationships to nurses, women and children. He discusses the care of the child, and obstetrics in general practice, and concludes with many simple hints on various phases of medical work. There is some advice for the aged and some prescriptions are presented which the author has apparently found useful in his work. Unfortunately, in these prescriptions he violates many of the best rules regarding prescription writing and uses for his vehicles some compounds that are essentially "shotgun" prescriptions in themselves. The exceedingly young man who is naive may find a few hints in this work that will be most valuable to him in his beginning of medical practice.

The Constitution and Its Reaction in Health By T. E. Hammond F.R.C.S. Assistant Surgeon The Royal Infirmary Cardiff. Cloth Price 7/6 1p 160 London H. K. Lewis & Company Ltd, 1934

The rather difficult title of this book does not express its contents. The book is essentially a textbook of personal hygiene. The author begins with six chapters on the constitution of man and his reactions to the seasons, to the weather and to nature generally. He classifies human bodies as hyposthenic and hypersthenic from the constitutional point of view. He then discusses all the common aspects of living in relationship to the human body, illustrating his discussions with brief notes of interesting cases. While much that is presented in this book is useful, it will strike the average American medical reader as most elementary and hardly on a par with some works available in this country.

The Advance of Science Edited by Watson Davis Director Science Service Washington D. C. Cloth Price \$3.50 1p 400 with illustrations Garden City N. Y. Doubleday Doran & Company Inc 1934

This volume attempts to summarize knowledge in many scientific fields and to present it in a manner understandable to the average well educated reader. The considerations include not only chemistry and physics but also geography, physiology, pathology, biology, eugenics and many other related topics. For the reader who wants a cursory survey of experimentation and of the newer discoveries, the volume should prove attractive. For the special reader it is far too diffuse to be significant. It is a most useful text, however, in indicating the manner in which Science Service makes modern science understandable.

Chemioterapia del cancro Dal Prof. G. Fichera. Paper Price 25 lire Pp 213 with 20 illustrations Milan Ulrico Hoepli 1935

This is the author's report on the chemotherapy of cancer to the international congress in Madrid in 1933. The report gives a long review of the literature on the subject, with an extensive bibliography. An index would have been helpful. Many kinds of treatment have been tried without success and no form of chemotherapy of cancer is beyond the experimental stage.

Manual of Clinical Laboratory Methods By Pauline S. Dimmitt Ph.G. Medical Technologist for the Stout Clinic Sherman Texas. Cloth Price \$2 Pp 150 with 36 illustrations Philadelphia F. A. Davis Company 1934

This small volume concerns itself primarily with the details of clinical laboratory procedures. The data are presented in almost outline form and cover the usual list of subjects found in books of clinical laboratory methods. Outside of its simplicity, the book has little to recommend it to the practicing physician. For the student it lacks the detail necessary for the development of a rational understanding of laboratory methods or their clinical application.

Medicolegal

Contract to Perform Vasectomy Not Against Public Policy—The plaintiff's wife had experienced great difficulty with the birth of her first child and had been advised that it would be dangerous to her life to bear another. The defendant-physician was consulted by the plaintiff and advised that a vasectomy be performed on the plaintiff. The operation was performed, and, it was alleged, the defendant-physician pronounced it successful and guaranteed the sterility of the husband. Notwithstanding the operation, however, the plaintiff's wife again became pregnant. The wife survived the birth of the baby but the plaintiff sued the defendant-physician to recover damages for the great anxiety the pregnancy had caused him and for the expenses incurred in connection therewith. The trial court sustained a demurrer to the complaint on the ground that the contract and performance of the operation were against public policy and that the law would leave the parties where they placed themselves. The plaintiff thereupon appealed to the Supreme Court of Minnesota.

The plaintiff in this case based his cause of action solely on the failure of the operation to fulfil the defendant's alleged promise. The complaint did not charge lack of skill, malpractice, or negligence in any respect in the performance of the operation. The first question presented, said the Supreme Court of Minnesota, is whether a contract to perform such an operation under the circumstances here presented is against public policy and for that reason void. No authorities bearing directly on this question were cited by either party to the suit and the court itself could find none. There is in Minnesota, said the court, no statutory prohibition against sterilization. The plaintiff was married and presumably would remain married to his present wife, who had been competently advised of the danger of further pregnancy. The operation of sterilization on a man is a simple one, said the court, accompanied by very slight hazards, whereas that on a woman is more serious and requires a greater degree of skill on the part of the physician. It entails hospitalization. It is frequently performed on women who habitually miscarry or abort. So far as progeny is concerned, the results to this married couple would be the same were effective sterilization performed on either. Therefore, in the opinion of the court, it was entirely justifiable for them to take the simpler and less dangerous alternative and have the husband sterilized. Such an operation does not impair, but frequently improves, the health and vigor of the patient. Except for his inability to beget children, he is in every respect as capable physically and mentally as before. It does not render the patient impotent or unable "to fight for the king," as was the case in mayhem or maiming. The court concluded that under the circumstances the contract was not void as against public policy nor was the performance of the operation illegal on that account.

The plaintiff contended, however, that his complaint was grounded on deceit, and relied on the case of *Hedin v. Minneapolis M & S Institute*, 62 Minn 146, 64 N W 158, 35 L R A 417, 54 Am. St. Rep 628. But, said the Supreme Court, there was no allegation of fraudulent intent on the defendant's part or any of the elements of deceit. In such an action the plaintiff must allege and prove, not only that the representation was false, but also that it was made with fraudulent intent. In the *Hedin* case there was abundant evidence to support the jury in finding that the defendant-physician must have known that his promise of cure could not be performed. The plaintiff in the present action did not seek to recover for breach of contract, he alleged no malpractice. He admitted that the operation he contracted for was performed. It is a matter of common knowledge that such an operation properly done in due course effects sterilization. It is in common use in states which authorize sterilization of defectives. Any competent physician or surgeon must necessarily have given the plaintiff advice to that effect. The purpose of the operation was to save the wife from the hazards to her life which were incident to childbirth. It was not the alleged purpose to save the expense incident to pregnancy and delivery. The wife

survived. Instead of losing his wife, the plaintiff has been blessed with the fatherhood of another child. The expenses alleged are incident to the bearing of a child, and their avoidance is remote from the avowed purpose of the operation. As well might the plaintiff charge the defendant with the cost of education of the child. Although the validity of the contract was upheld, the judgment sustaining defendant's demurrer was affirmed. The action of the trial court, sustaining a demurrer to the complaint, was affirmed.—*Christiansen v. Thornby* (Minn.), 255 N W 620.

Society Proceedings

COMING MEETINGS

- Alabama, Medical Association of the State of, Mobile, April 16 18 Dr D L Cannon 519 Dexter Avenue Montgomery Secretary
American Association of Anatomists, St. Louis, April 18 20 Dr George W Corner University of Rochester School of Medicine Rochester N Y Secretary
American Association of Pathologists and Bacteriologists, New York, April 18 19 Dr Howard T Karsner, 2085 Adelbert Road Cleveland Secretary
American Association of the History of Medicine, Atlantic City, May 6 Dr Edward J G Beardsley 1919 Spruce Street, Philadelphia Secretary
American Association on Mental Deficiency, Chicago, April 25 27 Dr Groves B Smith Beverly Farms, Godfrey Ill, Secretary
American College of Physicians, Philadelphia, April 29 May 3 Mr E R Loveland, 133 South 36th Street, Philadelphia, Executive Secretary
American Dermatological Association, White Sulphur Springs W Va, May 24 Dr William H Guy, 500 Penn Avenue Pittsburgh Secretary
American Pediatric Society, Cleveland, May 24 Dr Hugh McCulloch, 325 North Euclid Avenue, St. Louis Secretary
American Physiological Society, Detroit, April 10 13 Dr Frank C Mann Mayo Clinic, Rochester Minn Secretary
American Psychiatric Association, Washington, D C, May 13 17 Dr William C Sandy, State Education Building Harrisburg Pa, Secretary
American Society for Clinical Investigation, Atlantic City, May 8 Dr H L Blumgart 330 Brookline Avenue, Boston Secretary
American Society for Experimental Pathology, Detroit, April 10 13 Dr Shields Warren 195 Pilgrim Road, Boston Secretary
American Society for Pharmacology and Experimental Therapeutics, Detroit, April 10 13 Dr E M K Geising, 710 N Washington Street, Baltimore Secretary
American Society of Biological Chemistry, Detroit, April 10 13 Dr H A Mattill State University of Iowa, Iowa City, Secretary
Arizona State Medical Association, Phoenix, April 25 27 Dr D F Harbridge, 15 East Monroe Street Phoenix Secretary
Arkansas Medical Society, Fort Smith, April 15 17 Dr W R Brookshier 602 Garrison Avenue, Fort Smith Secretary
Association of American Physicians, Atlantic City, May 7 8 Dr James H Means Massachusetts General Hospital Boston Secretary
California Medical Association, Yosemite, May 13 16 Dr F C Warnshus, 450 Sutter Street San Francisco Secretary
District of Columbia, Medical Society of the Washington, May 1 Dr C B Conklin 1718 M Street N W, Washington Secretary
Federation of American Societies for Experimental Biology, Detroit, April 10 13 Dr H A Mattill, State University of Iowa, Iowa City, Secretary
Florida Medical Association, Ocala, May 13 15 Dr Shaler Richardson, 111 West Adams Street Jacksonville Secretary
Georgia Medical Association of Atlanta, May 7 10 Dr Allen H Bruce 139 Forrest Avenue N E Atlanta Secretary
Iowa State Medical Society, Davenport, May 8 10 Dr Robert L Parker 3510 Sixth Avenue, Des Moines Secretary
Kansas Medical Society, Salina, May 8 10 Mr Clarence Munns Stormont Building Topeka Executive Secretary
Louisiana State Medical Society, New Orleans, April 29 May 1 Dr P T Talbot 1430 Tulane Avenue, New Orleans Secretary
Maryland, Medical and Chirurgical Faculty of, Baltimore, April 23 24 Dr Walter Dent Wise 1211 Cathedral Street Baltimore Secretary
Mississippi State Medical Association, Biloxi, May 14 16 Dr T M Dye, McWilliams Building Clarksdale, Secretary
Missouri State Medical Association, Excelsior Springs, May 6 9 Dr E J Goodwin 634 North Grand Boulevard St. Louis Secretary
Nebraska State Medical Association, Omaha, May 14 16 Dr R B Adams Center McKinley Building, Lincoln Secretary
New Hampshire Medical Society, Manchester, May 7 8 Dr Carleton R Metcalf 5 South State Street, Concord Secretary
New Jersey, Medical Society of Atlantic City, April 30 May 2 Dr J B Morrison 66 Milford Avenue Newark Secretary
New York Medical Society of the State of, Albany, May 13 15 Dr Daniel S Dougherty, 2 East 103d Street New York, Secretary
North Carolina Medical Society of the State of, Pinehurst, May 6-8 Dr L B McBrayer Southern Pines Secretary
Oklahoma State Medical Association, Oklahoma City, May 13 15 Dr L S Wilbur 203 Ainsworth Building McAlester Secretary
South Carolina Medical Association, Florence, April 23 25 Dr E A Hines Seneca, Secretary
South Dakota State Medical Association, Pierre, May 13 15 Dr John F D Cook Langford Secretary
Tennessee State Medical Association, Nashville, April 9 11 Dr H H Shoulters 706 Church Street Nashville Secretary
Texas State Medical Association of Dallas, May 13 16 Dr Holman Taylor 208 Medical Arts Building Fort Worth Secretary
West Virginia State Medical Association, Wheeling, May 6 8 Mr Joe W Savage Public Library Building Charleston Executive Secretary

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

150 157 304 (Feb.) 1935

Changing Cause of Death in Diabetes Mellitus J M Flynn, Boston —p 157

Studies in Diabetes Mellitus III Interpretation of Variations in Diabetes Incidence E P Joslin, Boston L I Dublin and H H Marks New York —p 163

Action of Thevetin Cardiac Glucoside and Its Clinical Application H L Arnold Honolulu T H W S Middleton Madison Wis and K K Chen Indianapolis —p 193

Quinidine and Strychnine in Treatment of Premature Contractions J B Carter and E F Traut Chicago —p 206

*Cardiovascular Response to Subcutaneous Injection of Epinephrine and Pituitrin in Essential Hypertension A H Elliot and F R Nuzum Santa Barbara Calif —p 215

Malignant Nephrosclerosis (Malignant Hypertension) H E MacMahon and J H Pratt Boston —p 221

*Paradoxical Embolism F J Hirschboeck Duluth Minn —p 236

Metastatic Melanocarcinoma with Apparent Recovery J J Eller and I L Schonberg New York —p 240

Multiglandular Syndromes Resembling Simmonds Disease Case Report A Weinstein Nashville Tenn —p 245

Endogenous Origin of Early Pulmonary Tuberculosis Anatomic View of Its Clinical Diagnosis W Pagel Cambridge England —p 253

Is There a Moral Center in the Brain? N S Yawger Philadelphia —p 265

Recurrence of Facial Paralysis H R Merwarth Brooklyn —p 270

*Pathologic Physiology of Neuroglandular System G Crile Cleveland —p 276

Cardiovascular Response to Injection of Epinephrine and Solution of Pituitary—Elliot and Nuzum measured the blood pressure and pulse rate at intervals of five minutes over a period of one hour in thirty-two patients having essential hypertension, who had received a subcutaneous injection of 1 mg of epinephrine. The average systolic pressure fell slightly over a period of thirty-five minutes and then returned to the preinjection level, the average diastolic pressure fell to a maximal low point at forty-five minutes and remained near that level throughout the remainder of the period. The average pulse pressure decreased. The average pulse rate rose. A degree of parallelism existed between changes in the systolic pressure and in the pulse rate of these patients, such that a rise in pressure was usually accompanied by a rise in pulse rate and a fall in systolic pressure by either a lowered or an unchanged pulse. Elevation of systolic pressure may be primarily the result of cardiac stimulation by epinephrine whereas the fall in diastolic pressure is attributable to arteriolar dilatation. In forty hypertensive patients studied in a similar manner after receiving a subcutaneous injection of solution of pituitary, a slight rise in the average diastolic pressure and an equally slight fall in the average systolic pressure were observed after twenty minutes. The average pulse rate was unchanged. In the same patient, an unusual response to the injection of solution of pituitary was not necessarily accompanied by a vigorous response to epinephrine. No constant or frequent deviation from the reported normal cardiovascular response to the subcutaneous injection of epinephrine and solution of pituitary could be demonstrated in this series of patients having essential hypertension.

Paradoxical Embolism—Hirschboeck states that about 50 per cent of the instances of paradoxical embolism are associated with antecedent pulmonary embolism. A study of the intra auricular blood pressure establishes the pressure as somewhat higher in the left auricle than in the right assuring competence as far as any circulation of blood from the right auricle to the left auricle is concerned in a state of health. An anatomic patency is therefore associated with a physiologic com-

petence. Any disturbance in the pressure relationship may favor the development of paradoxical emboli when thrombosis in the venous circulation is present. Haggart and Walker showed experimentally that a sudden occlusion of the left pulmonary artery caused an immediate rise in the pulmonary pressure of about 29 per cent, whereas with total pulmonary occlusion the pressure increased rapidly from 120 to 257 per cent with an immediate fall in the systemic arterial pressure. A patent foramen ovale is the most common of all fetal relics. The literature generally recognizes this in all necropsies as between 30 and 35 per cent. Diagnostically, paradoxical embolism may be assumed as occurring in life if the patient is the subject of venous thrombosis, develops an embolus in the systemic circulation and, after a careful search, has no other apparent causes for arterial embolism. If pulmonary infarction precedes the embolic accident, the diagnosis is more certain. The author reports a case that illustrates the sequence of paradoxical emboli in the systemic circulation subsequent to venous thrombosis and in association with antecedent pulmonary embolism. It represents one of the rare instances in which an embolus is found in transit through the patent foramen ovale at the time of death.

Pathologic Physiology of Neuroglandular System—Crile emphasizes that the brain and the sympathetic nervous system and the glands are indissolubly linked together in function, that the one component of the neuroglandular system that can be normally and pathologically conditioned is nerve tissue—that is, the brain and sympathetic nervous system, that the glands cannot be so conditioned, that the brain and the sympathetic system can be conditioned only with the collaboration of certain hormones, and that in the case of civilized man the rise especially of the thyroid has so facilitated the conditioning of the brain that man owes his distinctions and his diseases to this unique collaboration. In support of this conception the author offers the clinical results of the application of this principle in 350 cases of hyperkinetic diseases improved by dekineticizing procedures.

Annals of Internal Medicine, Lancaster, Pa

S 777-892 (Jan.) 1935

Heart Block Due to Calcareous Lesions of the Bundle of His Review and Report of Case with Detailed Histopathologic Study W M Yater and V H Cornell Washington D C —p 777

Quantitative Studies on Increased Potency of Liver Extract by Incubation with Normal Human Gastric Juice P J Fouts O M Helmer and L G Zerfas Indianapolis —p 790

Correlation of Mineral Metabolism and Vegetative Nervous System in Thyroid Disease J Klein Chicago —p 798

Diseases of Nervous System Producing Dysfunction of Other Organs and Dysfunction of Other Organs Producing or Simulating Diseases of Nervous System L J Pollock Chicago —p 805

*Macrocytic Anemia in Banti's Disease D O Wright New Orleans —p 814

Alkalosis Clinical Problem C T Way and E Muntwyler Cleveland —p 818

*Observations of Remissions in Hyperthyroidism Induced by Pregnancy Urine Extract P Starr and Helen Patton Chicago —p 825

Incidence of Streptococcal Infection in Cardiovascular Sclerosis N W Jones and A L Rogers Portland Ore —p 834

Explanation of Mechanism of Infantile Paralysis Production in Human Being J A Toomey Cleveland —p 854

*Gastric Digestion Simple Visual Test and In Vitro Studies M B Levin and S Raffel, Baltimore —p 865

Macrocytic Anemia in Banti's Disease—Wright reports a case of Banti's disease in which the blood count showed a definite change from a hypochromic microcytic type of anemia to a macrocytic type closely resembling pernicious anemia in the stage of remission. He studied a series of cases diagnosed as Banti's disease to show that a color index of more than 1 is much more frequent and the mean color index higher in the groups with evidence of portal cirrhosis than in those without this complication. It is a well substantiated fact that a macrocytic type of anemia frequently occurs in portal cirrhosis. From his case report and from the study of the cases of Banti's disease it is obvious to the author that a macrocytic (pernicious) type of blood picture will appear when portal cirrhosis develops. Therefore the concept that Banti's disease is always accompanied by a microcytic type of anemia is erroneous.

Remissions in Hyperthyroidism Induced by Pregnancy Urine Extract—Starr and Patton treated thirteen cases of hyperthyroidism with pregnancy urine extract and theelin. The

usual course of treatment lasted for four or five months. Remission of hyperthyroidism has occurred coincidental with the treatment in seven cases. The six failures seem to illustrate that the induction of remission by pregnancy urine extract is dependent on normal ovarian function. At the present time no physiologic proof that the remission occurring in these cases may be attributed to the pregnancy urine extract and theelin treatment can be given, because the mechanism of such an action is unknown. Nevertheless, remissions have occurred abruptly in the healthiest adolescent girl, and more gradually in adult women. In two cases the return of menstruation, which had ceased during pregnancy urine extract treatment, was coincident with remission, as evidenced by a gain of weight, previously stationary, and a reduction of the metabolic rate to or nearly to the normal zone.

Gastric Digestion—Levin and Raffel found a microscopic method of estimation of gastric digestion based on the demonstrated ability of the gastric secretions to digest striae, connective tissue and nuclei to furnish a satisfactory index of gastric function (digestion). The mixture of secretions derived from the duodenum when combined with pepsin hydrochloric acid promotes the rapidity of digestion to a marked degree. Such increased activity occurs if the components are allowed to act on the test material at an appropriately low pH . Under these conditions, neutralization of the acid after a short period inhibits the progress of the digestion only to some degree. When neutralization of the mixture is effected before it has come into contact with the test material, however, no digestive activity is manifested. On the basis of these observations it is suggested that large doses of alkali be administered both before and after meals in cases of duodenal ulcer. Simultaneous experiments on the comparative digestibilities *in vivo* and *in vitro* of various animal proteins in the form of representative meats have indicated that a dried beef-liver preparation is of value in cases in which such proteins are desired but cannot be conveniently taken in the usual manner.

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Brain Lesions and Duodenal Ulcer Report of Two Cases F C Grant Philadelphia—p 156
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- Action of Glucose on Emptying of Stomach Effect of Varying Concentrations in Both Normal Stomachs and After Various Gastric Operations C G Johnston and I S Ravdin, Philadelphia—p 500
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Intracranial Operations in Sitting Position—Gardner recommends the sitting position of the patient combined with tribrom-ethanol anesthesia for operations on the cerebellum. This position results in (1) a diminution in bleeding, (2) a lowering of intracranial pressure, (3) a lessened tendency to immediate cerebral edema and (4) an improved respiratory exchange, and it also facilitates access to the patient, particularly by the anesthetist. This position is not recommended for operations on tumors about the sella turcica or on the inferior surfaces of the cerebral hemispheres. In other cerebral tumors the position is recommended with reservation, because of the tendency for an occasional patient to go into prompt and profound shock. The position has distinct advantages in cervical and upper dorsal laminectomy and in excision of the cervico-dorsal sympathetic ganglions by the Adson approach. It does not predispose to postoperative hemorrhage.

Meningiomas as Cause of Epilepsy—In reviewing 291 cases of meningioma, Groff observed that the incidence of epilepsy in this series was 30.9 per cent, or ninety cases. In these ninety cases there were eighteen of severe seven of mild and sixty-five of jacksonian seizures. The latter group was divided into thirty-six cases of a motor type of attack, twenty-two of a sensory motor spell and seven of a pure sensory seizure. Aside from these ninety cases there were twelve of uncinate fits. In fourteen of the eighteen cases of generalized convulsions the lesions were in the frontal lobe or the temporal lobe or arising from the sphenoid ridge. In fifty-four of the sixty-five cases of jacksonian epilepsy the tumors involved the frontal and parietal lobes. Ten of the twelve cases of uncinate fits presented tumors in close relationship to the uncinate gyrus. The incidence of epileptic seizure was greatest in tumors of the frontal, parietal and temporal lobe. There were 116 patients with tumors in this region and eighty had convulsions. All except sixteen of these had focal attacks. In the twenty-one cases of tumor located in the posterior fossa, not one was complicated by convulsive seizures. Sixty-six patients had pre-operative convulsions. Twenty-four were relieved after the tumor was removed in an average follow-up period of four years. Thirteen of the 201 patients without convulsions developed seizures after operation. Eight of these had jacksonian seizures, while the remaining five had severe attacks.

Effect of Superior Laryngeal Nerves on Tracheal Mucus—It is apparent to Johnson that 1 Stimulation of the peripheral ends of the recurrent and of the superior laryngeal nerves will cause a secretion of tracheal mucus. 2 A more abundant secretion is produced by pilocarpine. 3 Stimulation of the central end of the vagus or of the superior laryngeal nerves will cause a reflex secretion of mucus. 4 Direct stimulation of the tracheal mucosa will cause a secretion of mucus partially by direct irritation of the mucous glands and partially by stimulation of the mucous glands through a reflex arc. 5 These secretory mechanisms may be interrupted by atropine, except that of direct irritation of the mucous glands. 6 The demonstration of these facts together with the clinical observation presents fairly good presumptive evidence that there is a definite relationship between injury to the superior laryngeal nerves during thyroidectomy and the formation of postoperative tracheal mucus.

Peritoneum in Repair of Inguinal Hernia—Levering studied the tensile strength of various fasciae in dogs and compared these observations with similar studies made on the tensile strength of the peritoneum of the same animals. It seemed possible that some structure readily available in certain types of hernia might prove satisfactory for use in the reinforcement

ment of the abdominal wall. He found that the peritoneum has sufficient tensile strength so that it may be utilized in the repair of certain inguinal hernias. The experiments further show that peritoneum will unite with fascia and, when it comes in contact with the perimetrium of muscle, will unite with it in a similar manner as does the fascial suture. The author suggests that the hernial sac which now is discarded, be used in operations in which indications exist for reinforcement of the abdominal wall.

Selective Thoracoplasty in Treatment of Tuberculosis.—Overholt emphasizes that thoracoplasty should be so planned that maximal collapse of the involved lung and minimal collapse of the healthy portions of the lung is the result. The portion of the thoracic cage to be resected should not only include that part of the thoracic wall over areas of cavitation but should extend sufficiently to relax fibrotic uncavitated lung. The collapse obtained in the area treated should be complete within itself with each stage. In order to accomplish this long or complete rib and transverse process resections should be carried out, beginning at the top of the thoracic cage. The length of time between stages should be long enough to allow an accurate estimation of the necessity for, and the extent of, a second rib resection. This period should also be of sufficient length to permit the patient to receive the maximal benefit from the first operation before the second one is attempted. The operation can be offered to patients with a relatively small amount of involvement of the upper portion of one lung because the base on the same side is conserved. The operation can be offered to patients with bilateral disease who have good lower lobes and who otherwise would have no hope for recovery. Of 120 operations on seventy-three patients, the operative mortality was 25 per cent and the patient mortality 41 per cent.

Archives of Ophthalmology, Chicago

13:1150 (Jan.) 1935

- Detachment of Retina. Treatment by Means of Pyrometric Electride. L. Coppes Brussels Belgium—p. 1
Some Observations as to Indications for Advancement and Kindred Operations. P. C. Jameson, Brooklyn—p. 3
Association of Optic Neuritis, Facial Paralysis and Facial Hemiatrophy. E. A. Shumway, Philadelphia—p. 8
Hydrogen Ion Concentration of Tears. Its Relation to Certain Ocular Symptoms and Conjunctival and Corneal Lesions. G. N. Horsford and A. M. Hicks, San Francisco—p. 14
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Reaction of Buffer Solution and of Ophthalmic Drugs. Further Note. S. R. Gifford, Chicago—p. 78

Histologic Observations on Fundus Oculi in Leukemia

—From their study of eleven eyes in cases of leukemia it appears to Goldstein and Wexler that in most instances the retinal lesions are minimal, since they do not produce profound disturbance in the retinal structure and the retinal vessels are normal in appearance. Such changes as marked sheathing of the veins, together with exudation of large numbers of leukocytes into the retina and nerve, are decidedly the exception. Also, fragmentation and necrosis of the walls of the larger vessels must be unusual. Similarly, in the choroid, while dilatation of the sinuses with leukocytes to a variable degree is the rule, the enormous infiltration with enlargement noted in one of the cases is exceptional. Destruction of the wall of the blood vessel following infiltration was noted. The fragments of the wall of the vessel were necrotic, and the only explanation is invasion or local proliferation of blood cells. Of unusual interest was the sheathing of the posterior ciliary vessels and the infiltration of large numbers of leukocytes into the episclera, both in association with the infiltration into the choroid. In this case exophthalmos and edema of the conjunctiva of the left eye had occurred more or less coincidentally with a marked increase in the white blood cell count. While the orbital tissues were not examined and orbital lymphoma therefore was not demonstrated, it is fair to assume, from the condition of the episclera, that such a lesion existed and was responsible for the edema and the exophthalmos. While it is possible that

the sudden increase in the number of white blood cells was a factor in its etiology, the microscopic appearances do not warrant a definite statement as to whether the extra-ocular infiltration came by way of the choroid or directly from the blood stream.

Arch of Physical Therapy, X-Ray, Radium, Chicago

16:164 (Jan.) 1935

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Archives of Surgery, Chicago

30:1178 (Jan.) 1935

- Therapeutic Use of Concentrated Streptococcus Serum of the New York State Department of Health in Patients with Infections of Ear, Nose and Throat. Adele E. Shepler, Martha Jane Spence and W. J. MacNeal, New York—p. 1
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Fifty Fifth Report of Progress in Orthopedic Surgery. J. G. Kubus, E. F. Cave, S. M. Roberts and J. S. Barr, Boston; J. A. Freiberg, Cincinnati; J. E. Milgram, New York; and R. I. Stirling, Edinburgh, Scotland—p. 171

Senile Osteomalacia.—Kleinberg cites a case of atrophy of bone in which the atrophy was limited to the spinal column and pelvis, the etiology was obscure, the softening of the vertebral bodies resulted in a painful posterior curvature of the spine and rest on a convex frame yielded complete relief. Clinical examination revealed no neurologic disturbances in the cerebrospinal system that could induce atrophy of bone. Disuse was dismissed because despite the pain the patient was able to get about considerably, walking and working every day. Thus it was concluded that the disease of the spine was nutritional or metabolic. The demineralization progressed to such a degree that it caused a partial collapse of certain of the dorsal vertebrae, with resultant pain and deformity. The nutritional upset may be considered a senescent degenerative change. Why the metabolic upheaval should appear and involve a limited portion of the skeleton is inexplicable. In addition to rest on the canvas convex frame the patient received sedative doses of baking and massage of the back several times a day. Within three weeks the pain and tenderness disappeared, the kyphosis was reduced, and the patient, with the support of a light plaster-of-paris jacket, was able to move about comfortably and was discharged.

Preoperative Irradiation of Massive Tumors of Kidney.—In the experience of Wharton, preoperative irradiation of both Wilms and Grawitz tumors causes a remarkable decrease in their size and makes them easily operable. Preoperative irradiation also causes definite cellular changes in the malignant tissue such as hyalinization, pyknosis, fragmentation and destruction of the architecture of the tumor. Irradiation, however, will not destroy malignant tumors entirely. After having been intensively irradiated, tumors that he has removed have uniformly shown living malignant tissue, those that he has not removed have resumed active growth. Roentgen therapy is only a means of preparation to make the tumor operable, or a palliative measure to hold in check a tumor that cannot be removed. He believes that the transperitoneal approach is the most logical, clean and surest way to remove tumors of the kidney.

Irradiation in Treatment of Tumors of the Hypophysis—Rand and Taylor studied twenty-three cases to estimate the value of high voltage radiation in the treatment of tumors of the hypophysis. There were five cases of chromophil adenoma, thirteen chromophobe adenomas, two adenocarcinomas and three cystic chromophobe adenomas. Chromophil adenomas react most favorably to this form of treatment. The permanence of relief is indefinite. Eosinophilic and basophilic cells seem to react most favorably to irradiation. Chromophobe adenomas have not responded uniformly. Tumors of the hypophysis may be mixed. The predominating cells may be of the chromophobe type, but there may be a smattering of other types of cells. Adenocarcinoma of the hypophysis apparently does not react favorably to high voltage irradiation. Cystic adenomas of the chromophobe variety show no improvement following irradiation. When apparent chromophobe tumors fail to react favorably to irradiation within a short time, they are likely cystic and more amenable to surgical treatment. Irradiation can be given more intensively if a decompression is provided first. Apparently certain patients suffering from pituitary tumors gain from moderate to useful vision following irradiation. Without irradiation they would almost certainly become blind. No definite regression has been seen in general acromegalic symptoms following irradiation nor any definite advance in symptoms. Postoperatively, patients without irradiation have maintained improved vision on an average of from one to three years. It would seem logical in selected cases to employ irradiation first, in the hope that certain patients may be helped enough thereby to render surgical intervention unnecessary. These patients should be under the close scrutiny of a neurologic surgeon, for, at best, high voltage irradiation will give satisfactory results in only a certain proportion of cases. It does not replace the surgical procedure but rather acts as an adjunct to it.

Florida Medical Association Journal, Jacksonville

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- Recent Progress in Aviation Medicine L Iverson, Pensacola—p 279
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Id Recent Developments in Knowledge of Endemic Typhus Fever F F Sellers, Atlanta—p 7
Breast Lesions W P Nicolson Jr Atlanta—p 14
Medical Aspects of Some Acute Abdominal Conditions S C Ketchum Louisville—p 19
Carcinoma of Abdominal Testicles Report of Two Cases W P Harbin and L Harbin, Rome—p 24

Johns Hopkins Hospital Bulletin, Baltimore

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- Experimental Approach to Cancer Problem I Four Important Phases of Cancer Research II Avian Tumors in Relation to General Problem of Malignancy J B Murphy, New York—p 1
*Thirty Minute Spectrographic Micromethod for Detection of Pathologic Lead in Peripheral Blood H Blumberg and T F M Scott Baltimore—p 32
Demonstration of Encephalic Control of Micturition by Electrical Stimulation O R Langworthy and L C Kolb Baltimore—p 37
Iron of Blood Comparison of Values for Hemoglobin Determined by Newcomer Method and Calculated from Iron Content H W Joseph, Baltimore—p 50

Detection of Lead in Peripheral Blood—Blumberg and Scott describe a thirty minute spectrographic micromethod for the detection of pathologic amounts of lead in 0.1 cc samples of peripheral blood. The instrument used was a Hilger E1 large quartz spectrograph, operated in conjunction with a graphite arc and a quartz spherocylindric concentrating lens. The electrodes employed were high purity graphite rods, 10 mm in diameter. The upper electrode, the negative, was used with a flat surface. The lower electrode, the positive, was hollowed at its upper end by means of a steel drill, leaving an evenly cored space approximately 6.5 mm in diameter and

3 mm in depth. For each analysis three samples of blood from the finger were obtained, preferably from different fingers. The samples were collected in 0.1 cc micro blood sugar pipets. The blood from each finger was delivered immediately into the hollow core of a prepared electrode, which was then replaced in the inverted test tube and taken for analysis. By means of careful drainage, the pipets were emptied so well that the amount of blood left adhering to their walls was of no practical significance. With the blood in the core of the lower positive electrode, and with the flat upper electrode as the negative pole, the arc was struck. For about fifteen seconds the electrodes were scarcely separated, thus permitting the clotted blood to smolder and partly to char, without actually burning. The electrodes were then drawn apart and the arc allowed to burn. By visual observation of the light beam and of the burning electrodes, it was easy to tell when the sample had completely burned. This usually required from thirty to forty-five seconds. After the photographic plate was developed and fixed, it was rinsed in water and examined. If the blood contained a pathologic amount of lead, the sensitive lead line at 2,833.07 angstrom units would appear visible to the eye, and the minor lines at 2,802.09 angstrom units and 2,614.20 angstrom units could be seen with the aid of a lens. This was considered a positive result. In the control samples the sensitive line at 2,833.07 angstrom units either did not appear or showed as a faint line visible only with the aid of a lens. The minor lines could not be detected at all. This was considered a negative result. The authors originally intended the method for peripheral blood samples, but it can be used also with uncoagulated venous blood. In the case of the latter, care must be taken to use an anticoagulant free from lead. In their experience it has appeared that, unless a preliminary drying of the measured sample is resorted to, the uncoagulated venous blood is more difficult to burn than the quickly clotting peripheral sample.

Journal of Allergy, St Louis

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- *Effect of Low Relative Humidity at Constant Temperature on Pollen Asthma B Z Rappaport, T Nelson and W H Welker, Chicago—p 111
Air Studies at Higher Altitudes E L MacQuiddy, Omaha—p 123
Pollen Content of Air in North America O C Durham, North Chicago, Ill—p 128
Pathology of Two Fatal Cases of Bronchial Asthma P P Michael and A H Rowe Oakland Calif—p 150
Physical Allergy Its Role as Manifested in Routine Study of Three Hundred and Twenty Five Consecutive Allergic Cases O Swineford Jr University Va—p 175
*Technic on Intracutaneous Tests and Results of Routine Tests in Normal Persons F M Rackemann and F A Simon, Boston—p 184
Status Asthmaticus A T Sterling, Philadelphia—p 189

Effect of Low Humidity on Pollen Asthma—From a study of the results of twenty-two patients, sixteen of whom were completely relieved in four days, Rappaport and his associates conclude that the rapidity with which pollen asthmatic patients are relieved is greater under conditions of low humidity and relatively constant temperature in a pollen-free atmosphere than when the temperature and humidity are not controlled. In a pollen-free atmosphere, with the relative humidity ranging between 15 and 40 per cent and the temperatures ranging between 72 and 82 F, patients with pollen asthma had a delayed onset (from six to eight hours) of symptoms in attacks precipitated by storms. This conclusion is based on a comparison with the time of onset (one hour) of symptoms in the patients of an experimental ward in 1932. It is the authors' impression that the asthmatic attacks in the ward during storms were less severe and that the symptoms disappeared much more rapidly as compared to attacks precipitated during the experimental period of 1932. Under their experimental conditions, a concentration of ozone considerably greater than occurs after a heavy electrical storm showed no beneficial or detrimental effects. Some other factor, or factors, outside of pollen, humidity, temperature, or the concentration of ozone must play a part in the precipitation of symptoms of asthma in pollen asthmatic persons. Barometric changes and ionization have not been studied.

Technic on Intracutaneous Tests—Rackemann and Simon emphasize the importance of chemical as well as bacteriologic

cleanliness in making intracutaneous tests. The need for all-glass syringes is defined, and a convenient rack for segregating and labeling the syringes is described. When this improved technique is applied to the study of normal, nonallergic individuals, many positive skin tests are obtained. The importance of this observation to the study of allergic patients is discussed.

Journal of Lab and Clinical Medicine, St Louis

20: 337-450 (Jan.) 1935

- Meteorologically Conditioned Variability of Serologic Tests in Syphilis. E. T. Hoverson, Kankakee, Ill. and W. F. Petersen, Chicago with technical assistance of D. Sackett Elgin, Ill.—p. 337
- *Creatinine Clearance During Hyperthermia of Diphtheria and Fevers. W. H. Grant and Grace Medes, Minneapolis.—p. 345
- Effect of Alcohol on Spleen Volume. F. D. McCrea, D. F. Marion, W. W. Tyson and W. P. Kavanagh, Durham, N. C.—p. 350
- Some Studies on Etiology of Granuloma Inguinale. H. A. Poindexter, Washington, D. C.—p. 353
- Stereoscopic Roentgenography of Bedridden Pneumonia Patients. P. C. Hodges and T. H. Lipscomb, Chicago.—p. 357
- Response to Infection in Bone Marrow Dyscrasias. F. H. Bethell, Ann Arbor, Mich.—p. 362
- *Elliptic Human Erythrocytes. Observations of Size, Volume and Hemoglobin Content. D. J. Stephens and A. J. Tatelbaum, Rochester, N. Y.—p. 375
- Colloidal Gold Reaction in Five Hundred Cases of Neurosyphilis. W. C. Menninger, Topeka, Kan. and L. Bromberg, Chicago.—p. 383
- Comparison of Various Concentrations of Sodium Oxalate Solution with Heparin for Determination of Packed Cell Volume. O. S. Walters, St. Louis, and J. W. May, Lawrence, Kan.—p. 385
- Occurrence of Eggs of *Heterodera radicola* in Human Feces. A. E. Keller, Nashville, Tenn.—p. 390
- Virus of Lymphogranuloma Inguinale. Its Cultivation, Its Antigenic Value as Vaccine and Also in Production of Antiserum. J. T. Tamura, Cincinnati.—p. 393
- Water Studies in Obesity. E. C. Bartels, Springfield, Ill., and B. Blum, Rochester, Minn.—p. 401
- *Modified Method for Determination of Blood Cholesterol. J. E. Andes, New Orleans.—p. 410
- Enumeration of Blood Platelets. I. Olef, Boston.—p. 416
- Valves Versus the Motor Blower in the Benedict Type of Metabolism Apparatus Now in Common Use. P. Roth, Battle Creek, Mich.—p. 436

Creatinine Clearance During Hyperthermia.—Grant and Medes studied the creatinine clearances in dogs during the hyperthermia produced by diathermy and creatinine clearances in patients with fever caused by infection in order to determine the effect of general systemic hyperthermia on creatinine clearance and the extent to which any changes observed in infectious fevers may be referred to the elevation of body temperature. In contrast to the general parallelism that exists between body temperature and creatinine clearance in dogs during diathermy when all other factors are being held as nearly constant as possible, the creatinine clearances in patients with fever undergo wide variations. In the series of fifteen patients observed, the clearances during the height of the fever varied from 600 to 60 per cent of their postfebrile values. A survey of the relationship between blood pressure and filtration during the fever revealed similar irregularities. Nine patients showed an elevation of all three factors, temperature, blood pressure and filtration, three showed an increase in blood pressure with a fall in filtration, and in one patient filtration and blood pressure were lowered, while in the remaining two cases the changes in blood pressure and filtration were insignificant. The group whose behavior is the most difficult to explain on a theoretical basis is that in which blood pressure and temperature were both elevated while filtration was lowered. Two other known factors may be considered as responsible for this behavior: (1) There may be a decrease in the volume flow of blood to the kidney in spite of an elevation of temperature and blood pressure, and (2) there may be a direct effect of the infection on the kidney, resulting in a temporary closing off of some of the glomeruli or in an altering of their permeability.

Response to Infection in Bone Marrow Dyscrasias.—Bethell hopes that, by observing the degree of bone marrow response as measured by the total neutrophil count, the effort of the response as indicated by the percentage of immature forms and the severity of the infection as interpreted by the percentage of basophilic granule cells, some information may be gained concerning the physiology of the bone marrow in certain pathologic states. He observed that the response of the bone marrow to infection is dependent on its pre-existing func-

tional state as well as on the nature and severity of the infectious process. The estimation of the number of neutrophils in the circulating blood and their classification into nonfilament and filament nuclear forms does not differentiate between the intrinsic and extrinsic factors involved in the response. The occurrence of basophilic granules in the cytoplasm of the neutrophils is, on the other hand, solely a result of the infection. The total neutrophil count may be regarded as a measure of the degree of the bone marrow response, the percentage of nonfilament or immature forms as an indication of the effort of the response and the percentage of neutrophils exhibiting basophilic granulation as a sign of the severity of the infection. By correlation of these data, obtained from successive blood examinations of the same subject, it is possible to ascertain the nature of the bone marrow response as well as the progress of the infection. The author presents six cases of infection in the presence of various types of bone marrow dyscrasia which illustrate the manner in which this correlation is carried out. In these cases the percentage of neutrophils exhibiting cytoplasmic basophilic granulation gives a more accurate indication of the severity and the progress of the infection than either the total number of neutrophils per cubic millimeter or their degree of immaturity. Of the four fatal cases presented, pathologic diagnoses were available in three, and, so far as the methods of examination permitted, the conclusions arrived at by the blood studies were confirmed.

Elliptic Human Erythrocytes.—Stephens and Tatelbaum discuss the hematologic studies of fifteen members of an Italian family, eight of whom exhibited elliptic erythrocytes. In each of the affected persons there was an increase in the number of red blood cells per cubic millimeter, with a definite decrease in the mean corpuscular volume and the mean corpuscular hemoglobin. The number of red blood cells was inversely proportional to the mean cell volume and hemoglobin content. Two dimensional measurements of cells in fixed, stained smears indicated that the decrease in size involved the round cells and the abnormally shaped cells to approximately the same extent, without increase in the variability of distribution of cell size. In the unaffected members of the family the erythrocytes were normal in shape, size, volume and hemoglobin content.

Determination of Blood Cholesterol.—Andes states that, in the colorimetric estimation of blood (or serum) cholesterol, plaster of paris seems to be the most satisfactory desiccating medium and chloroform appears to be the most suitable extracting medium. He describes a method for the determination of cholesterol in blood (or other body fluids). The blood is dried on plaster of paris and the cholesterol is extracted with chloroform, the entire extraction and color development being completed in a Folin-Wu sugar tube.

Journal of Pediatrics, St Louis

6: 1-150 (Jan.) 1935

- Celiac Disease (Chronic Intestinal Indigestion). Report of Three Cases with Autopsy Findings. J. H. Hess and O. Saphir, Chicago.—p. 1
- Athletic Performance as Function of Growth. Speed in Sprinting. H. Gray and F. J. Daly, San Francisco.—p. 14
- Hemorrhage and Subsequent Calcification of Suprarenal. C. E. Snelling and I. H. Erb, Toronto.—p. 22
- Chorea. Is It a Manifestation of Rheumatic Fever? J. R. Gerstley and S. A. Wile, Chicago. E. I. Falstein, Elgin, Ill. and May Gayle, Houston, Texas.—p. 42
- *Occurrence of Blood Filled Cysts on Cardiac Valves in Infancy. S. D. Mills, Rochester, Minn.—p. 51
- *Sodium Thiocyanate in Prophylaxis and Treatment of Bacillary Dysentery with Especial Emphasis on the Shiga Type. Progress Report Covering First Two Year Period of Clinical Study. E. C. Mitchell and D. W. Goltman, Memphis, Tenn.—p. 57
- Pulmonary Lesions Associated with Intra Uterine Asphyxia. M. Rosenthal, Brooklyn.—p. 71
- Gonorrheal Vaginitis in Children Treated by Diathermy. One to Three Year Follow Up. R. J. Crossen, St. Louis.—p. 82
- *Continuous Intravenous Therapy in Infants. J. E. Ashby and H. L. Moore, Dallas, Texas.—p. 88
- Hydrocephalus of Unusual Size. D. J. Dolan and M. J. H. Grand, New York.—p. 94

Blood-Filled Cysts on Cardiac Valves in Infancy.—Mills states that the routine postmortem examinations of seventy-two hearts of new-born infants and children during a period of six months disclosed the rather frequent occurrence

of small, blood-filled elevations on the auricular surfaces of the atrioventricular valves. Twenty-three, or 32 per cent, disclosed the presence of blood-filled cysts on the cardiac valves. The majority of the subjects were full-term infants who had either been stillborn or had died within the first week of life. The oldest child of the group with cysts on the cardiac valves was 8 months of age, the youngest, a premature infant in the seventh month of gestation. Although the largest number of cysts (fourteen) occurred in the case of this premature infant, none were found in a group of five hearts from fetuses 6 months old or less when the cardiac valves were studied microscopically in serial section. The causes of death in the entire series were principally trauma at birth, congenital malformations or infection among older children. The site of predilection for these nodules is the atrioventricular valves, with the tricuspid valves slightly the favorite. The presence of a blood-filled cyst also was noted on a papillary muscle in one case. These cysts usually are found from 1 to 3 mm removed from the free edges of the valve on its auricular surface, although they may occur anywhere on the surface of the leaflets. It is usual for these cysts to be multiple, and occasionally they may be grouped so closely that the surface of the valve resembles a raspberry. Cysts on the semilunar valves project on the ventricular aspect of the valve near the base of the cusp. The cysts vary in size from that of a pinpoint to 2 mm in diameter. They may be multilocular, and this is particularly apparent when they are seen microscopically. Grossly, they appear as dark, sharply circumscribed, rounded elevations on the smooth surface of the valve. They are easily visible in a good light with the naked eye because of the contrast of the dark contents of the cyst against the pale background of the surface of the valve. The cyst usually is a round, smooth-walled cavity, pushing up the endothelium of the surface of the valve beneath which it lies. The wall is composed of a few concentric layers of fibrous connective tissue, and the lining of the cyst is made up of a single layer of spindle shaped cells with long, oval nuclei that cannot be distinguished from endothelium. The cysts may be multilocular or a series of communicating cavities. If the pressure within them becomes too great, the partitions may rupture, thereby converting a group of cysts into one large cavity. Small outpouchings from the periphery of the wall of the cyst, generally on the ventricular side, may be seen. In addition, several small, oval or elongated spaces are seen, which apparently are lined with endothelium, lying within the substances of the valve and running in a direction at right angles to the long axis of the leaflet. The contents of the cysts are chiefly erythrocytes, with occasional leukocytes and cells desquamated from the inner wall of the cavity. The explanations that have been offered by Elsasser, Bertu, Nichols, and Haushalter and Thiry for the origin of these cysts are discussed and the present theory is given that they are cystic dilatations at the ends of endothelial-lined canals in the substance of the valves.

Sodium Thiocyanate in Treatment of Bacillary Dysentery.—Mitchell and Goltman observed that sodium thiocyanate in the dosage of one-third gram (0.02 Gm.) per kilogram of body weight orally seems to have definite prophylactic value in Shiga dysentery and also if given intravenously in the dosage of 20 mg. per kilogram of body weight on successive days within twenty-four hours after onset in Shiga dysentery. It does not appear to influence dysentery due to other strains. However, these types of dysentery are usually mild in onset and in all the authors' work have been in progress several days before being seen. The drug does not influence either the course of the disease or the mortality when it is given as late as thirty hours after onset. It is probably of little value when given after twenty-four hours. When the drug is given early, not later than twenty-four hours after onset, it has a decided value in influencing the mortality and the severe toxic course of Shiga dysentery. The mortality with the new treatment in the charity services has not shown a material improvement over previous years. This is attributable, in the authors' judgment, to the fact that the cases in such services are rarely seen until the disease has been in progress for more than twenty-four hours. In the Osceola epidemic (private cases) in which the

drug was administered at the first appearance of diarrhea, only one patient in twenty-six died. The effectiveness of sodium thiocyanate therapy clearly depends on its early use. No claim for sodium thiocyanate (rhodanate) as a specific, either in the prevention or in the treatment of bacillary dysentery, is made by the authors as a result of their clinical experience. Their preliminary results, however, lead them to believe that their method of treatment is worth further trial, and they hope to publish at a later date a much more complete clinical report in which a larger number of institutions and physicians have participated.

Continuous Intravenous Therapy in Infants.—Ashby and Moore have found the scalp by far the most logical site for the continuous administration of a solution in the vein, because (1) the blood vessel is stable, (2) the application is easy, (3) the patient may move or toss the head, the arms and legs being free, and (4) the vessels in this area are the smallest. It is their contention that the greatest difficulty in the use of continuous intravenous administration, i. e., clogging of the needle or cannula by blood, is thus overcome. Many small tributaries of the superficial temporal veins draining the parietal and frontal aspects of the scalp are found in addition to the two or three small tributaries of the frontal and supra-orbital veins, which drain the anterior part of the scalp and flow down over the middle of the forehead. The latter vessels are the authors' first choice, because the child can roll his head from side to side without interfering with the flow of the solution. The infusion is given entirely by gravity. The container is an ordinary 300 cc. arsphenamine tube, connected by a short piece of rubber tubing to a drip bulb, commonly known as the rectal drip, from which a piece of rubber tubing from 3 to 4 feet in length passes to a small glass adapter half an inch in length. The needle, a 28 gage one-half inch so-called tuberculin needle, fits the adapter. The container hangs on the hook of a standard, adjustable in height. This adjustability regulates the rate of flow, which also may be regulated by a screw clamp inserted anywhere between the drip bulb and the needle. The needle may be kept in the vein most efficiently by a 3-inch strip of adhesive tape, 2 inches wide. This is placed firmly over the needle, adapter and skin directly in front of the needle. A small piece of cotton is placed under the adapter. In case of movement of the scalp, the skin, vein and needle move together without disturbing the flow. The rate of flow is judged by the number of drops per minute, this varies from 5 to 30 drops. The first 200 or 300 cc. is allowed to enter the vein at a rate of from 15 to 20 drops per minute, and then the rate of flow is usually reduced to 10 or 12 drops per minute and regulated according to the heart rate, the beginning of diuresis and the clinical appearance of the patient. The solution at ordinary room temperature is regarded as safe. The authors give blood transfusions in the same small blood vessels with the same sized needle. Their transfusion apparatus does not include the drip bulb, but a three way stopcock is inserted. The blood is drawn from the arsphenamine tube into a syringe fitting the stopcock, the valve is turned and the blood injected into the vein slowly. Citrated blood, which is strained when placed in the container, is used. Obstruction of the needle is rare. The authors have employed this procedure in 511 cases.

Maine Medical Journal, Portland

26 114 (Jan.) 1935

- Evolution of the Medical Examiner and His Present Day Problems W. E. Freeman, Yarmouth—p. 3
- Routine Hospital Laboratory Examinations M. Warren, Portland—p. 9
- Some Facts About Wright's Stain J. T. Fitzgerald, Portland—p. 10

Medical Annals of District of Columbia, Washington

4 128 (Jan.) 1935

- Malaria Treatment of Neurosyphilis W. Freeman, Washington—p. 1
- The General Practitioner's Concept of Treatment of Arthritis W. M. Yater, Washington—p. 4
- Tendon Transplantation for Paralysis of External Rectus Muscle Report of Case E. L. Goodman, Washington—p. 11
- Empyema of Ureteral Stump Report of Case R. M. LeComte, Washington—p. 13
- Dermatologic Conditions Encountered by the Otolaryngologist and Ophthalmologist C. B. Campbell, Washington—p. 14

Medical Bull of Veterans' Adm, Washington, D C

11 77 184 (Oct) 1934

- Intrathoracic Changes in Tularemia A Blumberg and R I Russell —p 77
 Diagnosis of Pleuropulmonary Disease H H Williams —p 84
 Cardiac Neuroses C H Ketterer —p 94
 Spinal Anesthesia H E Bundy —p 99
 Pernicious Anemia with Combined Sclerosis D I Liberman —p 102
 Surgical Use of Ultraviolet Irradiated Mineral Oils A H Matros and J D Brooks —p 106
 *Relationship of Influenza and Epidemic Encephalitis J H Hurst —p 110
 Weak or Flat Feet E E Hobby —p 135
 Transillumination in Orchitic Atrophy H A Brady —p 138
 Therapeutic Value of Music for Psychotic Patients A H Pierce —p 142
 Beneficial Effects of Music for the Mentally Ill W C Richter —p 148

Relationship of Influenza and Epidemic Encephalitis

—Hurst's study reveals that epidemic encephalitis is an acute disease with an incubation period of about ten days spreading slowly from site to site and tending to persist for a considerable time in the locality affected. In certain cases the infection is through open skin lesions it affects men more than women and attacks parts of the central nervous system especially the basal ganglions. It has a relationship to herpes which is interesting in view of the predilection of that disease for the posterior root ganglions of the spinal cord. The fact that herpes appears in some cases of influenza is of interest but is not sufficient to warrant claim of a common entity for the two diseases in the face of convincing evidence to the contrary. Epidemic encephalitis lacks the catholicity of infection, rapidity of spread and brief duration as a disease, and as an epidemic, the chest attack and the characteristic course, complications and sequels of influenza. The evidence fails in any particular to indicate a common entity for influenza and epidemic encephalitis. It fails to indicate that the presence of influenza predisposes to encephalitis either in the mass or in the individual. The cases diagnosed as influenza at the time of onset in an epidemic which later require a correction of diagnosis to encephalitis are extremely rare. The possibility must be admitted for cases that within a year or two after a disease diagnosed as influenza show unmistakable permanent residuals of epidemic encephalitis—such as masked face, parkinsonian tremor, festinating gait and speech defect with or without mental changes sometimes found in this disease—provided that in the interval there has been no showing of any intercurrent disease which, in sound medical judgment, could be interpreted as epidemic encephalitis.

Military Surgeon, Washington, D C

76:57 112 (Feb) 1935

- Stopping Power C Goodard —p 57
 Sabia an Immediate Pneumococcus Typing and Its Value to Small Station Hospitals S White —p 72
 Looking Backward H W Jones —p 74
 Medical Reserve Trains at the Mayo Clinic Oct 7 to 21 1934 T M Carow —p 84
 Analysis of Physical Examinations for the Civilian Conservation Corps at Richmond Virginia Oct 1 to 15 1934 N Mercer —p 88

Nebraska State Medical Journal, Lincoln

20 41-80 (Feb) 1935

- Analysis of Goiter Cases at the University Hospital C E Gurney Omaha —p 41
 Thyroid Heart Its Problems and Treatment M C Anderson Omaha —p 44
 Persistent Hyperthyroidism Case Reports J D Bisgard Omaha —p 46
 Hyperplastic Goiter with Temporary Cardiac Changes Case Studies in Goiter Number Seven A Brown Omaha —p 50
 Management of Thyroid Malignancies N F Hicken Omaha —p 52
 Struma Lymphomatosa (Hashimoto) Report of Ninth Case C Emerson Lincoln —p 58
 Progress of Surgery Review of Literature for Last Six Months of 1934 H H Davis Omaha —p 60
 Diagnostic Therapeutics in Gastro-Intestinal Conditions F W Heagy Omaha —p 63
 Induction of Labor L S McGoogan Omaha —p 67

Management of Malignant Conditions of Thyroid—In determining the efficacy of surgical and radiation therapy Hicken studied 264 cases of malignant disease of the thyroid. The radiosensitive tumors are the lymphosarcomas the malignant adenomas and the papillary adenocarcinomas. Those which do not respond to either the interstitial or roentgen therapy are the spindle cell sarcomas the carcinoma-sarcomas and the

scirrhous carcinomas. Biopsies should be made of every suspected malignant goiter, for the amount of radiation given depends on the type of neoplasm encountered. Complete removal of the neoplasm is always to be desired. Partial excision of the major portion of the infiltrating tumor cervical decompressions, tracheotomies and biopsies are valuable surgical adjuncts. A combination of surgical and roentgen therapy is more effective than either agent alone. Recurrent malignant lesions should always be excised and the local areas submitted to intensive irradiation. Metastatic lesions offer no contraindications to active surgical and roentgen therapy. The malignant adenoma comprises 90 per cent of all thyrogenic malignant cases and gives an excellent response to surgical and roentgen treatments. Pessimism and apathy have no place in the treatment of malignant goiters.

New England Journal of Medicine, Boston

212:87 136 (Jan 17) 1935

- Vaginal Hysterectomy O N Eastman Burlington Vt —p 87
 Gynecologic Problems of Interest to the Surgeon in General Practice A H Morse New Haven Conn —p 90
 What Is Wrong with the Patient Who Feels Tired Weak and Toxic? W C Alvarez Rochester Minn —p 96
 Mesenteric Thrombosis W J P Dye Wolfeboro N H —p 105
 Prevention or Postponement of Death from Heart Failure C S Burwell Nashville Tenn —p 108

212 137 182 (Jan 24) 1935

- Agranulocytosis Its Etiology and Treatment H Jackson Jr and F Parker Jr Boston —p 137
 Bleeding Gastric Ulcer G A Moore Brockton Mass —p 149
 *Typical Epileptic Seizures in Course of Schizophrenia Report of Two Cases E F Falsey New Haven Conn —p 153
 Primary Carcinoma of Vagina J T Williams Boston —p 156
 General Considerations and Principles of Excretion Urography M Swick New York —p 158

Epileptic Seizures in Course of Schizophrenia—Falsey presents two cases of typical epileptic seizures in the course of schizophrenia. Both instances occurred in young persons in whom arteriosclerotic and syphilitic factors may be definitely ruled out as possible etiologic factors in the pathogenesis of the seizures. In each instance the seizures were typically epileptic and occurred for the first time during a catatonic exacerbation of a rather long standing schizophrenia. In neither instance have the seizures recurred since the acute catatonic phase of the psychosis has subsided. In one case there was a mild infection (nasopharyngitis) and a mild elevation of non-protein nitrogen (44.4 mg during the period of epileptic manifestations). It appears that the epileptic seizures were either released by the catatonic episodes or were the result of the same etiologic factors involved in the exacerbation of the psychosis. Thus they appear to be a reflection of deep-seated vegetative metabolic or psychobiologic changes, which not only were concomitant with the psychosis but so lowered the convulsive threshold that epilepsy appeared.

Public Health Reports, Washington, D C

60 37 70 (Jan 11) 1935

- Incidence of Amebic Dysentery in New York City Note R Olesen and J Rosenbluth —p 37
 Effect of Experimental Local Irritation on Susceptibility to Vaccine and Encephalitis Virus (St Louis Type) C Armstrong —p 43
 Blood Cholesterol in Leprosy Study of Total and Free Cholesterol Cholesterol Esters Van den Bergh Reaction and Complement Fixation Test S H Black and H Ross —p 50

50 71 94 (Jan 18) 1935

- Rat and Rat Flea Survey of Los Angeles Harbor H E Trimble and G C Sherrard —p 74
 Administrator's Point of View of Psychiatric Services in Correctional Institution J W Sanford —p 79

Yale Journal of Biology and Medicine, New Haven

7 191 274 (Jan) 1935

- Psychiatrists Neurologists and the Neurosurgeon H Cushing New Haven Conn —p 191
 Clinical Diagnosis of Dissecting Aneurysm of Aorta J B Lounsbury New Haven Conn —p 209
 Psychoses Complicating Other Diseases E Kahn New Haven Conn —p 215
 Commentary on Recent Advances in Clinical Obstetrics H Thoms New Haven Conn —p 225
 Nature and Origin of Proteins R J Block, Scarsdale N Y —p 235

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Physical Medicine, London

157 176 (Jan.) 1935

- The Young Male Athlete R. Cove Smith—p. 159
 The Young Woman Athlete Louise McIlroy—p. 161
 Treatment of Paralysis Due to Spinal Injury C. L. Gowland—p. 162
 Manipulative Surgery in Athletic Injuries W. E. Tucker—p. 164
 Rider's Strain Notes on Muscle Strain in General M. Smart—p. 166
 The Car and Its Driver Some Observations on Driving Posture M. E. Ormsby—p. 170
 Infra Red and Ultraviolet Irradiation of Injuries in Sport W. A. Troup—p. 172

British Journal of Radiology, London

164 (Jan.) 1935

- *Protection of Radium Workers from Gamma Radiation G. W. C. Kaye, G. E. Bell and W. Binks—p. 6
 Tissue Culture I. Advantages and Limitations as Research Method H. B. Fell—p. 27
 Alteration in Sensitivity of Cells Toward Radiation Produced by Cold and by Anaerobiosis J. C. Mottram—p. 32
 Time Intensity Factor in Relation to Genetic Effects of Radiation H. D. Griffith and K. G. Zimmer—p. 40
 *Simple Method of Sinus Radiography in Erect Posture J. S. Fulton—p. 48
 Syringe for Intra Oral Administration of Lipiodol J. Raffan—p. 52

Protection of Radium Workers from Gamma Radiation—Kaye and his associates studied experimentally the two main factors of gamma-ray protection, viz., remoteness and lead shielding. The minimal shielding and the tolerance working distance have been determined under various conditions on the assumptions of a daily tolerance dose of 0.2 roentgen and a Sievert gamma-ray unit "dose" of 8 roentgens. The results are also calculable in simple cases from the lead transmission curve of gamma rays, which has also been determined under conditions taking full account of scattering. The results lend support to the recommendations of the International and British Committees for X-Ray and Radium Protection and furnish evidence that the recommendations provide a reliable basis for radium protection, particularly on such points as radium storage, the employment of temporary workers and the importance of expeditious manipulation in busy radium centers.

Method of Sinus Roentgenography in Erect Posture—Fulton submits a method for examining the nasal accessory sinuses in the erect posture, which permits the use of a focal film distance of 4 or 5 feet. The rigid alignment of the x-ray tube and the film permits the use of the smallest possible cone. With a small aperture cone good roentgenograms may be obtained without the use of a Potter-Bucky diaphragm, and the object film distance can thus be reduced to a minimum. For those who desire still further to eliminate scattering it is simple to incorporate a Lysholm grid without much increasing the object film distance. The method permits the taking of four projections on a single 15 by 12 inch film. The apparatus consists of a tube stand, a special caset frame and a telescopic stool. X-rays reach the caset only through a circular aperture, 5½ inches in diameter, which is cut in the center of the frame. Thus, with the caset pressed into each of the four corners in turn, four circular images are obtained on the film, each being 5½ inches in diameter, the centers of these being 6 inches apart. In the subsequent blackening of the surrounding film, the images are cut down to have a diameter of 5 inches in order to allow for any slight error in the centering of the cone. The provision of a rigid head clamp is essential. The most suitable seat for the patient is one in which the height may be varied by the roentgenographer while the patient remains seated. The usual procedure is adopted in fixing the patient's head. In the mentovertex projection, the patient turns round and faces the tube, thus bringing the right side to the left. To preserve a uniform relationship on the film, the caset is turned upside down for this exposure. Generally, 240 milliamperes seconds and a kilovoltage between 55 peak kilovolts for the lateral and 75 peak kilovolts for the mentovertex projection in the average patient are employed. This energy can be delivered through a 2½ kilovolt tube. When the four exposures have been made, the surrounding film is blackened by giving it a light exposure at low kilovoltage through a masking board, which consists of

three layers of three-ply wood. In the center layer the wood is replaced in parts by four disks of 8 pounds of lead, 5 inches in diameter, so placed that they protect the four circular roentgenograms. Embedded in this layer also are the letters R and L (right and left). The board is completed by the addition of two layers of three-ply wood, one on each side of the center portion, all three being firmly glued together. On the top layer, two number guides are countersunk in such a manner that small lead numerals may be slipped into the guides to indicate the date and the patient's serial number.

British Medical Journal, London

1187 1228 (Dec. 29) 1934

- Estrus Producing Hormones E. C. Dodd—p. 1187
 Problem of the Septic Hand R. Kennon—p. 1189
 Tropical Sprue and Its Modern Treatment N. H. Fairley—p. 1192
 *Fatal Case of Subacute Yellow Atrophy of Liver After Cinchophen T. N. Fraser—p. 1195
 Advantages of Nitrous Oxide and Air Analgesia in Midwifery of General and Hospital Practice J. Eklam—p. 1196
 Postoperative Management of Acute Empyema Thoracis G. A. Mason—p. 1197

Fatal Case of Atrophy of Liver After Cinchophen—Fraser cites a fatal case of acute rheumatism, which failed to respond properly to the usual remedies and was then treated with cinchophen. The total amount of cinchophen taken was 37½ grams (244 Gm.), at the rate of one tablet on five successive days. Jaundice appeared five days after the beginning of treatment. The question of idiosyncrasy has been raised by some authorities (Rabinowitz, Weir and Comfort) and probably had some connection in this case owing to the small dose of the drug that was taken. The pathologic features were quite classic and were similar to those of other reported cases, they were of interest from the close resemblance to the condition encountered in cases of trimethylololene poisoning. The advisability of the abandonment, or at least better control, of the administration of cinchophen should be considered.

1 146 (Jan. 5) 1935

- We Have Reason to Think W. L. Brown—p. 1
 Laboratory Testing of Disinfectants L. P. Garrod—p. 5
 Provision for Major Surgical Treatment of Pulmonary Tuberculosis F. Heat—p. 8
 Review of One Hundred Consecutive Gallbladder Operations J. V. Black—p. 11
 Preventive Immunization in an Institutional Epidemic of Scarlet Fever F. L. Scott and W. Morton—p. 12
 So Called Acidosis in Childhood Note R. A. M. Scott—p. 13

1 47 92 (Jan. 12) 1935

- The Surgeon and Pain J. R. Learmonth—p. 47
 Familial Acholuric Jaundice Simulating Lederer's Anemia R. V. Murray Lyon—p. 50
 Preoperative Preparation of Cases with Grave Intra Abdominal Hemorrhages Note K. H. Watkins—p. 52
 Sarcoma of the Tongue Report of Case J. C. Ross—p. 54
 *Treatment of Cholera with New Anticholera Serum Preliminary Note H. Ghosh—p. 56

Treatment of Cholera with Anticholera Serum—Ghosh obtained by anaerobic culture of the cholera vibrio in a special broth a toxin which, when injected in small doses intravenously in rabbits, produced cholera-like diarrhea. He obtained sufficient corroborative evidence of the presence of a toxin in this medium by experimentally producing cholera-like diarrhea in laboratory animals. This toxin was prepared from only one strain of cholera vibrio, as it was found to produce uniform toxin, provided the medium was prepared exactly according to formula. The production of toxin depended on conservation of the virulence. The author observed clinically that a single sodium chloride transfusion and a single intraperitoneal injection of from 30 to 40 cc of serum, according to the severity of the symptoms, diluted with 200 cc of physiologic solution of sodium chloride diminished the frequency of the stool within two or three hours, and the patient usually passed urine within four to five hours. Of thirty-two cases treated during the second exacerbation of an epidemic, as evidenced from the increase in the rate of mortality in control cases, only four patients died, of whom one was admitted to the hospital three days after the onset of the disease, one died of excessive purging following administration, by mistake, of high doses of sodium phosphate, and the other two died within two hours of admission before the serum could be absorbed. Of 198 serum treated patients forty died, whereas seventy-three of 211 control patients died.

Clinical Science, London

1: 327-414 (Dec 27) 1934

- Observations on Maladies in Which Blood Supply to Digits Ceases Intermittently or Permanently and on Bilateral Gangrene of Digits Observations Relevant to So-Called Raynaud's Disease T Lewis and G W Pickering—p 327
- Observations on Rate of Water Loss by Man at Rest Part I Description of Constant Temperature and Humidity Room Part II Spontaneous Diuresis During Prolonged Rest P D Argy Hart and E B Verney—p 367
- Cerebrospinal Fluid Pressure in Arterial Hypertension G W Pickering—p 394

So Called Raynaud's Disease—Lewis and Pickering point out that, if all instances of temporary arrest of the circulation to the finger or to any other part of the body that is particularly prone to become cold and all instances of symmetrical gangrene of digits without demonstrable obstruction to the main arteries of the limb are still to be classed as instances of "Raynaud's disease," a number of quite distinct conditions will continue to be grouped together. Such grouping cannot fail to obstruct inquiry into the causation of the various maladies and to prevent proper appreciation of their natural history. Many distinct maladies are being confused together and their separation is quite essential to the progress of future studies. The authors use the term "Raynaud's phenomenon" to signify active and intermittent closure of small arteries of the order of those supplying the digits, a closure manifesting itself clinically in a pallid or fully cyanotic state of the affected skin. This phenomenon can be a purely spasmodic affair, but it can come also when there is obstructive disease in the digital arteries themselves or in vessels proximal to these. This structural disease being ultimately responsible for the whole circulatory abnormality. The original disturbance may be a sudden and nonrecurring event, leaving behind it a proneness to attacks of cyanosis, which wrongly are regarded as signifying active disease. The events in each case must be regarded on their individual merits, and abnormal vasomotor influences should not be invoked in explanation because it has become the traditional and convenient line of reasoning for the whole group but only when there is clear supporting evidence of such causation. It is a mistake to consider gangrene as the result of an uncomplicated spasmodic disorder. When the circulation to the skin is shut off, there comes into immediate action a mechanism producing vasodilatation and manifesting itself ultimately in reactive hyperemia. Constriction of the vessels, produced through sympathetic channels, will counteract this dilator mechanism in the early stages of its establishment but as ischemia is continued the vasodilator factor will become increasingly intense, and sooner or later the nerves themselves will become functionless locally. Thus it would seem inevitable that a nervous vasoconstriction cannot be maintained sufficiently long to kill the skin. When gangrene occurs a structural change such as thrombosis has happened and permanently plugs the vessel. The view that thrombosis is an important factor must rest ultimately on microscopic demonstration and microscopic examination of the tissues concerned has not yet been carried nearly far enough. The authors suggest that intimal changes including thrombosis are usually or always responsible for the obliteration of small arteries leading to necrosis, and they have in mind not only the isolated attacks of discoloration and necrosis such as are seen in the bilateral digital gangrene but also the minute necrotic foci which form on the fingers in cases that are primarily spasmodic.

Cerebrospinal Fluid Pressure in Arterial Hypertension—Pickering states that the general clinical features presented by hypertensive patients with cerebrospinal fluid pressures of 250 mm of water and more contrast strongly with those presented by patients having lower pressures. The former are younger the kidneys are usually severely damaged and the disease progresses rapidly to a fatal termination. The latter are older the kidneys usually escape severe damage and the disease progresses less rapidly. Every patient with a cerebrospinal fluid pressure of more than 250 mm of water developed albuminuric retinitis. With one exception, every patient with a lower cerebrospinal fluid pressure had either no retinal lesion or the lesions characterizing arteriosclerotic retinitis. The author suggests that the essential difference between these two forms of retinitis is the addition in the albuminuric type of neuro-

retinal edema resulting from increased intracranial pressure. In individual patients with high blood pressure, the cerebrospinal fluid pressure has been found unaltered during headache and during acute attacks of coma and convulsions unassociated with uremia. There is a relation between high diastolic blood pressure and high cerebrospinal fluid pressure, and the former is one of the factors determining the latter.

Indian Journal of Medical Research, Calcutta

22: 199-424 (Oct) 1934

- Foundation of Biochemical Method of Standardizing Vitamin D or Irradiated Ergosterol N K Basu—p 199
- Simple Method of Growing Hookworm Larvae P A Maplestone—p 203
- Studies on Vitamin B₁ Part I Solubility of Vitamin as Present in International Standard Preparation G Sankaran and N K De—p 215
- Id Part II Iso Electric Point as Determined by Electrophoresis of Solutions of Vitamin Made from International Standard Preparation G Sankaran and N K De—p 233
- Iodine Content of Indian Foodstuffs M Patnaik—p 249
- Some Common Indigenous Remedies R N Chopra and S Ghosh—p 263
- Biologic Assay of Digitalis Preparations in Tropics Part IV R N Chopra J S Chowhan and N De—p 271
- Id Part V Potency of Lanadigin (Glucoside of D Lanata) and Its Relation to Standard Digitalis Powder (B P 1932) R N Chopra J S Chowhan and S Lal—p 279
- Some Inorganic Preparations of Indian Indigenous Medicine Part I Abhra Bhasma R N Chopra S Ghosh and A Dutt—p 285
- Some Experimental Observations on Venom of Indian Cobra K Ven katchalam and A N Ratnagiriswaran—p 289
- Studies of Antigenic Structure of Vibrio Cholerae Part VII Two Acid Soluble Protein Fractions R W Linton and B N Mitra—p 295
- Structure of Cholera and Cholera like Vibrios Notes R W Linton D L Shrivastava and B N Mitra—p 309
- Staining of Mycobacterium Lepae in Tissue Sections Note J Lowe—p 313
- Bacteriophage Essential Oils and Vaccination and Their Effects on Cholera Mortality J Morison E M Rice and R A Hawthornthwaite—p 317
- Studies on Nutritive Value of Milk and Milk Products Part I N C Datta and B N Banerjee—p 341
- Studies in Lipid Metabolism Part I Variation in Cholesterol Content of Blood and of Different Organs in Pigeons Consequent on Administration of Chloroform N C Datta—p 353
- Concentration of Antivenene by Ammonium Sulphate Method S D S Greal—p 365
- Nutritive Value of Indian Vegetable Foodstuffs Part V Nutritive Value of Ragi (Eleusine Coracana) S P Niyogi N Narayana and B G Desai—p 373
- Relationship of Skin and Nerve Leprosy E Muir—p 383
- Cutaneous Leishmaniasis as Natural Infection of Dog in India J A Sinton and H E Short—p 393
- Use of Bacteriophage Against Cholera in North Arcot District Madras Presidency, in 1933 K. C K E Raja—p 397

Relationship of Skin and Nerve Leprosy—Muir explains the distinction between neural and cutaneous leprosy by the aid of histologic observations and the leprolin test. The main factor determining the one type from the other is shown to be the degree of resistance. Another important factor is the relatively low resistance and cellular response to lepra bacilli in the subcutaneous nerves as compared with the skin. The importance is dwelt on of the distinction between resistant and nonresistant types in the diagnosis, prognosis, prevention and treatment of leprosy. For examining and comparing early lesions of the cutaneous and neural types, small elliptic pieces of skin and subcutaneous tissue with nerve branches attached are excised from typical macular lesions. Their similarity to the larger macules makes their nature recognizable, and as they are small the whole lesion can be excised. The main clinical distinctions between the neural and cutaneous macule are, in the neural macule, anesthesia on light touch, raised and indurated marked erythema, marked keratosis, anhidrosis and depilation and recognizable hypopigmentation, especially if capillaries are emptied by pressure with a watch-glass, and, in the cutaneous macule, sensation on light touch flat and soft, erythema slight or absent, keratosis, anhidrosis and depilation slight or absent and hypopigmentation generally more easily recognized. There is greater cellular response, in spite of fewer bacilli being present, in the neural than in the cutaneous type of macule. Especially in the cutaneous type there is, in proportion to the concentration of bacilli in the corium and nerves far greater cellular response in the former than in the latter. The bacillary concentration is greater in the nerves than in the corium, this being most noticeable in the neural type.

Journal of Tropical Medicine and Hygiene, London

38 116 (Jan 1) 1935

- *Clinical Study of Spleen in Blackwater Fever A D Charters—p 1
Experimental Transmission of Trypanosoma Rhodense Through Antelope and Glossina Morontans to Man J F Corson—p 9
Influence of Symbiosis on Pfeiffer's Bacillus E T Thompson—p 11

The Spleen in Blackwater Fever—Charters gives a description of fifteen cases of blackwater fever showing the importance of splenic contraction in the causation of the disease, age incidence and period of residence in the endemic area, tendency to recurrence, prognosis, treatment and prophylaxis. Contraction of the spleen, which is often brought on by stimulation of the sympathetic nervous system, is an essential factor in the causation of blackwater fever. The predisposing effect of blackwater fever is seen only when the last attack has left an enlarged spleen. The prognosis depends on the degree and on the rapidity of contraction of the spleen. The tenderness of the enlarged spleen is an important pre-blackwater fever sign. Immunity is for the most part hereditary in character. Quinine is contraindicated during the hemoglobinuric stage but is a valuable adjunct to treatment when administered in graduated dosage twenty-four hours after the cessation of blackwater fever. Support is given to the theory that post-blackwater pyrexia is due to a persistence of the hemolytic process, relatively mild in degree. Quinine destroys parasites in the spleen by means of its property of causing splenic contraction, which results both in entrance of the drug into the pulp spaces and in expulsion of the plasmodia into the general circulation. In blackwater fever the acute dissolution of malarial parasites is brought about in the same way, the abundance of antitoxin rendering this possible in those cases of the disease which are not preceded by a dose of quinine. A suggested method of treatment is the arrest of splenic contraction by means of splanchnic anesthesia. Prophylaxis depends on regular abdominal examination and on a course of quinine to any patient who shows enlargement of the spleen. When this organ becomes impalpable, administration of the drug is no longer necessary.

Lancet, London

1 168 (Jan 5) 1935

- Differential Diagnosis of Pregnancy A I Robinson and M M Dabrow—p 1
*Cerebral Vascular Accidents Unassociated with Cardiovascular Disease J St C Ellington—p 6
*Saccular Aneurysm of Thoracic Aorta Treated by Wiring with Colt's Apparatus T Thompson H S Souttar and L Howells—p 11
Agranulocytosis Due to Amidopyrine Experimental and Clinical Study of Seven New Cases P Blum—p 14
Digestibility of Common Foodstuffs as Determined by Radiography W C D Maile and K J I Scott—p 21

Cerebral Accidents Unassociated with Cardiovascular Disease—Ellington draws attention to the occurrence of cerebral vascular accidents in healthy persons without cardiovascular disease, describing four cases that are believed to be of this nature. In none of them were the usual causes of cerebral embolism, thrombosis or hemorrhage present. The sudden onset was suggestive of hemorrhage. In two cases the attacks occurred under circumstances in which it might be supposed that the systolic blood pressure was higher than usual. In the absence of any evidence of cardiovascular disease it seems probable that the vascular disturbance had occurred in or round some pre-existing local abnormality. The physical signs in each case suggested a well defined intracerebral lesion. In three cases the combination of aphasia, homonymous field defects involving central vision and transitory sensory disturbance pointed to lesions of the left temporal lobe, while in the other case the signs suggested a destructive lesion in the right cerebellar hemisphere. Although the cerebrospinal fluid was not examined immediately after the attack, no freshly shed blood was found. In two cases the faintly yellow discoloration of the fluid was explained as due to a previous subarachnoid hemorrhage or to an intracerebral hemorrhage at some distance from the ventricle or subarachnoid space. These features make it unlikely that these cases were due to the leakage of cerebral aneurysms. The benign course of the cases makes it improbable that they were due to gliomas, especially as those growths which undergo sudden degenerative change are usually of a rapidly progressive order. A more probable explanation of the nature of these lesions is suggested by the pathologic observations in a similar case which show that a hemorrhage had occurred

into the substance of a pre-existing vascular abnormality of the left half of the pons and left middle cerebellar peduncle. This abnormality had the features of a telangiectasis and was not associated with any vascular abnormality elsewhere in the nervous system or in the skin or other organs. Reference to the literature shows that it is not only capillary telangiectases which are liable to give rise to intracerebral hemorrhage in apparently healthy persons, as similar vascular accidents may occur in association with malformations composed of larger vessels—i.e., arteriovenous angiomas. Unlike the capillary telangiectases that are common in the contents of the posterior fossa, the arteriovenous anomalies appear to have a preference for the posterior part of the cerebral hemispheres. The favorable outcome in the author's four cases causes him to speculate on their pathology. However, their close clinical resemblance to other cases in which postmortem examination has been carried out makes it probable that they were caused by hemorrhage into a vascular anomaly of the type of a telangiectasis or an arteriovenous angioma.

Saccular Aneurysm of Thoracic Aorta—Thompson and his associates present a case of saccular aneurysm of the thoracic aorta in which Colt's method of introducing an expanding wire umbrella has proved successful. The patient received a series of blows on the chest directly before the symptoms of aneurysm appeared. In spite of rest and antisyphilitic treatment the aneurysm was increasing in size, protruding between the ribs and reddening the skin, so that rupture seemed an imminent probability. When Colt's umbrella of gold wire was inserted the tumor sank back into the chest and the severe pain was relieved. Since that time regular inspections of the chest have been made and the improvement has continued over a period of three and a half years after the operation. At the last observation the patient was almost free from symptoms and examination of the chest merely showed a slight pulsation over the seat of the aneurysm. The presence of a positive Wassermann reaction showed clearly that the underlying basis was syphilitic, but the onset of symptoms within a few days of receiving severe blows on the chest would point to the trauma being a predisposing cause. The author believes that the indications for the use of Colt's gold wire wisps in cases of thoracic aneurysm appear to be: 1. Definitely saccular aneurysm and not a mere general dilatation of the aorta. 2. Failure of a previous course of rest and antisyphilitic treatment to prevent an increase in the size of the aneurysm. 3. Involvement of the chest wall and reddening of the skin, suggesting imminent rupture of the sac. 4. Evidence of pressure on the esophagus or left bronchus, especially if small quantities of blood have been expectorated.

Medical Journal of Australia, Sydney

2 831 860 (Dec 29) 1934

- March of Cardiology E Russell—p 831
Chronic Alcoholism: Being Experiences and Conclusions of a General Practitioner After Nearly Fourteen Years of Addiction with Recovery. An Anonymous Contributor—p 840
Surgical Treatment of Chronic Duodenal Ulcer H C Rutherford Darling—p 843

1 136 (Jan 5) 1935

- An Address W N Robertson—p 1
Concerning Role of Heredity in Diabetes Mellitus I. Incidence and Character of Hereditary Diabetes K Maddox and Madeleine Scott—p 7
Sinusitis in Children C Cantor—p 13

Chinese Medical Journal, Peiping

48 1181 1338 (Dec) 1934

- Observations on Maturation of Erythrocytes in Albino Rat W C Ma—p 1194
Cranio-cerebral Survey of Australian Aboriginal J L Shellshair—p 1202
Development of the Upper Eyelid of Chinese with Especial Reference to the Mongolian Fold I C Wen—p 1216
Anthropologic and Roentgenologic Observations on Pelvis of Chinese Women H E Scheyer—p 1228
Cutaneous Nerves of the Chinese Foot M T Pan—p 1335
Coronary Arteries of the Chinese Heart M T Pan—p 1247
Measurements and Observations on Certain Aboriginal Tribes of Szechuan Province W R Morse and A Yoh—p 1267
Some Observations on Northern Chinese Skulls C Chang—p 1282
Anthropometric Study of Students of Chosen Christian College R A Smith—p 1289
Interrelation of Biometric and Clinical Methods in Appraisal of Nutritional Status P H Stevenson—p 1295
Plan for Continuation of Cooperative Embryologic Research in China P H Stevenson—p 1313

Annales de Medecine, Paris

37:1144 (Jan.) 1935

- Bronze Diabetes (Pigmentary Cirrhosis of Liver and Diabetes) M Labbé R Doulin and M Petresco—p 5
- Study of Hepatic Amylosis M Labbé R Boulin, I Bertrand and L. Justin Besançon—p 40
- Idiogenic Spirochetosis of Catarrhal Jaundice Form M Brule—p 62
- Purpura in Hepatic Disease P Ahrani—p 71
- Test of Galactosuria and Diagnosis of Hepatic Insufficiency M Labbé and F Neveux—p 80
- Physicochemical Factors in Formation of Gallstones V de Lavergne and P Kissel—p 105
- Critical Study of Pathogenic Theories of Biliary Lithiasis V de Lavergne and P Kissel—p 117
- Therapeutic Agents of Biliary Secretion E Chabrol and R Charonnat—p 131

Purpura in Hepatic Disease—Ahrani analyzes the purpura occurring in hepatic disease with a view to deciding whether this is a separate entity. The purpura of hepatic disease presents, he says, all the characters of hematogenic purpura. The question, then, is whether hepatic changes alone can produce spontaneous capillary ruptures, lengthening of the bleeding time, decrease of platelets and nonretraction of the clot. He concludes that the only one which can be undeniably assigned to the liver is deficiency of blood coagulability. He therefore believes that this group of purpuras belongs with those of hematogenic type and that the changes of the liver are wholly unable to produce the stigmas of hematogenic purpura. The existence of a separate hepatic purpura should thus be abandoned.

Galactosuria and Hepatic Insufficiency—Labbé and Neveux examined the value of the galactose test of liver function in normal and diseased persons. Simultaneous examinations of galactosuria and glycemia were made. The subjects were given 40 Gm of galactose dissolved in 200 cc of water before breakfast. The glycemia was measured before breakfast and every following half hour. At the same time urine was collected and analyzed for galactose. If the galactosuria was not ended after three hours collection was continued during the day to obtain the total twenty-four hour galactose excretion. The same method was followed on another day after ingestion of 50 Gm of dextrose. Seven healthy medical students furnished the normal subjects. The test was also carried out on nine patients with alcoholic cirrhosis, two with hypertrophic cirrhosis and diabetes, one with cardiac cirrhosis, two with catarrhal jaundice, one with chronic icterus and lithiasis and five other patients. The results, tabulated in detail were interesting but not superior to the usual dextrose test. If galactosuria is produced more easily than glycosuria, it does not mean a greater difficulty for the liver in fixing galactose or an incapacity of the tissues to use this sugar but simply that the permeability of the kidneys is greater for galactose than for dextrose. Hence there seems to be no valid reason for substituting galactose for dextrose in the functional examination of the liver. The authors also point out that the galactose test must be considered only a test of the glycogenic function of the liver and not an index of general hepatic function since it is well known that liver functions are multiple and relatively independent of one another.

Presse Medicale, Paris

43 97120 (Jan 19) 1935

- Cancer of Stomach in Cured Pernicious Anemia P É Weil and J Bernard—p 97
- Symptomatology Value of Arterial Hypertension in Cranial Traumatism P Wertheimer and P Frieh—p 99
- Interostal Neurolysis in Treatment of Pulmonary Tuberculosis According to Leotta Method F Rablou—p 102

Cancer of Stomach in Pernicious Anemia—Weil and Bernard describe the case of a man with pernicious anemia treated successfully for eight years. Finally death occurred following a short period of aggravated symptoms. Necropsy revealed a typical gastric epithelioma on the large curvature of the stomach with extensive infiltrations. The authors believe that such experiences may become more frequent now that patients with pernicious anemia are usually granted a longer period of life. Two possible explanations are suggested anatomic and functional. It is well known that cancers develop on chronic inflammatory lesions and it is suggested that the

gastric aphasia noted in pernicious anemia may serve in this role. The functional interpretation is based on the possible dissociation of hematopoietic and digestive function in pernicious anemia. Thus the cases of cancer coexisting with or evolving after anemia may be interpreted in an identical manner.

Hypertension in Cranial Traumatism—Wertheimer and Frieh believe that the blood pressure should be recorded four times a day after cranial traumatism. The absence of arterial hypertension excludes the presence of a block. The retention of normal arterial tension does not, however, insure a favorable prognosis. The prognosis depends on the clinical signs and their development such as variations of the cerebrospinal fluid pressure. Elevation of the arterial pressure, especially if rapid, associated with a constantly low cerebrospinal fluid pressure indicates the presence of blockage. In cases in which careful lumbar puncture, with drop by drop removal of fluid, lowers the level of arterial tension the diagnosis of 'relative blockage' is indicated, if under the same conditions the arterial tension remains the same, the blockage is complete. On this basis it seems that therapeutic measures may be more accurately applied.

Policlinico, Rome

42 65128 (Feb 1) 1935 Medical Section

- Variations of Hydroprotein Constitution of Blood Between Artery and Vein P Stefanutti—p 65
- Hypophonesis on External End of Clavicle According to Pende to Indicate Incipient Apical Changes F L Cassone—p 78
- Primary Pulmonary Carcinoma G Becchini—p 89
- Alkali Reserve in Hypoglycemia in Normal Persons and Diabetic Patients M Tripodi—p 111

Hypophonesis on External End of Clavicle—Cassone states that the pulmonary apex frequently becomes the seat of the first productive lesions of tuberculosis. He reviews the symptomatology of a patient presenting specific lesions and in whom palpation percussion, auscultation and roentgen examination of the apical regions were made. He discusses the value of each of these signs and their possible causes of error. Percussion was done on the external end of the clavicle, according to Pende, in patients having presented apical lesions in previous examinations and in patients in whom a diagnosis of a specific initial form was made from ectoscopic and anamnestic symptoms. The author found that in the first group of patients percussion indicated dullness in a clearer and more precise manner than when percussion was done on the apical region. In the second group percussion indicated immediately the localization of the disease and showed apical involvement. This was confirmed in many patients by a roentgenogram showing opacity and small dark circumscribed spots of the apex and also by auscultation revealing fine and fixed rales. Having observed that the dullness on the external end of the clavicle is present when there are no trophic changes of the muscles of the shoulder and even when the signs of apical catarrh are lacking the author concludes that it is one of the early appreciable pulmonary signs of apical lesions and is of marked symptomatologic value for the diagnosis of incipient tuberculosis.

Alkali Reserve in Hypoglycemia—Tripodi studied the behavior of the alkali reserve during the course of hypoglycemia artificially induced by subcutaneous injections of insulin in normal persons and diabetic patients. He found that the postinsulin glycaemic depression is constantly accompanied by a decline in the alkali reserve of normal persons and patients presenting mild nonacidotic diabetes. This decline coincides with the appearance of hypoglycemic symptoms and is proportionate to their gravity. In grave acidotic diabetes there is an increase in the alkali reserve in the first stage and, when in the second stage the glycaemic rate falls below a certain limit, variable in diabetic patients, there is a decline in the alkali reserve. Contrary to what was observed in normal persons and in patients with mild diabetes, the appearance of the first hypoglycemic symptoms does not coincide with a diminution of the alkali reserve but with an increase in it. If the hypoglycemic symptoms become more serious, the alkali reserve is lowered but not always to the level preceding the administration of insulin. The author injected large doses of sodium bicarbonate intravenously in normal persons and in diabetic patients during hypoglycemic symptoms. This injection exerts a favorable action on mild hypoglycemic symptoms, such as

perspiration, tremors, nervousness and rapid pulse. It does not arrest their evolution or improve the more serious hypoglycemic manifestations, such as debility, somnolence, convulsions and coma.

Dermatologische Zeitschrift, Berlin

70 249 308 (Jan.) 1935 Partial Index

Glandular and Exfoliative Cheilitis A. Jordan and A. Tarabochin — p. 249

*Complement Fixation in Fungus Diseases F. Foldvari — p. 260

Advantages of Buffer Action in Treatment of Eczema A. Papendieck — p. 269

*Multiple Fibromatosis of Skin After Frost Bite D. A. Zipersson — p. 279

Complement Fixation in Fungus Diseases—Foldvari used in his studies of complement fixation in fungus diseases two antigens (1) a polyvalent antigen prepared from Achiorion Quinckeanum, Achiorion Schoenleinii and various strains of Trichophyton and of Epidermophyton, and (2) an antigen prepared from strains of Trichophyton gypsum. He concludes that antibodies producing complement fixation are produced in considerable quantities in the deep seated fungus diseases. In the more superficial processes, the antibodies are formed in smaller quantities. Vaccine therapy promoted antibody formation in some of the cases, while in others it exerted no influence on the antibodies. The complement fixation test was of no value for the prognosis. The vaccine had the same therapeutic effect, whether the antibodies were increased or not. The allergic reactions did not always run parallel with the complement fixation reactions. It appears that the reactions are group reactions. The deviation of the complement seems to be of diagnostic value in fungus diseases with deeper processes (blastomycosis, sporotrichosis) or with eczematous or dysidrotic changes in which the microscopic or cultural demonstration fails.

Multiple Fibromatosis of Skin After Frost Bite—Zipersson describes the case of a woman, aged 30, who had approximately 800 nodules and tumors. She stated that the disorder began at the age of 2, after she had been exposed for a long period to the cold of winter. The histologic examination of two growths corroborated the diagnosis of multiple fibromatosis of the skin. The author mentions other writers who have observed cases of fibromatosis of the skin after exposure to cold. The multiplicity is especially characteristic for these fibromas. The growths are distributed over the entire body. The mechanism of development of the fibromas is not completely understood, but several theories have been suggested. The prognosis is rather unfavorable, since there is danger of malignant degeneration, necrosis and calcification. Treatment is generally of little avail, but, if the fibromas become large, surgical intervention is advisable.

Deutsches Archiv für klinische Medizin, Berlin

177 97 208 (Dec. 28) 1934 Partial Index

Clinical Report of Case of Transitory Heart Block with Abnormal Frequency of Ventricle L. Delius — p. 107

Alkali Therapy of Hypersecretion and Superaacidity K. P. Becker — p. 115

*Clinical Examination of Carbohydrate Metabolism with Consideration of Its Modification by Creatine D. Jahn — p. 121

Blood Pressure Increasing Substance in Cerebrospinal Fluid Particularly During Hypertension E. Kylin, T. Kjellin and H. Kristensson — p. 139

*Course of Galvanic Skin Reflex in Sympathetic Neuroses K. W. Essen — p. 144

Carbohydrate Metabolism and Its Modification by Creatine—Jahn shows that it is necessary to determine, in addition to the blood sugar curve after the dextrose tolerance test, the fluctuations in the lactic acid content and in the ketonic acid content so as to obtain information about the site of the utilization of sugar. Dextrose tolerance tests with and without physical exertion reveal the great differences in the rapidity of the utilization of sugar during rest and during physical exertion. Observations make it probable that substances from the muscular metabolism play a part in the regulation of the utilization of sugar. Studies on the metabolic action of creatine reveal a tendency to limitation of combustion of sugar in the tissues. In case of glycogen deficiency in the liver, there develops after the application of creatine a considerable ketonemia and a reduc-

tion in the blood sugar content. However, the reduction in the lactic acid content of the blood is observable in all cases. Creatine promotes the insulin action on the glycogen formation in the muscles and supports the blood sugar reducing action of the hormone. The contradictory changes in the lactic acid and in the ketone body contents of the blood can be explained by the action of the muscular substances that increase the insulin action. If clinical examination reveals a disturbance in the carbohydrate metabolism with hypoglycemia and ketonemia, the disturbance should be brought into relation with the reduction of the blood sugar after muscular exertion and carbohydrate intake and with the aspects of spontaneous hypoglycemia.

Galvanic Skin Reflex in Sympathetic Neuroses—Essen points out that the sympathetic apparatus of persons with a sympathetic neurosis has a deficient compensation capacity. He demonstrated this in the galvanic skin reflex that develops after a short cough. He tested this reflex in forty-six healthy persons and eighty-two persons with a sympathetic neurosis. Of the forty-six healthy persons, forty showed normal reflex action, and of the eighty-two with sympathetic neurosis, sixty-three showed a pathologic reflex. The abnormal reflex action was indicated by a prolongation of the latent time and of the time of disappearance and by fatigability and an undulated outline of the reflex record. The author concludes that the abnormal galvanic skin reflex is a frequent and significant sign of sympathetic neuroses. The galvanic skin reflex exemplifies that the dynamic course of sympathetic regulations is abnormal in persons with sympathetic neurosis.

Klinische Wochenschrift, Berlin

14 113 144 (Jan. 26) 1935 Partial Index

Concentric Hypertrophy of Heart and Toxicogenic Hypertension J. Pal — p. 116

Follicular and Corpus Luteum Hormones in Their Reaction on Anterior Lobe of Hypophysis C. Clauber and W. Breipohl — p. 119

*Clinical Significance of Green Fluorescence in Blood Serum W. Brunner — p. 121

*Primary Point of Attack of Allergens as Foundation of Allergic Tests and Therapy E. Urbach — p. 124

Tumor Immunity Z. Zakrzewski and H. J. Fuchs — p. 127

Green Fluorescence in Blood Serum—To determine the degree of urobilinemia in disorders of the liver or the kidney, Brunner employed his method for the quantitative determination of the maximal green fluorescence in the blood serum. He devised this method because Heilmeyer's quantitative determination of urobilinogen proved satisfactory only for the examination of feces and urine but not for the blood serum. To 1 cc of blood serum the author adds 0.5 Gm of pulverized zinc acetate, mixes well and lets it stand for twelve hours at room temperature. Then he adds 7 cc of absolute alcohol and shakes well. This mixture has to stand for twelve hours and then is filtered into test tubes. The absolutely clear filtrate is examined colorimetrically in the arc light simultaneously with a series of dilutions of ethoxy-diamino-acridine-lactate (from 1 200,000,000 to 1 10,000,000). To obtain a clearer picture of the quantities of urobilin, the values were changed by computation into milligrams per hundred cubic centimeters. The normal urobilin content of the blood serum is estimated at between 0.0628 and 0.125 mg per hundred cubic centimeters of blood serum, which corresponds to a solution of ethoxy-diamino-acridine-lactate of from 1 200,000,000 to 1 100,000,000. The author found that the determination of the urobilinemia is a more reliable and exact indicator for the disordered hepatic function than is urobilinuria. This could be observed particularly in insufficiency of the kidneys. In icterus that is caused by complete occlusion and in catarrhal icterus there exists in spite of fecal acholia and of usually greatly reduced urobilinuria a severe urobilinemia (autochthonous formation of urobilin in the liver). In chronic, true uremia uncomplicated by cardiac insufficiency and cirrhosis of the liver, the urobilinuria remains within normal limits. This indicates that the liver is not involved in the development of true uremia. The author thinks that the anemias accompanying uremia are probably not the result of increased hemolysis but rather of the toxic insufficiency of the bone marrow.

Primary Point of Attack of Allergens as Foundation of Allergic Tests and Therapy—Urbach states that the foundation of every clinical manifestation of an allergic dis-

order is an antigen antibody reaction. In the individual case, the manifestation of the allergy is dependent less on the antigen but almost entirely on the localization of the cellular antibodies. The author reproduces a table in which the allergic diseases and the principal point of attack of the allergens are put in opposite columns. Classification of the allergies on the basis of the site of the antigen antibody reaction explains why only a test that is performed on the shock organ can give information about the type and degree of allergization of the involved tissue. Moreover, it makes a more effective therapy possible, for only such desensitization is effective that considers the primary point of attack (epidermal, vasculocutaneous, vasculo-cerebral, epimucobronchial, leiomyobronchial and so on) and that is applied to the involved organ (epidermis, cutaneous vessels, bronchial mucous membrane, bronchial musculature and so on). If a few exceptions are disregarded, the clinical manifestations of an allergy are almost entirely determined by the organ in which the antigen antibody reaction takes place. Allergic eczema was one of the conditions in which the primary site of the cellular antibodies was disputed. Whereas Kyrle considered the epithelial hypersensitivity the only basis of eczematous manifestations, Jadassohn and his collaborators came to the conclusion that a purely epithelial hypersensitivity without the involvement of the cutaneous vascular system is not likely and assumed a vasculo-epithelial allergic origin. The author thinks that in eczema the primary site of the antibodies may be epithelial as well as vascular. Recent histologic studies indicate that the reticulohistiocytic elements of the epidermis (the so called Langerhans cells) and those of the cutis (the capillary endothelials of the papillary blood and lymph vessels) form a connected system, the so-called endothelial-Langerhans system. This would explain how a primary epidermal hypersensitivity later becomes elicitable by way of the vascular system. The differentiation of primary epithelial from primary vascular eczemas is done by epinephrine-iontophoresis. Just as in the skin, a differentiation is possible also in case of the mucous membranes (primary epimucous and primary vascular).

Medizinische Klinik, Berlin

31: 69 100 (Jan 18) 1935 Partial Index

Diagnosis and Therapy of Hemorrhoidal Disturbances A W Fischer —p 69

*Hemolytic Anemia—Spherocytic Disease H Leindorff —p 74
Pathogenesis of Intestinal Occlusion by Meckel's Diverticulum H Steindl —p 77

*Further Observations on Prophylactic Vaccinotherapy of Whooping Cough W Kaupé —p 79
Sporadic Pellagra in Vienna and Lower Austria J Urbach —p 79
Foreign Body in Retropharynx with Peripheral Relaxation of Larynx H Kneek —p 83

Hemolytic Anemia—Spherocytic Disease—Leindorff shows that there are two types of hemolytic anemias, the idiopathic and the symptomatic forms. The latter type is usually caused by chemical or bacterial toxins, while the first type is endogenic, a congenital 'hematic diathesis'. The diathesis may remain latent for a long time, but its manifestation may be brought on by various factors, such as infections, exposure or overexertion. When fully developed, the disease presents three characteristic symptoms: icterus, anemic pallor and splenic tumor combined with three hematologic signs: microcytosis, reduced resistance of the erythrocytes to hypotonic solution of sodium chloride and increase of reticulocytes. However, these symptoms need not all be present at the same time. In children the icterus is almost never severe and in some instances it is entirely absent. There are also cases without splenic tumor and some without pallor. The most characteristic signs of the disease are found on examination of the blood. The most important symptom is the microcytosis. The diameter of the erythrocytes is only 58 microns instead of 78 microns as in normal persons. Moreover, these are not the small erythrocytes, the micropoikilocytes, found in most forms of anemia. Instead of being disk shaped they are spherical and in spite of their smaller diameter they have a greater volume than the normal erythrocytes (100 cubic microns instead of 88). For this reason the author thinks that for this type of cells the term spherocytes is better than the term microcytes. The hemoglobin content of the spherocytes is comparatively high,

which explains the relatively high color index of 1 or higher in this type of anemia. Because the disk-shaped erythrocytes are the only suitable ones, it may be assumed that the organism tries to eliminate the spherical types by an increased activity of the reticulo endothelial system, particularly the spleen. This results in splenic tumor. Icterus develops if the liver is no longer capable of utilizing the excessive amounts of pigment. The author thinks that the nature of hemolytic anemia is explained best by assuming a congenital abnormality of the erythropoietic system, as the result of which it produces spherical instead of disk-shaped erythrocytes. To support further the opinion that the spherical form of the erythrocytes is the essential factor in hemolytic anemia, he mentions other hemolytic conditions that are characterized by erythrocytes of abnormal shape. He calls attention to sickle-cell anemia and to erythroblastic anemia. He compares the main aspects of these two types with the described type and shows that the different types are characteristic for different races, the sickle-cell anemia, for instance, for the Negro race. In regard to the therapy of hemolytic anemia, he states that treatment is unnecessary during the latent stage and that blood transfusion is advisable during the acute attack. Occasionally treatment with liver and iron may be helpful. Splenectomy should be done only in case of repeated hemolytic crises.

Prophylactic Vaccine for Whooping Cough—Kaupé reports his experiences with whooping cough vaccine in a home for nurslings and an orphans' home connected with it. In the nurslings and children who had whooping cough, the vaccinotherapy resulted in a prompt cure. All other children were given three prophylactic injections of vaccine and, although they had been in contact with the children who had whooping cough, they remained free from it. The author emphasizes that all the children, even the infants of from 1 to 6 months, tolerated the vaccine well. The only symptom produced by the injections was a slight temporary increase in the temperature.

31 101 132 (Jan 25) 1935 Partial Index

Azotemias W Nonnenbruch —p 101

Cardialgias and Aortalgias (Angina Pectoris) R Schmidt —p 105

Edematous Form of Herpes R Bezecky —p 109

*New Treatment of Congenital Dislocation of Hip Joint by Means of Straddle Bandage F Bauer —p 110

Treatment of Congenital Dislocation of Hip Joint—Bauer says that the treatment of congenital dislocation of the hip joint with nonsurgical reduction and prolonged subsequent fixation had two aims: the correction of the abnormal position of the joint and the permanent retention of the head in the acetabulum. He devised a method which, in addition to these two aims has a third, the stimulation of the joint. He tries to accomplish this by excluding fixation from the treatment, because he considers it harmful for two reasons. It inhibits the joint stimulating action and produces atrophy of all parts of the joint. The new feature of his method is the straddle bandage. Reduction is done immediately after the condition has been recognized. It can be done during the first few weeks of life. Then the straddle bandage is adjusted. It can be made of rep ribbon from 25 to 3 cm in width. A girdle that can be buttoned in front is placed round the thorax, and two shoulder straps secure the girdle against downward pull. Well fitting slings grasp both legs below the knee, and two pieces of ribbon of the proper length to secure correct abduction connect the slings of the legs with the girdle in the back. In case of slight abduction they are usually fastened on the same side, while in case of greater abduction they are fastened crosswise, on opposite sides. In older children, ribbons may be fastened also on the front of the girdle and connected with the slings round the legs. To secure continuous maximal abduction, a rod with holes at both ends may be fastened on the slings. Even if this is done there is still considerable freedom of movement. The bandage can be changed and washed. It is advisable to keep the bandage on during the daily bath. The author employed this bandage successfully in fourteen cases of congenital subluxation and in six cases of congenital dislocation. The treatment produces the best results if employed during the first year of life.

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Sodium Chloride in Metabolism During Urologic Disturbances.—Strauss points out that the part played by sodium chloride in the metabolism during urologic disturbances, particularly hypertrophy of the prostate, requires especial attention, for disturbances are likely. Whereas the kidney plays the most important part in the elimination of sugar and of the substances containing nitrogen, its significance in sodium chloride elimination is secondary to that of extrarenal factors. Sodium chloride elimination has no essential significance as an indicator for the renal function, but the sodium chloride tolerance test and the determination of the elimination are important. The examination of the concentration capacity of the kidney by one or repeated tolerance tests permits conclusions about the functional capacity of the kidney. In all forms of hypertrophy of the prostate in which renal changes exist, the sodium chloride elimination is abnormal following the tolerance test. The renal impairment characteristic of hypertrophy of the prostate is a hyponephrosis due to stasis. The changes developing in case of hypertrophy of the prostate, when considered from the point of view of the elimination of sodium chloride, can be divided into three groups. Hypertension belongs to the first group in which the elimination is normal with and without tolerance tests. To the second group, in which the elimination is abnormal during the tolerance test, belong the disorders that present the aspects of focal nephritis or of the benign and incipient stages of malignant sclerosis. The third group comprises the late forms of malignant sclerosis, in which the extrarenal factors predominate and the elimination is abnormal during and outside of the tolerance test. The extent of the renal changes and of the disturbance in the sodium chloride elimination depends on the degree and the duration of the hypertrophy of the prostate and on the intensity of the stasis. Uniform evaluation of the sodium chloride content of the serum in the course of the disease encounters considerable difficulties. Normal as well as subnormal values of the sodium chloride content of the serum are encountered in patients with hypertrophy of the prostate. Occasionally, but not always, there develops during the stage of renal insufficiency, together with the azotemia, a hyperchloremia. The sodium chloride content of the serum requires especial consideration during the period after urologic operations. Postoperative disturbances belonging to the group of hypochloremic azotemia have been observed. The reduction of the chloride values of the serum after prostatectomy or other

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Effect of Malaria on Pulmonary Tuberculosis.—In 800 necropsies on patients who died from acute or chronic malaria Shirokogorov found an incidence of a primary tuberculous focus in about 25 per cent. The appearance of the focus, of the adjacent tissue and of the remote organs showed the absence of signs of secondary reactivation of the primary tuberculous infection under the influence of acute or chronic malaria. This fact was particularly noteworthy in the cases of chronic malaria complicated by grave anemia, at times of a progressive malignant type characterized by bone marrow atrophy, profound metabolic disturbances in the form of fatty or amyloid

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SHOULD THE NUMBER OF PROFESSIONAL STUDENTS BE RESTRICTED?

RAYMOND WALTERS, A.M., LL.D., LL.D.
President University of Cincinnati
CINCINNATI

Should the number of professional students be restricted? This is no medieval, metaphysical question. It is as real as fresh paint on a front door, as timely as today's newspaper, as uncertain as anything that may happen tomorrow.

The question may be approached from three angles. One may approach it from the angle of personal interest. To do so is not necessarily to be selfish. For those of middle age or beyond, the answer is not of immediate concern, for whatever happens they can somehow wag along. Their personal interest is likely to center in the careers of their children and of young friends and students who come to them for counsel.

One may approach the question from the angle of professional interest. Proud of the past of the profession, imbued with its ethics and its spirit, one may honorably argue for its maintenance as it has been built up by the patient labors and the accumulated wisdom of countless workers in the field.

But I am confident that the reader will approve a third approach, that from the angle of general interest, an impartial consideration of this question as bound up with the national problem of professional service in relation to the public weal, an approach that stresses the good of the people as a whole.

In seeking an answer to the question of whether the number of professional students should be restricted, I propose to do three things:

1 To present facts as to the actual numbers in the professions, giving them in clear and orderly fashion without statistical details.

2 To quote views of advocates of differing interpretations and proposals.

3 To venture an opinion that seems to issue from the facts and from other related facts and circumstances.

As to my presentation of facts, may I explain that this very topic is on the agenda of a committee of the American Council on Education, the Committee on Standards, of which I am chairman, and that members of this committee have cooperated in collecting pertinent studies relating to the professions of law, medicine, college and university teaching, and engineering.

Read before the Annual Congress on Medical Education, Hospitals and Laboratories, Chicago, Feb. 18, 1935.

NUMBERS IN VARIOUS PROFESSIONS

What are the facts regarding numbers in the professions during recent normal years?

Profession of Law—An answer for the profession of law is presented in a tabulation by the National Conference of Bar Examiners and also in a study made by a member of the Committee on Standards of the American Council on Education, Mr. Alexander B. Andrews. The tabulation of the Bar Examiners¹ cites the 1930 census, which shows 160,605 lawyers in the forty-eight states and the District of Columbia. This was an increase for the country of 31 per cent over the number in 1920, as compared with an increase of 16 per cent in the population for the decade.

The per capita proportion in 1930 was approximately one lawyer for every 762 persons. There were 131 lawyers for each 100,000 of population for the country as a whole. Considerable variation was revealed as to states and the observation of the Bar Examiners was that "lawyers are more plentiful in the large cities" and that the ratio is increasing more rapidly in the large cities.

Interesting comparisons with numbers in the legal profession in European countries were afforded in an address² by Mr. Andrews as president of the North Carolina Bar Association in 1929, based on information in *Juristische Wochenschrift*, a weekly legal journal of Germany. These comparisons may be most compactly presented in the accompanying table.

One commentator observed³ that, while "the demand for the quantity of legal services in such countries is less than in the United States, yet in no foreign country is the population per lawyer nearly so small as in the United States."

College and University Teaching—Facts about the number of teachers in colleges and universities in the United States are provided by the reports of federal departments and of the weekly educational journal *School and Society*.

In 1929-1930 the teaching staffs of 1,078 universities, colleges and professional schools totaled 71,722 persons.⁴ In addition there were 14,463 teachers in 331 normal schools and teachers' colleges, making a grand total of 86,185 collegiate teachers.⁵

In their 1934 enrolment figures reported to me as a member of the staff of *School and Society*, 567 approved institutions had a total of 67,521 teachers. The ratio

1 The Bar Examiner 1, 254-257 (July) 1932.

2 Andrews, A. B. Proceedings of the Thirty First Annual Session of the North Carolina Bar Association, June 27-29, 1929. Raleigh, N. C. Edwards & Broughton Company.

3 Teaser, Sidney. A Proposal for a Limited Bar. Am. Bar A. J. 21, 43.

4 Biennial Survey of Education, 1928-1930. U. S. Office of Education. 2, 326-331.

5 Statistical Abstract of the United States, 1933. U. S. Department of Commerce.

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teach for some time. Special arrangements had to be made for Jewish physicians who could not be licensed by a representative of the pope, in such cases the license was issued by the faculty.⁷ Whoever practiced without a license was excommunicated and, in addition, persecuted by the municipal authorities. The license gave a physician the privilege of practicing in all Christian countries. In Paris, the formula spoken by the chancellor when conferring the license was:⁸

Ego, cancellarius, auctoritate apostolica, qua fruor in hac parte, do vobis licentiam legendi, interpretandi et faciendi medicinam hic et ubique terrarum. In nomine Patris, et Filii,

—I, the Chancellor, by the power invested by my apostolic authority that I exercise in these parts, confer on you the faculty to teach, to interpret, and to practice medicine here and in all countries. In the name of the Father the Son,

When a physician moved to another city, he had to submit to certain formalities. First of all the municipal authorities had to grant him permission to settle down, a permission that everybody had to seek, whether he was a physician or not. Then the physician had to present his diplomas to the university of the place and have his privileges renewed. This consisted in the paying of a fee and another disputation, the idea of which was to demonstrate that the candidate not only had degrees but was still conversant in the subject. Endless conflicts resulted if a man did not readily submit to these formalities. History tells of many such cases. Paracelsus in 1527 was invited by the city authorities to practice medicine in Basel and was appointed municipal physician. Being a doctor of the University of Ferrara, he was entitled to lecture at the university but, stubborn as he was, he refused to submit to the required formalities and the result was a permanent hostility of the university toward him, which eventually contributed to his peremptory departure from Basel. Johannes Sambucus, a Hungarian physician, practiced in Vienna without having shown his credentials to the faculty, whereupon the faculty in 1567 denounced him to the city authorities, and he would have been expelled from the city had not the emperor Maximilian II interfered.⁹

In cities where there were no universities the physician was compelled to present his diplomas to the city authorities, usually to the board of health. The fact that many, and among them some of the largest, cities had no universities led to the establishment of special medical organizations, as for instance the Royal College of Physicians in London, which was granted a charter, Sept 23 1518. It consisted originally of eight persons, and its purpose was to improve and regulate the exercises of the art of physic. No person except a graduate of Oxford or Cambridge was allowed to practice medicine in England unless he had been examined and approved by the president and three members of this college. This example was followed a century later by Scotland. The fact that irregular practitioners intruded in increasing numbers in Scotland made the need for such an institution strongly felt, and an application was made in 1617 to King James I of England for the establishment of a college, according to which the practitioners of medicine in Scotland should be incorporated into a Royal College of Physicians, which was to appoint

seven members to examine all those who intended to practice in Scotland. The exercise of medicine without a diploma of the college was to be made illegal. Although the application was favorably received at the court, the political conditions delayed the founding of the college, but in 1681 a charter was granted to the college. It is interesting to note that the universities, the municipal corporations and even the bishops and archbishops opposed the founding of the college violently, as they considered this an intrusion into their own rights and privileges. While so far the universities had been the only licensing bodies, from then on, in England and Scotland, licenses were granted by medical organizations,¹⁰ i. e., by medical practitioners.

The medieval university was a powerful, well organized body which not only transmitted knowledge but considered it its duty to keep the traditions pure. It was fully aware of its responsibilities, and the license issued by a faculty of medicine was a full guaranty of the adequate knowledge of its bearer. In the centuries following the Renaissance, the universities lost their high standing. They did not follow the trend of the times. They clung to the old traditions. A new medical science developed, and it developed outside the universities, centering its efforts around the new academies. In the Middle Ages most universities were controlled by the church, and thus guaranteed equal standards. After the Reformation the conditions were greatly changed. The church lost its grip on many of the universities, and there was a marked tendency toward state interference in university matters. In the seventeenth and eighteenth centuries the standard of the universities became more and more unequal. While some of the universities were still conscientious in delivering degrees, others became lax. A degree of such a university was therefore no longer a guaranty of a graduate's fitness to practice medicine, and the states began to protect themselves by disregarding the academic degree.

LICENSURE IN PRUSSIA

Until 1725, whoever had a master's degree of a medical faculty could practice medicine in Prussia, and whoever had a master's patent of a surgeon's guild could practice surgery. In 1725, however, a bill was passed according to which the master of medicine could not exercise his profession before he had taken a course in anatomy and discussed a *casus medico-practicus* before the *collegium medicum* and the *medico-chirurgicum*, which was a state board of health.¹⁰ The right of licensure was therefore taken from the universities and assumed by the state. New regulations were passed in 1789 and 1791, the candidate was examined "in the most important subjects of medicine." In other words, he now had to take two examinations, one for his doctor's degree at the university and, in addition, one for the license before a state board. After the unification of Germany, the license obtained in one of the states gave the privilege of practicing in all the other states, and it was decided that the state examination should be given by the physicians most competent in the matter, namely, by the university professors of the medical faculties. In this way one avoided submitting the candidates to two examinations, which would be a mere repetition and a waste of time, the doctor's degree was conferred after the candidate had passed his state examination and had submitted an inaugural dissertation. The universities had been reorganized in the

⁷ Kisch Guido. Die Prager Universität und die Juden 1348 1848, mit Beiträgen zur Geschichte des Medizin Studiums. Mährisch Ostrau 1925.

⁸ Corbin A. L'ancienne Faculté de médecine de Paris, Paris, 1872 p. 72.

⁹ Balut Nagy Stephen. Der weltberühmte Historicus Johannes Sambucus (1531 1584) als Arzt. Arch f Gesch d Med 24: 150 174 (April 30) 1931.

¹⁰ Billroth Theodor. The Medical Sciences in the German Universities a Study in the History of Civilization. New York, Macmillan Company 1924.

At Yale, from 1918 to 1928, the student body in the four nonprofessional schools of the university increased 77 per cent, while the faculty number increased 74 per cent. In its 1928 report, which cites these figures, the Yale Faculty Committee ascribed the progressive increase in the number of the faculty as 'a determining factor in preventing the salary scale from increasing in proportion to the university's income' ¹⁶

The teaching profession has its economic future largely in its own hands. If methods are developed for keeping down the teacher student ratio, so as to hold the faculty at about its present size, while still giving effective instruction in the larger subjects, a steady improvement in the economic status of the profession may be expected.

Evidence in another direction as to trends in certain American colleges was reported by Dr J G Umstatt, who found that in these colleges "the average of appointments per institution decreased from 107 in 1920-1921 to 69 in 1931-1932, a decrease of 35 per cent." Dr Umstatt expressed his thought that "the problem will become more acute as the surplus of unemployed college teachers increases, and should receive immediate, nation-wide consideration."

Consideration by administrators directly concerned was given at the October 1934 meeting of the Association of American Universities at the University of Chicago ¹⁷

A paper of Prof S H Slichter of Harvard estimated that the drop in academic employment due to the economic depression "has probably been less than 10 per cent," with a shrinkage in the number of professors "much greater in private institutions than in public." Professor Slichter prophesied that "the demand for college and university teachers will increase at a decreasing rate."

Prof George E Carrothers of the University of Michigan gave an estimate that American universities in the ten-year period from 1924 to 1933 awarded "a grand total of approximately 16,721 doctorates of philosophy." To the question "What to do with the product?" Professor Carrothers answered in terms of college teaching and of teaching in secondary schools. Dean L P Eisenhart of Princeton thought it desirable to approximate in the United States what has gone on for years in Europe, where holders of the doctorate and producers of research and literary work are teachers in the lycee and gymnasium. Dean Edgar S Furniss of Yale agreed that the secondary schools would gain by taking on doctors of philosophy who have the requisite personal qualifications for teaching younger students, and he suggested also fields such as public service as an outlet for graduate students.

At the same meeting Prof Anton J Carlson of the University of Chicago took definite exception to the doctrine of restricting enrolment because professional fields are crowded. "Is it such a waste if a Ph D, unable to find a place in education or in science, goes into industry or business?" Professor Carlson opposed limitation in the professions, following the old guild custom. "Who are we to say nay to those who want to go ahead regardless of the risks?" Dean Charles B Lipman of the University of California seconded this view, saying that he objected to such limitation, just as he objected to telling a farmer how much he may plant. "We don't know enough about the future to determine now the number of Ph D's it will need." President

Ray Lyman Wilbur of Stanford University added his approval of this point of view.

Limiting Engineering Students — "A more rapid increase than ever before in the quality and number of trained experts and leaders" was predicted in a report published in 1923 by a joint committee of the National Industrial Conference Board and the Society for the Promotion of Engineering Education ¹⁸. This was the committee's answer to the question "Do the industries in the United States need more or fewer engineers than the number now being graduated from engineering schools and colleges?"

Eleven years later (January 1934) a contrary view ¹⁹ was given by Mr David L Fiske, secretary of the American Society of Refrigerating Engineers. Mr Fiske basing his conclusions on an analysis of U S Census figures for forty years declared that "without regard to the employment influences of the current depression, statistics from 1890 to 1930 reveal signs of future overcrowding."

The facts at hand show mainly that in the next two decades the number of men in the profession will probably increase a third over that employed in 1930, if newcomers are limited to those with four years of college training. Professional and educational programs which disregard this situation must assume that the demand for technical engineering services will increase proportionately.

Calling attention to the sharp falling off in enrolment in American engineering schools in the past few years, Prof William B Plank ²⁰ of Lafayette College has written that, so far as the mineral industry is concerned, opportunities for employment appear to be good and that in the near future "the demand may easily exceed the supply."

That the 1923 report of the committee of the National Industrial Conference Board and the Society for the Promotion of Engineering Education remains valid today is maintained by Dean Herman Schneider of the College of Engineering and Commerce, University of Cincinnati. In a recent letter ²¹ Dean Schneider points to "the very wide range of activities covered by the engineer. There is hardly a field of construction, production or distribution in which the engineer has not become the dominant factor." He cites new avenues such as "political science and preventive medicine through the application of sanitary methods, zoning, housing and the employment of engineers by banks holding industrial concerns." Dean Schneider concludes that "there need be no curtailment in the production of engineering graduates who are soundly trained."

Limiting Medical Students — "There should be more effective control over the number and type of practitioners trained." This was one of the nine needs listed by the Committee on the Costs of Medical Care in its 1932 report, to which reference has already been made in this paper.

"It is evident," declared Dr Walter L Bierring of Des Moines, Iowa, in a paper read in September 1933, "that doctors have been trained without any consideration of possible consumer requirements. Overcrowding like overproduction, already existed when the country was consuming the maximum of professional services."

¹⁸ National Industrial Conference Board Special Report number 25 1923 pp 3 11

¹⁹ Fiske D L. Civil Engineering 4 16-20 (Jan) 1934

²⁰ Plank W B. Are Too Many Students Taking Mining Courses? Mining and Metallurgy May 1934

²¹ Schneider Herman. Personal communication to the author Feb 6 1935

¹⁶ Income and Living Costs of a University Faculty. New Haven Conn. Yale University Press 1928 pp 92 98

¹⁷ Walters, Raymond. School and Society Nov 3 1934

TRENDS IN GRADUATE TEACHING

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It is indeed a bold spirit who would attempt to prophesy the final objective in graduate medical instruction. There are, however, certain evidences of trends or tendencies that may be evaluated at this time. One given to divination is seldom chagrined by his mistaken predictions, and it is reasonably certain that few now here will be present when the final formula is evolved.

In the first decade of the century the majority of men seeking graduate medical instruction were well on into mature life and were seeking to fill the gaps in their medical knowledge. Many were graduates of the hundred medical schools that have ceased to function and the doctor was conscious of two fundamental defects in his training: (a) the lack of preliminary educational qualifications and (b) the inadequacy of his medical training. To his everlasting credit he had the inspirational value of ambition and the desire to extend his usefulness.

With the restriction of the number of medical schools and the development of adequate standards in undergraduate medical schools, the hospitals have become points for the dissemination of graduate medical instruction.

The defect in medical practice today is the lag between scientific knowledge and its practical application. The advancement in scientific knowledge within a period relatively so short as ten years makes it imperative for every physician to bring his practical knowledge into consonance with the present status of scientific medical knowledge. It should be the duty of graduate medical instruction to shorten this gap, to lessen the time interval between discovery, formulation and the practical application. This lag has been taken up by a number of noteworthy endeavors: (1) the efforts of county or state medical societies to bring postgraduate instruction to the county centers, (2) the traveling clinics, (3) the three-day clinics at centers of population by visiting specialists, (4) by staff meetings of hospitals, (5) by means of medical societies and medical publications, and (6) by graduate instruction in connection with established medical schools. The systematic approach to overcoming this medical gap or hiatus will be largely the obligation of universities conducting schools in graduate medical education.

If the medical schools continue to graduate the same number of physicians each year and there is the same annual death rate, there is a constant and increasing accretion of practitioners, as a corollary there will be a constantly diminishing number of patients per physician throughout the population generally. Paralleling the extraordinary industrialization of this country in the last forty years has been the development of specialization and the idea of pure research. Neither the population, the hospital facilities nor the potential economic return can take the yearly output of graduates in medicine and put them all into the specialties or research. Many graduates will engage in one form or other of public health activity, but there will still remain a major proportion of recent graduates in medicine who must be absorbed into the practice of medicine. The history of all social movements indicates that when

the recompense derived from any profession or vocation is on a constantly diminishing scale there is an increasing depreciation in the quality of men entering that profession. It would seem reasonable to anticipate that when the financial return from the practice of medicine becomes relatively too low and the cost of the undergraduate course in medicine too high, the ranks of medical practitioners will be filled with students who desire to make medicine a business or a trade enterprise. The result will be a constantly increasing hospital load of dispensary or clinic practice.

It would indeed be a bold prophet who would attempt to predicate the status of the hospital situation ten years from today. I believe that at least 60 per cent of the practice of medicine in the well populated states of the Union will be undoubtedly taken care of through dispensaries and clinics. It would seem inevitable that the private and voluntary hospital system will undergo remarkable transformation and that physicians serving in dispensaries will undoubtedly be paid for their attendance.

It may be said that in no country in the world is the level of dispensary medical practice equal to that in America. Generally speaking, the medical service provided by the dispensary system is adequate and effective. A survey of the constantly diminishing mortality statistics of the last thirty years offers conclusive proof on this point.

It is apparent that the voluntary hospital system is in the process of breaking down by reason of the inadequacy of funds derived from philanthropic sources and that many of the hospitals will be salvaged by becoming part of the city, state or governmental system. There will arise from this condition of affairs the necessity for the periodic reeducation of a large number of physicians. This may be accomplished by mandatory attendance for set periods of study at graduate schools near the large centers of medical thought and activity. The key to this type of graduate teaching will be the individual hospital of 350 beds that will be complete in all the major departments. There may arise from these conditions a second major issue whereby the voluntary hospitals will employ all their staff on a salary basis and enter into active competition for the medical business of the community. This potential semicommercial hospital system may have pedagogic qualities of high repute for specialistic teaching but will be inadequate in a broad comprehensive scheme of graduate instruction, as the teachers in such institutions will have had little or no experience with actual practice and will be restricted to the patients that come to the outpatient department or enter the wards of the hospital.

Education, whether it is medical or purely scholastic, has an organic growth and necessarily should have a continuing development. The practice of medicine, except for the full time, paid physicians in institutions and those engaged in research under salary, will have an economic background which will be predicated on the economic conditions that surround the public health and medical problem.

There are sufficient medical educational facilities to take care of the country's population for an indefinite period of time. In most of the states of the Union there is an adequacy of hospital beds to take care of the citizens who require hospitalization, although there may be in certain localities an inadequacy for special conditions, such as beds for patients with tuberculosis.

Referring to the "limitation of numbers in the first-rate medical schools," Dr Lee said that "the output of doctors is not running wild in the realm of over-production about which we hear so much."

At the same meeting Dr William Trufant Foster, director of the Pollak Foundation for Economic Research, gave an address strongly advocating group practice, in which he commented on the willingness of "physicians as a body especially family doctors, to risk their lives and to serve suffering mankind without regard to money rewards."²⁴

GENERAL VIEWS REGARDING PROFESSIONAL LIMITATIONS

The "extraordinary growth in the number of students" in the universities of Europe and increasing unemployment in the professions were discussed by Dr Walter M Kotschnig of Geneva at a conference of experts in Geneva in August 1933 (Dr Kotschnig has kindly supplied me with a mimeographed copy of the proceedings of this conference.) He said

In almost every country there is a marked increase in the number of medical and law students. The increase in medical students may perhaps be regarded as one of the consequences of the war, which brought the experience of human suffering home to the younger generation as no other event of the last decades had done. The study of law was often taken up even before the war by those who did not know what to study.

Many took to higher education because they preferred it to continued unemployment.

Dr Kotschnig's declaration was that "the number of people who are fitted by intellect and character for university study is necessarily limited," and he expressed his judgment that the great influx of students has lowered the level within European universities. Dr Kotschnig and others at the Geneva Conference very definitely urged restriction in the number of professional students, favoring a system of vocational guidance by which more youths should be trained as electricians, agriculturists and craftsmen.

A vigorous critic of current plans to restrict the number of professional students in the United States is Prof Harold F Clark of Teachers College, Columbia University. Professor Clark's views were set forth in his book "Economic Theory and Correct Occupational Distribution," published in 1931 and more recently in an article in the *Journal of Educational Sociology* for December 1934. In this article he says

No group can be trusted with the determination of the number of people to be admitted to that group. The history of groups that have had power to determine their numbers offers conclusive evidence that that power will be misused.

The damage caused is not less because plausible excuses are given or even because the protection of society is said to be the cause of the limitation.

Along with physicians, lawyers and engineers, Professor Clark includes dentists and architects and adds "The plumbers, bricklayers and carpenters know that there are too many plumbers, bricklayers and carpenters."

Professor Clark's own proposal is that local and state planning commissions should be organized. "The state commissions will have to combine and set up a national occupational council. This will determine the optimum number of people for each occupation. All the people of course, will have to be used to do all of the work."

Somewhat the same criticism was presented in a conference at the University of Oregon in July 1934

by President George W Fraser of the Colorado State Teachers College.²⁵

We are told that we have too many farmers, too many shoemakers, too many textile workers, too many miners, too many ditch diggers.

If we are to be logical then and follow the advice of the leaders of our professional schools, we would cut down the number of men entering all professions and all occupations.

In fact, this whole line of argument reduces itself to absurdity. If we were to cut down our population by five to twenty million we would then need fewer doctors, nurses, teachers, artisans, factory laborers, miners and laborers.

President Fraser then gave as 'the other side of the question' his view that "we do not have too many doctors in America. Large areas of our country are without adequate medical service. We do not have too many teachers in America."

Our surplus labor must be taken up with social services which can be rendered by teachers, playground experts, doctors, nurses and others who do not produce material things. There is a limit to the number of shoes that can be worn or cars that can be driven. There is no limit to the social services that can be rendered in our changing society.

A PERSONAL VIEW

What I have presented thus far represents material which members of the Committee on Standards of the American Council on Education cooperated in gathering and which the chairman of the committee has assembled and summarized as compactly and objectively as he could.

What follows is not objective but subjective. Other members of the standards committee are in no way responsible for it. This is simply a personal opinion, the thought of one man who puts it forward with full recognition of the difficulties of the problem and with no undue confidence that his opinion is right.

My opinion is based on two assumptions.

The first is that, in the American democracy today, one should accept as basic, in regard to limiting numbers in the professions, the old Benthamite doctrine—the greatest good to the greatest number. One should have in mind less the advantage of the profession and of those in it than the advantage of all the people.

A second assumption is that the good of the people is so peculiarly dependent on the service of the professions that satisfactory conditions within the professions are a matter of public concern. The social welfare of all citizens and the personal welfare of each citizen are bound up with how the lawyer represents us, how the engineer builds the bridges over which we ride, how the college professor teaches our sons and daughters, how the physician averts disease and when we have it, heals us.

With these two assumptions in mind I propose a new approach to the question of limiting numbers in the professions, a question I shall for our purposes here restrict to the medical profession. This is the approach that emphasizes quality rather than quantity.

It might appear that quantity would be the prime consideration in the light of our principle of the greatest good for the greatest number, and that this consideration would indicate for the profession of medicine those mass methods and techniques by which industry and business in the United States have produced and distributed efficiently and cheaply. Within certain bounds this is logical, in fact the medical profession has

²⁵ Proceedings of the Conference on Higher Education, University of Oregon, July 1934, pp. 92-93.

together with such research work as may be accomplished in the undergraduate schools. However, in the training of practitioners the most important desideratum is scientific observation. The ability to observe and record accurately, uninfluenced by personal psychological factors, is very difficult to obtain. For the development of the scientific spirit, which means precision, accuracy of observation and succinct, clear-cut, inductive reasoning, there is no training quite so thorough as the application of one's time and ability to a concrete problem in research. However, relatively few men seeking postgraduate instruction can take this kind of work, either from lack of time, inadequate preliminary education, or the absence of the right spirit or many other undetermined factors.²

Medical graduates seeking instruction will necessarily be varied but may be classified as follows: 1 The recent graduate or hospital intern wishing instruction of a general character and desiring a continuous and advanced form of technic of graduate teaching. 2 The physician desiring to enter a specialty either from general practice or from a general rotating internship. 3 The physician desiring to engage in research work. 4 The physician who can justly claim to be a specialist and who desires more intensive training in some particular phase of his own specialty. 5 The physician already in general practice who desires to renew or keep abreast of the latest scientific advances in medicine. 6 The physician who desires to make good some of his professional deficiencies that have been revealed in his medical practice. This group of physicians is apt to be made up of men doing general practice in communities of from 50,000 to 100,000 and who of necessity must engage in some degree in a type of practice that in larger cities is handled by specialists. 7 A large group of practitioners who live within commuting distance of graduate institutions and who desire to "refresh" their medical information by a day's, a week's or a month's intensive course in some particular phase of medicine. 8 The recent resident or intern who desires to proceed for a higher medical degree, such as doctor of medical science.³

One of the most interesting questions in medical pedagogy—What shall constitute the proper relationship between clinical and laboratory work?—is constantly recurring and engaging the attention of medical educators. With the ever increasing tendency toward specialization, certain functions formerly considered within the domain of clinical medicine are performed by separate departments with individual executive officers. An excellent example of this scheme of division of labor is to be found in the marvelous organization and development of the laboratory courses of study. So marked has this tendency toward specialistic training become that in many clinical laboratories is found an overaccentuation of the laboratory idea with a corresponding diminution, even to the point of extinction, of the clinical phases. This condition brings with it certain particular evils, and, although it is true that there are certain definite benefits to be derived from such an accurate division of labor, the main objection is that the evils far outweigh the supposed benefits. A consideration of the problem in its main features would suggest that the proper course is one midway between the two divergent ideas. A happy medium would be arrived at when the laboratory would

exist in an associated position and when laboratory information is coordinated with the clinical aspects of disease.

The old fashioned, so-called practical physician with little real scientific training is a heritage of obsolete conditions. The present-day demand is for real scientific training and the concrete application of the principles and knowledge of chemistry, physiology, bacteriology and pathology to the conditions of everyday medical practice. It is not necessary to obtain a theoretical and practical knowledge in all the laboratory subjects, nor would the time be well spent, for it would require from five to ten years to obtain such an abundant knowledge. The problem is rather for a moderate knowledge, thoroughly mastered and tested by actual practice.

With the rapid progress medicine is making today the student must make up his mind to pick out from time to time such new phases of medical knowledge as have established for themselves a definite place in everyday practice. The newer aspects of metabolism, endocrinology, serology, x-ray interpretation and roentgen therapy present such functional importance that the alert physician must obtain a thorough, broad understanding of the subject. Therefore, any comprehensive plan of study will require sufficient laboratory work to make the student conversant with the fundamental knowledge necessary for efficient scientific, practical work. This will embrace a knowledge of bacteriology, of chemistry, of the various phenomena of metabolism, of blood chemistry, of the newer aspects of diabetes and nephritis and the like. In pathology, of the various effects of chronic focal infection, of degenerative process from chronic intoxication. In therapeutics, of the use of some of the synthetic remedies and the latest teachings of pharmacology. In technic, of the application of modern diagnostic procedures, of spinal puncture, of intraspinal and intravenous therapy, and an experience in the diagnostic aid of special instruments, such as the ophthalmoscope, the endoscope and the cystoscope.

The undergraduate medical school and the changed relationships in the hospital situation will largely predetermine activities in graduate medical instruction. Pure research probably will be eliminated from undergraduate medical activities, and the function of the faculty in the undergraduate medical schools, so far as research is concerned, will be to select those students who from natural ability and aptitude exhibit qualities that will be valuable in a research program. Pure scientific medical research should be reserved for graduate time. Certain hospitals will undoubtedly devote their clinical material to a complete and integrated system of medical fellowships and resident positions in the special division of medicine. The number of such resident positions will after all be limited, for only a hospital with large bed and clinic facilities can possibly transform itself into an institution for the development of specialists. It will require anywhere from three to five years, added to the undergraduate course in medicine, for an institution to certify to the competence of an individual in a given specialty. The teaching of specialists will of necessity be confined to large cities and their large hospitals.

There follow logically from these premises three distinctive trends in graduate medical education: (1) a research fellowship in pure science, (2) a continuous

³ Bulletin of the New York Post Graduate Medical School and Hospital.

a dean and faculty calls for more care, wisdom and humility. But undertake it they must.

And now for my concluding thought. It seems to me that, if we accept the doctrine of quality first the determination of quality among candidates for the medical profession may well be left to the medical colleges. If so, there will probably be a solution of our question as to numbers in the profession—a solution that issues from the economic conditions in which we find ourselves. Financial limitations hamper every university and medical school. With stabilized income from tax sources in institutions under public control with stabilized income from endowments in institutions under private control with stabilized fees in both types the gifts that trickle in should be assigned not for more enrolment but for more research and for improvement in teaching facilities.

Each medical college should resist the temptation to take more students merely to make money. Each medical college should hail quality as its obligation and goal as never before. In this policy there should be concurrence by the Council on Medical Education and Hospitals of the American Medical Association and by the Association of American Medical Colleges and by the Federation of State Medical Boards of the United States. This is an objective, I firmly believe that is unselfish and is devised for no private advantage but is calculated rather to bring the greatest good to the greatest number of the American people.

THE HISTORY OF MEDICAL LICENSURE

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The idea of making the practice of medicine dependent on a license, a certificate issued by a competent body testifying that the bearer has undergone a training considered adequate, is an idea that originated in the Middle Ages. The European Middle Ages created an institution that was modified in the course of time but survived in its basic idea to the present day. The idea of licensing the medical profession resulted from the general structure of medieval society, which was strictly organized according to status, crafts, trades and professions. Each such vocational group had regulations, standard-setting codes, guaranteeing highly qualified services to society. It was recognized that such standards were particularly important in the case of the medical profession. In no other profession is lack of knowledge so serious in its consequences as in medicine. A wrong legal judgment can be corrected by a higher court. A wrong diagnosis or a wrong treatment may result in the death of the patient. No wonder society tried to protect itself from ignorant physicians. If the profession was to be respected and society was to have confidence in it, standards must be set, and the man living up to these standards had to testify legally that he was a real physician. In this way a clean-cut distinction was established between the physician who had undergone a prescribed training and the pseudophysician or quack. Great credit must be given to medieval society not only for having recognized the importance of these facts but for giving them a legal conformation and for having set an example for all time to come.

Read before the Annual Congress on Medical Education Hospitals and Licensure Chicago Feb 18 1935

MEDICAL PRACTICE IN ANCIENT TIMES

Attempts at some kind of regulation of medical practice can be found before the Middle Ages and they will have to be reviewed briefly. The oldest document of the kind that I know of is to be found in the sacred books of the Parsis, the Avesta. In one of these books, the Vendidad, a book very similar in character to Leviticus, is found a tariff regulating the physician's fee, very much like the one in the Code of Hammurabi. Besides, there are rules concerning the admission of the surgeons to practice. The text runs ¹

36(94) Maker of the material world thou Holy One! If a worshipper of Mazda want to practice the art of healing, on whom shall he first prove his skill?—on worshippers of Mazda or on worshippers of the Daevas?—

37(96) Ahura Mazda answered 'On worshippers of the Daevas shall he first prove himself rather than on worshippers of Mazda. If he treat with the knife a worshipper of the Daevas and he die if he treat with the knife a second worshipper of the Daevas and he die if he treat with the knife for the third time a worshipper of the Daevas and he die, he is unfit to practice the art of healing forever and ever.

38(99) Let him therefore never attend any worshipper of Mazda, let him never treat with the knife any worshipper of Mazda, nor wound him with the knife. If he shall ever attend any worshipper of Mazda if he shall ever treat with the knife any worshipper of Mazda and wound him with the knife, he shall pay for it the same penalty as is paid for wilful murder.

39(102) If he treat with the knife a worshipper of the Daevas and he recover if he treat with the knife the second worshipper of the Daevas and he recover if for the third time he treat with the knife a worshipper of the Daevas and he recover, then he is fit to practice the art of healing forever and ever.

40(104) He may henceforth at his will attend worshippers of Mazda, he may at his will treat with the knife worshippers of Mazda, and heal them with the knife.

In other words, parts of society, the true believers, were protected against lack of knowledge in the surgeon.

This is a very exceptional document, for throughout antiquity medical practice was open to all. The physicians had to compete with the quacks, and some of the hippocratic writings show how serious this competition was. Some physicians endeavored to outdo themselves by dressing extravagantly and by displaying showy instruments and it is highly probable that the art of prognostic developed to such an extent in Greece not only for medical reasons but through the tendency to gain the patient's confidence by telling him right away what his case was and what would happen to him.² The hippocratic oath was not a legal document. It was a private contract between master and pupil, the master adopting his pupil as a son. And, besides, it set ethical standards.³ No worldly authority could enforce the oath. It is not known how long it was in effect, in all probability it was restricted to a small group of physicians in the early days of Greece.

In ancient Rome, medical practice was also open to all. But then from the first century B. C. on, the physicians were given a privileged position in society. In 46 B. C., Julius Caesar presented all free-born Greek physicians on Roman soil with the right of Roman citizenship. Augustus knighted his body-physician Musa. In the ensuing years the privileges accorded physicians

¹ The Zend Avesta I. The Vendidad edited by J. Darmesteter in The Sacred Books of the East edited by F. M. Müller Oxford 4 83 84 1880

² Edelstein Ludwig Peri aerion und die Sammlung der Hippokratischen Schriften Problematika Forschungen zur klassischen Philologie No 4 Berlin 1931

³ Deichgraber Karl Die ärztliche Standesethik des Hippokratischen Eides Quellen und Studien zur Geschichte der Naturwissenschaften und der Medizin Berlin 3 29-49 1932

Marginal No	General				Nervous and Mental				Tuberculosis				Maternity				Industrial				Eye, Ear, Nose and Throat				Marginal No	
	Hospitals	Beds	Basinets	Patients Admitted	Hospitals	Beds	Basinets	Patients Admitted	Hospitals	Beds	Basinets	Patients Admitted	Hospitals	Beds	Basinets	Patients Admitted	Hospitals	Beds	Basinets	Patients Admitted	Hospitals	Beds	Basinets	Patients Admitted		
1 Alabama	62	5,373	366	72,951	2,882	4	5,257	1,529	5,092	4	237	26	146	2	70	55	293	47	3	3.2	33	6,309	170	1	1	
2 Arizona	30	1,789	107	30,894	1,095	2	1,948	342	870	20	1,792	2,825	1,078	1	30	4	40	18	0	140	20	1,697	45	2	2	
3 Arkansas	26	2,912	210	34,869	1,203	2	4,413	1,850	4,309	42	6,560	749	4,309	1	30	4	40	18	4	291	7	2,568	77	3	3	
4 California	230	29,500	2,337	403,583	18,718	41	25,036	13,467	23,406	42	4,920	4,885	3,972	0	338	212	1,311	240	10	721	19	8,684	435	23	6	
5 Colorado	64	4,081	504	68,410	2,800	4	7,737	2,484	4,101	13	1,920	1,237	1,212	1	8	19	80	4	3	320	20	2,886	127	6	6	
6 Connecticut	39	0,914	950	100,187	4,225	15	8,400	3,704	8,018	7	1,075	1,314	1,487	1	11	12	71	2	1	1,075	1,314	1,487	1	7	7	
7 Delaware	10	744	112	14,240	430	2	1,338	337	1,211	3	783	173	161	2	130	90	2,762	78	1	65	5	1,016	32	8	8	
8 District of Columbia	17	5,400	394	74,610	3,062	3	5,838	1,028	5,481	3	6,700	2,4	3,32	2	33	23	56	5	2	137	2,407	73	65	9	9	
9 Florida	76	4,250	634	61,021	2,900	5	4,740	1,417	4,411	2	80	68	71	2	33	23	56	5	1	65	5	1,016	32	8	8	
10 Georgia	82	6,035	630	99,037	2,710	7	7,609	1,930	7,118	0	603	1,937	538	2	33	23	56	5	2	137	2,407	73	65	9	9	
11 Idaho	3	1,403	212	1,348	15,093	33	963	3,107	12,682	27	3,405	4,344	3,086	1	8	50	60	2	1	30	4	434	50	2	10	
12 Illinois	219	27,709	3,640	448,240	10,881	30	34,776	15,093	33,963	27	3,405	4,344	3,086	1	8	50	60	2	2	137	2,407	73	65	9	9	
13 Indiana	94	7,698	1,074	115,568	2,728	15	12,972	3,107	12,682	27	3,405	4,344	3,086	1	8	50	60	2	2	137	2,407	73	65	9	9	
14 Iowa	122	0,905	1,010	113,940	3,088	14	11,003	3,788	10,802	9	1,857	1,477	1,140	2	90	54	1,701	77	2	137	2,407	73	65	9	9	
15 Kansas	96	0,927	721	89,248	3,008	11	6,501	1,472	0,344	7	782	426	691	4	105	60	216	63	1	60	3,60	17	13	3	13	
16 Kentucky	72	4,017	511	73,784	2,212	10	7,140	2,540	0,834	4	1,083	1,580	014	1	20	28	120	20	3	240	2,829	133	14	14	14	
17 Louisiana	42	5,637	398	110,490	4,460	6	0,334	2,186	0,011	3	320	268	178	1	20	28	120	20	5	221	10	2,750	70	15	15	
18 Maine	54	2,877	417	46,451	1,605	5	3,104	622	3,000	4	482	401	442	1	10	10	322	9	3	106	13	4,034	101	17	17	
19 Maryland	40	1,311	640	91,221	4,003	19	9,468	6	2,091	8,975	31	4,341	5,601	3,802	10	552	412	7,046	310	2	250	10	078	21	18	18
20 Massachusetts	150	10,693	2,008	297,662	13,762	30	28,137	0,787	27,243	31	4,341	5,601	3,802	10	552	412	7,046	310	2	250	10	078	21	18	18	
21 Michigan	163	14,654	1,889	221,457	7,063	17	20,459	5,203	10,701	23	3,482	3,000	2,984	0	1,880	225	11,217	1,180	13	233	31	3,722	102	21	21	
22 Minnesota	167	10,197	1,476	167,327	0,020	14	13,032	4,040	12,588	17	2,013	1,406	1,315	4	227	70	1,172	86	1	50	0	397	10	23	23	
23 Mississippi	90	10,040	1,169	105,053	6,246	18	13,733	3,960	12,638	7	1,200	1,140	1,234	8	448	306	3,242	24	1	402	4	5,163	173	33	33	
24 Missouri	40	2,877	355	35,570	1,461	2	2,163	500	2,129	1	150	100	137	1	18	10	42	10	3	101	12	2,333	62	25	25	
25 Montana	87	4,304	570	60,024	2,274	5	5,114	680	6,000	1	160	169	154	1	80	15	119	33	4	120	10	1,462	50	27	27	
26 Nebraska	13	633	49	0,598	184	1	750	65	320	2	210	137	170	1	22	18	220	8	1	19	0	400	8	29	29	
27 Nevada	31	1,050	341	30,880	1,146	3	2,620	563	0,294	18	2,813	4,406	2,012	2	250	293	6,075	183	5	210	10	1,076	70	31	31	
28 New Hampshire	88	12,445	1,966	232,007	8,268	28	21,776	5,813	10,663	18	1,244	1,302	607	10	1,340	840	20,102	919	1	19	0	400	8	29	29	
29 New Jersey	330	52,641	6,572	606,814	30,883	70	82,834	29,637	70,755	59	10,312	14,086	9,790	2	77	42	183	27	2	20	333	9	30	30		
30 New Mexico	98	5,346	660	102,000	2,883	9	7,293	3,240	0,003	20	3,373	2,731	1,790	2	60	40	212	30	3	109	11	1,331	41	82	82	
31 New York	165	18,228	2,520	251,019	11,077	32	26,573	7,013	2,708	21	3,215	3,646	2,907	11	318	185	2,251	140	1	31	2	1,41	4	33	33	
32 North Carolina	90	4,910	621	80,171	2,573	6	7,205	2,708	4,154	0	887	1,210	707	2	60	40	212	30	1	30	183	4	35	35		
33 North Dakota	51	3,721	427	61,000	2,108	4	4,904	1,276	4,011	20	4,341	5,778	3,808	2	103	17	133	41	1	30	183	4	35	35		
34 Ohio	295	31,890	4,022	513,083	19,001	47	38,009	13	11,911	28,106	2	406	410	415	10	4,6	263	3,027	104	1	10	4	107	37	37	
35 Oklahoma	46	3,083	268	50,180	1,783	3	4,009	1,263	4,001	0	639	665	460	2	103	23	1,215	54	1	20	5	420	12	39	39	
36 Oregon	63	9,10	478	94,017	3,080	8	6,180	2,601	6,490	1	102	101	130	2	103	23	1,215	54	1	20	5	420	12	39	39	
37 Pennsylvania	225	12,694	1,349	216,195	5,862	15	18,046	3,080	11,431	18	2,008	3,702	1,010	3	52	28	186	70	8	408	15	0,35	212	41	41	
38 Rhode Island	92	1,629	244	24,531	1,004	3	1,204	402	1,211	3	171	230	187	2	103	23	1,215	54	1	20	5	420	12	39	39	
39 South Carolina	78	0,428	629	95,120	3,670	4	2,690	603	1,883	7	1,153	1,311	981	1	30	30	48	7	8	408	15	0,35	212	41	41	
40 South Dakota	81	0,784	902	101,922	3,070	8	7,600	1,068	7,301	11	1,240	1,746	1,100	1	30	30	48	7	8	408	15	0,35	212	41	41	
41 Tennessee	60	4,302	412	82,106	2,123	4	4,052	1,079	3,740	0	690	727	608	1	24	24	90	72	2	57	5	471	1	44	44	
42 Texas	127	11,286	1,013	109,957	6,000	53	14,766	14	0,229	14,175	21	1,044	1,875	1,845	1	0	30	129	5	1	110	20	2,254	79	45	45
43 Utah	20	802	113	12,427	433	3	1,283	279	1,200	21	1,044	1,875	1,845	1	0	30	129	5	1	110	20	2,254	79	45	45	
44 Vermont	4	108	333	425	47	84	513	845	488	481	463	70	603	2	103	23	1,215	54	1	20	5	420	12	39	39	
45 Virginia	4	237	398	713	47	008	0	071,612	231	082	487	70	603	2	103	23	1,215	54	1	20	5	420	12	39	39	
46 Washington	4,306	393,548	40,588	0,303	673	250	405	519	0,618	83	112	60	022	130	7	1,153	1,311	981	1	30	30	48	7	8	8	
47 West Virginia	4,306	393,548	40,588	0,303	673	250	405	519	0,618	83	112	60	022	130	7	1,153	1,311	981	1	30	30	48	7	8	8	
48 Wisconsin	4,302	371,609	48,941	240,384	415,042	509	63,922	90,503	50,088	146	8,018	0,480	4,737	131	0,637	4,480	4,190	3,406	146	8,018	0,480	4,737	131	0,637	4,480	
49 Wyoming	4,306	357,034	42,715	234,000	393,407	502	61,910	50,707	50,707	140	5,434	4,023	3,412	104	5,912	3,031	3,412	3,412	140	5,434	4,023	3,412	104	5,912	3,031	
50 Totals (1934)	4,322	54,364	6,394	228,084	340,067	508	63,170	50,784	50,784	178	5,747	3,005	3,005	108	7,039	3,712	3,712	3,712	108	7,039	3,712	3,712	108	7,039	3,712	
51 (1935)	4,322	54,364	6,394	228,084	340,067	508	63,170	50,784	50,784	178	5,747	3,005	3,005	108	7,039	3,712	3,712	3,712	108	7,039	3,712	3,712	108	7,039	3,712	
52 (1936)	4,322	54,364	6,394	228,084	340,067	508	63,170	50,784	50,784	178	5,747	3,005	3,005	108	7,039	3,712	3,712	3,712	108	7,039	3,712	3,712	108	7,039	3,712	
53 (1937)	4,322	54,364	6,394	228,084	340,067	508	63,170	50,784	50,784	178	5,747	3,005	3,005	108	7,039	3,712	3,712	3,712	108	7,039	3,712	3,712	108	7,039	3,712	
54 (1938)	4,322																									

teach for some time. Special arrangements had to be made for Jewish physicians who could not be licensed by a representative of the pope in such cases the license was issued by the faculty.⁷ Whoever practiced without a license was excommunicated and, in addition, persecuted by the municipal authorities. The license gave a physician the privilege of practicing in all Christian countries. In Paris, the formula spoken by the chancellor when conferring the license was:⁸

Ego, cancellarius, auctoritate apostolica, qua fruor in hac parte, do vobis licentiam legendi, interpretandi et faciendi medicinam hic et ubique terrarum. In nomine Patris, et Filii,

—I, the Chancellor, by the power invested by my apostolic authority that I exercise in these parts, confer on you the faculty to teach, to interpret and to practice medicine here and in all countries. In the name of the Father the Son

When a physician moved to another city, he had to submit to certain formalities. First of all the municipal authorities had to grant him permission to settle down a permission that everybody had to seek, whether he was a physician or not. Then the physician had to present his diplomas to the university of the place and have his privileges renewed. This consisted in the paying of a fee and another disputation, the idea of which was to demonstrate that the candidate not only had degrees but was still conversant in the subject. Endless conflicts resulted if a man did not readily submit to these formalities. History tells of many such cases. Paracelsus in 1527 was invited by the city authorities to practice medicine in Basel and was appointed municipal physician. Being a doctor of the University of Ferrara, he was entitled to lecture at the university but, stubborn as he was, he refused to submit to the required formalities and the result was a permanent hostility of the university toward him, which eventually contributed to his peremptory departure from Basel. Johannes Sambucus, a Hungarian physician practiced in Vienna without having shown his credentials to the faculty, whereupon the faculty in 1567 denounced him to the city authorities, and he would have been expelled from the city had not the emperor Maximilian II interfered.⁹

In cities where there were no universities the physician was compelled to present his diplomas to the city authorities, usually to the board of health. The fact that many, and among them some of the largest cities had no universities led to the establishment of special medical organizations, as for instance the Royal College of Physicians in London, which was granted a charter, Sept 23 1518. It consisted originally of eight persons, and its purpose was to improve and regulate the exercises of the art of physic. No person except a graduate of Oxford or Cambridge was allowed to practice medicine in England unless he had been examined and approved by the president and three members of this college. This example was followed a century later by Scotland. The fact that irregular practitioners intruded in increasing numbers in Scotland made the need for such an institution strongly felt, and an application was made in 1617 to King James I of England for the establishment of a college, according to which the practitioners of medicine in Scotland should be incorporated into a Royal College of Physicians, which was to appoint

seven members to examine all those who intended to practice in Scotland. The exercise of medicine without a diploma of the college was to be made illegal. Although the application was favorably received at the court, the political conditions delayed the founding of the college, but in 1681 a charter was granted to the college. It is interesting to note that the universities, the municipal corporations and even the bishops and archbishops opposed the founding of the college violently as they considered this an intrusion into their own rights and privileges. While so far the universities had been the only licensing bodies, from then on, in England and Scotland, licenses were granted by medical organizations, i.e., by medical practitioners.

The medieval university was a powerful, well organized body which not only transmitted knowledge but considered it its duty to keep the traditions pure. It was fully aware of its responsibilities, and the license issued by a faculty of medicine was a full guaranty of the adequate knowledge of its bearer. In the centuries following the Renaissance, the universities lost their high standing. They did not follow the trend of the times. They clung to the old traditions. A new medical science developed, and it developed outside the universities, centering its efforts around the new academies. In the Middle Ages most universities were controlled by the church, and this guaranteed equal standards. After the Reformation the conditions were greatly changed. The church lost its grip on many of the universities, and there was a marked tendency toward state interference in university matters. In the seventeenth and eighteenth centuries the standard of the universities became more and more unequal. While some of the universities were still conscientious in delivering degrees, others became lax. A degree of such a university was therefore no longer a guaranty of a graduate's fitness to practice medicine, and the states began to protect themselves by disregarding the academic degree.

LICENSURE IN PRUSSIA

Until 1725, whoever had a master's degree of a medical faculty could practice medicine in Prussia, and whoever had a master's patent of a surgeon's guild could practice surgery. In 1725, however, a bill was passed according to which the master of medicine could not exercise his profession before he had taken a course in anatomy and discussed a casus medico-practicus before the collegium medicum and the medico-chirurgicum, which was a state board of health.¹⁰ The right of licensure was therefore taken from the universities and assumed by the state. New regulations were passed in 1789 and 1791, the candidate was examined "in the most important subjects of medicine." In other words, he now had to take two examinations, one for his doctor's degree at the university and, in addition, one for the license before a state board. After the unification of Germany, the license obtained in one of the states gave the privilege of practicing in all the other states, and it was decided that the state examination should be given by the physicians most competent in the matter, namely, by the university professors of the medical faculties. In this way one avoided submitting the candidates to two examinations, which would be a mere repetition and a waste of time, the doctor's degree was conferred after the candidate had passed his state examination and had submitted an inaugural dissertation. The universities had been reorganized in the

⁷ Kisch Guido. Die Prager Universität und die Juden 1348 1848 mit Beiträgen zur Geschichte des Medizin Studiums. Mährisch-Osttau 1935.

⁸ Corlieu A. L'ancienne Faculté de médecine de Paris Paris 1877 p. 72.

⁹ Bálint Nagy Stephen. Der weltberühmte Historicus Johannes Sambucus (1531 1584) als Arzt Arch f Gesch d Med 24 150 174 (April 30) 1931.

¹⁰ Billroth Theodor. The Medical Sciences in the German Universities a Study in the History of Civilization New York, Macmillan Company 1924.

(Continued from page 1081)

HOSPITALS BY SIZE

No phenomenon regarding hospitals is more striking than the decline in the number of small hospitals and the corresponding increase in the number of large hospitals during the past decade

Hospitals by Size 1924-1934

Year	Under 10 Beds	10-25	26-50	51-100	101-200	201-300	300 Beds	Over 300 Beds	Total
1924	665	2,301	1,744	1,207	746	260	401	7,320	
1928	325	2,129	1,586	1,240	766	311	489	6,867	
1934	191	1,661	1,485	1,215	841	361	580	6,334	

During that time, hospitals of less than ten beds declined in number from 665 to 191, ten to twenty-five beds from 2,301 to 1,661, twenty-six to fifty beds from 1,744 to 1,485. Only in the size group of fifty-one to a hundred beds capacity did the number of hospitals

Totals According to Type of Service 1934,
Condensed from Table 2

	Hospitals	Beds	Basis	Patients Admitted	Average Census	Patient Length of Stay	Average Days of Stay
General	4,108	393,420	47,856	6,201,500	237,390	80,640	17.14
Nervous and mental	614	513,840	84	172,415	488,481	178,290	565.034
Tuberculosis	405	70,063	82,400	59,689	21,786	480	204
Maternity	130	7,620	4,131	70,940	4,647	1,606	155.29
Industrial	113	5,575	34.3	69,609	2,423	884	70.15
Eye ear nose and throat	50	2,793	19	103,720	1,265	461	72.4
Children	59	5,386	146	87,571	3,629	1,824	58.15
Orthopedic	69	6,389	12	28,076	5,003	1,823	60.6
Isolation	71	7,430	45	38,040	2,934	1,010	91.27
Convalescent and rest	120	5,456	45	24,083	3,580	1,306	700.04
Hospital departments of institutions	312	21,082	310	13,202	14,500	5,320	30.30
All other hospitals	94	8,132	30	36,730	6,462	2,308	630.04
Totals	6,714	1,048,101	53,020	7,147,416	830,008	302,985	770.49

Percentages of Beds Occupied

	1920	1930	1931	1932	1933	1934
According to Ownership or Control						
Federal	76.8	70.2	76.5	78.2	75.0	74.7
State	94.0	93.8	94.2	94.2	94.5	94.5
County	80.7	82.2	81.2	84.1	80.8	84.8
City	74.3	75.0	76.3	82.8	83.0	83.2
City-county	80.2	81.6	82.0	72.4	75.5	78.3
Total governmental	88.9	88.8	88.7	89.8	90.1	89.8
Church	66.7	64.2	63.2	59.6	64.0	56.3
Fraternal	68.7	67.4	69.0	66.8	64.0	66.5
Associations and restricted corporations*						60.1
Industrial	54.4	53.1	48.2	47.7	44.4	
Independent associations	65.0	65.4	64.3	61.1	58.5	
Total nonprofit						55.6
Individual and partnership Corporations (unrestricted as to profit)*	54.2	51.7	48.7	45.0	41.1	40.9
Total proprietary						44.8
Total nongovernmental	64.6	63.2	61.9	59.2	55.3	56.5
According to Type of Service						
General	60.5	64.7	64.4	63.3	59.9	60.3
Nervous and mental	90.7	94.8	94.0	94.9	90.1	90.0
Tuberculosis	82.7	85.5	85.0	85.4	85.3	85.2
Maternity	62.8	63.2	58.6	63.6	60.8	60.9
Industrial	54.6	53.0	48.1	47.4	44.2	43.4
Eye ear nose and throat	47.7	53.0	52.0	49.9	40.6	45.3
Children	60.9	67.0	69.9	67.8	60.9	67.3
Orthopedic	80.2	88.5	78.1	79.4	76.0	76.7
Isolation	36.1	32.7	38.6	39.0	41.2	39.4
Convalescent and rest	70.9	68.3	72.3	67.4	69.2	65.0
Hospital departments of institutions	63.0	65.5	63.9	63.2	60.1	66.4
All other hospitals	74.6	78.3	69.2	74.0	70.2	70.2
Total all hospitals	60.1	70.8	70.6	70.7	78.8	70.2

* See text Change in Classification page 1006

Unoccupied Beds in Hospitals

	1929	1932	1933	1934
According to Ownership or Control				
Federal	13,868	16,167	18,900	19,856
State	21,664	20,360	24,119	26,021
County	12,620	13,440	11,863	12,762
City	14,088	11,969	11,774	13,040
City-county	2,807	2,249	2,234	2,409
Total governmental	60,007	60,199	68,996	72,888
Church	37,785	47,436	52,219	49,412
Fraternal	1,600	1,844	1,912	1,510
Associations and restricted corporations*				59,423
Industrial	3,107	3,171	3,301	
Independent associations	54,794	64,800	71,300	
Total nonprofit				110,643
Individual and partnership Corporations (unrestricted as to profit)*	17,373	19,450	19,039	17,583
Total proprietary				17,087
Total nongovernmental	114,715	136,710	148,376	140,110
According to Type of Service				
General	123,025	145,049	155,021	150,030
Nervous and mental	18,070	24,076	24,168	24,364
Tuberculosis	10,603	10,164	10,881	10,374
Maternity	2,022	2,748	3,119	2,678
Industrial	3,180	3,185	3,303	3,152
Eye ear nose and throat	1,383	1,361	1,427	1,528
Children	1,857	1,724	1,668	1,757
Orthopedic	1,175	1,353	1,497	1,886
Isolation	4,745	4,450	3,988	4,496
Convalescent and rest	1,859	1,913	1,657	1,876
Hospital departments of institutions	9,148	8,793	8,591	7,392
All other hospitals	2,364	1,089	1,720	1,670
Total unoccupied beds—all hospitals	180,367	205,900	216,775	215,003

* See text Change in Classification page 1070

Summary of Growth of Hospitals 1909 to 1934

Year	Federal Hospitals		State Hospitals		All Other Hospitals		Total	
	Number	Capacity	Number	Capacity	Number	Capacity	Number	Capacity
1909	71	8,827	232	159,040	4,006	223,160	4,309	421,067
1914	83	12,602	294	232,834	4,640	287,045	5,017	532,481
1918	110	18,815	303	262,254	4,910	331,182	5,323	612,251
1923	220	53,869	601	502,268	6,009	369,646	6,830	765,722
1928	294	61,765	580	369,759	5,903	461,410	6,822	892,934
1931	291	69,170	576	410,282	5,746	435,063	6,613	914,115
1932	301	74,151	568	442,601	5,693	497,602	6,562	1,014,354
1933	310	75,030	557	469,640	5,585	491,760	6,437	1,027,040
1934	313	77,860	544	413,035	5,477	497,201	6,334	1,045,101

remain practically stationary for the ten year period having increased only from 1,207 to 1,215. Hospitals of from 101 to 200 beds capacity increased in number from 746 to 841, 201 to 300 beds from 256 to 361, and over 300 beds from 451 to 580.

PATHOLOGY DEPARTMENTS

The census of hospitals for the year 1929 revealed that 4,026 of the 6,665 hospitals then in existence had clinical laboratories. In 1933, 4,324 of the 6,437 hospitals then in existence had their own laboratories. In 1934, 4,271 of the 6,334 hospitals reported laboratories. The percentages of hospitals thus equipped are 60.41, 67.17 and 67.43 for the three years respectively.

In 1934, 2,950 hospitals, or 46.57 per cent of the total hospitals in existence, reported having physicians as pathologists or laboratory directors as compared with 2,878 or 44.71 per cent in 1933.

At present 876 hospitals report that laboratory work is in charge of other than physician-pathologists, as compared with 1,089 one year ago. Hospitals in the United States employ 6,105 laboratory technicians.

RADIOLOGY DEPARTMENTS

In 1929, 4,394, or 65.93 per cent of hospitals then in existence reported that they had their own radiology

TRENDS IN GRADUATE TEACHING

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It is indeed a bold spirit who would attempt to prophesy the final objective in graduate medical instruction. There are, however, certain evidences of trends or tendencies that may be evaluated at this time. One given to divination is seldom chagrined by his mistaken predictions, and it is reasonably certain that few now here will be present when the final formula is evolved.

In the first decade of the century the majority of men seeking graduate medical instruction were well on into mature life and were seeking to fill the gaps in their medical knowledge. Many were graduates of the hundred medical schools that have ceased to function and the doctor was conscious of two fundamental defects in his training: (a) the lack of preliminary educational qualifications and (b) the inadequacy of his medical training. To his everlasting credit he had the inspirational value of ambition and the desire to extend his usefulness.

With the restriction of the number of medical schools and the development of adequate standards in undergraduate medical schools the hospitals have become points for the dissemination of graduate medical instruction.

The defect in medical practice today is the lag between scientific knowledge and its practical application. The advancement in scientific knowledge within a period relatively so short as ten years makes it imperative for every physician to bring his practical knowledge into consonance with the present status of scientific medical knowledge. It should be the duty of graduate medical instruction to shorten this gap, to lessen the time interval between discovery, formulation and the practical application. This lag has been taken up by a number of noteworthy endeavors: (1) the efforts of county or state medical societies to bring postgraduate instruction to the county centers, (2) the traveling clinics, (3) the three-day clinics at centers of population by visiting specialists, (4) by staff meetings of hospitals, (5) by means of medical societies and medical publications, and (6) by graduate instruction in connection with established medical schools. The systematic approach to overcoming this medical gap or hiatus will be largely the obligation of universities conducting schools in graduate medical education.

If the medical schools continue to graduate the same number of physicians each year and there is the same annual death rate, there is a constant and increasing accretion of practitioners, as a corollary there will be a constantly diminishing number of patients per physician throughout the population generally. Paralleling the extraordinary industrialization of this country in the last forty years has been the development of specialism and the idea of pure research. Neither the population, the hospital facilities nor the potential economic return can take the yearly output of graduates in medicine and put them all into the specialties or research. Many graduates will engage in one form or other of public health activity, but there will still remain a major proportion of recent graduates in medicine who must be absorbed into the practice of medicine. The history of all social movements indicates that when

the recompense derived from any profession or vocation is on a constantly diminishing scale there is an increasing depreciation in the quality of men entering that profession. It would seem reasonable to anticipate that when the financial return from the practice of medicine becomes relatively too low and the cost of the undergraduate course in medicine too high, the ranks of medical practitioners will be filled with students who desire to make medicine a business or a trade enterprise. The result will be a constantly increasing hospital load of dispensary or clinic practice.

It would indeed be a bold prophet who would attempt to predicate the status of the hospital situation ten years from today. I believe that at least 60 per cent of the practice of medicine in the well populated states of the Union will be undoubtedly taken care of through dispensaries and clinics. It would seem inevitable that the private and voluntary hospital system will undergo remarkable transformation and that physicians serving in dispensaries will undoubtedly be paid for their attendance.

It may be said that in no country in the world is the level of dispensary medical practice equal to that in America. Generally speaking, the medical service provided by the dispensary system is adequate and effective. A survey of the constantly diminishing mortality statistics of the last thirty years offers conclusive proof on this point.

It is apparent that the voluntary hospital system is in the process of breaking down by reason of the inadequacy of funds derived from philanthropic sources and that many of the hospitals will be salvaged by becoming part of the city, state or governmental system. There will arise from this condition of affairs the necessity for the periodic reeducation of a large number of physicians. This may be accomplished by mandatory attendance for set periods of study at graduate schools near the large centers of medical thought and activity. The key to this type of graduate teaching will be the individual hospital of 350 beds that will be complete in all the major departments. There may arise from these conditions a second major issue whereby the voluntary hospitals will employ all their staff on a salary basis and enter into active competition for the medical business of the community. This potential semicommercial hospital system may have pedagogic qualities of high repute for specialistic teaching but will be inadequate in a broad comprehensive scheme of graduate instruction, as the teachers in such institutions will have had little or no experience with actual practice and will be restricted to the patients that come to the outpatient department or enter the wards of the hospital.

Education, whether it is medical or purely scholastic, has an organic growth and necessarily should have a continuing development. The practice of medicine, except for the full time, paid physicians in institutions and those engaged in research under salary, will have an economic background which will be predicated on the economic conditions that surround the public health and medical problem.

There are sufficient medical educational facilities to take care of the country's population for an indefinite period of time. In most of the states of the Union there is an adequacy of hospital beds to take care of the citizens who require hospitalization, although there may be in certain localities an inadequacy for special conditions such as beds for patients with tuberculosis.

OUTPATIENT DEPARTMENTS

Outpatient statistics presented in an accompanying table give the total number of outpatient departments by states operated during the year 1934 as 2,319. There

Superintendents in Hospitals

	M D	R N	Lay
Alabama	27	49	9
Arizona	41	0	16
Arkansas	27	22	18
California	120	138	120
Colorado	41	80	28
Connecticut	30	28	24
Delaware	5	7	8
District of Columbia	18	8	7
Florida	22	44	27
Georgia	53	37	10
Idaho	22	10	11
Illinois	83	162	85
Indiana	40	53	40
Iowa	41	76	42
Kansas	32	72	23
Kentucky	42	42	15
Louisiana	23	26	12
Maine	22	40	6
Maryland	97	28	17
Massachusetts	94	134	43
Michigan	87	110	45
Minnesota	50	88	49
Mississippi	41	29	6
Missouri	08	40	30
Montana	20	24	15
Nebraska	41	42	19
Nevada	12	2	5
New Hampshire	7	32	6
New Jersey	57	54	61
New Mexico	27	12	11
New York	213	216	104
North Carolina	58	61	27
North Dakota	15	28	12
Ohio	85	102	77
Oklahoma	40	33	31
Oregon	21	39	15
Pennsylvania	113	130	110
Rhode Island	13	6	13
South Carolina	20	20	13
South Dakota	23	23	13
Tennessee	46	33	20
Texas	110	121	53
Utah	17	7	10
Vermont	10	20	2
Virginia	38	47	22
Washington	42	49	30
West Virginia	37	20	10
Wisconsin	46	02	81
Wyoming	13	12	2
Totals (1934)	2,276 35%	2,561 40%	1,545 20%
(1933)	2,312 30%	2,550 40%	1,548 24%
(1925)	2,648 38%	1,076 20%	2,523 37%

Births in Hospitals

According to Ownership or Control	1929	1933	1934
Federal	2,996	5,070	6,068
State	0 120	16 145	15,348
County	17,527	37 215	39 610
City	45 787	71,336	70 711
City-county	6 806	11,913	12,587
Total governmental	83 341	141 679	144 419
Church	209 726	215,609	210 507
Fraternal	1 780	1 622	1 030
Associations and restricted corporations*	4 327	3 178	269 137
Industrial	283 136	310 718	
Independent associations			
Total nonprofit			491 364
Individual and partnership	39 436	36 120	30 865
Corporations (unrestricted as to profit)*			44 465
Total proprietary			75,360
Total nongovernmental	538,355	567 507	566 724
According to Type of Service			
General	561 754	649,880	648 090
Maternity	53,019	55 249	43 648
Industrial	4 423	3 181	2 850
Children's	802	679	696
Hospital departments of institutions	277	272	320
All other hospitals..	1 661	15	222
Total births in all hospitals	621 896	709 206	701 143

* See text. Change in Classification page 1078

were 2,351 reported in 1933. The total number of patients this year was 9,885,465, compared to 9,519,427 in 1933. The total number of visits made by out-

patients during the year was 34,358,606. The number of visits in 1933 was 32,822,077.

The table is arranged so that comparisons are readily made between the figures for recent years.

Along with the increase of 1,536,529 visits to outpatient departments in the last year, it is interesting to note that the number of patient days for bed patients in all hospitals amounted to 302,985,770.

During the past year the number of visits to outpatient departments in the state of New York rose from 7,743,191 to 8,238,764. For Illinois, the visits dropped from 2,772,437 to 1,536,982.

Outpatient Departments

	Number of Outpatient Departments 1934	Number of Outpatients 1934	Number of Visits by Outpatients 1934
Alabama	31	100,051	420 519
Arizona	33	68 702	854 585
Arkansas	23	52 287	103,828
California	122	426,801	2,352 617
Colorado	32	59 629	182 787
Connecticut	29	73,971	256 835
Delaware	10	49 548	34 703
District of Columbia	19	113 086	820 401
Florida	35	66,893	256 581
Georgia	38	148 623	814 014
Idaho	17	6,332	21 190
Illinois	97	619,197	1,536,982
Indiana	40	164,841	331 083
Iowa	40	75 325	227 203
Kansas	43	219 212	337 129
Kentucky	33	193,718	232,567
Louisiana	19	138 057	580,290
Maine	27	28,065	197 249
Maryland	38	162,048	820 401
Massachusetts	127	605 183	2,048,608
Michigan	91	837 168	1,273,335
Minnesota	52	181 093	637 501
Mississippi	27	59 051	89,211
Missouri	45	238 681	886,044
Montana	18	28 110	83 417
Nebraska	19	22 435	62 065
Nevada	4	5 358	41 718
New Hampshire	22	11 428	24,805
New Jersey	00	564 660	1 438 044
New Mexico	20	31 483	235 262
New York	204	2,562,361	8 238 764
North Carolina	80	178 966	350 710
North Dakota	10	20 601	23 663
Ohio	83	362 010	1 437 473
Oklahoma	41	70 758	282,330
Oregon	16	36 692	171 679
Pennsylvania	197	1 046,805	3 607 008
Rhode Island	16	30,692	136,820
South Carolina	27	67 123	141 081
South Dakota	18	34,021	181 066
Tennessee	36	115,586	443 035
Texas	78	190,071	1 074 294
Utah	13	15 299	74,827
Vermont	12	14,881	22,612
Virginia	51	80 178	329 620
Washington	38	82,155	421 005
West Virginia	39	103 489	190 447
Wisconsin	49	182,675	415 766
Wyoming	10	16 691	13 793
Totals (1934)	2 319	9,885,465	34 358 606
(1933)	2,351	9,519 427	32,822 077
(1931)	2,269	8 186,811	28,505,213
(1931)	2 012	6 962 724	23,431,382
(1927)	2,130	6 750 388	13,804 560

General Hospitals in Rural Areas Compared with Those in Urban Districts*

	Rural Places under 10 000 population			Urban 10 000 and over		
	No. of Hos- pitals	Beds	Basal nets	Average Patients Admitted	Per Cent of Occu- pancy	Length of Stay
Rural	2 003	68,506	10 710	34 529	1 073,600	50.2 12 da
Urban	2 031	552,023	37,921	176 060	5 022,428	62.4 13 da

* Including all registered general hospitals except army, navy, marine and veterans.

METHODS OF REGISTERING AND APPROVING HOSPITALS

The inclusion of any hospital in the Register is an indication that evidence concerning irregular or unsafe practices in that hospital has not been available to the Council on Medical Education and Hospitals. Con-

together with such research work as may be accomplished in the undergraduate schools. However, in the training of practitioners the most important desideratum is scientific observation. The ability to observe and record accurately, uninfluenced by personal psychological factors, is very difficult to obtain. For the development of the scientific spirit, which means precision, accuracy of observation and succinct, clear-cut, inductive reasoning, there is no training quite so thorough as the application of one's time and ability to a concrete problem in research. However, relatively few men seeking postgraduate instruction can take this kind of work, either from lack of time, inadequate preliminary education, or the absence of the right spirit or many other undetermined factors.³

Medical graduates seeking instruction will necessarily be varied but may be classified as follows: 1 The recent graduate or hospital intern wishing instruction of a general character and desiring a continuous and advanced form of technique of graduate teaching. 2 The physician desiring to enter a specialty either from general practice or from a general rotating internship. 3 The physician desiring to engage in research work. 4 The physician who can justly claim to be a specialist and who desires more intensive training in some particular phase of his own specialty. 5 The physician already in general practice who desires to renew or keep abreast of the latest scientific advances in medicine. 6 The physician who desires to make good some of his professional deficiencies that have been revealed in his medical practice. This group of physicians is apt to be made up of men doing general practice in communities of from 50,000 to 100,000 and who of necessity must engage in some degree in a type of practice that in larger cities is handled by specialists. 7 A large group of practitioners who live within commuting distance of graduate institutions and who desire to "refresh" their medical information by a day's, a week's or a month's intensive course in some particular phase of medicine. 8 The recent resident or intern who desires to proceed for a higher medical degree, such as doctor of medical science.³

One of the most interesting questions in medical pedagogy—What shall constitute the proper relationship between clinical and laboratory work?²—is constantly recurring and engaging the attention of medical educators. With the ever increasing tendency toward specialism, certain functions formerly considered within the domain of clinical medicine are performed by separate departments with individual executive officers. An excellent example of this scheme of division of labor is to be found in the marvelous organization and development of the laboratory courses of study. So marked has this tendency toward specialistic training become that in many clinical laboratories is found an overaccentuation of the laboratory idea with a corresponding diminution, even to the point of extinction, of the clinical phases. This condition brings with it certain particular evils, and, although it is true that there are certain definite benefits to be derived from such an accurate division of labor, the main objection is that the evils far outweigh the supposed benefits. A consideration of the problem in its main features would suggest that the proper course is one midway between the two divergent ideas. A happy medium would be arrived at when the laboratory would

exist in an associated position and when laboratory information is coordinated with the clinical aspects of disease.

The old fashioned, so-called practical physician with little real scientific training is a heritage of obsolete conditions. The present-day demand is for real scientific training and the concrete application of the principles and knowledge of chemistry, physiology, bacteriology and pathology to the conditions of everyday medical practice. It is not necessary to obtain a theoretical and practical knowledge in all the laboratory subjects, nor would the time be well spent, for it would require from five to ten years to obtain such an abundant knowledge. The problem is rather for a moderate knowledge, thoroughly mastered and tested by actual practice.

With the rapid progress medicine is making today the student must make up his mind to pick out from time to time such new phases of medical knowledge as have established for themselves a definite place in everyday practice. The newer aspects of metabolism, endocrinology, serology, x-ray interpretation and roentgen therapy present such functional importance that the alert physician must obtain a thorough, broad understanding of the subject. Therefore, any comprehensive plan of study will require sufficient laboratory work to make the student conversant with the fundamental knowledge necessary for efficient scientific, practical work. This will embrace a knowledge of bacteriology, of chemistry, of the various phenomena of metabolism, of blood chemistry, of the newer aspects of diabetes and nephritis and the like. In pathology, of the various effects of chronic focal infection, of degenerative process from chronic intoxication. In therapeutics, of the use of some of the synthetic remedies and the latest teachings of pharmacology. In technique, of the application of modern diagnostic procedures, of spinal puncture, of intraspinal and intravenous therapy, and an experience in the diagnostic aid of special instruments, such as the ophthalmoscope, the endoscope and the cystoscope.

The undergraduate medical school and the changed relationships in the hospital situation will largely predetermine activities in graduate medical instruction. Pure research probably will be eliminated from undergraduate medical activities, and the function of the faculty in the undergraduate medical schools, so far as research is concerned, will be to select those students who from natural ability and aptitude exhibit qualities that will be valuable in a research program. Pure scientific medical research should be reserved for graduate time. Certain hospitals will undoubtedly devote their clinical material to a complete and integrated system of medical fellowships and resident positions in the special division of medicine. The number of such resident positions will after all be limited, for only a hospital with large bed and clinic facilities can possibly transform itself into an institution for the development of specialists. It will require anywhere from three to five years, added to the undergraduate course in medicine, for an institution to certify to the competence of an individual in a given specialty. The teaching of specialists will of necessity be confined to large cities and their large hospitals.

There follow logically from these premises three distinctive trends in graduate medical education: (1) a research fellowship in pure science, (2) a continuous

³ Bulletin of the New York Post Graduate Medical School and Hospital.

boarding places for tuberculous patients. Some of these places will, with the growth of population, develop into hospitals.

The capacity of these auxiliary types of places is unknown and hardly ascertainable. Our survey of hospitals has noted 1,535 of them. They constitute an important factor in medical and nursing care for certain districts, and as adjuncts to medical service.

SURVEY OF TUBERCULOSIS HOSPITALS

A plan for the study of all tuberculosis hospitals was adopted by the Council on Medical Education and Hospitals Oct. 22, 1932, and by the House of Delegates of the American Medical Association in June 1933. The survey, which was planned to cover the original list of 500 tuberculosis sanatoriums, was extended to include children's preventoriums, hospitals for extrapulmonary tuberculosis and the large tuberculosis departments in hospitals of other classifications.

The National Tuberculosis Association and the American Sanatorium Association have extended their full cooperation. At the convention of the National Tuberculosis Association in Cincinnati in May 1934 the officials of these organizations offered their assistance in the preparation of the tuberculosis questionnaire. Subsequently, many of the sanatorium superintendents contributed valuable suggestions.

The inspection work, which was carried out by the Council's staff of hospital examiners began in the spring of 1933 and was carried out in conjunction with the Council's investigation of other hospitals. Toward the end of the survey a questionnaire was sent to all sanatoriums in order to record changes and further supplement the information obtained by inspection. The inspections are now practically completed and it is also gratifying to report that more than 90 per cent of the hospitals have returned the tuberculosis questionnaire.

To gain further knowledge of the extent of tuberculosis hospitalization in the United States, the Council requested 6,117 additional hospitals to report the number of tuberculous patients admitted last year and the number now under treatment. Approximately 5,800 hospitals have reported to date.

At the Annual Congress on Medical Education and Licensure held in Chicago February 18 and 19 a program was included on the general and educational aspects of tuberculosis. One of the papers dealt with

"The Function of the General Hospital in the Treatment of Tuberculosis."

It is expected that the tuberculosis survey will be completed by April 15 of this year and that a preliminary report can be made to the House of Delegates at the annual session of the American Medical Association in June. The results of the study will be made available also to the national tuberculosis organizations, the hospital field and to the medical profession at large.

INSPECTION OF SCHOOLS FOR TECHNICIANS

During recent years the Council on Medical Education and Hospitals has engaged in the study of schools for occupational therapists, laboratory technicians and physical therapy technicians. This was in response to requests of the American Occupational Therapy Association, the American Society of Clinical Pathologists and the American Physiotherapy Association, and by order of the House of Delegates of the American Medical Association.

The work of the Council is concerned with the education of technicians, their registration being in the hands of their own organizations.

1 Schools of Occupational Therapy—The inspection of these schools, which began Nov. 27, 1933, was carried out in conjunction with the other activities of the Council, the schools being inspected by members of the staff on their regular tours among hospitals. Up to the present time, twelve schools have been visited.

Inspection included a study of the organization, faculty, physical plant, resources, administration, publicity, and a detailed study of the curriculum.

Essentials of an acceptable school of occupational therapy are being set up in cooperation with officials of the American Occupational Therapy Association. When these essentials are finally approved by the House of Delegates, a list of acceptable schools will be prepared.

2 Schools for Clinical Laboratory Technicians—The Council began inspecting these schools in 1933 together with its regular hospital field work. The Council's study covers organization, faculty, physical plant, records, educational requirements, curriculum, advertising, and all other matters having any bearing on the operation of the school.

Of the 215 schools reported to be in operation, 112 have already been inspected. When the survey has been completed the Council in conference with others will make the necessary changes in the existing educational standards. Following the approval of the essentials, a list of schools offering acceptable training in clinical laboratory technic will be prepared.

3 Schools for Physical Therapy Technicians—The Council on Physical Therapy and the Council on Medical Education and Hospitals of the American Medical Association have been lending their cooperation to the Congress on Physical Therapy in the formulation of proper standards for the Registry of Physical Therapy Technicians.

The Board of Trustees of the American Medical Association in 1934 was directed to effect, if feasible, some plan for rating schools for physical therapy technicians. The Trustees passed the matter on to the Council on Medical Education and Hospitals.

The Council has inspected thirty out of the forty-three existing schools. On the completion of this survey, the Council together with the representatives of the American Physiotherapy Association, the Congress on Physical Therapy and the Council on Physical Therapy will formulate proper educational requirements and essentials for approved schools of physical therapy. When these essentials are approved by the House of Delegates of the American Medical Association, a list of approved schools for physical therapy technicians will be prepared.

PRACTICAL CONSIDERATIONS RELATING TO INTERNSHIPS AND RESIDENCIES

Advice or information is often sought of the Council on many matters affecting intern or residency training not essentially educational in substance. The inquiries most frequently made relate to: 1. The present supply and demand for interns. 2. Preferred methods of appointment of interns. 3. Proper appraisal of intern and residency services, particularly the kind of records that should be kept. 4. Salaries for interns.

Variation in custom and other local circumstances makes it inadvisable to present any single method or

Hahnemann Medical College and Hospital of Philadelphia
Johns Hopkins University School of Medicine
University of Maryland School of Medicine and College of
Physicians and Surgeons
George Washington University School of Medicine
Howard University College of Medicine
Georgetown University School of Medicine

From the studies thus far conducted it is apparent that some schools are accepting more students than the circumstances justify. In some instances physical or clinical facilities are inadequate, and in some instances many students are admitted whose academic records are poor.

THE SITUATION IN VARIOUS DEPARTMENTS

Psychiatry—Few schools, if any, have reached the level in the teaching of psychiatry recommended by the National Committee for Mental Hygiene. Dr. Ebaugh of that committee, in his paper before the Association of American Medical Colleges, at Nashville in October 1934, reported recent improvement in more than a score of medical schools in this respect. Many schools, however, still rely on the old-fashioned method of taking senior students to a state hospital for a three ring circus with human performers. The training of students in an understanding of the mental factors that may be present in the ordinary run of medical cases has not as yet progressed very far. It will take courage and fresh attacks on the problem to make the mental state of patients as significant to the medical student as physical phenomena.

Public Health—Dr. Osler used to say that, when a score of remedies are used for one disease, it is likely that none of them have much value. A wide variation in the methods employed for the teaching of what is called public health would seem to indicate that this part of the medical curriculum is still in an experimental stage. Some schools lay great stress on the functions of the public health official. This would seem to me a specialty that should be reserved for graduate study. Some schools stress what they call the preventive aspects of general medicine and surgery, but actual accomplishment along this line is still disappointing and will continue so until public health teaching of the prospective physician becomes a substantial part of the medical course. More support for public health teaching in the medical school is needed if full advantage of known facts is to be given the public.

Obstetrics—The report of the Committee on Maternal Mortality of the New York Academy of Medicine, released about a year ago, severely arraigned the teaching of obstetrics in medical schools. Many of the conclusions of that committee rest on false or insecure premises, but the studies so far made by the Council do indicate that in some schools the training in obstetrics is definitely inadequate. In some cases the teaching is almost exclusively didactic, and clinical experience falls far short of the standards set by the Council. In other instances, the students may participate in a fair number of deliveries but without adequate supervision or any supervision at all.

So far, the inspections have shown a remarkable strength in the basic sciences and main clinical departments of most schools. One may well be proud of the results of thirty years of the combined efforts of physicians, educators and laymen, together with foundations, universities and hospitals. But the Council's pride in achievement should stimulate it to work for fully rounded results in all schools in all parts of the country.

SPECIAL EXAMINING BOARDS

During the year the Council has been studying the relationships of the specialties to special examining boards. Certain parts of these relationships will require study and careful analysis before final plans are adopted. The boards have been set up or are being organized by leaders and leading organizations in the specialties. The Council, representing the general profession, has certain responsibilities to the profession and to the public that demand a decisive part in any special recognition given to specialists. It has to be on guard to see that there is free access by all properly equipped and trained men and women to the specialties. There is always danger of "shut-out" organizations developing, similar to fraternities and some of the present national societies of specialists. Those who have arrived are often human enough to set up unfair and even personal obstacles to prevent competitors from getting in. The Council on Medical Education and Hospitals of the American Medical Association must take a fair attitude to all and an uncompromising attitude against either favoritism or prejudice.

Some of the difficulties now being encountered are

1 Most of these special boards have adopted the statement that the applicant must be "a graduate of a medical school which is satisfactory to the board."

Since it is known how difficult it is for the Council to make an appraisal of medical schools, it must be evident that these special boards have no satisfactory means of knowing the character of the medical school except by relying on the Council's published list. If so, why not accept the fact and require graduation from a medical school approved by the Council?

2 Some of these boards require the candidate to have limited his practice and to indicate that he intends to continue to limit his practice to the special field involved.

It seems to me that such a requirement may operate to the detriment of the specialty concerned. Suppose that a well trained man, in radiology for example, should desire to locate in a city of 50,000. For the first two or three years he might find it quite impossible to maintain himself in a practice limited to radiology, and during these introductory years he might desire to do a little general practice just to keep the pot boiling. It is almost certain that a well trained man would prefer to restrict himself to radiology just as soon as it would be economically feasible, to enforce the limitation might prevent, in the case cited, a well trained man from locating in such a town.

3 This limitation is particularly difficult with respect to obstetrics and gynecology. From a physiologic point of view, these specialties deal with the female reproductive system, but in surgical practice an arbitrary line cannot be drawn between the reproductive organs and other contents of the abdominal cavity. These special boards should face the facts and should not ensnare the medical profession in a web of fine spun theory.

4 The procedure of refusing a certificate or examination should be modified. One of the present boards requires its candidates to sign a waiver of rights. Should the council not require that, whenever an applicant is refused a certificate or admission to the examination, the board should allow the rejected candidate some recourse.

employed and to submit this information to the American Medical Association annually on special forms supplied for this purpose

The essential part of such a record system might well be the application blank itself. Data supplied by the candidate should be verified by direct correspondence with the medical school, a step already taken by the majority of institutions. Notations should also be made on the same blank to indicate when the internship or residency commenced and when it terminated and the date when this information was forwarded to the American Medical Association.

Many hospitals have extended this system to include periodic evaluations of the type of instruction and experience received by interns and residents, and also to receive at regular intervals from heads of clinical departments an appraisal of the service rendered, aptitude displayed and general attitude of each member of the house staff.

In the registration of credit in the files of the American Medical Association, most difficulty arises either from lack of agreement as to what constitutes an internship, externship or residency, or conflicting dates of duration of services. Both of these factors require an increasingly voluminous verifying correspondence. It is strongly hoped that in the near future uniform methods of designating the various gradations of house officers may be adopted throughout the hospital world, possibly according to the following definitions.

An intern is one who has been granted an M.B. or M.D. degree from an approved medical school, and, whether still enrolled in the medical school or not, enters a hospital shortly after graduation for at least twelve months of supervised clinical experience. Depending on the length of the internship, the service may be divided into junior, senior and intermediary grades, and, according to type, rotating, mixed or straight.

A resident has completed an approved internship and elects to continue for at least twelve months in a hospital in order to obtain an adequately supervised experience in a limited field of medicine or surgery. A

Allowances for Interns in Approved Hospitals

	Number of Hospitals				Number of Interns			
	1923	1927	1930	1933	1923	1927	1930	1933
Instruction and experience only	106	184	159	203	1 060	2 541	2,842	3 214
Monthly allowance up to \$20	151	201	228	121	907	1 440	1 633	1 102
\$25 and over	113	150	102	282	394	773	504	1,344
Bonus	6	24	67	59	24	150	570	480
Other arrangements	40	10	18	11	134	42	100	64
Totals	510	578	664	676	3 119	4 952	6 124	6 204

residency may extend for as long as a progressive, graded service is offered, and provides for junior, assistant and chief residencies.

Clinical fellowships are distinguished from residencies as being extended periods of graduate study, under university control, which are provided for by endowment or other financial arrangement. They usually, though not always, involve the performance of original investigative work and frequently the fulfillment of definite requirements for advanced degrees.

The terms extern, houseman, wardman, and the like, have either outlived their usefulness or add unnecessary confusion to a system organized on such essentially simple lines as most house staffs are.

INTERN SALARIES

Data regarding salaries paid interns in approved hospitals have been presented in this number of THE JOURNAL from time to time. The accompanying table represents latest available statistics. Figures for a few other years are added for comparison. There has been no change in trends apparent in previous years. Although fewer interns than ever are paid, those hospitals which do grant allowances have become somewhat more generous.

Residency Statistics

Number of approved residences 1933	2 133
Number of approved residences 1934	2,378
Number of hospitals approved for residences 1933	340
Number of hospitals approved for residences 1934	377

Number of Available Residences in Specialties September 1934			
Anesthesia	6	Obstetrics..	79
Cardiology	2	Obstetrics gynecology	120
Communicable diseases	74	Ophthalmology	83
Dermatology syphilology	22	Ophthalmology otolaryngology	85
Epilepsy	7	Orthopedics	88
Fractures	2	Otolaryngology	83
Gynecology	32	Pathology	110
Industrial surgery	2	Pediatrics	255
Leprosy	1	Psychiatry	230
Malignant diseases	34	Radiology	66
Maxillofacial surgery	1	Surgery	404
Medicine	328	Thoracic surgery	4
Mental deficiencies	6	Tropical diseases	8
Metabolic diseases	3	Tuberculosis	143
Mixed	23	Urology	58
Neurology	33		
Neurosurgery	0	Total	2,373

A comparison was made of current practices in governmental and private hospitals. No great difference was noted and in either case the larger the hospital, the more frequently are interns expected to consider that maintenance and instruction are the sole remuneration to which they are entitled.

The Council has neither objected to nor recommended paying interns, since up to the present it has always appeared most satisfactory to leave this question for individual solution by the hospitals according to the excellence and consequent demand for the internships.

COMPUTATION OF NECROPSIES

As reported previously, a change has been made in the Council's method of necropsy computation. All bodies removed from hospitals by coroners or medical examiners, and hence not available for examination in the presence of the interns, may be disregarded as hospital deaths. This ruling will affect also those bodies removed from hospitals and directed to medical schools for dissection. In this way, hospitals are not penalized because of official practices over which they have no control.

It will be remembered that the Council has for some years disregarded stillbirths either as deaths or as necropsies. Except as stated, all other deaths and necropsies should be counted.

RESIDENCY APPROVAL

An increasing number of hospitals are realizing the advantages of supplying postgraduate medical education on an approved basis. The statistical table indicates growth in this field during 1933-1934. The number of available opportunities in the various special classifications is also presented in the table. If additional hospitals feel qualified to supply residencies under any of these headings, copies of the requirements and application blanks may be had on request. Approval, it should be noted, is extended only to individual residencies that have undergone individual analysis and investigation.

DESENSITIZATION

In nearly all the cases desensitization was accomplished and no general reaction was encountered in the process of desensitization. To accomplish desensitization two methods, previously reported, were used. The first and more simple procedure was attempted in the presence of marked bleeding symptoms and the second when the first failed or when the local reactions were too severe. With the first method the injection after the reaction of hypersensitivity was decreased to 0.05 cc of the 1:3,000 solution. This usually caused a swelling but unless it was very large it was disregarded, and subsequent injections were increased in amount, very cautiously, until the required dosage was reached. Occasionally the reactions were too severe or desensitization could not be accomplished, the second method was then indicated. The following series of injections, given twice a week, was found very satisfactory: 0.1 cc of 1:10,000, 0.4 cc of 1:10,000, 0.2 cc of 1:6,000, 0.4 cc of 1:6,000, 0.1 cc of 1:3,000, 0.4 cc of 1:3,000, and so on. Injections were continued even though some of the doses caused a local reaction. In a very few instances the initial dilution had to be decreased, below the 1:10,000 strength. In the great majority of the cases the first method proved efficacious and saved a great deal of time.

It must be remembered that, when sensitivity develops and the dosage is decreased, the hemorrhagic symptoms usually tend to recur. It is therefore essential for the period of desensitization to be as brief as possible, which is another advantage of the first method. An important point is that in cases with marked bleeding symptoms enough venom must be given in the first ten days, before sensitization develops, to tide the patient over the period of desensitization.

EFFECT OF THE ADMINISTRATION OF SNAKE VENOM
IN VARIOUS HEMORRHAGIC CONDITIONS

The patients under treatment could be divided into two main groups. In the first group the hemorrhagic symptoms were not the result of a demonstrable hematologic condition. Many were diagnosed as functional bleeding for lack of a better term. The hemorrhage was due to some local cause, possibly vascular, or as a result of some obscure endocrine disturbance, especially in women. The second group presented definite changes in the blood which were responsible for the hemorrhagic state, as in hemophilia, thrombocytopenic purpura, and sprue.

A. Cases Without Blood Changes—1. Idiopathic Nasal Bleeding and Bronchiectasis with Hemoptysis

CASE 1—C. G., aged 3 years, had been bleeding from the lips and gums for a number of months. A sister had a tendency to bleed. There was a slight secondary anemia, the platelets numbering 190,000. After four injections of 0.6 cc. of snake venom given twice a week, the bleeding stopped.

CASE 2—C. H., a girl, aged 10 years, had a history of nasal bleeding, especially on slight trauma. When a tooth was extracted during the period of observation, she bled for two hours. The blood count, bleeding time and coagulation time were normal. Venom was given twice a week, beginning Feb. 27, 1933. There have been no nasal hemorrhages since the first few injections.

CASE 3—H. D., a boy, aged 7 years, had been bleeding from the nose and mouth for four years about three times a week. His oldest brother used to bleed from the nose. Examination of the blood was negative. The patient was treated twice a week from Sept. 2, 1932, until March 4, 1933. Through September there was practically no bleeding. In October he became sensitized. The injections were continued and desensitization was accomplished.

There was no nasal bleeding during October and November. He was then told to stay away for two weeks and at the end of that time he had a small nasal hemorrhage. Injections were given once a week and the bleeding stopped. An acute rhinitis caused bleeding a few times, when this subsided, injections were given once every two weeks. There has been no bleeding in the past five months.

CASE 4—Dr. J., aged 28, had had epistaxis off and on for a number of years. Two weeks before injections were given there were daily hemorrhages. Four injections were given. Bleeding stopped after the first injection and there has been no recurrence for eight months.

CASE 5—R. B., aged 17, had had frequent and prolonged nasal bleeding for the last six months. Two weeks before treatment was started the patient suffered daily nasal hemorrhages. Treatment was begun, Feb. 19, 1932, injections were made once a week for two months. After the first injection bleeding stopped, and there has been no recurrence for one year.

CASE 6—J. B., a man, aged 35, had hemoptysis, which had begun fourteen years before. Bleeding occurred once a week or oftener. Usually the patient coughed up about an ounce of blood. Several years after the onset he contracted pneumonia, which was followed by profuse sputum and increased hemoptysis. After a very profuse hemorrhage in April 1930 he was admitted to the Mount Sinai Hospital. The bronchoscopy was negative and the injection of iodized poppy-seed oil showed a few small saccular dilatations in the right upper bronchus. Pneumothorax and phrenicectomy helped for a while. The cause of the hemoptysis was thought to be either a varix of the mucous membranes or a broncholith with ulceration. Since May 1932, bleeding has recurred as much as half a cupful a day. Then it subsided somewhat, but since February 1933 bleeding had almost reached its former severity. It was then decided to treat the patient with injections of snake venom, which was started, Feb. 20, 1933, twice a week. On March 14, 1933, the patient was sensitized and then desensitized. There was no appreciable effect until March 17, when he reported not only that there was less bleeding but that the interval between hemorrhages became lengthened. Injections were continued twice a week. No large hemorrhages have occurred. The patient still coughs up some blood-tinged sputum.

CASE 7—A. H., aged 13 years, admitted to Mount Sinai Hospital, March 30, 1933, complained of attacks of profuse hemoptysis. Tonsillectomy, performed seven years previously, was followed by severe hemorrhages. Two weeks later a cough developed, which continued for five years. Two years later another tonsillectomy was done, this was followed by a cough, accompanied by profuse and foul sputum. Roentgenograms of the chest after the injection of iodized oil showed bronchiectases of the lower left bronchus. Treatment with snake venom was begun in April. There have been no attacks of hemoptysis since the first injection but the patient still coughs up considerable sputum daily. The treatment was first given twice a week and later once a week.

The effect of snake venom injections was striking in seven cases characterized by persistent nasal hemorrhages and occasional bleeding from the lips and the gums, and in two cases of bronchiectasis with persistent hemoptysis. These patients at first were treated with snake venom twice a week and later once a week. In some instances bleeding did not recur after the first few injections. In most of the cases the bleeding did not recur for months after the treatment was discontinued.

2. Functional Uterine Bleeding. The following seven cases were characterized by excessive menstrual periods with no apparent organic abnormalities.

CASE 8—R. A., a woman, aged 28, had secondary anemia—hemoglobin, 68 per cent. The patient had profuse menstrual periods that lasted seven days. Treatment was begun Feb. 6, 1933 and was given twice a week. The next period lasted five days. The patient was sensitized, March 20, and desensitized by April 1. The treatment was continued twice a week. Subsequent periods were shortened, with little bleeding.

REGISTERED HOSPITALS

ALABAMA—Continued

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Opelika 6156—Lee	Gen	NPAsn	20	4	23	6	24
East Alabama Hospital	Gen	Indiv	30	2	8	7	110
Roscoe 4373—Randolph	Gen	Indiv	20	2	5	10	120
Knight Sanatorium	Gen	Indiv	20	2	10	7	234
Scottsboro, 2304—Jackson	Gen	Corp	52	7	12	15	570
Hodges Hospital	Gen	Corp	30	6	12	16	1,090
Selma 18 012—Dallas	Gen	Corp	30	6	12	16	847
Burwell Infirmary (col)	Gen	CyCo	70	2	27	14	711
Goldsbey King Memorial Hosp	Gen	Corp	50	15	162	12	408
Good Samaritan Hosp (col)	Gen	Corp	50	4	10	8	
Selma Baptist Hospital	Gen	Corp	50	4	10	8	
Vaughan Memorial Hospital	Gen	Corp	50	4	10	8	
Sheffield 6 221—Colbert	Gen	Corp	50	4	10	8	
Colbert County Hospital	Gen	Corp	50	4	10	8	
Sylacauga 4 115—Talladega	Gen	Corp	50	4	10	8	
Drummond Fraser Hospital	Gen	Corp	50	4	10	8	
Sylacauga Infirmary	Gen	Corp	50	4	10	8	

ALABAMA—Continued

JOUR. A. M. A.
MARCH 30 1935

Related Institutions

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Altoona 1 033—Etowah	Gen	Indiv	12	3	23	5	12
Klein Hospital	Gen	State	17	3	0	4	1,061
Birmingham 259 073—Jefferson	Gen	NPAsn	10	3	0	7	392
Alabama Boys Industrial School	Inst	NPAsn	10	3	0	7	170
Children's Home Hosp (col)	Gen	State	10	3	0	7	170
Miss Quinn's Nursing Home	Gen	Indiv	10	3	0	7	170
Salvation Army Home and Hospital	Mat	Church	50	30	87	41	112
Demopolis 4 037—Marengo	Gen	Indiv	10	4	10	1	86
Hand Bailey Hospital	Gen	Corp	10	1	9	10	203
East Talladega, 2,040—Tallapoosa	Gen	Corp	14	1	9	4	13
Community Hospital	Gen	Corp	20	20	158	6	171
Greensboro 1790—Hale	Gen	Corp	20	20	158	6	171
Greensboro Hospital	Gen	Corp	20	20	158	6	171
Mobile 68 202—Mobile	Gen	Corp	20	20	158	6	171
Allen Memorial Home	Mat	Church	20	20	158	6	171
Mobile County Poor Asylum	Inst	County	20	20	158	6	171
Monroeville 1,335—Monroe	Gen	Indiv	10			3	129
Monroeville Infirmary	Inst	State	35			4	1,023
Monterello 1 245—Shelby	Gen	Indiv	29			12	212
Peterson Hall	Gen	Indiv	60			30	2,100
Montgomery 60 079—Montgomery	Inst	State	25				
Eastern Star Hospital	Gen	Frat	25				
Fraternal Hospital (col.)	Gen	Indiv	25				
Libby Prison Hospital	Gen	Indiv	25				
Miriam Jackson Hospital	Inst	State	25				
Mountain Creek 370—Chilton	Inst	State	25				
Jefferson Manly Falkner Soldiers Home	Inst	State	20				
Selma 18 012—Dallas	Inst	State	20				
Alabama Methodist Orphanage	Inst	Church	10			4	203
Talladega 7 506—Talladega	Inst	NPAsn	18	1		1	45
Goodnow Hospital (col)	Inst	NPAsn	620			567	60
Tuscaloosa 20 640—Tuscaloosa	MeDe	State	73			50	94
Partlow State School	MeDe	State	73			50	94
Wetumpka 2,357—Elmore	MeDe	State	73			50	94
State Convict Tuber Hospital TB	State		73			50	94

Summary for Alabama

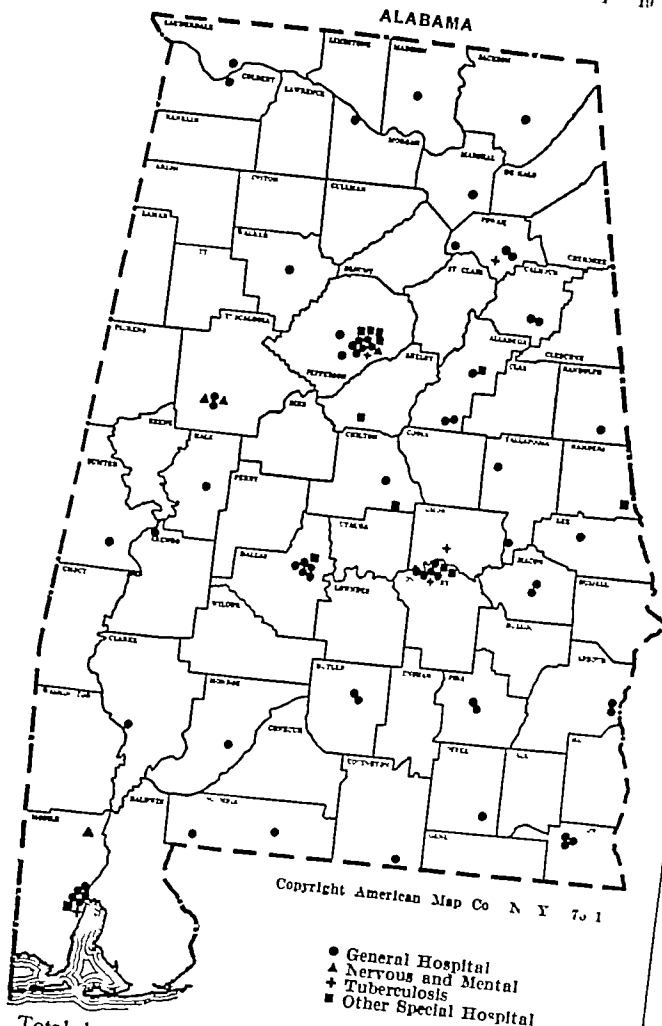
Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted
Related institutions	64	10 420	7 653	80 457
Totals	22	1 169	817	6 729
Refused registration	86	11 579	8 470	87 186

ARIZONA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Ajo 3,000—Pima	Gen	NPAsn	35	5	12	157	
P Phelps Dodge Hospital	Gen	NPAsn	35	5	12	157	
Bisbee 8 023—Cochise	Gen	NPAsn	35	5	12	157	
Copper Queen Hospital	Gen	NPAsn	35	5	12	157	
Douglas 9 023—Cochise	Gen	NPAsn	35	5	12	157	
Cochise County Hospital	Gen	County	93	4	44	73	882
Florence 1,318—Pinal	Gen	County	23	5	32	17	104
Pinal County Hospital	Gen	County	23	5	32	17	104
Ft Defiance 39—Apache	Gen	County	23	5	32	17	104
Ft Defiance Sanatorium	TB	I A	20			18	73
Southern Navajo General Hosp	Gen	I A	20			18	73
Ft Hunchuca 1 214—Cochise	Gen	I A	20			18	73
Station Hospital	Gen	I A	20			18	73
Ganado 34—Apache	Gen	Army	40	1	22	23	632
Sage Memorial Hospital	Gen	Church	65	15	49	61	576
Globe 7 157—Gila	Gen	Church	65	15	49	61	576
Gila County Hospital	Gen	County	40	4	No data supplied		
Jerome 4 032—Yavapai	Gen	County	40	4	No data supplied		
United Verde Copper Company Hospital	Gen	Corp	52	4	16	20	720
Keams Canyon 36—Navajo	Gen	Corp	52	4	16	20	720
Hopi General Hospital	Gen	I A	40	3	23	29	708
Kingman 2,000—Mohave	Gen	I A	40	3	23	29	708
Mohave General Hospital	Gen	I A	40	3	23	29	708
Leupp 58—Cocconino	Gen	County	35	5	34	8	243
Leupp Indian Hospital	Gen	County	35	5	34	8	243
Mesa 3 711—Maricopa	Gen	I A	40	2	10	29	700
South Side District Hospital	Gen	I A	40	2	10	29	700
Morrell 6 175—Greenlee	Gen	NPAsn	20	2	30	11	610
Phelps Dodge Hospital	Gen	NPAsn	20	2	30	11	610
Vogales 6 000—Santa Cruz	Gen	Corp	18	3	6	3	154
Phoenix 48 118—Maricopa	Gen	Corp	18	3	6	3	154
Phoenix Indian Hospital	Gen	Corp	18	3	6	3	154
Phoenix Indian Sanatorium	Gen	Corp	18	3	6	3	154
Phoenix Sanatorium	Gen	Corp	18	3	6	3	154
St Joseph's Hospital	Gen	Corp	18	3	6	3	154
Arizona State Hospital	Gen	Corp	18	3	6	3	154
Booker T Washington Memorial Hospital (col)	Ment	State	048			870	340
Good Samaritan Hospital	G&TB	Indiv	22	8	38	8	148
Phoenix Indian Hospital	Gen	Church	120	20	375	79	3,000
Phoenix Indian Sanatorium	Gen	Church	120	20	375	79	3,000
Phoenix Sanatorium	Gen	Church	120	20	375	79	3,000
St Luke's Hospital	TB	I A	160	5	50	53	1,292
St Luke's Home	TB	I A	160	5	50	53	1,292
Prescott 5,517—Yavapai	Gen	Church	80			20	35
Mercy Hospital	Gen	Church	173	15	360	58	4,015
Pamsetgaaf Sanatorium	TB	Indiv	75			22	63
St Luke's in the Mountains	Gen	Church	30	7	63	14	580
Ray 2 450—Pinal	TB	Indiv	30	7	63	14	580
Ray Hospital	TB	Indiv	30	7	63	14	580

Key to symbols and abbreviations is on page 1091



Total hospitals in Alabama, 86 general 62 general beds occupied, 541 per cent population per general bed 514

Talladega 7,506—Talladega	Gen	Corp	50	4	20	12	783
Citizens Hospital	Gen	Corp	50	4	20	12	783
Troy 6,814—Pike	Gen	Corp	50	4	20	12	783
Beard Memorial Hospital	Gen	Corp	50	4	20	12	783
Edge Hospital	Gen	Corp	50	4	20	12	783
Tuscaloosa 20 650—Tuscaloosa	Gen	Corp	50	4	20	12	783
Bryce Hospital	Gen	Corp	50	4	20	12	783
Druid City Hospital	Gen	Corp	50	4	20	12	783
Veterans Admin Facility	Gen	Corp	50	4	20	12	783
Veterans Admin Facility (col.)	Gen	Corp	50	4	20	12	783
Tuskegee Institute 200—Macon	Gen	Corp	50	4	20	12	783
John A. Andrew Memorial Hospital (col.)	Gen	Corp	50	4	20	12	783

treated since Feb 15, 1932. Six weeks after injections were begun, ecchymosis developed at the injection site. She was treated twice a week for five months and after that once a week irregularly. At the last examination, April 7, 1933, she was still getting purpuric spots on the arms and legs. So far, there has been no response to the venom.

CASE 20—S J, a woman, aged 30, with Schönlein-Henoch's purpura, had had recurrent purpura, hematuria and a history of prolonged and profuse menstrual periods. Treatment was begun in the early part of 1932, twice a week. The patient was sensitized and desensitized. The first period after she had received treatment for several weeks was shorter and less profuse, hematuria disappeared and she was almost free from purpuric symptoms. The treatment was continued for six months. It had to be given for a number of months before striking improvement was noted.

CASE 21—I S, a boy, aged 12, with Schönlein-Henoch's purpura had had persistent recurrent purpuric spots on the arms and legs accompanied with pain and swelling of joints, occasional nosebleeds, intestinal colic and passage of blood. At the time treatment was started (March 1933) the symptoms had been approximately of six weeks' duration. By March 27 the patient was sensitized and desensitized. From then on he was treated once a week. Definite continuous improvement followed. The nosebleeds and hematuria have disappeared but occasional purpuric eruptions occur around the ankles. The treatment is now given once every two weeks and the only symptom that remains is the appearance of an occasional purpuric eruption around the ankles.

CASE 22—A F, a man, aged 60, had recurrent hemorrhagic bursitis of the elbows and knees. The blood picture was normal. Treatment was begun in March 1932. After five injections, the bursitis disappeared and has not recurred.

CASE 23—T C, a man, aged 42, had had recurrent purpuric eruptions on the legs for months, especially after drinking wine. The blood count was normal. He was treated twice a week from April 1932 through December 1932 with no effect.

CASE 24—Mrs B, aged 50, had recurrent purpura and occasional bizarre giant ecchymoses, from 5 to 6 cm in diameter, especially noticeable on exertion. The blood picture was normal, allergic tests were negative. A widespread localized edematous and hemorrhagic reaction followed the injection of venom. The patient was injected twice a week for months. At first it seemed as though there was a decrease in recurrences, but in the last few months the venom has had almost no effect on the course of this disease.

This form of purpura or recurrent ecchymoses is probably not a true clinical entity. It comprises conditions such as Schönlein-Henoch's purpura, or hemorrhagic capillary toxicosis, anaphylactic purpura or possibly ovarian dysfunction. The blood picture, especially blood platelets, coagulation time and clot retraction, is always normal. Occasionally the tourniquet test may be positive, indicating some form of capillary disturbance. Six out of nine patients treated showed immediate signs of improvement. Snake venom proved ineffective in three cases.

4 Osler's Disease (Multiple Hereditary Telangiectases)

CASE 25—Miss B, aged 23, had had epistaxis and nasal discharge for many years. In the past few years the nasal bleeding lasted at least twenty minutes, three or more times a week. Her father had frequent nosebleeds. Examination of the nares revealed multiple telangiectases in nasal mucosa and bilateral antrum disease. No relief of symptoms was obtained from local treatment or roentgen therapy. Treatment with snake venom was started, Oct 3, 1932. She became sensitized on the fifth injection and was desensitized by October 27 and then treated with venom once a week. October 31, the patient reported that there was no bleeding. There was no bleeding in November or December. In January a slight epistaxis occurred. She was then treated twice a month and the bleeding increased. She did not appear for three weeks and then reported several nasal hemorrhages. Under treatment given

once a week since that time no bleeding has been reported. The areas of telangiectases have markedly decreased in size.

CASE 26—W A, a man, aged 50, had had bleeding from the nose and mouth for six years. His father also had had frequent nosebleeds. The patient had been treated with radium with no relief. In the last two and a half months before treatment with venom, bleeding had been very profuse and almost daily. Small and large telangiectases were found on the tongue, the lips and the nasal mucosa, and small spider nevi were scattered over the body. The blood picture was normal. Treatment was started, Nov 11, 1932, two or three times a week in large doses of 1 cc. Within two weeks there was less bleeding. November 28, the patient became sensitized and as the amount of venom was decreased in the process of desensitization the bleeding recurred. By Feb 6, 1933, it was found that two injections a week of full 1 cc doses kept the patient under fairly good control, although bleeding tended to recur when the injections were decreased. Since that time, some of the telangiectases have disappeared.

CASE 27—Mrs S S, aged 49, had had daily nosebleeds for years. She had a sister and a daughter who bled from the nose. Telangiectases were found on the tongue, lips, mucous membranes of the cheeks and in the nasal mucosa. Treatment was begun, May 20, 1932. The hemoglobin was 74 per cent. Injections were made twice a week. The bleeding continued through May, at which time the hemoglobin dropped to 60 per cent. The patient was sensitized and desensitized, during which time the bleeding continued. In July, injections were given once a week because the patient could not come more often. The bleeding diminished. Later, treatment was given every two weeks until the present time. She still bleeds occasionally but there is a marked decrease in the amount and frequency. Once during this time she was admitted to the hospital and it was found that if the injections were given frequently (three times a week) bleeding could be controlled. The telangiectasia of the tongue have almost disappeared, although there are still some in the nasal mucosa.

CASE 28—M, a boy, aged 6 years, living in Maine, somewhat out of touch with an active clinic, was suffering from familial telangiectasia of the nose and had bled almost continually throughout the last half of his life. After the onset of the treatment a very encouraging record of some thirty-five days without any nasal hemorrhage was set. Then, after the onset of a nasal pharyngitis, he had four consecutive, severe hemorrhages. Resumption of the treatment with the venom was followed by a remarkable improvement.

Previous to treatment with snake venom, other forms of treatment were used, such as boiling water, coagulants, horse serum or radium, with only slight or no improvement. The treatment with the snake venom produced definite control of the bleeding. The treatment, however, in such cases must be kept up indefinitely, more frequently at first and less frequently later, once a week or once in two weeks, depending on the clinical effect. In two cases some of the telangiectases either disappeared or diminished in size.

B Diseases Associated with Bleeding as a Result of Definite Blood Changes—1 Thrombocytopenic Purpura Haemorrhagica. (a) Cases followed by apparent improvement after snake venom injections.

Nine cases were treated. The patients varied in age from 5 to 65 years. There were eight females and one male in this series. The symptoms were typical in most of the cases, namely, hemorrhages from mucous membranes, purpura and ecchymoses in the skin and in a number of the women profuse and prolonged menstrual periods. Marked weakness and pallor had developed in some as a result of the loss of blood. In all the cases there was a marked reduction in the number of platelets, prolongation of the bleeding time, absence of clot retraction, a positive tourniquet test and a secondary anemia.

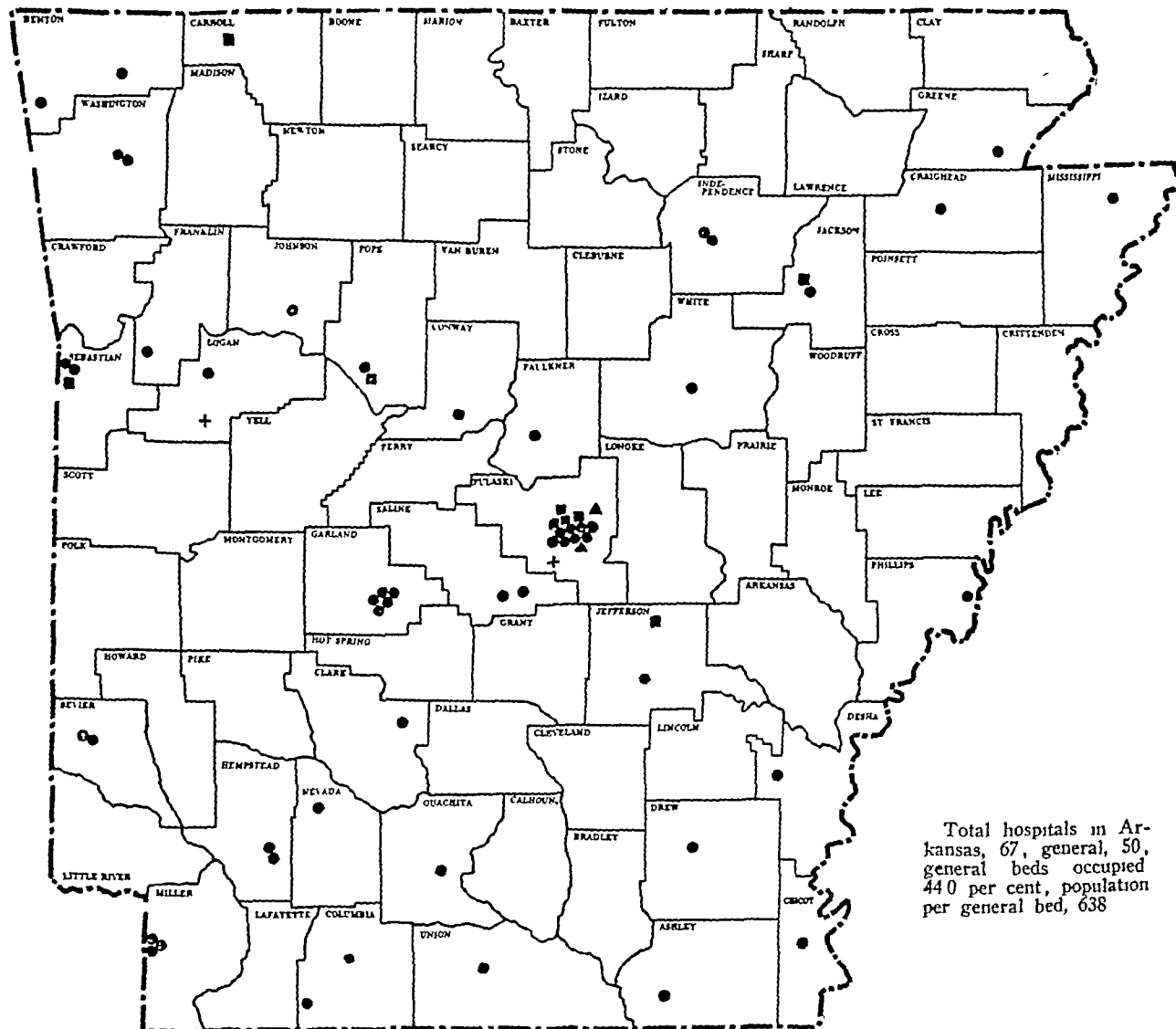
ARKANSAS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
State Hospital	Ment	State	3 503			3,507	1,000
Trinity Hospital	Gen	Corp	44	0	77	17	910
United Friends Hospital (col)	Gen	Frat	25	1	No data supplied		
Magnolia, 3 008—Columbia							
Magnolia Sanatorium	Gen	Part	15	2	No data supplied		
Monticello, 8 076—Drew							
Black Wilson Hospital	Gen	Corp	30		30	0	420
Morrilton, 4 043—Conway							
St Anthony's Hospital	Gen	Church	16	2	14	10	382
Newport, 4 647—Jackson							
Newport Sanatorium	Surg	Part	16	2	No data supplied		
North Little Rock, 19 418—Pulaski							
Veterans Admin Facility	Ment	Vet	820		832		253

ARKANSAS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Shoam Springs, 2 378—Benton							
Shoam Springs City Hospital	Gen	City	10	2	5	5	140
State Sanatorium—Logan							
Arkansas Tuberculosis Sanat	TB	State	524			523	705
Taylor, 263—Columbia							
Bertie Lee Horn Sanatorium	Gen	Indiv	15		80	4	312
Texarkana, 10 764—Miller							
Michael Mengler Mem Hosp	Gen	Church	50	10	58	40	1 002
St Louis Southwestern Hosp	Indus	NP Assn	150			27	997
Related Institutions							
DeQueen, 2 938—Seyler							
Childress Hospital	Gen	Indiv	15	1	6	6	229

ARKANSAS



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• General Hospital
▲ Nervous and Mental+ Tuberculosis
■ Other Special Hospital

Paragonid 5 900—Greene							
Dickson Memorial Sanatorium	Gen	Corp	25	2	12	5	350
Paris 3 234—Logan							
Dr Jewell's Infirmary	Gen	Indiv	18	2			
Pine Bluff 20 760—Jefferson							
United Links Hospital (col)	Gen	Indiv	13		3	1	100
Prestcott 3 033—Beyada							
Corn Donnell Hospital	Gen	Indiv	36	3	31	14	510
Russellville 5 628—Pope							
St Mary's Hospital	Gen	Indiv	55	6	22	25	880
Searcy 3 357—White							
Wakenight Sanatorium	Gen	Indiv	21	1	0	8	478

Ft Smith 31 429—Sebastian							
Sebastian County Hospital	Inst	County	78			75	147
Little Rock, 81 679—Pulaski							
Arkansas Confederate Home	Inst	State	100			143	
Arkansas School for the Blind	Inst	State	20			6	50
Florence Crittenton Home	Mat	NP Assn	30	4	34	18	40
Pulaski County Hospital	Gen	County	200	8	62	192	574
Newport 4 547—Jackson							
Dr Gray's Sanatorium	Gen	Indiv	0	2	3	3	90
Rogers 3 554—Benton							
Home Hospital	Gen	Indiv	8	4	2	1	64

Key to symbols and abbreviations is on page 1091

Total hospitals in Arkansas, 67, general, 50, general beds occupied 440 per cent, population per general bed, 638

REPORT OF CASE

History—Mrs O B, aged 30, noted the first symptoms of pulmonary tuberculosis in February 1929. She was admitted to a sanatorium in April and was transferred to the surgical service of the University of Minnesota Hospital in December for thoracoplasty to obliterate a large cavity in the right lung. After the operation the patient gradually failed. There was continuous pain and discharge from the wound for over a year thereafter. In February 1931, about a year after the operation, albuminuria appeared. In March 1931 the liver was found to be markedly enlarged and amyloid disease was suspected. She was transferred to the medical service. She weighed 110 pounds (50 Kg), the blood pressure was 105 systolic 70 diastolic, and no edema was evident. The liver extended below the umbilicus, but the spleen and kidneys were not palpable. At this time 15 cc. of a 1 per cent solution of congo red dye was injected intravenously. After one hour all the dye was removed from the blood stream. The patient was given a high protein diet, cod liver oil, pills of ferrous carbonate and heliotherapy. Improvement gradually occurred, although her condition was regarded as hopeless. The spleen became palpable in April. At this time a roentgenogram showed an enormously enlarged liver and unusually large kidney shadows though within normal limits of size. During April and May persistent diarrhea occurred which was thought to be due to amyloidosis of the bowel. There was no evidence roentgenographically or otherwise of enteric tuberculosis. The patient continued to improve and after October 1931 her temperature, which had been elevated continually for two years returned to normal. Her weight increased from a low level of 110 pounds (50 Kg) to 129 pounds (58.6 Kg) in December 1931, 142 pounds (64.5 Kg) in February 1932, and at the time of her discharge in May 1932, it was 159 pounds (72.2 Kg). The thoracoplasty wound was still being irrigated. The liver had diminished appreciably in size, and the spleen was still palpable.

Laboratory Observations—Persistent albuminuria was first noted in February 1931. The amounts ranged from 3+ to 4+ (boiled solid). The average amount diminished somewhat and after August was recorded as from 1+ to 2+ which persisted during the period in the hospital. The specific gravity of the urine during the period of albuminuria ranged from 1.009 to 1.029. Concentration-dilution tests performed in March and in October 1931 showed a range of specific gravity from 1.005 to about 1.017 on both occasions. The phenolsulphonphthalein test revealed 70 per cent excretion in two hours in September 1931 and 75 per cent in November 1931. Casts were seen on only a few occasions. Red cells and leukocytes were occasionally noted. In May 1931 the urinary proteins were composed of albumin 0.250 Gm. and globulin 0.134 Gm. The blood proteins totaled 6.06 Gm, of which 1.73 Gm was albumin and 4.33 Gm was globulin. The nonprotein nitrogen level was 22.5 mg and the blood urea nitrogen was 13 mg. The Rehberg test in May 1931 was 107.5 cc. In December 1929 the hemoglobin was 63 per cent and the red cells numbered 3,400,000. There was a diminution to 44 per cent and 2,000,000 respectively in May 1931 but on discharge from the hospital the hemoglobin had increased to 50 per cent and the red cells to 4,500,000.

The congo red test performed in April 1931 showed that all the dye had been absorbed, presumably by amyloid substance. Nine months later (January 1932) only 22 per cent of the dye was absorbed and in April 42 per cent was retained in the tissue, which represents the usual finding in normal persons and indicates resorption or disappearance of amyloid substance. The patient returned home and after a few months gradually resumed her housework.

In March 1935 the patient weighed 200 pounds (91 Kg). She had no symptoms of tuberculosis, felt well and did her housework. The wound had healed, the liver and spleen were not palpable, and the urine contained only a faint trace of albumin.

COMMENT

Until recent years a diagnosis of amyloid disease during life rested largely on a history of prolonged infectious disease, suppuration or a malignant condition and the signs of enlargement of the liver, spleen or kidneys, anemia and albuminuria without evidence, necessarily, of nephritis or nephrosis. Under

these circumstances the diagnosis was often uncertain, and if patients in whom the disease was suspected recovered it was considered doubtful that amyloid disease had existed. Following experimental studies which showed that amyloid substance was often resorbed, provided the causative factors were removed before the disease had progressed too far, and the introduction of specific tests for the disease, numbers of cases of recovery have been observed, to which the case here reported is added.

TREATMENT OF ACUTE DINITROPHENOL POISONING

M L TAINTER MD SAN FRANCISCO

Because of the widespread use of alpha-dinitrophenol in treating obesity and the repeated emphasis on its toxicity when taken in overdosage, a new toxicologic problem seems to be developing. This arises chiefly from the selection of dinitrophenol as the lethal drug by would-be suicides, but partly also as accidental poisoning resulting from use of proprietary or secret products containing the drug. In order to attain a position in the list of popular suicidal agents, a drug apparently must combine certain properties not necessarily related to its therapeutic usage. That is, its action must be dramatic enough to be associated in the lay mind with powerful effects and certainly fatal outcome. The drug must be commonly available, so that it can be taken without undue delay when the decision for suicidal attempt is made. It is also well known that the popularity of a drug for this purpose fluctuates in direct proportion to the newspaper space given to sensational accounts of its effect and suicidal use. These various factors are combined almost ideally in dinitrophenol to make it the poison of choice. Hence it is likely to appear with increasing frequency in cases of acute poisoning. That is, it is readily available, it has received the required newspaper publicity to establish it in the lay mind as a fatal drug, and it occupies an almost unique dramatic position in that it literally burns a patient to death. In view of these circumstances, practicing physicians should be informed of the symptoms and the proper measures to be used in treating such acute poisoning.

The symptoms of dinitrophenol poisoning may vary with the dose. High or toxic doses cause nausea and gastro-intestinal distress, marked sensations of heat, flushed skin, marked sweating, restlessness, rapid and deep respiration, and fever. As the fever increases, the respiration becomes extremely rapid and of maximum depth until the victim is using all his accessory muscles of respiration in a terrific effort to force more and more air into his lungs. There may be pain in the chest, or anginal cramps at this stage, as well as sensations of intense heat. If a fatal dose has been taken the respiration finally fails to keep up with the increased oxygen consumption, the blood becomes cyanotic, and anoxemia develops. With the anoxemia there is a piling up of lactic acid in the tissues which, associated with a high fever of over 110 F, quickly causes heat rigor of the skeletal muscle. The rigor appears first in the extremities and then spreads to the respiratory muscles, so that death promptly follows.

There is no specific chemical antidote capable of neutralizing or destroying dinitrophenol in the body. Treatment of such poisoning must therefore be directed at the symptoms and to the removal of the drug from the body. When the patient is first seen, the stomach should be washed out with large volumes of water, preferably containing sodium bicarbonate, 5 per cent strength. Dinitrophenol does not readily dissolve in water in the presence of the acid of the stomach, hence alkalization is desirable. A large volume of fluid may be left in the stomach to replenish the water that has been lost by the profuse sweating. Actual danger to life arises from the failure to oxygenate the blood and from the excessive fever. The oxygen saturation of the blood may be maintained by inhalation of pure oxygen through a mask or preferably in a suitable tent, if the latter is available. The fever can be combated by putting the victim in a bathtub containing ice water, or in an ice pack. This will generally reduce the body temperature very quickly and keep it within normal limits. However, the application of intense cold to the skin probably has other effects than mere abstraction of heat from the body. Animal experiments have shown that, at atmospheric temperatures of only a few degrees above freezing, the metabolic stimulation of the

CALIFORNIA—Continued

REGISTERED HOSPITALS

Hospitals and Sanatoriums
 St Vincent Hospital*
 Santa Fe Coast Lines Hosp
 Southern California Sanit
 Terry Sanitarium Hospital
 White Memorial Hospital*
 Los Banos 1875—Merced
 Los Banos Hospital
 Los Gatos 3168—Santa Clara
 Oak & Sanitarium

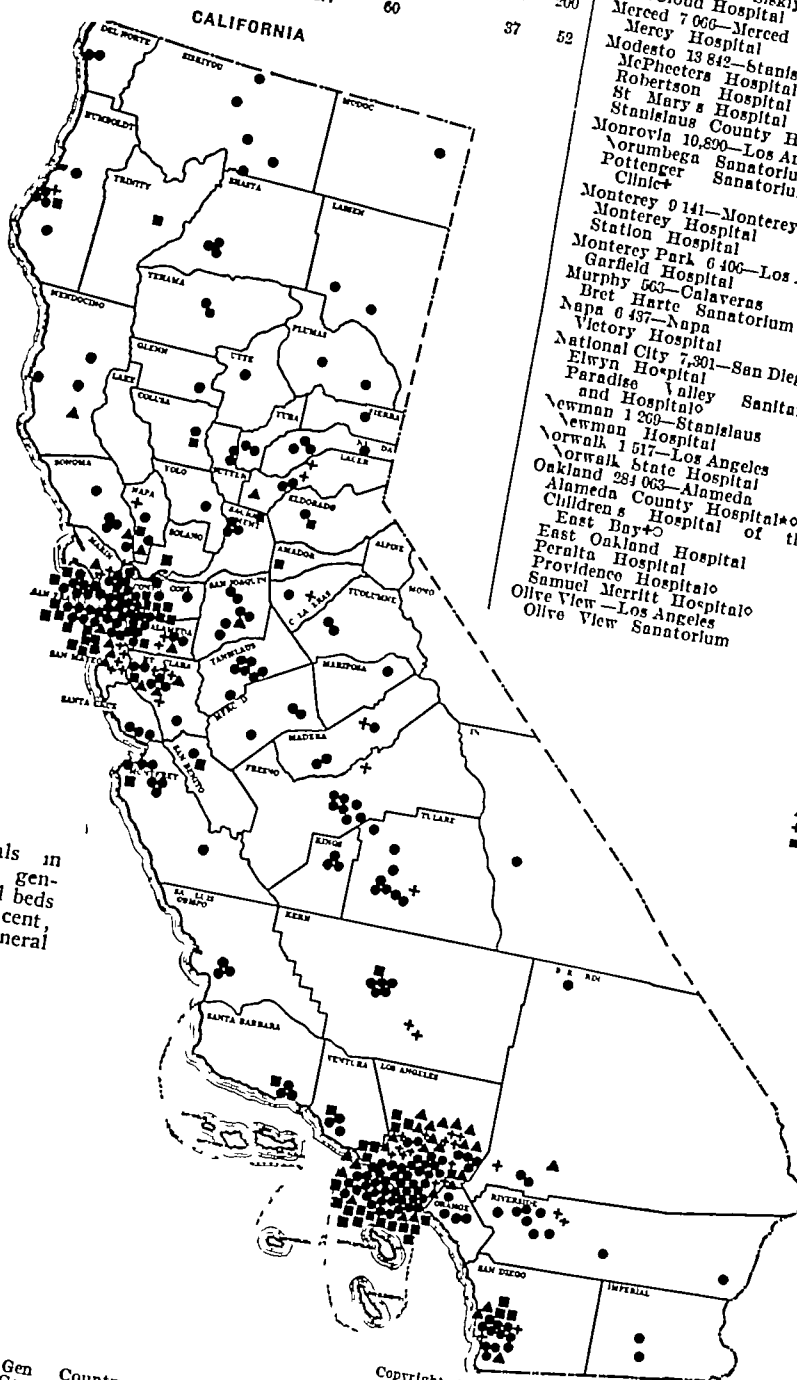
Type of Service	Control	Beds Rated Capacity	Basins	Number of Births	Average Patients	Patients Admitted
Gen	Church	200	40	403	128	4,409
Indus	NPAsen	150			97	1,860
Chr	Indiv	57			16	374
Gen	Indiv	24			13	130
Gen	Corp	12			13	130
Gen	Church	112			451	73
TB	Indiv	60			5	200
					37	52

CALIFORNIA—Continued

JOUR A N A
 MARCH 30 1935

Hospitals and Sanatoriums

Type of Service	Control	Beds Rated Capacity	Basins	Number of Births	Average Patients	Patients Admitted
Gen	County	250	12	10	200	2,448
Gen	Corp	30	6	2	12	649
Gen	Indiv	20	9	50	15	610
Gen	Corp	32	6	37	7	402
Gen	Indiv	30	7	134	18	1,033
Gen	Indiv	33	5	60	18	844
Gen	Indiv	35	8	117	10	813
Gen	Church	22	8	78	7	1,013
Gen	County	209	17	157	195	2,383
TB	Indiv	20			15	40
TB	Corp	120			51	87
Gen	NPAsen	50	6	28	13	560
Gen	Army	60	2	9	38	910
Gen	NPAsen	33	10	115	13	600
TB	County	180			128	133
Gen	Corp	26	6	70	10	578
Gen	Part	12			2	124
Gen	Church	100	16	337	54	1,572
Gen	Part	11	3	17	4	28
Ment	State	2,262			2,287	977
Gen	County	318	20	838	202	10,406
Chil	Corp	60			20	1,033
Gen	Corp	70	18	54	45	2,330
Gen	Corp	124	30	514	67	3,098
Gen	Church	212	30	369	63	2,512
Gen	NPAsen	150	18	413	90	4,073
TB	County	917			943	694



Total hospitals in California, 382 general, 239 general beds occupied, 63.4 per cent, population per general bed 208

• General Hospital
 ▲ Nervous and Mental
 + Tuberculosis
 ■ Other Special Hospital

Gen	County	43	5	52	30	707
Gen	Indiv	20	3	38	9	224
TB	NPAsen	44				59
Gen	Army	90	6	48	40	1,000
Gen	Navy	534				208
						220
Orange 8066—Orange						
Orange County Hospital*	Gen	County	2.5	18	240	3,020
St Joseph Hospital*	Gen	Church	100	20	201	40
Oxnard 6,280—Ventura	Gen	Church	50	12	101	9
St John's Hospital						461
Pacifica 1,012—Los Angeles						
Independent Order of Foresters						
California Tuberculosis Sanatorium						

Key to symbols and abbreviations is on page 1091

TB Frat 120

Madera 466—Madera
 Madera County Hospital
 Madera Sanitarium
 Manor—Marin
 Arcadia Sanatorium
 March Field—Riverside
 Station Hospital
 Mare Island 410—Solano
 U S Naval Hospital

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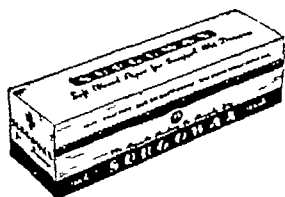
SURGOWAX (Waxed Paper) ACCEPTABLE

Manufacturer, The Menasha Products Company, Menasha, Wis

Surgowax is a waxed paper especially prepared for surgical wet dressings. It is made from full bleached Hemlock pulp, under sanitary and sterile conditions. It is craped and steam treated and coated with refined paraffin. It is prepared in rolls, each strip 12 inches wide and 150 feet long, and each roll encased in a cardboard carton with a cutter edge.

Claims for this product, according to the firm, are that it is moisture resistant, soft and pliable, will not irritate tissues and will conform to the shape of any part of the body to which it is applied as a bandage. This makes it desirable as an economical method in connection with wet dressings.

Surgowax has been used in a clinic acceptable to the Council for several months. It was found to be a good protective covering for wet dressings. It can be molded into position about joints or about the face better than can stiffer material commonly used in covering wet dressings.



Surgowax (Waxed Paper)

In view of the favorable report the Council on Physical Therapy voted to include Surgowax in its list of accepted devices.

NU-HESIVE GAUZE BANDAGE ACCEPTABLE

The Nu-Hesive Gauze Bandage a latex-treated bandage, is manufactured by the Diadem Surgicals, Inc., Fitchburg, Mass. Packing of Nu-Hesive is in two forms: one, the hospital and physician's line, is packed twelve rolls, individually and cellophane wrapped, in each box; two, the retail line, is packed forty-eight one-inch to the carton. Each roll in a separate box, and the two-inch, twenty-four in.

Nu-Hesive Gauze Bandage is the trade name for the product. It is made from sterilized gauze which is impregnated with a practically nonabsorbent cohesive latex, leaving the interstices of the fabric partially open. The process of application requires squeezeroll control of the quantity of applied latex solution, followed by electric-heat-radiation drying while in suspension. Five-yard rolls are wrapped with paper in the machine, following which a bandage cut-off operation is accomplished with knives running in sterilizing solution. According to the firm the cellophane-wrapped rolls, with one end still open, are placed in a sterilizing cabinet for sufficient time to destroy bacteria; the rolls individually boxed are sterilized in the same way with the box, before closing.



Nu-Hesive gauze bandage

The company claims that the package is sterile and free from bacteria and micro-organisms that is until it is opened. It is quick to apply and is strong yet it can be torn off as used, no scissors are needed. It will not stretch or shrink, sticks to itself, and will not adhere to the wound or skin. Surface bleeding may be stopped with a four-layer coverage. The bandage is not affected by water or by alcohol and it does not loosen easily. It is a stiff support, several layers produce a "cast" effect. There is little or no discoloration of the area covered.

The firm does not claim that 'Nu-Hesive' eliminates entirely the use of ordinary cotton bandage or adhesive bandages but in selected instances it is of great value. After the Council investigated "Nu-Hesive" it was recommended for and included in the Council's list of accepted products.

Council on Pharmacy and Chemistry**PRELIMINARY REPORTS OF THE COUNCIL**

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
PAUL NICHOLAS LEECH Secretary

SNAKE VENOM SOLUTION MOCCASIN (LEDERLE)

Elsewhere in this issue of *THE JOURNAL* appears an article by Peck and Rosenthal¹ on the "Effect of Moccasin Snake Venom in Hemorrhagic Conditions." At the suggestion of the authors the manufacturer (Lederle Laboratories, Inc.) has submitted the product to the Council in order that a statement of the Council's conclusions might appear in the same issue as the report of the investigators.

Snake Venom Solution Moccasin was first used experimentally by Peck and Sobotka,^{2a} who attempted to produce Schwartzman's phenomenon (local hemorrhagic necrosis) by the use of local and intravenous injections of bacterial toxic filtrates with fungus extracts. They injected rabbits with snake venom and, after allowing from fourteen to thirty days to elapse, found these animals refractory to Schwartzman's phenomenon. Further experimentation determined that there were no circulating antibodies and that antivenom had no effect on the course of the phenomenon. They therefore believed that the induced refractory state was due to some change in the vessel wall which prevented the occurrence of the phenomenon.

Peck² found that while moccasin and copperhead venom produced this refractory state bothrops and rattlesnake venoms did not. He also found that it was necessary to titrate moccasin venoms for potency and that there was no relationship between the toxicity (i. e., neurotoxicity) of individual moccasin venoms and their ability to produce the refractory state. These experiments were followed by the clinical use of moccasin snake venom in various hemorrhagic conditions.³

ADMINISTRATION AND DOSAGE

In the earlier work of Peck³ and of Peck and Goldberger⁴ the venom was given intradermally, later Peck and Rosenthal⁵ reported that subcutaneous injections gave the same results and were less painful to the patient. The material to be injected consisted of the venom diluted 1:3,000 with physiologic solution of sodium chloride. Further dilutions were sometimes necessary for desensitization. The procedure now reported consists of an initial dose of 0.4 cc, which is subsequently increased to 1 cc. Injections are given twice weekly, variation being governed by the effectiveness of the treatment, sensitization and recurrence of symptoms. The same principles apply to the dosages for children, in which the minimum is 0.2 cc and the maximum 0.6 cc. These dosages are said to have been used successfully in children 1 year of age. Successive injections were usually given in the same extremity.

USUAL REACTION

Local reaction is reported to occur at the site of the injection and to vary considerably in the size of the ecchymotic area. This occurs principally with the first few injections.

SENSITIZATION AND DESENSITIZATION

Peck⁴ had previously reported hypersensitivity in 75 per cent of patients with allergic manifestations, a changed reaction in

1 Peck S M and Rosenthal Nathan Effect of Moccasin Snake Venom (*Ancistrodon piscivorus*) in Hemorrhagic Conditions this issue p 1066

2a Peck S M, and Sobotka Harry Production of a Refractory State as Concerns the Schwartzman Phenomenon by the Injections of Venom of the Moccasin Snake (*Ancistrodon piscivorus*) J Exper Med 54: 407 (Sept) 1931

2 Peck, S M A Refractory State as Concerns the Schwartzman Phenomenon J Immunol 25: 447 (Nov) 1933

3 Peck S M Attempts at Treatment of Hemorrhagic Diathesis with Snake Venom Proc Soc Exper Biol & Med 20: 579 (Feb) 1932 Peck S M and Goldberger M A The Treatment of Uterine Bleeding with Snake Venom Am J Obst & Gynec 25: 887 (June) 1933

Peck S M and Rosenthal Nathan Effect of Moccasin Snake Venom in Hemorrhagic Conditions (this issue p 1066)

4 Peck, S M Sensitization and Desensitization in Man with Snake Venom, Arch Dermat & Syph 27: 312 (Feb) 1933

CALIFORNIA—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Artesia 3891—Los Angeles	N&M	Indiv	21		No data supplied		
Dr Hansen's Sanitarium							
Auburn 2,661—Placer	Gen	County	130	4	48	110	940
Placer County Hospital							
Azusa 4868—Los Angeles							
Physiotherapy Institute and Rural Rest Home	Conv	NPAasn	45			43	110
Bakersfield, 26 015—Kern							
R. B. Rees Hospital	Surg	Indiv	10		No data supplied		
Trinity Hospital	Gen	Indiv	24	5	No data supplied		
Belmont 984—San Mateo							
Chas S Howard Foundation	TB	NPAasn	20				
Reed Sanitarium	N&M	Indiv	25			17	60
Berdoe Camp—Riverside							
Berdoe Hospital	Indus	NPAasn	20			19	614
Berkeley 82 109—Alameda							
California State Schools for the Deaf and Blind	Inst	State	22			6	278
Bythe 1020—Riverside							
Frank Luke Memorial Hosp	Gen	County	6	3	20	2	266
Chula Vista 3,869—San Diego							
McNabb Hospital and Sanit	Inst	NPAasn	20			24	
Claremont 2 710—Los Angeles							
Claremont College Infirmary	Inst	Corp	24			3	207
Colusa 2,116—Colusa							
Colusa County Hospital	Inst	County	65	2	25	52	210
Corona 7,018—Riverside							
Corona Hospital	Gen	Part	8	3	20	3	260
Coronado, 5425—San Diego							
Coronado Hospital	Gen	Indiv	14	5	05	4	377
Crescent City 1 720—Del Norte							
Del Norte County Hospital	Gen	County	22	1	12	2	66
Culver City 5 669—Los Angeles							
St. Erna Sanitarium	N&M	Indiv	40			35	72
Decoto 610—Alameda							
Masonic Home Hospital	Inst	Frat	50			45	
Dinuba 2,068—Tulare							
Dinuba Hospital	Gen	Indiv	10	4	11	2	210
Eldridge 16—Sonoma							
Sonoma State Home	MeDe	State	2,500			2505	258
Eureka 15 752—Humboldt							
Humboldt County Isolation Hospital	Iso	County	16		No data supplied		
Fowler 1 171—Fresno							
Fowler Sanitarium	Gen	Indiv	6	3	12	2	120
Glendale, 62,730—Los Angeles							
Villa Shaw Rest Home	N&M	Indiv	26			25	12
Hills 216—Slackyou							
Hills Hospital	Gen	Indiv	6	2	9	1	50
Hobart Mills 516—Nevada							
Hobart Estate Company Hosp	Gen	NPAasn	10	3	3	2	50
Hollister 3 767—San Benito							
San Benito County Hospital	Inst	County	54	1		37	145
Hondo—Los Angeles							
Los Amigos Rancho Psychiatric Unit	Ment	County	552			550	235
Keene 164—Kern							
Kern County Preventorium	TB	County	44			43	65
Kingsburg 1,322—Fresno							
Kingsburg Sanitarium	Gen	Indiv	8	3	30	4	150
La Crescenta 1 510—Los Angeles							
Kimball Sanitarium	N&M	Indiv	24			15	45
La Mesa 2 513—San Diego							
La Mesa Sanatorium	TB	Indiv	20			3	20
Lincoln 2,094—Placer							
Joslin's Sanitarium	N&M	Indiv	15			7	8
Livermore 3 119—Alameda							
Del Valle Preventorium	TB	County	85				
Lone Pine 360—Inyo							
Lone Pine Hospital	Gen	Indiv	7	4	15	2	85
Los Angeles 1 238 048—Los Angeles							
Banksia Sanitarium	N&M	Corp	18			14	23
Chase Diet Sanitarium	Conv	Indiv	22			11	111
Doughty Sanatorium	TB	Indiv	12			8	23
Florence Crittenton Home	Mat	NPAasn	30	20	53	20	72
Junior League Convalescent Home for Children	Conv	NPAasn	24			20	67
Juvenile Hall Hospital	MeDe	County	80			71	3 785
Las Palmas Rest Home	Nerv	Indiv	10			8	14
Los Angeles Smallpox Quarantine Hospital	Iso	City	100				
Reathaven	N&M	NPAasn	40			23	97
St Barnabas Rest Home for Men	Conv	Church	14			10	98
St Vincent's Maternity Home	Mat	NPAasn	10	10	72	20	72
Salvation Army Women's Home and Hospital	Mat	Church	60	40	137	43	200
Loyalton 837—Sierra							
Sierra Valley Hospital	Gen	Indiv	8	1	9	2	91
Manteca 1 614—San Joaquin							
Manteca Hospital	Gen	Indiv	8	4	13	65	
Marysville 5 763—Yuba							
Yuba County Hospital	Gen	County	97	5	41	83	558
Merced 7 066—Merced							
Merced General Hospital	Gen	County	220	11	194	211	1,856
Monrovia 10,800—Los Angeles							
Canyon Preventorium	TB	NPAasn	90			90	271
Maryknoll Sanatorium	TB	Church	22			17	23
Mountain View Rest Home	N&M	Indiv	45			45	24
Palm Grove Sanatorium	N&M	Part	35			28	14
Pine Rest Sanatorium	TB	Indiv	18				
Montebello 5,408—Los Angeles							
Los Angeles Convalescent Home	Conv	NPAasn	40			30	305

CALIFORNIA—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Mountain View 3,308—Santa Clara							
Mountain View Hospital and Sanitarium	Gen	Indiv	8			2	350
National City 7 801—San Diego							
Wilhelmine Home	N&M	Indiv	10		No data supplied		
Nevada City 1 701—Nevada							
Nevada City Sanitarium	Gen	Indiv	9	5	70	5	266
Nevada County Hospital	Gen	County	62	4	61	185	
Oakland 284 063—Alameda							
Fl Reposo Sanitarium	Conv	Indiv	15			12	130
Kings Daughters of California Home for Incurables	Inc	NPAasn	110				
Oakland Maternity Hospital	Mat	Indiv	12	12	125	4	123
Salvation Army Women's Home and Maternity Hospital	Mat	Church	35	30	129	50	161
Pacific Grove 5 558—Monterey							
Bayview Hospital	Gen	Indiv	12	5	36	4	163
Pasadena 76 086—Los Angeles							
El Nido Pasadena Preventorium	Conv	NPAasn	40			40	53
Placerville 2,322—Eldorado							
Eldorado County Hospital	Gen	County	55	2	7	40	120
Porterville, 5 303—Tulare							
Mill Street Hospital	Gen	Indiv	12	4			
Mt Whitney Hospital	Gen	Indiv	8	2	21	1	63
Quincy 1 039—Plumas							
Plumas Industrial Hospital	Gen	Indiv	5			1	69
Redding 4 188—Shasta							
Shasta County Hospital	Gen	County	52	7	43	32	531
Repreca 30—Sacramento							
Poison Prison Hospital	Inst	State	76			64	740
Rosemead 2 717—Los Angeles							
Rosemead Lodge	N&M	Indiv	40			31	96
Rose 1 355—Marin							
The Cedars	MeDe	Part	36			81	7
Sallinas 10 263—Monterey							
Monterey County Hospital	Gen	County	120	6	109	90	869
San Andreas 770—Calaveras							
San Andreas Hospital	Gen	Indiv	6	2	1	1	24
San Diego 147 095—San Diego							
Carter Sanitarium	N&M	Indiv	8			4	57
Fraser Sanitarium	Conv	Indiv	21			8	60
Lane Sanitarium	Conv	Indiv	9			6	5
Peterson's Sanitarium	N&M	Indiv	18			10	37
Rest Haven Preventorium	TB	NPAasn	62			50	62
San Francisco 634,304—San Francisco							
Garden Nursing Home	Inc	NPAasn	61			33	80
Laguna Honda Home Infirmary	Inst	CyCo	700			700	
San Francisco Emergency Hospital Service	Emerg	CyCo	115	5		25	890
San Francisco Polyclinic	Gen	NPAasn	13			6	462
San Gabriel 7 224—Los Angeles							
Baldy View Sanitarium	N&M	Part	75			60	54
Mission Lodge Sanitarium	N&M	Indiv	50			44	55
San Jose 57 651—Santa Clara							
Beale Convalescent Home	N&M	Indiv	10			7	20
Sunnyholme Preventorium	TB	County	47			80	10
San Mateo 13 444—San Mateo							
San Mateo Preventorium	TB	NPAasn	28				
San Quentin 328—Marin							
Charles L. Neumiller Hospital	Inst	State	137			127	1,586
San Rafael 8 022—Marin							
Marin County Tuberculosis Hospital	TB	County	16			10	32
Santa Barbara 83 013—Santa Barbara							
La Loma Feliz	CardCh	Indiv	12			7	9
Santa Monica, 37,146—Los Angeles							
Santa Monica Diet Home	Conv	Indiv	10			5	27
Santa Monica Rest Home	N&M	Indiv	52			52	134
Santa Rosa 10 636—Sonoma							
Sonoma County Hospital	Gen	County	153	9	143	136	1,185
Sonoma 2 248—Tuolumne							
Tuolumne County Hospital	Gen	County	26	3	29	24	855
Stanford University 720—Santa Clara							
Stanford Convalescent Home	Chil	NPAasn	70		No data supplied		
Suisun City 605—Solano							
Solano County Hospital	Inst	County	96		No data supplied		
Sunland—Los Angeles							
Sunland Sanatorium	TB	Corp	60			54	70
Ventura 11 432—Ventura							
Ventura School for Girls	Inst	State	40		No data supplied		
Verdugo City 5 006—Los Angeles							
Rockhaven Sanitarium	N&M	Indiv	60			41	28
Veterans Home—Napa							
Veterans Home Hospital	Inst	State	246			140	521
Waterman—Amador							
Preston School of Industry Hospital	Inst	State	42			8	1 485
Weaverville 509—Trinity							
Trinity County Hospital	Inst	County	25			23	
Willows 2,024—Glenn							
Glenn County Hospital	Gen	County	50	1	3	35	420
Wilmar 5 005—Los Angeles							
Jean G. McCracken Home	N&M	NPAasn	48			36	104
Yuba City 3 605—Sutter							
Sutter County Hospital	Gen	County	64	6	No data supplied		
Summary for California							
			Number	Beds	Average Patients	Patients Admitted	
Hospitals and sanatoriums			273	54,938	41,965	427,773	
Related institutions			109	8,211	6,886	26,397	
Totals			382	63,149	48,851	454,070	
Refused registration..			72	2,448			

HOSPITAL SERVICE IN THE UNITED STATES

FOURTEENTH ANNUAL PRESENTATION OF HOSPITAL DATA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

The significance of the hospital as a social institution must impress any one who ponders the compilations presented in these pages. Our thanks for this valuable information are due officers who have so generously responded to our inquiries.

The usual questionnaires were mailed to 6,437 hospitals, and reports were received from 6,230, a percentage of 96.78 replying. Reports still are coming in

ber 1934. The average daily census of patients was 830,098, an increase of 19,827 over 1933.

Patients were admitted to hospitals at the rate of one every 4.41 seconds, including Sundays and holidays.

General hospitals admitted 6,291,556 patients, or 88 per cent of all patients admitted.

The total number of births reported in hospitals was 701,143.

Federal - 37 days

State - 21.5 days

County - 20.6 days

City - 15.5 days

City-County - 17.4 days

Church - 11.4 days

Fraternal - 17 days

Association - 11 days

Ind. and Part. - 8 days

Corporation - 9 days

Governmental - 21.2 days

Non-Proprietary - 11.2 days

Proprietary - 8.7 days

Average length of stay per patient in general hospitals, for 1934

In addition to the foregoing, there are 221 hospitals in Alaska, Hawaii, Puerto Rico and elsewhere, figures from which will be presented separate from those for the states, near the close of this article.

All the hospitals of this country admitted 7,147,416 patients during the period under survey, which corresponds in general with the calendar year 1934, since reports were received mainly in November and Decem-

ber 1934. One person in seventeen made use of a hospital during the year, according to the federal census of 1930, and one in eighteen according to the estimated census for 1934.

The number of idle beds reached a record total of 218,003, of which 156,030 were in general hospitals.

The average length of stay per patient in general hospitals was fourteen days, in mental hospitals, 1,034 days.

In the governmental general hospitals the average length of stay was twenty-one days, and in the non-governmental general hospitals eleven days.

The growth of hospitals for the last twenty-five years has been at the rate of 25,000 additional beds each year.

The growth of hospitals for the last twelve months equals over fifty-seven beds for every day in the year, including Sundays and holidays.

There are 2,226 superintendents who have the M.D. degree, 2,551 registered nurses, and 1,545 without medical or nursing degrees.

Hospitals in the United States employ 6,105 laboratory technicians and 4,300 x-ray technicians.

The measure of quantity of hospital service is the patient day—that is, the care of one patient for one day. During the last year the patient days in all hospitals numbered 302,985,770, a gain of 7,236,855 over the previous year.

The number of hospitals now in the Register of the American Medical Association is 6,334, as compared with 6,437 one year ago, a net decrease of 103 hospitals. This decrease was caused, in part, by thirty-one (net) custodial institutions closing their hospital departments and sending their patients to neighboring general hospitals. The net loss of thirty-nine general hospitals was due mainly to the closing or temporary discontinuance of small institutions for lack of patronage. Forty were dropped from the Register on grounds of ethics, as against twenty-one restored from those formerly rejected. Some were closed on account of merger, and a few have been deleted for lack of information.

In the twenty-five years from 1909 to 1934, during which time the total number of hospital beds mounted from 421,065 to 1,048,101, or an average of 25,081 additional beds a year, there was an almost uniform rate of increase throughout the period. Comparatively little difference was made by war, depression or any other condition. The various departments of government agencies, organizations and individuals that have

COLORADO—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Grand Junction 10,247—Mesa							
St Mary's Hospital	Gen	Church	0	12	110	3	1,020
Greeley 12,203—Weld							
Greeley Hospital	Gen	County	8	15	230	50	1,018
Hayden 554—Routt							
Solandt Memorial Hospital	Gen	NPAasn	12	4	0	3	100
Holyoke 1,236—Phillips							
Holyoke Hospital	Gen	Indiv	8	2	13	3	150
Ignacio 464—LaPlata							
Edward T Taylor Hospital	Gen	I A	3	3	9	12	4.0
La Junta 7,193—Otero							
A T & S F Railroad Hosp	Indus	Corp	30			23	42
Mennonite Hosp and Sanit	G&I B	Church	70	10	95	34	700
Lamar 4,233—Prowers							
Charles Maxwell Hospital	Gen	Corp	0	7	33	12	010
Leadville 3,771—Lake							
St Vincent Hospital	Gen	Church	20	3	10	1	182
Longmont, 6,029—Boulder							
Longmont Hospital	Gen	Indiv	33	7	31	12	450
Montrose 3,566—Montrose							
Montrose Hospital	Gen	Indiv	14	5	32	6	268
St Luke's Hospital	Gen	Indiv	12	2	30	7	254
Oak Creek 1,211—Routt							
Oak Creek Hospital	Gen	Indiv	10	2	12	3	00
Red Cross Hospital	Gen	Indiv	12	2	2	4	230
Ouray 707—Ouray							
Bates Hospital and Sanitarium	Gen	Indiv	2	3	14	7	316
Pueblo 5,000—Pueblo							
Colorado State Hospital	Ment	State	3,120		2,900		503
Corwin Hospital	Gen	Corp	210	10	138	74	1,020
Parkview Hospital	Gen	NPAasn	100	0	121	40	1,030
St Mary Hospital	Gen	Church	1	12	160	70	2,300
Woodcroft Hospital	N&M	Corp	1	10		64	180
Rocky Ford 3,426—Otero							
Physicians Hospital	Gen	NPAasn	10	2	32	7	291
Salida 5,005—Chaffee							
D & R G W Railroad Hosp	Gen	NPAasn	71	4	18	30	834
Red Cross Hospital	Gen	Corp	40	2	12	18	330
Sprink 600—Jefferson							
Sanct of the Jewish Consump							
tives Relief Society	TB	NPAasn	301		153		131
Steamboat Springs, 1,108—Routt							
Steamboat Springs Hospital	Gen	Indiv	10	4	22	3	114
Sterling 7,190—Logan							
St Benedict Hospital	Gen	Church	34	6	70	12	580
Townor 60—Montezuma							
Ute Mountain Indian Hospital	Gen	I A	21	4	14	11	238
Trinidad 11,732—Las Animas							
Mt San Rafael Hospital	Gen	Church	6	10	103	37	1,020
Walsburg 5,503—Huerfano							
Laime Brothers Hospital	Gen	Part	20	3	18	7	280
Wheat Ridge 1,030—Jefferson							
Evangelical Lutheran Sanit	TB	Church	12		60		27
Woodmen 400—Ft Paso							
Modern Woodmen of America	TB	Frat	2		128		157
Sanatorium							
Related Institutions							
Boulder 11,223—Boulder							
Boulder County Hospital	Gen	County	40	6	60	3	300
Mesa Vista Sanatorium	TB	Indiv	30		10		10
Canon City 5,933—Fremont							
Colorado State Penitentiary	Inst	State	2		90		630
Colbran 341—Mesa							
Plateau Valley Congregation	Gen	Church	8	4	18	3	115
Hospital							
Colorado Springs 23,327—Ft Paso							
Myron Stratton Home and	Inst	NPAasn	20		15		00
Hospital							
Denver 287,881—Denver							
Castello Home	TB	Frat	10		10		5
Oakes Home Sanitarium	TB	Church	10		New		
St Francis Sanatorium	TB	Church	10		10		2
Salvation Army Woman's Home							
and Hospital	Mat	Church	8	10	77	4	89
Englewood 7,080—Arapahoe							
Temple Sanatorium	TBConv	Indiv	2		20		190
Fruita 1,003—Mesa							
Fruita Community Hospital	Gen	Indiv	8	1	6	3	134
Golden 2,426—Jefferson							
Hospital State Industrial School	Inst	State	24		4		570
for Boys							
Grand Junction 10,247—Mesa							
State Home and Training School	McDe	State	300		27		16
for Mental Defectives							
Greeley 12,203—Weld							
Island Grove County Hospital	Inst	County	70		64		100
Homelake 225—Rio Grande							
Colorado State Soldiers and	Inst	State	30		15		70
Sailors Home							
Las Animas 2,517—Bent							
Blackwill Hospital	Gen	Indiv	11	3	12	2	70
La Veta 782—Huerfano							
La Veta Hospital	Gen	Indiv	0	1	8		30
Longmont 6,029—Boulder							
St Vrain Hospital	Gen	Indiv	12	3	17	10	158
Loveland 5,506—Larimer							
Loveland Hospital and Clinic	Gen	Part	10	5	27	4	208
Namaqua Hospital	Gen	Indiv	14	4	10	3	144
Monte Vista 2,010—Rio Grande							
Monte Vista Hospital	Gen	Part	9	3	30	7	267
Pueblo 50,090—Pueblo							
City Isolation Hospital	Iso	City	13				

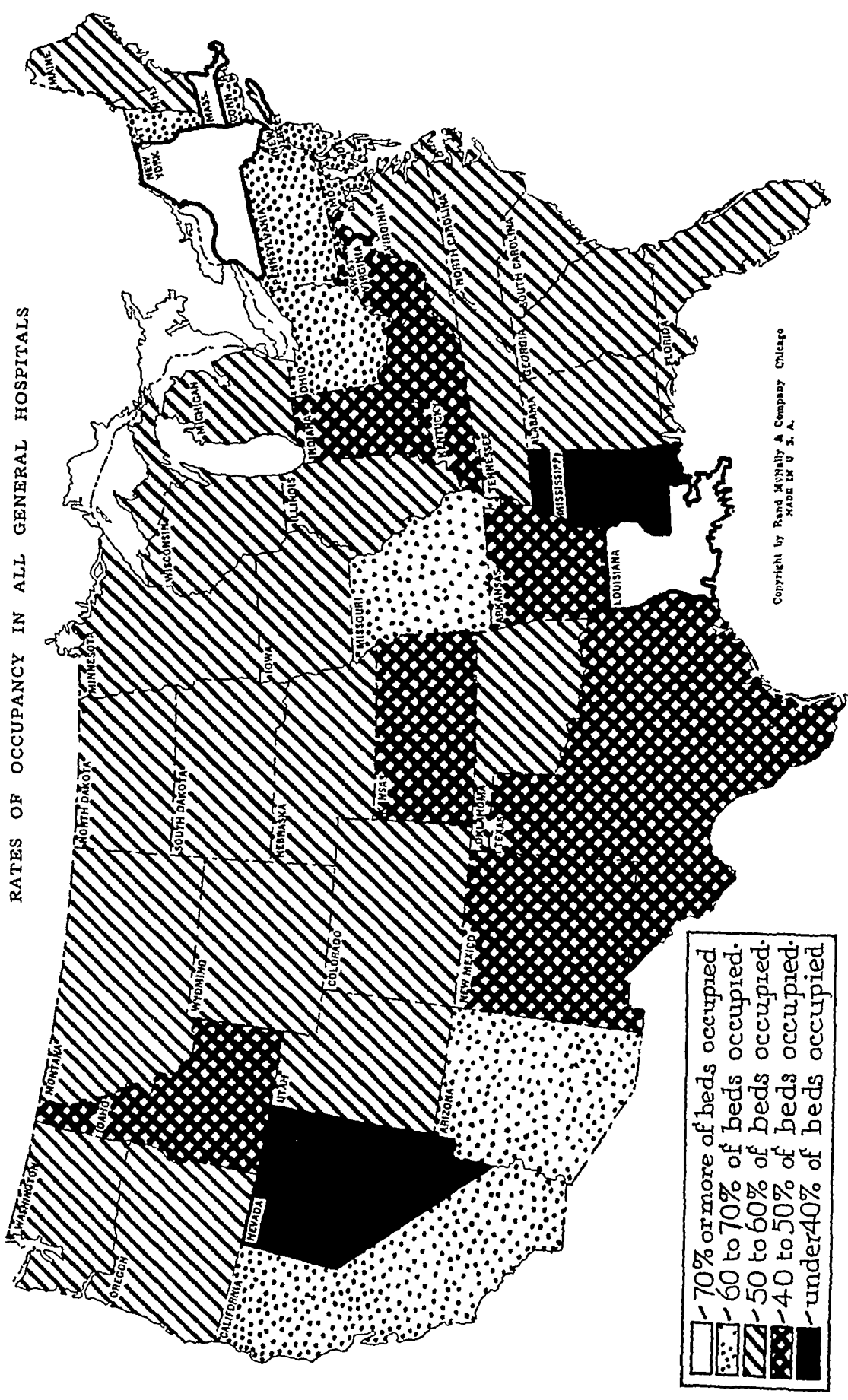
COLORADO—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Ridge 207—Jefferson							
State Home and Training School	McDe	State	200			200	18
for Mental Defectives							
Selbert 273—Kit Carson							
Selbert Hospital	Gen	Indiv	0	2	4	1	40
Windsor 1,802—Weld							
Bartx Memorial Hospital	Gen	Indiv	7	2	14	2	72
Yuma 1,300—Yuma							
Lutheran Deaconess Hospital	Gen	Church	7	11	10	4	177
Summary for Colorado							
Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted			
Related institutions	77	11,330	7,824	76,711			
	20	1,084	700	3,623			
Totals	103	12,414	8,523	80,334			
Refused registration	20	471					

CONNECTICUT

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Bridgeport 140,710—Fairfield							
Bridgeport Hospital	Gen	NPAasn	326	74	1,284	203	7,067
Englewood Hospital	TbIs	City	150			33	695
St Vincent's Hospital	Gen	Church	216	35	690	182	3,468
Bristol Hospital							
Bristol Hospital	Gen	NPAasn	84	22	300	62	2,067
Canaan 50—Litchfield							
Robert C Geer Memorial Hosp	Gen	NPAasn	20	6	31	8	308
Cromwell 2,814—Middlesex							
Cromwell Hall	Gen	Corp	33			16	63
Danbury 22,201—Fairfield							
Danbury Hospital	Gen	NPAasn	112	23	383	86	2,652
Derby 10,788—New Haven							
Griffin Hospital	Gen	NPAasn	80	20	293	54	1,460
Greens Farms 275—Fairfield							
Hall Brooke Sanitarium	N&M	Corp	85			63	119
Greenwich 0,681—Fairfield							
Blythwood	N&M	Corp	70			47	87
Greenwich Hospital	Gen	NPAasn	101	24	310	72	2,170
Hartford 164,072—Hartford							
Cedarcrest Sanatorium	TB	State	287			280	179
Charter Oak Private Hospital	Gen	Corp	14		7	3	157
Hartford Hospital	Gen	Corp	693	87	1,790	523	14,400
Mt Sinai Hospital	Gen	NPAasn	65	10	175	42	1,479
Municipal Hospital	GenIs	City	300	30	351	247	5,082
Neuro Psychiatric Inst and							
Hospital of the Hartford							
Retreat	N&M	NPAasn	200			205	468
St Francis Hospital	Gen	Church	400	75	1,200	297	7,571
Wildwood Sanatorium	TB	NPAasn	0			32	70
Manchester 5,700—Hartford							
Manchester Memorial Hospital	Gen	NPAasn	55	11	209	38	1,141
Meriden, 38,481—New Haven							
Meriden Hospital	Gen	NPAasn	118	18	309	72	2,096
Underhill Meriden State Tu							
berculosis Sanatorium	TB	State	252			231	183
Middletown 24,554—Middlesex							
Connecticut State Hospital	Ment	State	3,024			3,013	790
Middlesex Hospital	Gen	NPAasn	133	27	416	63	2,430
Milford 12,000—New Haven							
Milford Hospital	Gen	NPAasn	50	10	110	18	732
New Britain 68,128—Hartford							
New Britain General Hosp	Gen	NPAasn	200	30	606	131	3,643
New Haven 162,600—New Haven							
Dr I H Evans Private Hosp	Gen	Indiv	7	4	14	4	87
Graco Hospital	Gen	NPAasn	242	44	716	149	4,222
Hospital of St Raphael	Gen	Church	220	30	532	180	5,739
New Haven Hospital	Gen	NPAasn	397	42	694	313	7,070
Newington 4,572—Hartford							
Newington Home for Crippled							
Children	Orth	NPAasn	190			183	184
Veterans Admin Facility	Gen	Vet	260			200	1,310
New London 29,640—New London							
Home Memorial Hospital	Gen	Corp	48	12	125	20	670
Lawrence and Memorial Asso							
ciated Hospitals	Gen	NPAasn	100	30	530	106	9,577
Dr Lena's Surgical Hospital	Surg	Indiv	24	1	1	10	773
New Milford 4,700—Litchfield							
New Milford Hospital	Gen	NPAasn	30	10	63	13	200
Newtown 482—Fairfield							
Fairfield State Hospital	Ment	State	500			428	426
Norwalk 30,019—Fairfield							
Norwalk General Hospital	Gen	NPAasn	142	23	460	83	2,682
Norwich 23,021—New London							
Norwich State Hospital	Ment	State	2,019			2,773	1,301
Norwich State Tuberculosis							
Sanat (Uncas-on Thames)	TB	State	404			300	397
William W Backus Hospital	Gen	NPAasn	127	28	363	92	2,530
Putnam 7,318—Windham							
Day Kimball Hospital	Gen	Corp	75	10	152	45	1,240
Rockville 7,445—Tolland							
Rockville City Hospital	Gen	NPAasn	35	10	73	13	582
Sharon 1,710—Litchfield							
Sharon Hospital	Gen	NPAasn	40	12	140	15	086
Shelton 10,113—Fairfield							
Laurel Heights State Tubercu	TB	State	350			343	231
losis Sanatorium							

RATES OF OCCUPANCY IN ALL GENERAL HOSPITALS



70% or more of beds occupied

60 to 70% of beds occupied

50 to 60% of beds occupied

40 to 50% of beds occupied

under 40% of beds occupied

Occupancy in General Hospitals

The percentages of beds occupied in general hospitals during the year 1934, by states, were as follows

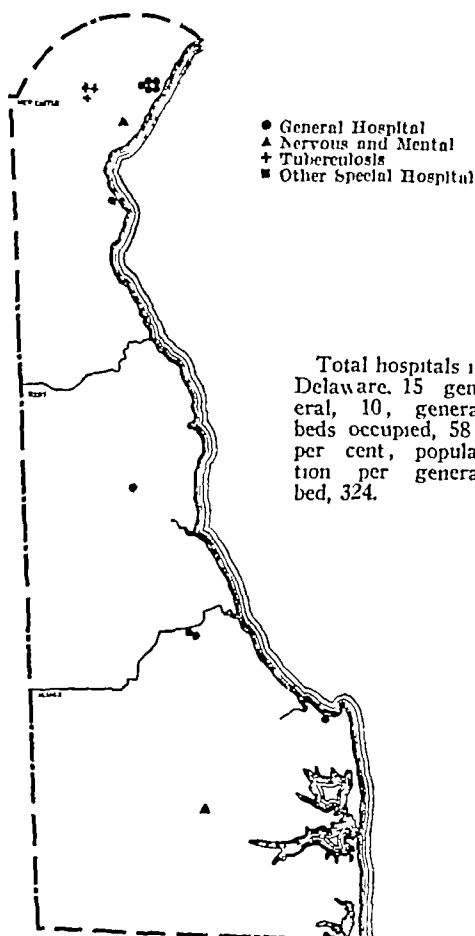
Alabama	54.1	District of Columbia	72.1	Kansas	40.9	Minnesota	59.1	New Jersey	60.5	Oregon	55.5
Arizona	61.3	Florida	51.7	Kentucky	40.3	Mississippi	36.5	New Mexico	40.4	Pennsylvania	61.0
Arkansas	44	Georgia	53.9	Louisiana	78.7	Missouri	62.5	New York	60.6	Rhode Island	57.2
California	63.4	Idaho	46.7	Maine	58.9	Montana	61.5	North Carolina	50.0	Tennessee	53.3
Colorado	57.6	Illinois	68.9	Massachusetts	60.4	Nebraska	52.2	North Dakota	57.3	Utah	59.1
Connecticut	63	Indiana	49.1	Nevada	70.3	New Hampshire	53.9	Ohio	52.5	Vermont	62.4
Delaware	53.7	Iowa	53.5	Michigan	64.8	New Jersey	60.5	Oklahoma	52.5	Washington	56.8
										West Virginia	50.1
										Wisconsin	53.5
										Wyoming	50.1

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DELAWARE

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Dover 4 800—Kent	Gen	Corp	43	8	90	22	812
Kent General Hospital							
Farnhurst 332—New Castle							
Delaware State Hospital*	Ment	State	0/8			871	210
Ft Dupont (Delaware City P O)—New Castle							
Station Hospital	Gen	Army	28			5	130
Lewes 1 923—Sussex							
Beebe Hospital	Gen	NPAasn	60	8	51	18	566
Marshallton 630—New Castle							
Brandywine Sanatorium	TB	State	121			67	74
Edgewood Sanatorium (col)	TB	State	40			32	23
Millford 3,719—Sussex							
Marshall Hospital	Gen	Part	30		26	7	212
Millford Emergency Hospital	Gen	Corp	39	6	68	23	601

DELAWARE



Total hospitals in Delaware, 15 general, 10, general beds occupied, 587 per cent, population per general bed, 324.

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Wilmington 106 597—New Castle	Gen	Corp	176	24	420	183	4 227
Delaware Hospital*	Gen	NPAasn	163	30	469	09	3 338
Homeopathic Hospital	Gen	Church	72	12	228	47	1 770
St Francis Hospital	Gen	NPAasn	116	18	404	72	2 424
Wilmington General Hosp *	Gen	NPAasn					

Related Institutions

Marshallton 630—New Castle	TB	NPAasn	22			50	85
Sunnybrook Cottage							
Stockley 138—Sussex	MeDe	State	380			340	67
Wilmington 106,597—New Castle							
Gross Private Hospital	Gen	Part	16	6		New	

Summary for Delaware

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	12	1,867	1 420	14 660
Related institutions	3	418	372	196
Totals	15	2 285	1 788	14,856
Refused registration	0			

DISTRICT OF COLUMBIA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Washington 486,869							
Carson & Private Hosp (col)	Gen	Indiv	15	4	10	11	286
Central Dispensary and Emergency Hospital*	Gen	NPAasn	270			201	7 157
Chevy Chase Sanatorium	N&M	Indiv	23			19	47
Children's Hospital*	Chil	NPAasn	182			120	4 169
Children's Tuberculosis Sanat (Glenn Dale, Md P O)						New	
Columbia Hospital for Women and Lying In Asylum	TB	City	142				
Eastern Dispensary and Casualty Hospital	Mat	Corp	120	80	1 545	75	2 600
Episcopal Eye Ear and Throat Hospital*	Gen	NPAasn	160	21	16	40	1,515
Freedmen's Hospital (col)***	ENT	Church	100			64	5,238
Gallinger Municipal Hosp***	Gen	Fed	320	44	793	212	4 222
Garfield Memorial Hospital***	Gen	City	706	54	1,892	691	18,071
Georgetown University Hosp**	Gen	Corp	268	43	604	180	7,367
George Washington University Hospital*	Gen	NPAasn	213	51	781	126	4 220
National Homeopathic Hosp	Gen	NPAasn	60	20	221	41	2,309
Providence Hospital*	Gen	Church	211	30	472	133	4 060
St Elizabeths Hospital*	Gen	Fed	446	4	3	377	14,8
St Elizabeths Hospital*	Ment	Fed	5 275			5,000	894
Sibley Memorial Hospital*	Gen	Church	235	75	1 631	181	7,467
Tuberculosis Hospital	TB	City	220			215	210
U S Naval Hospital	Gen	Navy	328			121	971
Veterans Admin Facility	Gen	Vet	327			261	2 091
Walter Reed General Hosp*	Gen	Army	1 120	12	313	851	8 061
Washington Sanitarium and Hospital*	Gen	Church	170	10	178	95	1 838

Related Institutions

Washington 486,869							
Children's Summer Health Camp	TB	NPAasn	150				160
District Training School (Laurel, Md P O)	MeDe	City	540			462	57
Florence Crittenton Home	Mat	NPAasn	10	10	38	3	92
Home for the Aged and Infirm	Inst	City	84			84	155
Kendall House Sanitarium	Conv	Indiv	22			10	100
National Training School for Boys Hospital	Inst	Fed	30			8	835
St John's Orphanage	Inst	Church	15			2	52
U S Soldiers Home Hospital	Inst	Army	500			301	1 451
Washington Eye Ear and Throat Hospital	ENT	Corp	15			1	237
Washington Home for Incurables	Inc	NPAasn	162			137	83

Summary for District of Columbia

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	23	11 029	9 113	88 411
Related institutions	10	1 528	1 162	2 622
Totals	33	12 557	10,275	89 033
Refused registration	0			

Total hospitals in District of Columbia, 33, general, 17, general beds occupied, 721 per cent, population per general bed 91

FLORIDA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Arcadia 4 082—De Soto							
Arcadia General Hospital	Gen	Corp	25	3	No data supplied		
Bartow 5 269—Polk							
Bartow General Hospital	Gen	Indiv	20	4	22	8	486
Polk County Hospital	Gen	County	56	5	33	63	1 076
Bay Pines—Pinellas							
Veterans Admin Facility	Gen	Vet	197			152	1,349
Bradenton 5 086—Manatee							
Bradenton General Hospital	Gen	Corp	15	4	32	5	242
Century 1 820—Escambia							
Turkeyville Hospital	Gen	Part	30	4	22	11	536
Chattahoochee 450—Gadsden							
Florida State Hospital	Ment	State	4 125			8 895	1,077
Clearwater 7 607—Pinellas							
Morton F Plant Hospital	Gen	NPAasn	31	10	61	10	410
Coral Gables, 5 697—Dade							
University Hospital	Gen	Corp	35	12	95	14	650
Dade City 1,811—Pasco							
Jackson Memorial Hospital	Gen	Indiv	12	2			
Daytona Beach 16,568—Volusia							
Halifax District Hospital	Gen	NPAasn	125		149	25	972
Halifax District Hospital (Colored Annex)	Gen	NPAasn	18	3	13	8	240
De Land, 5,246—Volusia							
De Land Memorial Hospital	Gen	NPAasn	26	11	40	5	333
Ft Barrancas 30—Escambia							
Station Hospital	Gen	Army	30			81	832
Ft Lauderdale 8,666—Broward							
Memorial Hospital	Gen	Corp	31	7	No data supplied		
Ft Myers 9 032—Lee							
Lee Memorial Hospital	Gen	NPAasn	25	4	38	2	360
Gainesville 10 465—Alachua							
Alachua County Hospital	Gen	County	60	10	113	21	837
Jacksonville 129,540—Duval							
Brewster Hospital (col)*	Gen	Church	65	10	221	25	660
Duval County Hospital*	Gen	County	170	15	411	150	3,023

Key to symbols and abbreviations is on page 1091

(Continued from page 1076)

occupancy figures all show increases, except in number of patients admitted, as will be seen by the accompanying table of governmental hospitals. The city-county hospitals have 11,138 beds and 548 bassinets, and admitted 113,860 patients, the daily average census was 8,729

Total patient days in all governmental hospitals was 235,425,000, average length of stay, 109 days

admitted, however, there has been an increase from 1,753,565 a year ago to 1,786,522. There has also been a slight increase in the average daily census from 63,621 to 63,851

The total patient days in hospitals under church control was 23,305,615, average length of stay, thirteen days

Fraternal hospitals number seventy-two, the same as the previous year. Their capacity of 5,411 shows a

Table 1—Hospital Facilities by States and by Control—B Nonprofit Organizations

Marginal No	Church					Fraternal					Associations and Restricted Corporations					Total Nonprofit					Marginal No	
	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census		
1 Alabama	9	681	111	12,780	32	1	29	212	12	11	558	41	10,573	244	21	1,263	152	23	571	581	1	
2 Arizona	10	789	80	12,308	452	1	35	33	15	7	298	13	1,372	103	18	1,121	99	13	713	570	2	
3 Arkansas	8	620	77	14,819	307	3	115	4	89	65	8	574	25	5,351	161	10	1,609	109	21	0	613	3
4 California	40	4,011	822	81,430	2,339	6	650	50	6,069	449	68	4,657	528	62,417	2,868	103	9,943	1,536	150	842	5,656	4
5 Colorado	23	2,523	303	33,024	1,311	2	203		102	138	18	1,571	65	8,696	1,096	48	4,360	308	41	012	2,545	5
6 Connecticut	5	117	196	24,024	706						30	4,948	732	78,967	3,419	41	6,095	928	102,921	4,215	6	
7 Delaware	1	72	12	7,119	47						6	581	89	11,491	866	7	6,43	100	13,270	413	7	
8 Dist Columbia	5	755	115	18,721	480						11	1,677	251	31,552	1,120	16	2,482	366	50,273	1,600	8	
9 Florida	7	672	107	8,663	263	3	150	5	1,036	102	23	1,002	135	14,326	352	33	1,824	247	24,024	717	0	
10 Georgia	5	411	54	10,778	222	1	60		22	30	17	693	112	16,496	4,2	23	1,364	166	26,493	724	10	
11 Idaho	11	590	114	13,410	341						2	57	4	816	10	13	647	118	13,785	358	11	
12 Illinois	83	11,384	1,748	181,148	5,004	5	444	25	4,815	301	60	8,555	1,361	183,753	4,902	178	20,888	3,184	319,716	10,407	12	
13 Indiana	29	3,881	599	60,816	1,700	2	164		90	120	15	1,004	100	10,780	464	46	5,109	759	77,185	2,374	13	
14 Iowa	41	4,023	587	89,096	2,025	1	50		17	45	23	1,059	101	14,169	4,6	65	5,182	748	70,252	2,546	14	
15 Kansas	37	3,065	424	44,442	1,485	1	240		1,357	62	21	703	114	12,122	365	50	4,108	538	57,021	1,522	15	
16 Kentucky	14	1,684	300	2,099	700	2	28		141	20	23	1,115	140	15,354	581	39	2,737	346	43,494	1,310	16	
17 Louisiana	10	1,316	193	25,638	735	2	123	12	1,026	70	14	1,033	87	12,567	512	20	2,492	232	39,241	1,322	17	
18 Maine	6	353	41	6,571	189						22	1,346	198	23,205	848	27	1,699	299	29,776	1,087	18	
19 Maryland	9	1,024	167	20,937	1,666						28	3,626	361	50,192	2,633	37	5,560	523	78,129	4,109	19	
20 Massachusetts	15	2,409	409	41,221	1,655	1	60		331	60	114	11,053	1,843	180,280	7,042	133	13,612	2,22	226,638	8,757	20	
21 Michigan	34	3,765	644	58,864	1,944	3	175	16	768	129	50	6,382	835	80,210	3,055	96	10,822	1,495	139,642	5,129	21	
22 Minnesota	36	3,519	523	60,962	1,834	1	60		238	58	37	2,892	411	29,962	1,169	74	6,001	934	101,162	3,052	22	
23 Mississippi	2	160	18	4,357	102	1	12		50	5	17	795	83	10,609	220	20	967	101	15,046	337	23	
24 Missouri	38	5,683	679	70,820	3,294	4	328		1,457	290	24	2,315	295	30,467	1,204	66	8,330	974	111,744	4,785	24	
25 Montana	21	1,569	267	24,438	813						8	297	63	4,408	121	29	1,586	320	28,646	934	25	
26 Nebraska	24	2,412	294	35,029	1,261						0	161	32	2,041	81	30	2,505	326	88,610	1,342	26	
27 Nevada	1	52	12	1,235	34						2	60	0	1,292	29	3	112	21	2,577	63	27	
28 New Hampshire	5	323	66	7,011	200						25	1,157	248	10,860	676	30	1,510	314	26,871	876	28	
29 New Jersey	19	3,680	599	58,019	2,242	2	150		125	62	62	7,990	1,207	138,761	5,382	83	11,726	1,716	197,505	7,666	29	
30 New Mexico	14	977	79	8,742	357						0	349	33	2,086	123	23	1,306	112	10,823	490	30	
31 New York	77	11,533	1,497	166,976	5,855	5	571		4,181	387	225	29,386	3,803	504,370	19,810	310	42,240	5,360	675,537	29,061	31	
32 North Carolina	17	1,020	150	17,462	508	1	25		22	16	58	3,270	380	61,901	1,768	70	4,315	536	70,375	2,350	32	
33 North Dakota	20	1,478	226	28,261	843						0	278	65	0,233	145	29	1,756	291	34,584	988	33	
34 Ohio	48	6,818	1,034	106,593	4,062	4	401		1,910	309	76	6,564	959	113,910	3,601	128	13,781	1,933	222,118	7,912	34	
35 Oklahoma	8	767	141	14,467	404	2	81	10	1,221	27	10	332	39	4,510	113	20	1,180	190	20,498	544	35	
36 Oregon	15	1,708	234	30,267	1,047	1	50		269	62	14	609	94	11,295	260	30	2,367	823	41,531	1,350	36	
37 Pennsylvania	42	6,872	898	90,932	3,214	5	350		1,241	342	190	24,063	2,941	301,557	16,931	237	31,315	3,839	453,730	20,587	37	
38 Rhode Island	3	410	43	3,944	104						13	1,889	233	24,618	1,207	16	2,290	296	28,757	1,401	38	
39 South Carolina	5	210	29	4,890	153	3	144	7	1,245	103	23	1,368	180	24,466	767	31	1,782	166	30,611	1,023	39	
40 South Dakota	15	979	178	17,330	471						10	392	78	5,743	166	25	1,871	254	23,073	637	40	
41 Tennessee	6	1,078	133	27,226	585						27	1,641	143	20,860	904	33	2,710	276	48,076	1,450	41	
42 Texas	40	3,960	478	78,717	1,918	4	297	16	1,637	178	27	1,570	122	23,568	963	71	5,827	616	99,252	2,769	42	
43 Utah	6	964	162	14,013	499	1	20		45	20	4	163	34	3,157	73	11	1,147	196	17,215	592	43	
44 Vermont	3	217	21	3,861	154						16	1,438	122	14,363	1,094	19	1,655	143	18,224	1,248	44	
45 Virginia	4	496	63	8,510	234	2	147	10	1,714	53	41	2,605	294	48,966	1,371	47	3,208	367	59,090	1,633	45	
46 Washington	21	2,625	427	36,580	1,164	2	70	9	936	49	21	1,648	293	28,997	830	44	4,840	729	60,489	2,043	46	
47 West Virginia	10	622	116	19,425	585						13	832	102	11,028	408	23	1,814	218	24,453	793	47	
48 Wisconsin	54	5,518	893	80,482	3,004	1	20		18	18	33	2,034	397	35,093	961	88	7,672	1,220	116,193	3,933	48	
49 Wyoming	2	45	10	670	14						5	116	23	2,223	40	7	161	35	2,907	60	49	
50 Totals (1934)	9,0	113,203	16,067	1,786,522	63,851	72	5,411	150	34,700	3,601	1,604	140,038	20,034	2,342,513	89,615	2,646	267,712	36,251	4,163,735	157,067	50	
51 (1933)	984	116,810	16,190	1,753,565	63,621	72	5,390	132	36,817	3,487												
52 (1931)	1,011	116,036	15,861	2,013,352	73,911	70	5,528	161	44,790	3,820												
53 (1931)	1,012	110,635	15,881	2,013,352	73,911	70	5,528	161	44,790	3,820												
54 (1930)	1,017	116,810	15,615			75	5,606	140		3,770												
55 (1929)	1,024	113,555	15,037			75	5,770			3,627												
56 (1928)	1,056	114,013	13,190			87	5,298	196														
57 (1927)	1,060	108,552				72	818			3,103												

CHURCH, FRATERNAL AND OTHER NON-PROFIT ORGANIZATIONS

The nonprofit group of institutions, including church and fraternal, comprise mainly general hospitals which care for patients with acute sickness or injury on a pay basis as contrasted with local county and city hospitals which are employed mainly for the care of indigent sick. As is well known, the nonprofit group, however, also renders a very large amount of charity or indigent service.

The number of hospitals reported under church control is 970 as compared with 984 for the previous year. In the same time the bed capacity dropped from 115,840 to 113,263, bassinets now number 16,067 as compared with 16,190 last year. In the number of patients

slight gain. They admitted 34,700 patients, compared to 36,817 last year. At the same time the average census rose from 3,487 to 3,601, indicating that the average period of stay in fraternal hospitals has increased during the year.

Other nonprofit corporations, in addition to those under church and fraternal auspices, reported under this classification for the first time, have to their credit 1,604 hospitals with a capacity of 149,038 beds and 20,034 bassinets. They admitted 2,342,513 patients and they had an average daily census of 89,615. The total nonprofit civilian hospitals, including church, fraternal and the other hospitals, run on a nonprofit basis but, not including governmental, number 2,646, with a capacity of 267,712 beds and 36,251 bassinets. They

FLORIDA—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Tallahassee 10 700—Leon Florida Agricultural and Mechanical College Hosp (col)	Inst	State	42	2	6	12	612
Tampa 101,161—Hillsborough Hillsboro County Tuberculosis Sanatorium	TB	County	60			60	48
Millie Hospital	N&M	Indiv	10				
Pine Heath Preventorium	Chil	NPAasn	25			25	308
Tampa Sanitarium	Gen	Indiv	8			3	32
Umatilla 007—Lake Harry Anna Memorial Home for Crippled Children	Orth	Frat	35			27	60
Vero Beach 2,268—Indian River Indian River Hospital	Gen	Indiv	12	5	11	2	185
Wauchula 2,574—Hardee Wauchula Infirmary	Gen	Corp	8	5	No data supplied		
Winter Haven 7 180—Polk Winter Haven General Hosp	Gen	Corp	15	5	No data supplied		
Summary for Florida							
Hospitals and sanatoriums	67		8 882			6,093	Patients Admitted 65,277
Related institutions	26		1 121			841	5 200
Totals	93		9 503			6 934	70 427
Refused registration	23		560				

GEORGIA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Albany 14 507—Dougherty Phoebe Putney Memorial Hosp	Gen	NPAasn	45	5	70	13	834
Alto 219—Habersham State Tuberculosis Sanatorium	TB	State	338			250	950
Americus 8,760—Sumter Americus and Sumter County Hospital	Gen	CyCo	20	2	18	5	253
Athens 18 192—Clarke Athens General Hospital	Gen	County	55	8	51	21	843
Fairhaven Tuberculosis Sanat	TB	NPAasn	30			10	27
St Mary's Hospital	Gen	Corp	35	4	No data supplied		
Atlanta 360 691—Fulton Albert Steiner Clinic for Cancer and Allied Diseases	Ca	City	30			24	435
Atlanta Hospital	Gen	Indiv	20	0			
Battle Hill Sanatorium	TB	CyCo	218			211	107
Blackman Sanatorium	Gen	Indiv	20			10	208
Crawford W Long Memorial Hospital	Gen	NPAasn	142	12	322	52	2 456
Georgia Baptist Hospital	Gen	Church	130	20	480	55	4 450
Grady Hospital	Gen	City	300	64	1 434	216	10 539
Grady Hospital, Emory University Division (col) **	Gen	City	230	33	1,559	217	8,381
Henrietta Eggleston Hospital for Children	Chil	NPAasn	50	2		21	884
Piedmont Hospital	Gen	Corp	120	15	192	55	2,236
St Joseph Infirmary	Gen	Church	120	15	187	48	1 877
Veterans Admin Facility	Gen	Vet	200			185	1 330
William A Harris Memorial Hospital (col)	Gen	Indiv	13	2	No data supplied		
Augusta 60,342—Richmond University Hospital	Gen	City	251	19	408	102	6 020
Veterans Admin Facility	Ment	Vet	000			960	367
Wilhenford Hospital for Women and Children	Gen	NPAasn	50	4	32	10	723
Bainbridge 6 141—Decatur Bainbridge Hospital	Surg	Indiv	82	1		23	596
Riverside Hospital	Gen	Part	25	6	45	10	364
Brunswick 14 022—Glynn Brunswick City Hospital	Gen	CyCo	64	8	No data supplied		
Cairo 3,169—Grady Cairo Hospital	Gen	Indiv	25	4	29	8	376
Canton 2,892—Cherokee Cokers Hospital	Gen	Corp	25	2	26	10	317
Cedartown 8 124—Polk Hall Chaudron Hospital	Gen	Indiv	10	2	10	3	200
Columbus 43 131—Muscogee Columbus City Hospital	Gen	CyCo	250	21	233	73	3 744
Cuthbert 3,235—Randolph Patterson Hospital	Gen	Indiv	25	3	12	8	340
Dalton 8 160—Whitfield Hamilton Memorial Hospital	Gen	Corp	36	3	No data supplied		
Decatur 13,276—De Kalb Scottie Rife Hospital for Crippled Children	Orth	Frat	60			30	225
Donaldsonville 1 183—Seminole Chason's Hospital	Gen	Part	30	10	No data supplied		
Dublin 6 681—Laurens Claxton Sanitarium	Gen	Indiv	35	3	25	15	1 100
Eastman 3 022—Dodge Coleman Sanitarium	Gen	Indiv	40	4	5	8	203
Elberton 4 600—Elbert Elbert County Hospital	Gen	CyCo	16	5	15	5	258

GEORGIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Emory University—De Kalb Emory University Hospital	Gen	NPAasn	150	16	260	80	2,928
Fitzgerald, 6 412—Ben Hill Fitzgerald Hospital	Gen	Corp	30	4	No data supplied		
Ft Benning—Chattahoochee Station Hospital	Gen	Army	230	8	130	170	3,997
Ft McPherson, 150—Fulton Station Hospital	Gen	Army	220	4	30	176	3,251
Ft Oglethorpe 1 186—Catoosa Station Hospital	Gen	Army	202			63	2,254
Ft Screven 17—Chatham Station Hospital	Gen	Army	30			40	1 965
Gainesville 8 624—Hall Downey Hospital	Gen	Corp	52	6	42	20	933
Griffin 10,321—Spalding R F Strickland and Son Memorial Hospital	Gen	Indiv	46	5	55	18	714
Hoschton 427—Jackson Allen Clinic and Hospital	Gen	Part	10	2	16	4	104
Jesup 2 303—Wayne Drs Colvin Ritch Sanitarium	Gen	Part	16	3	21	8	294
Lagrange 20 131—Troup Dunson Hospital	Gen	City	35	6	27	14	501
Macon 64 045—Bibb Hopewell Sanatorium	TB	CyCo	24			22	45
Macon Hospital	Gen	CyCo	140	15	784	100	4 730
Middle Georgia Hospital	Gen	Corp	50	10	146	25	1,342
Oglethorpe Private Infirmary	Gen	Corp	35	6	41	17	927
Pumpelly Massenburg Sanat	Gen	Corp	26	3	38	0	668
St Luke's Hospital (col)	Gen	Indiv	12	1	12	8	120
Warrenton 7 638—Cobb Marietta Hospital	Gen	Corp	30	4	48	8	425
Metter 1 424—Candler Metter Sanitarium	Gen	Indiv	12			2	8 354
Milledgeville 5,634—Baldwin Allen's Invalid Home	N&M	Indiv	150			80	190
Milledgeville City Hospital	Gen	Indiv	40	6	23	29	840
Milledgeville State Hospital	Ment	State	6 160			5 770	1 077
Millen 2 527—Jenkins Millen Hospital	Gen	Indiv	22	4	15	8	431
Monroe, 3 706—Walton Walton County Hospital	Gen	NPAasn	16	1	6	4	180
Moultrie 8 027—Colquitt Edmondson Brannen Hospital	Gen	Part	12	2	No data supplied		
Newnan, 6,386—Coweta Newnan Hospital	Gen	NPAasn	22	2			
Plains 600—Sumter Wise Sanitarium	Gen	Corp	50	2	16	7	309
Rome 21,843—Floyd Harbin Hospital	Gen	Part	65	5	63	20	1 270
McCall Hospital	Gen	Corp	60	10	122	19	1,574
Sandersville 3 011—Washington Rawlings Sanitarium	Gen	NPAasn	50	7	38	20	667
Savannah 85,024—Chatham Central of Georgia Railway Hospital	Indus	Corp	62			34	1,250
Charity Hospital (col)	Gen	NPAasn	30	12	178	32	1 170
Georgia Infirmary (col)	Gen	NPAasn	75	6	234	51	1 933
Oglethorpe Sanatorium	Gen	Indiv	50	10	103	24	685
St Joseph Hospital	Gen	Church	75	12	132	36	1,281
Telfair Hospital	Gen	NPAasn	83	16	246	45	1 681
U S Marine Hospital	Gen	USPHS	185			148	1 783
Warren A Candler Hospital	Gen	Church	72	6	161	50	3 009
Smyrna, 1 178—Cobb Dr Brawners Sanitarium	N&M	Indiv	40			22	169
Statesboro 3 906—Bulloch Van Buren's Sanitarium (col)	Gen	Indiv	25			10	75
Stone Mountain 1,355—De Kalb Stone Mountain Sanitarium	N&M	Indiv	35			15	80
Swainsboro 2 442—Emanuel Franklin Hospital	Gen	Indiv	20	2	14	3	271
Thomaston 4 022—Upson Thomaston Hospital	Gen	Indiv	16				New
Thomasville 11 733—Thomas John D Archbold Memorial Hospital	Gen	NPAasn	103	12	69	29	1,334
Tifton 3,300—Tift Coastal Plain Hospital	Gen	Corp	20	2			
Trion 3 289—Chattooga Riegel Hospital	Gen	Indiv	25	0			New
Valdosta 13 482—Lowndes Frank Bird Hospital	Gen	Indiv	22	3	16	7	374
Little-Griffin Private Hospital	Gen	Corp	45	3	90	20	989
Washington 3 188—Wilkes Washington General Hospital	Gen	NPAasn	25	2	24	8	221
Waycross 15,510—Ware Atlantic Coast Line Hospital	Indus	Corp	75			39	1,253
Ware County Hospital	Gen	County	68	8	72	39	1,508
Related Institutions							
Adel 1 796—Cock Adel Hospital	Gen	Part	7			5	2 150
Atlanta 300 691—Fulton Brook Haven Manor Sanat	N&M	Indiv	12			No data supplied	
Florence Crittenton Home	Mat	NPAasn	25	15	39	5	46
Georgia Sanitarium	Gen	Indiv	10	2	2	2	45
St Mary's Hospital	Mat	Indiv	8	8	10		10
U S Penitentiary Hospital	Inst	Fed	157			87	1 042
Venerable Hospital and Clinic	Ven	City	60			39	480

increase of 220,044 over one year ago. The average daily census was 237,395 as against 231,692 one year ago.

Among the 4,198 general hospitals are 537 that reported that they have tuberculosis departments and that they admitted 40,900 patients to those departments last year. In addition, there were 188 general hospitals which reported 5,262 patients admitted but said that they did not have a separate tuberculosis department. Combining these figures, therefore, we find that the grand total of tuberculosis patients admitted, as such, to general hospitals was 46,162.

It is among the general hospitals that hospitals approved for internship training are selected. At the present time the 708 hospitals offering internships acceptable to the Council employ 6,376 interns.

COUNTIES WITH AND WITHOUT GENERAL HOSPITALS

The number of counties having general hospitals located within their boundaries is 1,779 as compared with 1,296 counties that do not have registered hospitals, located within their boundaries. Each hospital, of course, serves its community or territory regardless of imaginary boundaries. In 1920 there were 1,332 counties that had general hospitals located within them and 1,695 that did not have them. Between 1920 and 1934 the total number of counties increased by division from 3,027 to 3,075.

The forty-eight state maps interspersed among the list of registered hospitals in this issue give the location, state and county, of each hospital.

Totals According to Control, 1934, Condensed from Table 1

	Hospitals	Beds	Basal nets	Patients Admitted	Average Census	Average Patient Length of Stay
Federal	313	77,865	560	324,354	68,900	21,246,255
State	644	473,035	1,154	474,539	447,014	163,160,110
County	406	83,919	2,404	453,420	71,157	25,072,300
City	828	71,931	3,680	792,887	59,891	21,860,215
City-county	68	11,138	548	113,860	8,729	3,186,085
Total govern- mental	1,749	717,888	8,346	2,159,065	645,000	235,425,000
Church	670	118,263	16,067	1,786,522	63,501	23,305,615
Fraternal	72	5,411	150	34,700	3,601	1,314,360
Associations and restricted cor- porations	1,604	149,038	20,034	2,342,513	80,015	32,709,475
Total non-profit	2,046	267,712	36,251	4,163,735	157,067	57,329,405
Individual and partnership	1,810	29,429	4,391	366,313	12,046	4,396,760
Corporations (un- restricted as to profit)	620	33,072	4,038	458,303	15,485	5,634,020
Total proprie- tary	1,930	62,501	8,429	824,616	28,031	10,231,815
Grand total	6,334	1,048,101	53,026	7,147,410	630,098	302,983,770

NERVOUS AND MENTAL HOSPITALS

As usual, mental hospitals show the greatest increase in capacity and occupancy. The Register lists 614 mental hospitals, seven less than last year, but the capacity is 513,845 beds, a gain of 14,890. They admitted 172,415 patients, an increase of 1,582. There was an average of 488,481 patients and inmates in the mental institutions.

TUBERCULOSIS HOSPITALS

Tuberculosis hospitals show comparatively slight numerical changes from year to year. The present tabulation includes 495 tuberculosis hospitals and sanatoriums with 70,063 beds, 82,455 patients admitted, and

an average census of 59,689. Something is said regarding tuberculosis farther along in this article under "Survey of Tuberculosis Hospitals."

OTHER SPECIAL HOSPITALS

The maternity hospitals in the Register, 134 a year ago, now number 130, having 7,625 beds, 4,131 bassinets, with 76,980 patients admitted and an average

Analysis of General Hospitals by Control

	Hospitals	Beds	Basal nets	Births	Patients Admitted	Average Patient Census	Average Patient Length of Stay
Federal	254	46,600	550	5,097	301,121	30,554	11,162,210
State	47	16,700	831	14,236	230,521	13,614	4,969,110
County	306	29,553	2,084	34,646	393,500	22,276	8,130,740
City	210	38,057	3,608	68,997	718,037	80,560	11,150,760
City-county	40	6,066	532	12,404	107,121	5,119	1,868,435
Total govern- mental	757	136,855	7,514	136,852	1,750,300	102,113	37,271,245
Church	630	100,898	14,714	197,869	1,740,341	54,625	19,938,125
Fraternal	22	2,132	140	1,630	23,909	1,148	419,020
Associations and restricted corpo- rations	1,172	111,894	17,768	243,615	2,058,178	62,301	22,708,115
Total non-profit	2,024	214,884	32,620	443,114	3,822,428	118,124	48,115,260
Individual and partnership	906	20,730	4,090	28,837	329,123	7,523	2,745,895
Corporations (un- restricted as to profit)	421	21,407	3,632	40,612	350,700	6,635	3,516,700
Total proprietary	1,417	42,146	7,722	69,499	718,823	17,168	6,262,590
Grand total gen- eral hospitals	4,198	393,425	47,806	648,905	6,201,506	237,395	86,649,175

daily census of 4,647. These figures are all less than for corresponding items one year ago.

Industrial hospitals number 113, having dropped five during the year. The capacity, 5,575 beds, was 5,923 last year. They admitted 69,609 patients as compared with 69,748 last year, and the average census was 2,423, a decrease of 197 in one year.

The fifty-five eye, ear, nose and throat hospitals, having 2,793 beds, admitted 103,720 patients, and the average census was 1,265. This group showed little change during the year.

There was no change in the number of the next three groups, there being fifty-eight children's, sixty-nine orthopedic and seventy-one isolation hospitals, the same as the previous year. Neither was there appreciable change in the capacity and occupancy of these three groups.

Hospitals and homes for convalescence and rest in the Register are limited to places that are equipped for medical and nursing care. There are 125, as compared with 130 a year ago, the capacity, 5,456, remaining practically unchanged, with a decrease in the patients admitted from 27,383 to 24,083. The average daily census dropped from 3,802 to 3,580.

Hospital departments of institutions dropped during the year from 343 to 312. The institutions that discontinued their hospital departments made arrangements to have their charges hospitalized in existing general hospitals. Some of the institutions increased their hospital facilities so that there are now 21,982 hospital beds as compared with 21,582 last year. The total number of patients was 135,272 or 15,802 less than last year.

The foregoing figures, by groups, account for all types of hospitals except ninety-four that are unclassified, which, however, show a total of only 8,132 beds and admitted 36,730 patients.

(Continued on page 1084)

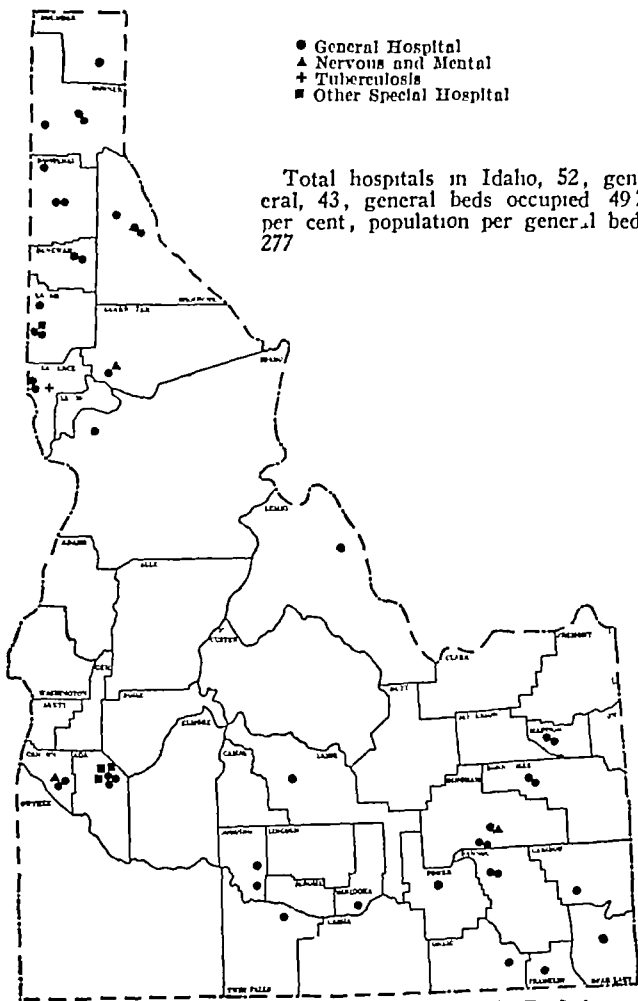
IDAHO

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
American Falls 1250—Power Schlitz Memorial Hospital	Gen	County	10	4	52	7	3.3
Boise 2154—Ada	Gen	Church	12	10	138	6	2,242
St Alphonsus Hospital	Gen	Church	100	14	368	78	3,534
St Luke's Hospital	Gen	Vet	303			164	011
Veterans Admin Facility	Gen						
Bonnara Ferry 1418—Boundary	Gen	Corp	2	5	46	6	302
Bonnara Ferry Hospital	Gen	NPAsn	50		1	11	105
Coeur d'Alene 8,297—Kootenai	Gen	Indiv	14	4		7	309
Lakeside Hospital	Gen	Church	14	4	17	8	328
Cottonwood 519—Idaho	Gen	IA	14		38	0	240
Our Lady of Consolation Hosp	Gen						
Ft Hall 160—Bingham	Gen						
Ft Hall Indian Agency Hosp	Gen						

IDAHO

- General Hospital
- ▲ Nervous and Mental
- + Tuberculosis
- Other Special Hospital

Total hospitals in Idaho, 52, general, 43, general beds occupied 497 per cent, population per general bed, 277



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Gooding 1592—Gooding	Gen	CyCo	15	6	49	8	344
Gooding County Hospital	Gen	Indiv	15	5	10	4	190
Hailey 9/3—Blaine	Gen	Church	84	10	281	26	1,710
Hailey Clinical Hospital	Gen	Corp	40	8		14	
Idaho Falls 9420—Bonneville	Gen	Part	18	3	29	0	443
Idaho Falls Latter Day Saints Hospital	Gen	IA	132			114	197
Spencer Hospital	Gen	Church	75	12	176	60	1,260
Kellogg 4124—Shoshone	Gen	Corp	32	3	34	21	357
Wardner Hospital	Gen	Indiv	25	3	15	5	300
Lapwai 416—Nez Perce	Gen	Indiv	35	5	40	8	423
Lapwai Sanatorium	Gen	Indiv	12	3	7	3	51
Lewiston 9403—Nez Perce	Gen	Church	45	6	119	19	668
St Joseph's Hospital	Gen	Church	35	5	No data supplied		
White Hospital	Gen	Church	35	5	No data supplied		
Montpelier 2,436—Bear Lake	Gen	Church	35	5	No data supplied		
Montpelier Hospital	Gen	Church	35	5	No data supplied		
Moscow 4478—Latah	Gen	Church	35	5	No data supplied		
Gritman Private Hospital	Gen	Church	35	5	No data supplied		
Inland Empire Hospital	Gen	Church	35	5	No data supplied		
Nampa 8,296—Canyon	Gen	Church	35	5	No data supplied		
Mercy Hospital	Gen	Church	35	5	No data supplied		
Nazarene Missionary Sanitarium and Institute	Gen	Church	35	5	No data supplied		

IDAHO—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Orofino 1078—Clearwater	Gen	Part	30	4	11	20	434
Orofino Hospital	Gen	County	50	15	230	42	1,635
Pocatello, 10471—Bannock	Gen	Church	42	12	100	25	838
Pocatello General Hospital	Gen	Church	42	12	100	25	838
St Anthony's Mercy Hospital	Gen	Church	42	12	100	25	838
Potlatch, 1,500—Latah	Gen	Part	20	3	22	8	281
Potlatch Hospital	Gen	Part	20	3	22	8	281
Preston 3381—Franklin	Gen	Corp	15	4	33	9	443
General Memorial Hospital	Gen	Corp	15	4	33	9	443
Priest River 049—Bonner	Gen	Part	12	2	2	1	36
Priest River Hospital	Gen	Part	12	2	2	1	36
Rexburg 3048—Madison	Gen	Indiv	12	2	No data supplied		
Emergency Hospital	Gen	Indiv	10	3	50	5	425
Rexburg General Hospital	Gen	Indiv	10	3	50	5	425
Rupert 2200—Minidoka	Gen	Indiv	18	2		New	
Rupert General Hospital	Gen	Indiv	18	2		New	
St Maries 1006—Benewah	Gen	Part	30	3	14	8	238
St Maries Hospital	Gen	Part	30	3	14	8	238
Sandpoint 3,290—Bonner	Gen	Indiv	35	6	12	9	182
Parnell Hospital	Gen	Indiv	10	2	15	2	42
Soda Springs 831—Caribou	Gen	County	48	2	10	31	1,103
Caribou County Hospital	Gen	County	48	2	10	31	1,103
Twin Falls 8787—Twin Falls	Gen	County	50	10	170	52	1,331
Twin Falls County General Hospital	Gen	County	50	10	170	52	1,331
Wallace 3034—Shoshone	Gen	Church	40	10	50	15	750
Providence Hospital	Gen	Church	40	10	50	15	750
Wallace Hospital	Gen	Church	40	10	50	15	750
Wendell 725—Gooding	Gen	Church	22	5	60	11	382
St Valentine's Hospital	Gen	Church	22	5	60	11	382

Related Institutions

Blackfoot 3109—Bingham	Gen	Indiv	7	2	18	3	205
Dr W W Beck Hospital	Gen	Indiv	7	2	18	3	205
State Hospital South	Gen	State	540			453	107
Boise 2154—Ada	Gen	State	540			453	107
Boise City Detention Hospital	Iso	City	10			2	6
Idaho State Soldiers Home	Inst	State	27			9	60
Salvation Army Women's Home and Hospital	Inst	State	27			9	60
Ft Hall 160—Bingham	Mat	Church	8	20	50	2	90
Ft Hall Indian School Hosp	I A	IA	14		54	0	230
Malad City 2,533—Oneida	Gen	NPAsn	7	4	41	4	211
Community Hospital	Gen	NPAsn	7	4	41	4	211
Moscow 4478—Latah	Inst	State	15			7	549
University of Idaho Infirmary	Inst	State	15			7	549
Nampa 8206—Canyon	MeDe	State	523			490	39
State School and Colony	MeDe	State	523			490	39
Orofino 1078—Clearwater	Ment	State	400			360	66
State Hospital North	Ment	State	400			360	66
St Maries 1006—Benewah	Gen	Indiv	12	3	No data supplied		
Dr Platt's Hospital	Gen	Indiv	12	3	No data supplied		
Salmon 1371—Lemhi	Gen	Part	10	3	8	3	92
Salmon General Hospital	Gen	Part	10	3	8	3	92
Spirit Lake 1,241—Kootenai	Gen	Part	10	2	4	1	51
Spirit Lake Hospital	Gen	Part	10	2	4	1	51

Summary for Idaho

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	39	1,718	912	2,442
Related institutions	13	1,583	1,392	1,716
Totals	52	3,301	2,304	27,218
Refused registration	2	64		

ILLINOIS

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Alton 30151—Madison	Ment	State	1,537			1,483	401
Alton State Hospital	Ment	State	1,537			1,483	401
St Anthony's Infirmary and Sanitarium	Gen	Church	90			40	435
St Joseph's Hospital	Gen	Church	70	15	175	33	2,142
Amboy 1924—Lee	Gen	Corp	12	3	23	4	147
Amboy Public Hospital	Gen	Corp	12	3	23	4	147
Anna 3,436—Union	Ment	State	2,047			2,002	679
Anna State Hospital	Ment	State	2,047			2,002	679
Hale-Willard Memorial Hosp	Gen	City	15	4	22	0	234
Annawan 490—Henry	Gen	Indiv	21	2	5	2	142
J M Young Hospital	Gen	Indiv	21	2	5	2	142
Aurora 46,589—Kane	Gen	NPAsn	109	18	323	40	1,599
Copley Hospital	Gen	NPAsn	109	18	323	40	1,599
Kane County Spring Brook Sanitarium	TB	County	85			81	82
Mercyville Sanitarium	N&M	County	150			124	183
St Charles Hospital	Gen	Church	100	20	285	40	1,534
St Joseph Mercy Hospital	Gen	Church	120	20	334	50	1,740
Batavia 5,045—Kane	N&M	Corp	30			23	14
Bellevue Place Sanitarium	TB	NPAsn	50			45	49
Fox River Sanitarium	TB	NPAsn	50			45	49
Bellevue 23,425—St Clair	Gen	Church	110	15	230	51	1,981
St Elizabeth's Hospital	Gen	Church	110	15	230	51	1,981
Station Hospital	Gen	Army	30			10	215
Belvidere 8,123—Boone	Gen	Corp	25	10	65		387
Highland Hospital	Gen	Church	40	12	68	18	625
St Joseph's Hospital	Gen	Church	40	12	68	18	625
Benton 8,210—Franklin	Gen	Indiv	20	1	11	12	289
Moore Hospital	Gen	Indiv	20	1	11	12	289

Table 2.—Hospital Facilities by States and Type of Service—Continued

Original	Children's			Orthopedic			Isolation			Convalescent and Rest			Hospital Departments of Institutions			All Other Hospitals			Totals							
	Hospitals	Beds	Patients Admitted	Hospitals	Beds	Patients Admitted	Hospitals	Beds	Patients Admitted	Hospitals	Beds	Patients Admitted	Hospitals	Beds	Patients Admitted	Hospitals	Beds	Patients Admitted	Hospitals	Beds	Patients Admitted	Average Census	Marginal No			
1 Alabama	1	50	865	28	865	28	865	28	865	28	865	28	865	28	865	28	865	28	865	28	865	28	865			
2 Arizona	1	70	718	30	718	30	718	30	718	30	718	30	718	30	718	30	718	30	718	30	718	30	718			
3 Arkansas	3	278	10	6178	167	10	6178	167	10	6178	167	10	6178	167	10	6178	167	10	6178	167	10	6178	167			
4 California	1	147	18	8102	122	1	147	18	8102	122	1	147	18	8102	122	1	147	18	8102	122	1	147	18			
5 Colorado	1	182	4150	120	1	182	4150	120	1	182	4150	120	1	182	4150	120	1	182	4150	120	1	182	4150			
6 Connecticut	2	40	822	80	2	40	822	80	2	40	822	80	2	40	822	80	2	40	822	80	2	40	822			
7 Delaware	1	50	2	884	21	1	50	2	884	21	1	50	2	884	21	1	50	2	884	21	1	50	2			
8 District of Columbia	4	400	34	6458	933	2	180	414	157	3	613	3	613	3	613	3	613	3	613	3	613	3	613			
9 Florida	1	270	3	568	233	1	270	3	568	233	1	270	3	568	233	1	270	3	568	233	1	270	3			
10 Georgia	1	75	1000	93	2	57	292	73	154	57	1	100	100	100	100	100	100	100	100	100	100	100	100			
11 Idaho	1	100	423	61	2	200	477	157	110	157	1	110	110	110	110	110	110	110	110	110	110	110	110			
12 Illinois	6	500	8370	938	5	682	923	581	6	185	15	185	15	185	15	185	15	185	15	185	15	185	15			
13 Indiana	1	239	6	275	205	1	239	6	275	205	1	239	6	275	205	1	239	6	275	205	1	239	6			
14 Iowa	1	65	1	1078	10	2	310	750	206	3	56	88	5	8	5	8	5	8	5	8	5	8	5			
15 Kansas	2	366	12	6071	280	1	100	424	110	2	277	3100	205	2	110	511	68	10	511	68	10	511	68			
16 Kentucky	1	80	358	11	1	110	321	94	1	67	112	0	1	67	112	0	1	67	112	0	1	67	112			
17 Louisiana	1	30	295	15	5	693	3175	333	8	1,760	2	5,897	700	6	337	1,025	240	2	1,025	240	2	1,025	240			
18 Maine	2	100	802	20	1	30	12	150	15	1	30	12	150	15	1	30	12	150	15	1	30	12	150			
19 Maryland	7	847	30	1078	643	14	1,046	11,635	1,644	8	1,141	11,635	1,644	8	1,141	11,635	1,644	8	1,141	11,635	1,644	8	1,141			
20 Massachusetts	4	163	14	1,070	81	1	150	383	143	2	60	55	2	60	55	2	60	55	2	60	55	2	60			
21 Michigan	3	341	17	7,523	213	2	82	40	30	3	123	4	448	10	5	307	1,010	101	5	307	1,010	101	5			
22 Minnesota	2	117	2	985	50	1	50	600	91	2	70	0	441	20	3	40	280	10	3	40	280	10	3			
23 Mississippi	6	510	7,917	320	8	631	1,263	486	6	1,542	5	708	424	11	423	30	346	312	22	1,423	30	346	312			
24 Missouri	1	80	358	11	1	110	321	94	1	67	112	0	1	67	112	0	1	67	112	0	1	67	112			
25 Montana	1	30	295	15	5	693	3175	333	8	1,760	2	5,897	700	6	337	1,025	240	2	1,025	240	2	1,025	240			
26 Nebraska	2	100	802	20	1	30	12	150	15	1	30	12	150	15	1	30	12	150	15	1	30	12	150			
27 Nevada	7	847	30	1078	643	14	1,046	11,635	1,644	8	1,141	11,635	1,644	8	1,141	11,635	1,644	8	1,141	11,635	1,644	8	1,141			
28 New Hampshire	4	163	14	1,070	81	1	150	383	143	2	60	55	2	60	55	2	60	55	2	60	55	2	60			
29 New Jersey	3	341	17	7,523	213	2	82	40	30	3	123	4	448	10	5	307	1,010	101	5	307	1,010	101	5			
30 New Mexico	2	117	2	985	50	1	50	600	91	2	70	0	441	20	3	40	280	10	3	40	280	10	3			
31 New York	6	510	7,917	320	8	631	1,263	486	6	1,542	5	708	424	11	423	30	346	312	22	1,423	30	346	312			
32 North Carolina	1	80	358	11	1	110	321	94	1	67	112	0	1	67	112	0	1	67	112	0	1	67	112			
33 North Dakota	1	30	295	15	5	693	3175	333	8	1,760	2	5,897	700	6	337	1,025	240	2	1,025	240	2	1,025	240			
34 Ohio	2	100	802	20	1	30	12	150	15	1	30	12	150	15	1	30	12	150	15	1	30	12	150			
35 Oklahoma	7	847	30	1078	643	14	1,046	11,635	1,644	8	1,141	11,635	1,644	8	1,141	11,635	1,644	8	1,141	11,635	1,644	8	1,141			
36 Oregon	4	163	14	1,070	81	1	150	383	143	2	60	55	2	60	55	2	60	55	2	60	55	2	60			
37 Pennsylvania	3	341	17	7,523	213	2	82	40	30	3	123	4	448	10	5	307	1,010	101	5	307	1,010	101	5			
38 Rhode Island	2	117	2	985	50	1	50	600	91	2	70	0	441	20	3	40	280	10	3	40	280	10	3			
39 South Carolina	6	510	7,917	320	8	631	1,263	486	6	1,542	5	708	424	11	423	30	346	312	22	1,423	30	346	312			
40 South Dakota	1	80	358	11	1	110	321	94	1	67	112	0	1	67	112	0	1	67	112	0	1	67	112			
41 Tennessee	2	97	9	1,243	60	2	62	775	47	1	35	10	10	10	1	20	84	11	1	20	84	11	1			
42 Texas	1	35	98	20	1	20	45	20	45	20	45	20	45	20	45	20	45	20	45	20	45	20	45			
43 Utah	1	20	800	12	3	155	1,620	132	2	130	155	11	3	1	48	2	63	28	1	48	2	63	28			
44 Vermont	1	155	2,033	102	1	65	1	65	1	30	7	1,415	110	1	16	65	6	1	16	65	6	1	16			
45 Virginia	1	50	2	884	21	1	50	2	884	21	1	50	2	884	21	1	50	2	884	21	1	50	2			
46 Washington	1	75	1000	93	2	57	292	73	154	57	1	100	100	100	100	100	100	100	100	100	100	100	100			
47 West Virginia	1	80	358	11	1	110	321	94	1	67	112	0	1	67	112	0	1	67	112	0	1	67	112			
48 Wisconsin	1	50	2	884	21	1	50	2	884	21	1	50	2	884	21	1	50	2	884	21	1	50	2			
49 Wyoming	1	50	2	884	21	1	50	2	884	21	1	50	2	884	21	1	50	2	884	21	1	50	2			
50 Totals	53	5,850	140	87,571	3,630	60	6,380	13	28,078	5,003	71	7,480	46	38,640	2,034	125	5,456	45	24,083	3,630	312	21,082	310	135	272	14,600
51 Alabama	58	5,480	130	90,307	3,618	60	6,401	10	29,530	4,964	71	7,780	16	40,904	2,801	130	5,480	50	27,533	3,802	343	21,082	310	135	272	14,600
52 Arizona	58	5,480	130	90,307	3,618	60	6,401	10	29,530	4,964	71	7,780	16	40,904	2,801	130	5,480	50	27,533	3,802	343	21,082	310	135	272	14,600
53 Arkansas	58	5,480	130	90,307	3,618	60	6,401	10	29,530	4,964	71	7,780	16	40,904	2,801	130	5,480	50	27,533	3,802	343	21,082	310	135	272	14,600
54 California	58	5,480	130	90,307	3,618	60	6,401	10	29,530	4,964	71	7,780	16	40,904	2,801	130	5,480	50	27,533	3,802	343	21,082	310	135	272	14,600
55 Colorado	58	5,480	130	90,307	3,618	60	6,401	10	29,530	4,964	71	7,780	16	40,904	2,801	130	5,480	50	27,533	3,802	343	21,082	310	135	272	14,600
56 Connecticut	58	5,480	130	90,307	3,618	60	6,401	10	29,530	4,964	71	7,780	16	40,904	2,801	130	5,480	50	27,533	3,802	343	21,082	310	135	272	14,600
57 Delaware	58	5,480	130	90,307	3,618	60	6,401	10	29,530	4,964	71	7,780	16	40,904	2,801	130	5,480	50	27,533	3,802	343	21,082	310	135	272	14,600
58 District of Columbia	58	5,480	130	90,307	3,618	60	6,401	10	29,530	4,964	71	7,780	16	40,904	2,801	130	5,480	50	27,533	3,802	343	21,082	310	135	272	14,600
59 Florida	58	5,480	130	90,307	3,618	60	6,401	10	29,530	4,964	71	7,780	16	40,904	2,801	130	5,480	50	27,533	3,802	343	21,082	310	135	272	14,600
60 Georgia	58	5,480	130	90,307	3,618	60	6,401	10	29,530	4,964	71	7,780	16	40,904	2,801	130	5,480	50	27,533	3,802	343	21,082	310	135	272	14,600
61 Idaho	58	5,480	130	90,307	3,618	60	6,401	10	29,530	4,964	71	7,780	16	40,904	2,801	130	5,480	50	27,533	3,						

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Washingtonian Home	(Included in Martha Washington Hosp)						
Welles Park Hospital	Gen	Corp	50	10	100	30	30
Wesley Memorial Hospital*	Gen	Church	229	21	442	106	3,310
West Side Hospital	Gen	Corp	142	10	187	54	2,017
Women and Children's Hosp *	Gen	NPAasn	100	20	437	60	2,217
Woodlawn Hospital*	Gen	NPAasn	140	34	324	51	2,077
Chicago Heights 22,321—Cook	Gen	Church	100	20	130	20	904
St James Hospital	Gen	Church	20	4	30	8	300
Ollaton 5 920—De Witt	Gen	City	20	4	30	8	300
Dr John Warner Hospital	Gen	City	20	4	30	8	300
Compton 277—Lee	Gen	Indiv	10	2	23	5	312
Compton Hospital	Gen	Indiv	10	2	23	5	312
Danville, 86 765—Vermillion	Gen	NPAasn	158	12	121	54	1,177
Lake View Hospital	Gen	NPAasn	150	18	240	61	2,230
St Elizabeth Hospital	Gen	Church	502			430	1,593
Veterans Admin Facility	Gen	Vet					
Decatur 57,510—Macon	Gen	NPAasn	141	24	441	68	2,374
Decatur and Macon County Hospital	Gen	NPAasn	141	24	441	68	2,374
Macon County Tuberculosis Sanatorium*	TB	County	80			57	1,200
St Marys Hospital	Gen	Church	180	25	622	110	3,006
Wabash Employees Hospital	Indus	NPAasn	85			50	1,200
De Kalb 8 545—De Kalb	Gen	Corp	45			43	21
De Kalb County Tuberculosis Sanatorium	TB	County	45			43	21
De Kalb Public Hospital	Gen	City	40	12	90	12	513
St Marys Hospital	Gen	Church	50	9	62	7	283
Des Plaines 8 708—Cook	Gen	Corp	10	6	32	3	
Northwestern Hospital	Gen	Corp	10	6	32	3	
Dixon 9 908—Lee	Gen	NPAasn	60	11	127	21	820
Dixon Public Hospital	Gen	NPAasn	60	11	127	21	820
Du Quoin 7,503—Perry	Gen	NPAasn	60	5	57	17	676
Marshall Browning Hospital	Gen	NPAasn	60	5	57	17	676
East Moline 10 107—Rock Island	Gen	State	100			180	602
East Moline State Hospital	Gen	State	100			180	602
East St Louis 74,347—St Clair	Gen	NPAasn	52	6	86	34	992
Christian Welfare Hospital	Gen	Church	260	30	377	100	3,601
St Marys Hospital	Gen	Church	260	30	377	100	3,601
Edwardsville 6,235—Madison	Gen	Church	90			70	132
Madison County Tuberculosis Sanatorium	TB	County	90			70	132
Effingham 4 978—Effingham	Gen	Church	60	6	42	20	931
St Anthony's Hospital	Gen	Church	60	6	42	20	931
Elgin 35 920—Kane	Gen	State	3,000			4,151	1,800
Elgin State Hospital	Gen	State	3,000			4,151	1,800
Resthaven Sanatorium	N&M	Indiv	75			40	127
St Joseph's Hospital	Gen	Church	100	20	204	50	2,687
Sherman Hospital	Gen	NPAasn	110	20	310	74	3,004
Elmhurst 14 055—Du Page	Gen	NPAasn	80	20	282	30	1,632
Elmhurst Community Hospital	Gen	NPAasn	80	20	282	30	1,632
Evanston 63,338—Cook	Gen	NPAasn	18	4	11	4	102
Evanston Community Hospital (col.)	Gen	NPAasn	18	4	11	4	102
Evanston Hospital	Gen	NPAasn	235	36	745	102	5,112
St Francis Hospital	Gen	Church	320	50	604	103	6,649
Evergreen Park 1 504—Cook	Gen	Church	150	24	414	60	2,007
Little Company of Mary Hospital	Gen	Church	150	24	414	60	2,007
Ft Sheridan 602—Lake	Gen	Army	210	4	47	133	3,670
Station Hospital	Gen	Army	210	4	47	133	3,670
Freeport 22 045—Stephenson	Gen	Church	80	10	160	32	1,120
Evangelical Deaconess Hosp	Gen	Church	100	10	209	60	1,702
St Francis Hospital	Gen	Church	100	10	209	60	1,702
Galesburg 28 830—Knox	Gen	NPAasn	82	18	184	33	1,094
Galesburg Cottage Hospital	Gen	Church	120	10	182	32	1,203
St Marys Hospital	Gen	Church	120	10	182	32	1,203
Geneseo 3 406—Henry	Gen	City	20	5	31	7	310
J C Hammond City Hospital	Gen	City	20	5	31	7	310
Geneva 4 607—Kane	Gen	NPAasn	67	18	175	28	849
Community Hospital	Gen	NPAasn	67	18	175	28	849
Granite City 25 130—Madison	Gen	Church	103	22	123	54	1,714
St Elizabeth Hospital	Gen	Church	103	22	123	54	1,714
Harrisburg 11 620—Saline	Gen	Corp	80	1	8	7	350
Harrisburg Hospital	Gen	Corp	80	1	8	7	350
Lightner Hospital	Gen	Indiv	30	5	38	18	1,010
Harvard 2 988—McHenry	Gen	Part	21	5	30	6	200
Harvard Community Hospital	Gen	Part	21	5	30	6	200
Harvey 16,374—Cook	Gen	NPAasn	90	20	301	37	1,517
Ingalls Memorial Hospital	Gen	NPAasn	90	20	301	37	1,517
Herrin 9 708—Williamson	Gen	Part	40	5	39	17	584
Herrin Hospital	Gen	Part	40	5	39	17	584
Highland 3,310—Madison	Gen	Church	70	7	88	42	978
St Joseph's Hospital	Gen	Church	70	7	88	42	978
Highland Park 12 203—Lake	Gen	NPAasn	53	17	204	21	1,041
Highland Park Hospital	Gen	NPAasn	53	17	204	21	1,041
Hillsboro 4 435—Montgomery	Gen	NPAasn	50	5	45	15	448
Hillsboro Hospital	Gen	NPAasn	50	5	45	15	448
Hines—Cook	G&TB	Vet	1 750			1 642	5 049
Veterans Admin Facility	G&TB	Vet	1 750			1 642	5 049
Hinsdale 6 923—Du Page	Gen	NPAasn	100	5	134	40	1,060
Hinsdale Sanatorium and Hospital	Gen	NPAasn	100	5	134	40	1,060
Jacksonville 17 747—Morgan	Gen	State	3,343			3 283	779
Jacksonville State Hospital	Gen	State	3,343			3 283	779
Morgan County Tuberculosis Sanatorium	TB	County	40			21	41
Norbury Sanatorium	N&M	Corp	125			53	130
Our Saviors Hospital	Gen	Church	82	10	118	45	1,200
Passavant Memorial Hosp	Gen	Church	73	12	87	31	844
Joliet 42 093—Will	Gen	Church	102	36	530	140	3 793
St Joseph's Hospital	Gen	Church	102	36	530	140	3 793

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Silver Cross Hospital	Gen	NPAasn	133	17	261	61	2,647
Will County Tuberculosis Sanatorium	TB	County	100			76	50
Kankakee 20 020—Kankakee	Gen	State	4 000			4 046	1 423
Kankakee State Hospital	Gen	Church	114	12	145	47	1 418
St Mary Hospital	N&M	Indiv	26			16	22
Kenilworth 2,401—Cook	Gen	NPAasn	50	12	120	20	849
Kenilworth Sanitarium	Gen	Church	56	11	109	40	700
Kewanee 17 093—Henry	Gen	NPAasn	10	3	20	0	160
Kewanee Public Hospital	Gen	NPAasn	42	8	93	15	694
St Francis Hospital	Gen	Church	60	15	237	30	1 106
La Harpe 1 170—Hancock	Gen	NPAasn	25	6	35	0	286
La Harpe Hospital	Gen	Church	53	8	79	34	968
Lake Forest 6 604—Lake	Gen	Church	63	9	44	25	875
Allice Home Hospital	Gen	Church	120	8	112	77	2,357
La Salle 13 149—La Salle	TB	County	45			36	56
St Mary Hospital	Gen	Corp	40	6	51	16	590
Libertyville 3,791—Lake	Gen	Church	60	10	112	30	1 130
Condell Memorial Hospital	Ment	State	1 201			1 196	118
Lincoln 12 855—Logan	Gen	Church	43	8	56	31	1 000
Evangelical Deaconess Hosp	Gen	Corp	85	10	157	16	822
St Clara's Hospital	Gen	Indiv	20	3	21	5	232
Litchfield 6 612—Montgomery	Gen	Church	130	36	321	50	1 400
St Francis Hospital	Gen	City	111	22	280	42	1,901
Mackinaw 760—Tazewell	Gen	City	33	10	111	23	682
Oak Knoll Sanatorium	Gen	NPAasn	34	10	84	9	388
Macomb 8 600—McDonough	Gen	Indiv	20			20	11 400
Marquette Phelps Hospital	Gen	Indiv	20	8	19	11	90
St Francis Hospital	Gen	Church	40	4	24	30	553
Manteno, 1 149—Kankakee	TB	NPAasn	88			50	103
Manteno State Hospital	Gen	Church	80	10	124	44	1 780
Mattoon 14 631—Coles	TB	County	50			24	12
Memorial Methodist Hospital	Ment	Vet	1 130			1 046	167
Mcrose Park 10 741—Cook	Gen	County	1 004			No data supplied	
Westlake Hospital	TB	County	634			405	669
Mendota 4 008—La Salle	Gen	Church	120	40	100	90	3 037
Harris Hospital	Gen	NPAasn	327	100	992	107	5 040
Moline 32 230—Rock Island	Gen	Corp	68	7	12	40	1,631
Lutheran Hospital	TB	County	60			29	47
Moline Public Hospital	TB	Corp	110			54	144
Monmouth 8 606—Warren	Gen	City	58	12	201	30	1,200
Monmouth Hospital	Gen	Church	50	12	53	22	188
Morris 5 668—Grundy	Gen	Corp	40	6	22	32	712
Morris Hospital	Gen	NPAasn	40	8	138	20	1 073
Mt Vernon 12,375—Jefferson	Gen	NPAasn	100	18	181	01	1,873
Mt Vernon Hospital	Gen	Church	130	23	474	107	3,583
Moweaqua 1 478—Shelby	N&M	Indiv	26			14	32
Moweaqua Hospital	TB	City	93			62	116
Murphysboro, 8 180—Jackson	N&M	Indiv	25			10	60
St Andrew's Hospital	Ment	State	2 771			2 712	846
Naperville 1 118—Du Page	Gen	Church	300	30	619	183	4 702
Edward Sanatorium	Gen	NPAasn	50	10	120	28	1 088
Normal 6 708—McLean	TB	County	36			36	40
Brokaw Hospital	Gen	County	40	12	102	14	920
Fairview Sanatorium	Gen	City	40	6	70	10	769
North Chicago 8 460—Lake	Gen	NPAasn	120	20	200	72	2 182
Veterans Admin Facility	TB	County	50			43	46
Oak Forest 60—Cook	Gen	County	195	20	408	124	3 471
Cook County Infirmary	Gen	Army	50	1	5	11	892
Cook County Tuberculosis Hospital	Gen	Church	22	2	13	12	222
Oak Park 63 982—Cook	Gen	NPAasn	120	20	200	72	2 182
Oak Park Hospital	TB	County	50			43	46
West Suburban Hospital	Gen	County	195	20	408	124	3 471
Olney 6 140—Richland	Gen	NPAasn	50	10	120	28	1 088
Olney Sanatorium	TB	County	36			36	40
Ottawa 15 094—La Salle	Gen	County	40	12	102	14	920
Highland	Gen	City	40	6	70	10	769
Ottawa Tuberculosis Sanat	Gen	NPAasn	120	20	200	72	2 182
Ryburn Memorial Hospital	TB	County	50			43	46
Pana 5,830—Christian	Gen	County	195	20	408	124	3 471
Huber Memorial Hospital	Gen	NPAasn	50	10	120	28	1 088
Paris 8,781—Edgar	Gen	NPAasn	100	18	181	01	1,873
Paris Hospital	Gen	Church	130	23	474	107	3,583
Pekin 16,120—Tazewell	N&M	Indiv	26			14	32
Pekin Public Hospital	TB	City	93			62	116
Peoria 104,960—Peoria	N&M	Indiv	25			10	60
John O Proctor Hospital	Ment	State	2 771			2 712	846
Methodist Hospital of Central Illinois	Gen	Church	300	30	619	183	4 702
Illinois	Gen	NPAasn	50	10	120	28	1 088
Michell Farm	TB	County	36			36	40
Peoria Municipal Tuberculosis Sanatorium	Gen	County	40	12	102	14	920
Peoria Sanatorium	Gen	City	40	6	70	10	769
Peoria State Hospital	Gen	NPAasn	120	20	200	72	2 182
St Francis Hospital	TB	County	50			43	46
Peru 9 121—La Salle	Gen	County	195	20	408	124	3 471
Peoples Hospital	Gen	NPAasn	50	10	120	28	1 088
Pontiac 8,272—Livingston	Gen	NPAasn	100	18	181	01	1,873
Livingston County Sanatorium	Gen	Church	130	23	474	107	3,583
St James Hospital	N&M	Indiv	26			14	32
Princeton 4 702—Bureau	TB	City	93			62	116
Julia Rackley Perry Memorial Hospital	N&M	Indiv	25			10	60
Quincy 30 241—Adams	Ment	State	2 771			2 712	846
Blessing Hospital	Gen	Church	300	30	619	183	4 702
Hillcrest	Gen	NPAasn	50	10	120	28	1 088
St Mary Hospital	TB	County	36			36	40
Rantoul 1 555—Champaign	Gen	County	40	12	102	14	920
Station Hospital	Gen	City	40	6	70	10	769
Red Bud 1,208—Randolph	Gen	NPAasn	120	20	200	72	2 182
St Clement's Hospital	TB	County	50			43	46

department In 1933 there were 4,677, or 72.66 per cent, and in 1934, 4,488, or 70.86 per cent. Physicians serving as radiologists were reported for 1933 in 3,487 hospitals and for 1934 in 3,403 hospitals. Institutions having other than physician-radiologists numbered 892 in 1933 and 703 in 1934. Hospitals reported that they employ 4,300 x-ray technicians.

PHYSICAL THERAPY, DENTAL AND NURSING DEPARTMENTS

The present census shows that 2,008, or 31.7 per cent of hospitals, have physical therapy departments, as compared with 2,091 in 1927, or 30.72 per cent of hospitals then existing.

Dental departments have increased since 1927 from 796 to 1,168 and the number of dentists named as having hospital connection increased at the same time from 1,682 to 3,277. By referring to the accompanying table it will be seen that the number of dental departments has increased by 100 per cent or more in thirteen states.

Hospitals Having Departments of Physical Therapy and Dentistry and Accredited Schools of Nursing—1927 and 1934

	Dental Departments								Accredited Schools of Nursing	
	Physical Therapy Departments		1927		1934					
			De part ments	Den tists	De- part ments	Den tists				
	1927	1934					1927	1934		
Alabama	32	18	12	51	17	54	40	80		
Arizona	16	11	2	3	2	4	3	4		
Arkansas	22	17	7	9	4	5	26	8		
California	183	180	28	60	56	205	55	48		
Colorado	80	83	20	49	24	63	21	19		
Connecticut	22	31	10	41	28	151	23	23		
Delaware	6	4	3	6	6	18	0	7		
Dist. of Columbia	13	14	11	18	12	38	13	11		
Florida	26	24	6	21	9	20	18	13		
Georgia	28	23	12	21	21	66	44	18		
Idaho	18	16	2	2	2	4	0	0		
Illinois	128	134	40	57	48	136	128	128		
Indiana	64	47	10	29	22	64	34	27		
Iowa	67	61	10	17	14	29	54	31		
Kansas	44	37	9	13	18	34	57	38		
Kentucky	33	22	12	21	12	32	20	21		
Louisiana	24	19	9	10	12	40	20	15		
Maine	21	20	4	5	12	22	31	25		
Maryland	22	20	18	30	22	56	28	24		
Massachusetts	74	76	66	124	85	230	94	87		
Michigan	82	81	28	47	46	89	48	39		
Minnesota	72	59	18	20	28	62	56	42		
Mississippi	20	20	2	2	8	10	30	35		
Missouri	50	56	21	40	28	80	42	36		
Montana	17	10	1	1	4	4	17	12		
Nebraska	38	33	7	11	15	34	27	15		
Nevada	3	4	1	3	1	1	1	1		
New Hampshire	12	18	7	11	6	10	22	22		
New Jersey	62	84	36	67	61	161	45	51		
New Mexico	7	0	1	1	0	0	2	2		
New York	180	237	127	307	179	712	142	131		
North Carolina	47	32	13	20	18	30	44	44		
North Dakota	10	15	2	2	3	5	16	16		
Ohio	102	83	51	124	66	219	72	71		
Oklahoma	32	32	7	10	11	14	36	13		
Oregon	26	23	5	7	7	10	15	10		
Pennsylvania	134	143	81	150	109	294	163	142		
Rhode Island	9	7	11	21	11	89	9	11		
South Carolina	17	11	3	7	8	9	30	23		
South Dakota	26	20	2	2	2	2	19	18		
Tennessee	84	23	9	14	17	40	34	28		
Texas	89	37	23	31	20	64	72	50		
Utah	11	8	3	6	3	4	6	6		
Vermont	10	14	1	3	7	10	12	12		
Virginia	23	22	16	33	10	32	43	20		
Washington	51	47	9	10	15	21	26	24		
West Virginia	22	23	6	9	13	16	42	31		
Wisconsin	73	60	12	15	20	37	38	33		
Wyoming	10	8			3	3	7	2		
Totals	2,091	2,008	796	1,682	1,168	3,277	1,814	1,531		

Schools of nursing numbered 1,814 in 1927 and 1,531 in 1934, including for both years only the schools of nursing accredited by their respective state boards of nurse examiners. In addition, there were 264 unaccredited schools in 1927, and only eighteen in 1934.

SUPERINTENDENTS IN HOSPITALS

Thirty-five per cent of the superintendents or executives of hospitals are physicians holding the M.D. degree, 40 per cent are registered nurses, and 25 per cent are persons without medical or nursing degrees. The number of physicians serving as hospital superin-

Pathology and Radiology Departments, Directors and Technicians

	Number of Clinical Laboratories	Director		Number of Technicians	Number of X-Ray Departments	Director		Number of Technicians
		M.D.	Other			M.D.	Other	
Alabama	50	38	10	73	66	49	13	55
Arizona	27	10	6	14	37	27	7	16
Arkansas	51	34	13	51	51	40	10	39
California	231	164	41	394	262	196	48	291
Colorado	69	45	15	88	68	45	17	64
Connecticut	49	39	3	95	49	44	5	76
Delaware	12	9	1	13	11	11		9
Dist. of Columbia	24	24		68	23	22	1	37
Florida	68	43	23	65	69	49	14	54
Georgia	82	53	21	91	82	65	13	71
Idaho	28	14	9	19	40	26	9	24
Illinois	254	170	51	426	161	95	51	280
Indiana	80	59	22	115	104	67	21	69
Iowa	111	68	19	104	127	91	29	101
Kansas	80	56	18	91	97	74	14	66
Kentucky	73	36	26	68	78	56	18	60
Louisiana	48	36	8	60	49	40	4	41
Maine	43	25	13	46	52	38	11	43
Maryland	62	35	12	76	55	43	10	62
Massachusetts	188	144	20	347	185	161	14	193
Michigan	162	204	31	254	165	145	36	189
Minnesota	134	82	28	147	189	109	27	119
Mississippi	60	24	30	58	67	49	13	49
Missouri	108	83	19	178	110	96	8	127
Montana	20	15	10	34	86	25	5	25
Nebraska	57	41	13	69	72	58	10	54
Nevada	0	4	1	6	10	5	2	6
New Hampshire	27	20	4	32	30	26	1	26
New Jersey	114	96	15	176	116	102	8	118
New Mexico	23	16	3	15	33	28	8	17
New York	400	240	34	825	481	376	34	490
North Carolina	168	66	34	196	115	86	19	91
North Dakota	20	14	13	36	33	20	10	35
Ohio	191	124	41	296	183	147	26	183
Oklahoma	87	50	35	89	96	57	36	90
Oregon	43	29	11	70	54	39	12	49
Pennsylvania	279	225	41	470	267	233	23	267
Rhode Island	21	17	4	33	18	17	17	17
South Carolina	30	22	13	40	39	30	8	30
South Dakota	38	27	10	36	44	32	8	29
Tennessee	66	39	15	79	78	52	13	67
Texas	197	123	63	266	223	162	20	188
Utah	18	16	1	22	26	22	3	16
Vermont	20	14	4	16	23	20	2	20
Virginia	84	60	15	108	63	71	8	76
Washington	72	49	11	89	85	65	13	63
West Virginia	62	45	13	73	64	45	17	57
Wisconsin	135	84	25	167	141	90	28	124
Wyoming	18	14	2	10	23	15	6	12
Totals (1934)	4,271	2,950	876	6,105	4,488	3,403	703	4,300
(1933)	4,394	2,678	1,039		4,677	3,467	892	
(1929)	4,026				4,394			

tendents was 2,226 in 1934, 2,312 in 1933, and 2,648 in 1929. Registered nurses for the same three years respectively numbered 2,551, 2,559 and 1,676. Superintendents not holding medical or nursing degrees, for the same years respectively, were 1,545, 1,548 and 2,528. The number of physician-superintendents is relatively high in states having a number of large hospitals.

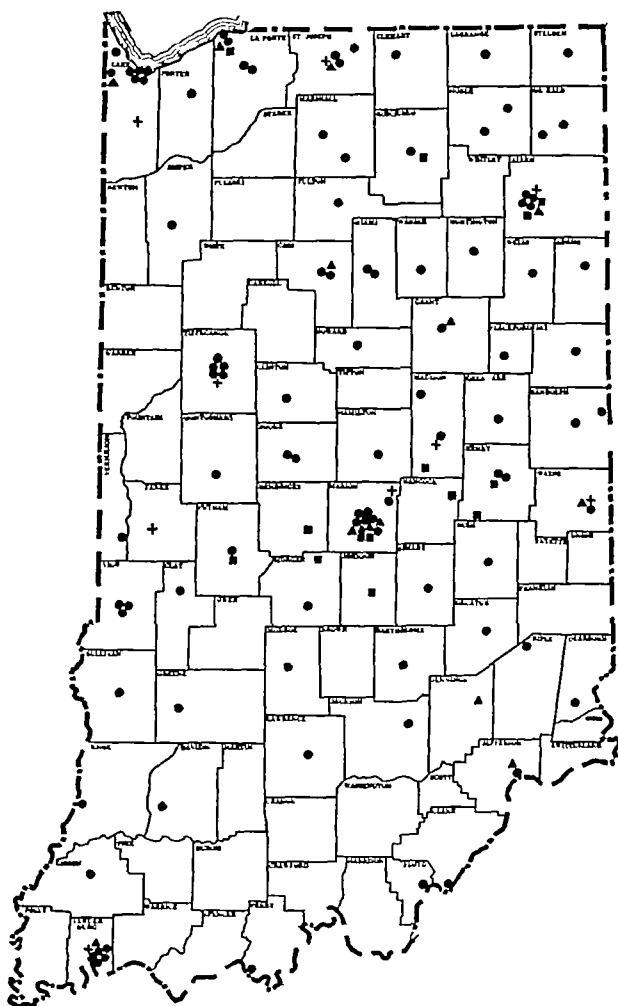
BIRTHS IN HOSPITALS

The total births reported by all hospitals this census numbered 701,143, or 8,133 less than in 1933. There were 480,488 births in maternity hospitals, as compared with 55,249 in 1933. There were 648,995 in general hospitals, or 885 less than in 1933. Federal hospitals reported 6,098 births—a gain of 1,028 over 1933 and 3,802 over 1929. Births in governmental hospitals were 144,419—a gain of 2,740 over the previous year. The nongovernmental hospitals reported 556,724 births—a loss of 10,873 as compared with the previous year.

INDIANA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Bloomington, 18 227—Monroe Bloomington Hospital ^o	Gen	NPAasn	35	7	75	10	901
Bluffton 5 074—Wells Wells County Hospital	Gen	County	10	3	50	14	422
Brazil 8 744—Clay Clay County Hospital	Gen	County	40	10	55	18	563
Clinton 7,938—Vermillion Vermillion County Hospital	Gen	County	30	6	34	14	463
Columbus 9,935—Bartholomew Bartholomew County Hospital	Gen	County	45	6	70	10	620
Crawfordsville 10,855—Montgomery Culver Hospital	Gen	County	48	12	06	26	1 175
Crown Point 4 046—Lake Lake County Tuberculosis Sanatorium	TB	County	205			202	171

INDIANA



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● General Hospital + Tuberculosis
▲ Nervous and Mental ■ Other Special Hospital

Total hospitals in Indiana, 139, general 94, general beds occupied, 491 per cent, population per general bed, 435

Decatur 5 156—Adams Adams County Memorial Hosp	Gen	County	35	6	49	19	733
East Chicago 54 784—Lake St Catherine's Hospital ^o	Gen	Church	294	50	343	79	2 031
Elkhart 32 949—Elkhart Elkhart General Hospital	Gen	NPAasn	70	10	130	27	1,253
Elwood 10 635—Madison Mercy Hospital	Gen	Church	20	5	178	7	649
Evansville 102,249—Vanderburgh Boehne Tuberculosis Hospital ⁺	TB	County	115			90	246
Evansville State Hospital	Ment	State	1,200			1 180	314
Protestant Deaconess Hosp ^o	Gen	Church	144	15	224	80	2,477
St Mary's Hospital ^o	Gen	Church	150	16	176	90	2,803
U S Marine Hospital	Gen	USPHS	90			52	478
Welborn Walker Hospital ^o	Gen	Corp	100	6	64	55	1 744

INDIANA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Ft Benjamin Harrison—Marion Station Hospital	Gen	Army	107	4	46	88	2,024
Ft Wayne 114 946—Allen Irene Byron Tuberculosis Sanat	TB	County	200			141	219
Lutheran Hospital ^o	Gen	Church	138	30	383	77	2,330
Methodist Episcopal Hosp ^o	Gen	Church	122	16	141	44	2,906
St Joseph Hospital ^o	Gen	Church	243	57	566	122	3,880
Frankfort, 12,100—Clinton Clinton County Hospital	Gen	County	42	8	74	13	651
Garrett 4 428—De Kalb Sacred Heart Hospital	Gen	Church	41	7	24	16	400
Gary 100 496—Lake Gary Hospital	Indus	Corp	100			24	189
Methodist Episcopal Hospital	Gen	Church	100	20	325	46	1,813
St Antonio Hospital	Gen	Corp	50	0	15	18	559
St John Hospital (col)	Gen	Indiv	15	6	24	3	206
St Mary's Mercy Hospital ^o	Gen	Church	230	35	550	119	4,361
Greencastle 4 613—Putnam Putnam County Hospital	Gen	County	40	5	27	11	501
Greensburg 5 702—Decatur Decatur County Memorial Hosp	Gen	County	25	6	87	10	207
Hammond 64 560—Lake Mt Mercy Sanitarium	N&M	Church	26			16	175
St Margaret's Hospital ^o	Gen	Church	214	30	570	118	803
Hartford City 6 613—Blackford Blackford County Hospital	Gen	County	30	5	65	18	384
Huntington, 13 426—Huntington Huntington County Hospital	Gen	County	27	6	68	11	4 0
Indianapolis 304 161—Marion Central State Hospital ⁺	Ment	State	1 729			1,761	220
Dr W B Fletcher's Sanat	N&M	Corp	50			0	230
Indianapolis City Hospital ^o	Gen	City	533	80	517	412	0 504
James Whitcomb Riley Hospital for Children (Affl) ^o	Chil	State	270			233	3 508
Methodist Episcopal Hosp ^o	Gen	Church	539	61	873	204	11 102
Norway's Sanatorium	N&M	Corp	33			5	61
Robt W Long Hosp (Affl) ^o	Gen	State	107			102	1 927
St Vincent's Hospital ^o	Gen	Church	260	35	444	121	4,210
Veterans Admin Facility	Gen	Vet	152			151	1 146
William H Coleman Hospital for Women (Affl) ^o	Mat	State	68	35	563	61	1 745
Jeffersonville 11 946—Clark Clark County Memorial Hosp	Gen	County	35	6	0	No data supplied	
Kendallville 5 439—Noble Lakeside Hospital	Gen	City	20	12	38	12	444
Kokomo 32,843—Howard Good Samaritan Hospital ^o	Gen	Church	56	8	70	25	741
LaFayette 26 240—Tippecanoe LaFayette Home Hospital ^o	Gen	NPAasn	180	20	230	52	1 609
St Elizabeth Hospital ^o	Gen	Church	225	20	237	108	2 866
Wabash Valley Sanitarium	Gen	NPAasn	45	7		300	
William Ross Sanatorium	TB	County	45			38	56
LaPorte 15 755—LaPorte Fairview Hospital	Gen	NPAasn	28	8	75	21	751
Holy Family Hospital	Gen	Church	90	15	130	43	1,385
Lebanon 6 445—Boone Williams Hospital	Gen	Indiv	24	3	0	No data supplied	
Witham Memorial Hospital	Gen	County	20	0	44	11	370
Linton 5 085—Greene Freeman Greene County Hosp	Gen	County	30	4	30	15	450
Logansport 18 508—Cass Cass County Hospital	Gen	County	50	6	76	26	732
Logansport State Hospital ⁺	Ment	State	1 682			1,576	280
St Joseph's Hospital	Gen	Church	40	10	45	23	584
Madison 6,630—Jefferson Kings Daughters Hospital	Gen	NPAasn	27	6	29	13	483
Marion 24 406—Grant Grant County Hospital ^o	Gen	NPAasn	55	6	70	18	691
Veterans Admin Facility	Ment	Vet	1 500			1 400	461
Martinsville 4 962—Morgan Morgan County Memorial Hos pital	Gen	County	18	6	40	4	173
Michigan City 26 735—LaPorte Clinic Hospital	Gen	Corp	50	10	84	18	604
St Anthony's Hospital	Gen	Church	100	15	134	23	937
Mishawaka 25,630—St Joseph St Joseph Hospital ^o	Gen	Church	100	20	238	59	1 544
Muncie 40 648—Delaware Ball Memorial Hospital ^o	Gen	NPAasn	144	18	200	72	2,319
New Albany 25,810—Floyd St Edward's Hospital	Gen	Church	100	14	103	33	1 060
Newcastle 14 027—Henry Henry County Hospital	Gen	County	50	5	60	18	702
Newcastle Clinic Hospital	Gen	Corp	15	2	39	6	396
Nobleville 4,811—Hamilton Hamilton County Hospital	Gen	County	90	6	40	10	728
North Madison 573—Jefferson Madison State Hospital	Ment	State	1,580			1,505	292
Oaklandon 375—Marion Sunnyside Sanatorium	TB	County	261			261	238
Peru, 12,730—Miami Dukes Miami County Memorial Hospital	Gen	County	52	12	48	18	616
Wabash Railroad Employees Hospital	Indus	NPAasn	50			23	422
Plymouth 5,390—Marshall Marshall County Hospital	Gen	County	20	6	52	10	638
Portland 5,276—Jay Jay County Hospital	Gen	NPAasn	12	4	20	8	400
Princeton 7,505—Gibson Methodist Episcopal Hospital	Gen	Church	30	5	55	12	400
Rensselaer 2,916—Jasper Jasper County Hospital	Gen	County	34	8	118	16	500

Key to symbols and abbreviations is on page 1091

siderable investigation is carried out in the case of each hospital before it is admitted to the Register

First, hospitals supply information regarding their capacity, equipment, classification and list of staff. Each member of the staff is then looked up in the biographic files of the Association. Information and advice are obtained from the secretaries and other members of the county medical societies, from state, city or county health departments, from the councilors of the state medical association for the district in which the hospital is located, and from other sources. Investigation of hospitals for internship and residency approval is more comprehensive than for registration.

A personal visit by a member of our staff of hospital examiners is made to each hospital approved, or applying for approval, for internships or for residencies. An increasing number of other hospitals are being inspected.

The list of registered hospitals, by states, begins on page 1091 of this issue, where considerable data are given about each hospital. Classifications, symbols and abbreviations are explained at the head of the list. The list in each state is given in two sections: (1) hospitals and sanatoriums, and (2) related institutions. The related institutions include some general hospitals lacking certain essentials, nursing homes, school infirmaries, prison infirmaries, custodial and other institutions designed to give some medical, nursing or convalescent care in an ethical and acceptable manner, but not strictly hospitals. In the statistics the two classifications are consolidated.

Hospitals Sanatoriums and Related Institutions

	Hospitals	Beds	Bassinets	Births	Patients Admitted	Average Census
Hospitals and sanatoriums	4,897	870,310	50,012	687,847	6,831,087	687,343
Related institutions	1,437	168,791	3,014	13,290	312,329	142,705
Total registered hospitals	6,334	1,039,101	53,026	701,137	7,143,416	830,048

Hospitals in Alaska Canal Zone Guam Hawaii, Philippine Islands Puerto Rico and Virgin Islands

Alaska	29		495	69
Canal Zone	10		1,642	39
Guam	1		60	
Hawaii	47		4,641	232
Philippine Islands	98		8,132	404
Puerto Rico	41		3,210	194
Virgin Islands	5		320	22
Totals		(1914) 221	18,430	1,020
		(1933) 215	18,794	1,020
		(1939) 204	18,930	720

There are 221 hospitals located in these territories. The distribution of those hospitals and their capacity are shown in the accompanying table. The total number of beds is 18,430 and of bassinets 1,020. Alaska with nineteen hospitals gained one during the past year, Hawaii with forty-seven has gained two, Philippine Islands with ninety-eight has added three, Puerto Rico with forty-one hospitals and the Virgin Islands with five remain the same. The statistics of the number of beds, the number of patients admitted, average census of patients and number of births for the year are omitted for these 221 hospitals, because such statistics have been received from only 70 per cent of these hospitals as this article goes to press.

HOSPITALS REFUSED REGISTRATION

There are 569 institutions which, because of alleged unethical or questionable practices, admission to their staffs of members who are seriously unqualified, either morally or professionally, flagrant methods of advertising, or for other valid reasons, are deemed unworthy of being included in any published list of reputable hospitals.

Hospitals Refused Registration

Alabama	5	Maine	7	Oklahoma	18
Arizona	3	Maryland	4	Oregon	12
Arkansas	0	Massachusetts	16	Pennsylvania	20
California	72	Michigan	16	Rhode Island	1
Colorado	20	Minnesota	10	South Carolina	3
Connecticut	2	Mississippi	2	South Dakota	3
Delaware		Missouri	24	Tennessee	0
Dist. of Columbia		Montana	0	Texas	26
Florida	23	Nebraska	21	Utah	
Georgia	1	Nevada	1	Vermont	
Idaho	2	New Hampshire	1	Virginia	3
Illinois	41	New Jersey	7	Washington	20
Indiana	18	New Mexico		West Virginia	2
Iowa	10	New York	31	Wisconsin	6
Kansas	27	North Carolina	6	Wyoming	3
Kentucky	10	North Dakota	3		
Louisiana	2	Ohio	27	Total	569

Only a little over 1 per cent of the total capacity of all hospitals is included in the 569 institutions that are refused registration. From the standpoint of hospitalization, therefore, they are, as a rule, not needed. Not only are they left out of the Register and the American Medical Directory but their names are consistently omitted from all the publications of the Association and they are refused admission to the advertising columns.

This helps to distinguish between the good and the bad in hospitals. As a result, it is considered a disgrace among hospitals and physicians to be refused registration, and institutions that are rejected are frequently aroused and correct the objectionable practices in order that they may be recognized. Public and professional opinion forces many such institutions to sell their buildings to more reputable owners or to close up.

The Register is used as a basic list of hospitals. Industrial and governmental agencies use it in selecting hospitalization for their dependents and beneficiaries. Physicians almost universally observe the Register in referring their patients.

The good work that the American Medical Association has accomplished by its vigilance in distinguishing between the fit and the unfit in the hospital field has been shared very largely by other organizations. The American College of Surgeons has cooperated by refusing to consider for its approval an unregistered hospital, and the American Hospital Association has followed the Register in considering applications for institutional membership. It is evident, also, that the public in general limits its patronage and its donations to hospitals that are considered worthy of a place in the Register.

MISCELLANEOUS FACILITIES FOR MEDICAL AND NURSING SERVICE

In addition to the 6,334 registered hospitals, sanatoriums and related institutions, and in addition to the 569 institutions refused registration, there is an unknown number of small places, some of which afford suitable living accommodations and medical and nursing care of a limited or special type. Among them are emergency stations, doctors' offices with living accommodations, small nursing and maternity hospitals, and

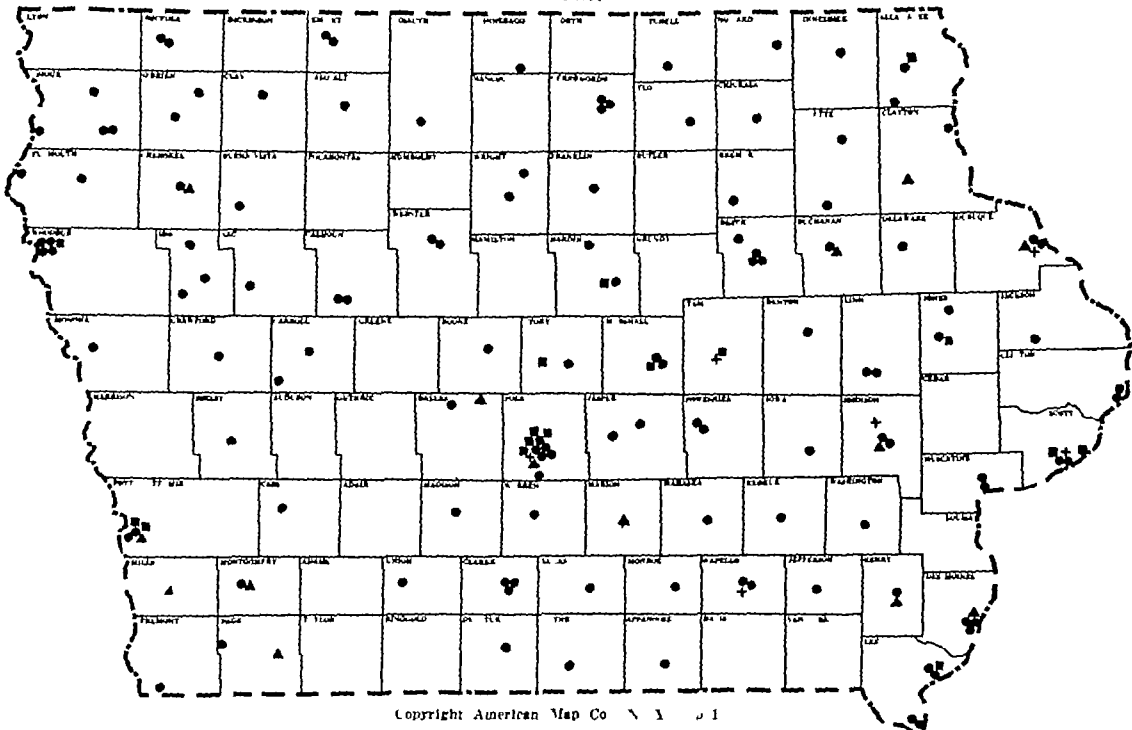
IOWA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Hamburg 2103—Fremont	Gen	Indiv	10	5	No data supplied		
Hamburg Hospital	Gen	Church	40	8	60	18	940
Hampton 3473—Franklin	Gen	Indiv	15	2	18	2	147
Lutheran Hospital	Gen	Corp	15	3	7	8	403
Hartley 1372—O'Brien	Gen	Corp	15	3	7	8	403
Hand Hospital	Gen	Corp	15	3	7	8	403
Hull 400—Sioux	Gen	Corp	15	3	7	8	403
Hull Hospital	Gen	Corp	15	3	7	8	403
Ida Grove 2206—Ida	Gen	Part	12	3	15	6	120
Ida Grove General Hospital	Gen	Part	12	3	15	6	120
Independence 3691—Buchanan	Ment	State	1735			1608	700
Independence State Hospital	Gen	NPAasn	26	6	29	8	201
Peoples Hospital	Gen	NPAasn	26	6	29	8	201
Iowa City, 15,340—Johnson	(Included in University Hospitals)						
Children's Hospital	Ment	State	60			44	323
Iowa State Psychopathic Hospital	Gen	Church	120	20	212	36	1,249
University Hospitals**	Gen	State	900	54	808	686	14,828
Iowa Falls 4112—Hardin	Gen	City	18	6	38	10	325
Ellsworth Hospital	Gen	City	18	6	38	10	325
Keokuk 15100—Lee	Gen	Corp	60	10	86	42	678
Graham Protestant Hospital	Gen	Church	120	15	208	60	1,080
St. Joseph's Hospital	Gen	Church	120	15	208	60	1,080

IOWA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Mt. Pleasant 3743—Henry	Gen	County	20	5	64	0	267
Henry County Soldiers' and Sailors Memorial Hospital	Ment	State	1600			1,581	433
Mt. Pleasant State Hospital	Gen	Indiv	24	4	41	10	382
Muscatine 16778—Muscatine	Gen	NPAasn	50	6	54	10	834
Bellevue Hospital	Gen	Church	50	5	35	10	309
Benjamin Hershey Memorial Hospital	Gen	Church	51	9	60	16	673
Nevada 3133—Story	Gen	City	47	10	120	24	782
Iowa Sanitarium and Hospital	TB	State	363			340	213
New Hampton 2458—Chickasaw	Gen	Church	36	6	76	17	480
St. Joseph's Hospital	Gen	Indiv	12	4	30	7	420
Newton 11,600—Jasper	Gen	Indiv	20	4	28	10	360
Mary Frances Skiff Memorial Hospital	Gen	Indiv	20	4	28	10	360
Oakdale, 62—Johnson	Gen	City	47	10	120	24	782
State Sanatorium for Tuberculosis	TB	State	363			340	213
Oswego 7794—Fayette	Gen	Church	36	6	76	17	480
Mercy Hospital	Gen	Indiv	12	4	30	7	420
Onawa 2438—Monona	Gen	Indiv	20	4	28	10	360
Onawa Hospital	Gen	Indiv	20	4	28	10	360
Oscola 2871—Clarke	Gen	Indiv	20	4	28	10	360
Harken Hospital	Gen	Indiv	20	4	28	10	360

IOWA



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- General Hospital
▲ Nervous and Mental
✕ Tuberculosis
■ Other Special Hospital

Total hospitals in Iowa, 159, general, 122, general beds occupied, 535 per cent, population per general bed 1360

Knockville 4097—Marion	Ment	Vet	801			847	103
Veterans Admin. Facility	Gen	Indiv	20	6	02	10	887
Lake City 2012—Calhoun	Gen	Part	12	5	30	4	100
McCrory Hospital	Gen	Part	12	5	30	4	100
McKay Memorial Hospital	Gen	Part	12	5	30	4	100
Le Mars 4788—Plymouth	Gen	Church	50	10	76	21	856
Sacred Heart Hospital	Gen	Church	50	10	76	21	856
Leon 2006—Decatur	Gen	County	20	5	10	8	289
Decatur County Hospital	Gen	County	20	5	10	8	289
Manning 1817—Carroll	Gen	Indiv	22	4	No data supplied		
Wyatt Memorial Hospital	Gen	Indiv	22	4	No data supplied		
Maquoketa 3693—Jackson	Gen	Indiv	20	4	25	11	278
City Memorial Hospital	Gen	Indiv	20	4	25	11	278
Marshalltown 17,373—Marshall	Gen	Church	125	16	153	79	1,880
Evangelical Deaconess Home and Hospital	Gen	Church	60	15	48	20	937
St. Thomas Mercy Hospital	Gen	Church	60	15	48	20	937
Mason City 23304—Cerro Gordo	Gen	Corp	40	12	88	18	702
Park Hospital	Gen	Church	70	12	161	33	1,277
St. Joseph's Mercy Hospital	Gen	Part	10	3	33	4	179
Story Hospital	Gen	Part	10	3	33	4	179
McGregor 1,290—Clayton	Gen	Indiv	10	3	12	5	117
McGregor Hospital	Gen	Indiv	10	3	12	5	117
Monticello 2,239—Jones	Gen	NPAasn	20	5	89	15	600
John McDonald Hospital	Gen	NPAasn	20	5	89	15	600
Oscola Hospital	Gen	Part	20	4	24	10	292
Oscola Sanitarium and Hosp	Gen	Indiv	10	3	13	4	78
Oskaloosa 10123—Mahaska	Gen	Part	35	5	25	12	331
Mercy Hospital	Gen	Part	35	5	25	12	331
Ottumwa 28075—Wapello	Gen	Corp	65	12	177	24	1,329
Ottumwa Ho pital	Gen	Corp	65	12	177	24	1,329
St. Joseph Hospital	Gen	Church	60	12	148	49	1,682
Sunnyloft Sanatorium	TB	County	55			61	86
Perry, 6581—Dallas	Gen	NPAasn	20	5	40	12	40
Kings Daughters Hospital	Gen	NPAasn	20	5	40	12	40
Red Oak 5778—Montgomery	Gen	Indiv	12	4	No data supplied		
Murphy Memorial Hospital	Gen	Indiv	12	4	No data supplied		
Shenandoah 6502—Page	Gen	NPAasn	20	6	58	11	532
Henry and Catherine Hand Hospital	Gen	NPAasn	20	6	58	11	532
Sibley 1570—Osceola	Gen	Part	18	4	30	7	250
Osceola Hospital	Gen	Part	18	4	30	7	250
Sibley Hospital	Gen	Indiv	15	4	8	8	206
Sigourney 2,262—Keokuk	Gen	Indiv	11	2	4	1	92
Sigourney Hospital	Gen	Indiv	11	2	4	1	92
Sioux City 79183—Woodbury	Gen	Church	75	15	230	57	1,960
Lutheran Hospital	Gen	Church	190	18	270	64	2,374
Methodist Hospital	Gen	Church	200	20	265	100	3,677
St. Joseph's Mercy Hospital	Gen	Church	125	14	170	70	3,410
St. Vincent's Hospital	Gen	Church	125	14	170	70	3,410

Key to symbols and abbreviations is on page 1091

procedure as offering superior advantages. The following suggestions, therefore, should be considered as having practical value since they represent, at least in part, successful methods in certain hospitals or medical schools at present.

INTERN SUPPLY AND DEMAND

The excess of approved internships over the number of applicants, which at one time was stated to be as much as a thousand places, has largely disappeared. An investigation has been made, therefore, into the number of available internships, the results of which are presented in the accompanying table. The three important factors which have reduced the number of openings each year are the increasing length of internships, repeaters, and the placement of foreign graduates.

There were 2,222 interns in the group serving over twelve months—on the average 20.7 months. Yearly replacements in this group, therefore, will amount to 1,285. By subtracting these figures from the total number of approved internships and total graduates seeking internships, there remain 3,982 twelve month services for 3,714 applicants, an excess of 268. However, the Council has records of 113 men who are repeating a year's rotating service. The number of foreign graduates placed will approximate this figure and, as a result, the Council has requested that hospitals which it has approved assign no internships to foreign graduates until all applicants from our own class A schools have been placed.

This scarcity of internships has been in part due to the temporary abandonment of intern training by the Navy, Army and Marine hospitals. The two latter groups of institutions are completing details for active resumption of intern training. With these and other hospitals recently approved and reinstated, about 172 additional openings will be provided.

SELECTION AND APPOINTMENT OF INTERNS

Hospital administrators, intern committees and deans of medical schools have at various times testified concerning the unsatisfactory methods now employed in making application for, and making appointments to, internships. Under existing circumstances, an enormous amount of energy and correspondence is necessary on the part of all involved—the intern, the hospital, and those who are called on to write character and aptitude references for applicants.

Many of the present difficulties could be minimized if practices already engaged in by deans or faculty intern committees could be enlarged and directed in more effective channels, if uniform application blanks were in use, if (still more important) uniform times of application and appointment were observed and, finally, if a central coordinating and placement bureau were established.

The following procedures are offered as suggestions for further discussion and improvement. Since most internships commence July 1, methods are recommended on this basis, but time relationships would be the same for appointment at any period.

1 The first step involves acceptance of a uniform internship application blank by all approved hospitals which will supply intern committees with sufficient data for intelligent selection of interns. These blanks will be handled as follows:

(a) Duplicate blanks will be supplied to each candidate at the medical school. He will submit these blanks properly filled out, together with his photograph, to his dean or faculty intern committee.

(b) The medical school authorities will verify the submitted data and add in space provided the candidate's class standing and their estimate of the student's probable performance as an intern.

(c) The candidate will submit at the same time as he presents his application, and on a separate form, his first, second and third choice of hospital.

(d) On an agreed date, for example, February 1, the original applications are sent by the dean to the first choice hospital. The duplicates are retained in the medical school files to provide against loss or other mishap to the original applications.

2 On receipt of the blanks, the hospital intern committee makes a selection of acceptable applicants—additional data if necessary are secured, arrangements for personal interviews are made, and any other procedures in keeping with hospital custom are carried out. Contracts are then dispatched to successful candidates and, if satisfactory, signed, witnessed and returned. All applications from unsuccessful candidates are returned to the medical school before March 1.

3 This second step will have been completed by March 1 and the entire procedure, using the same blank, is repeated for the second and third choice hospitals the months of March and April being used to complete the performance.

Available Approved Internships

Number of approved internships September 1934	6,204
Average length of internships	18 Mo
Graduates seeking internship, 1934	4,909
Interns serving over 12 months	2,222
Total months served	46,064
Average length of internship	20.7 Mo
Internships available in 1934	1,285
Twelve month internships	3,082
Total months served	47,764
Graduates placed in this group	3,714
Excess of internships over 1934 graduates	268

4 As soon as a hospital has obtained its complement of interns, the central bureau is notified and suitable means are taken by it to notify the medical schools.

5 The names of all candidates unabsorbed by May 1 would be submitted to the central bureau. Likewise, all approved hospitals would supply the same bureau with the number of unfilled appointments. Adequate arrangements for publicity or more direct methods of bringing intern and vacancy together could readily be brought about.

To be completely successful, this plan would operate even in hospitals controlled by or within the sphere of influence of the schools, or where other close relationship exists between medical school and hospital.

The plan seems to preserve to both hospital and intern as much free choice in selection as exists at present, imposes no great added burden to medical school committees, and relieves interns of the anxiety and physical burden of writing dozens of futile applications during the important closing months of their academic careers.

RECORDS OF INTERNSHIPS AND RESIDENCIES

The attention of all hospitals approved for internship or residency training has been directed on several occasions to the provision made by the Council for accurate registration of all hospital services in the biographic files of the American Medical Association. Hospitals have been asked, therefore, to maintain adequate records (as to the exact duration and type of experience obtained) on each intern or resident.

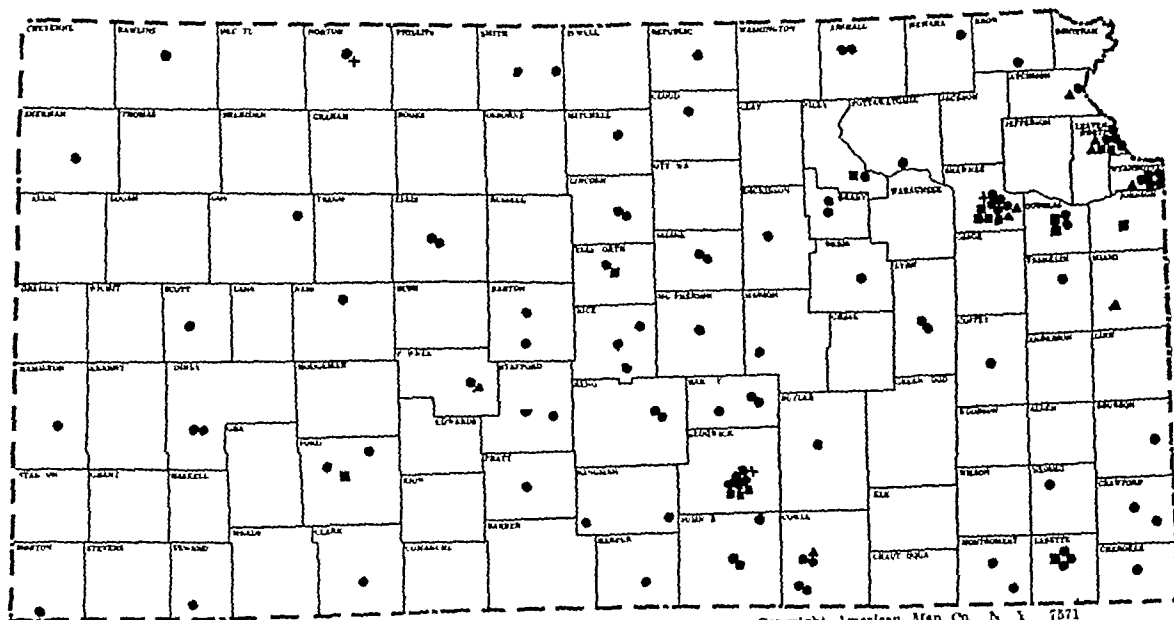
KANSAS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Norton 2767—Norton	Gen	Church	20	10	30	9	360
Laird Memorial Hospital	Gen	Church	20	10	30	9	360
State Sanatorium for Tuberculosis	TD	State	268			264	100
Oswatomie 4440—Miami	Gen	Church	1,550			1,020	202
Oswatomie State Hospital	Ment	State	1,550			1,020	202
Ottawa 9663—Franklin	Gen	County	45	12	73	15	620
Ransom Memorial Hospital	Gen	County	45	12	73	15	620
Parsons 14503—Labette	Gen	Church	35	4	44	17	380
Mersey Hospital	Gen	Church	35	4	44	17	380
M. K. T. Railroad Employees Hospital	Indus	NPAasn	50			23	309
State Hospital for Epileptics	Epl	State	508			727	104
Pittsburg 18145—Crawford	Gen	Church	75	6	82	37	1,200
Mt Carmel Hospital	Gen	Church	75	6	82	37	1,200
Pratt 6322—Pratt	Gen	Corp	20	6	36	4	280
Minnebach Hospital	Gen	Corp	20	6	36	4	280

KANSAS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Wesley Hospital	Gen	Church	282	10	14	200	70
Wichita Hospital	Gen	Church	282	10	14	200	70
Winfield, 9,338—Cowley	Gen	Church	44	6	55	81	953
St Mary's Hospital	Gen	Church	44	6	55	81	953
William Newton Memorial Hospital	Gen	City	42	10	93	23	791
Related Institutions							
Ashland 1232—Clark	Gen	NPAasn	10	4	35	4	2,6
Ashland Hospital	Gen	NPAasn	10	4	35	4	2,6
Atchison 13,024—Atchison	N&M	Indiv	22	1		11	40
Prospect Park Sanitarium	N&M	Indiv	22	1		11	40
Burlington 2,273—Coffey	Gen	Indiv	15	3		New	
Burlington Hospital	Gen	Indiv	15	3		New	
Council Grove 2,895—Morris	Gen	Part	10	2		No data supplied	
Council Grove Hospital	Gen	Part	10	2		No data supplied	

KANSAS



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• General Hospital + Tuberculosis
▲ Nervous and Mental ■ Other Special Hospital

Total hospitals in Kansas, 127, general, 96
occupied, 499 per cent, population per general bed, 316

Quinter 570—Gove	Gen	Indiv	10	4	12	4	220
Quinter Hospital and Sanit	Gen	Indiv	12		26	6	100
Ransom 421—Dess	Gen	Indiv	12		26	6	100
Mid West Hospital	Gen	Indiv	12		26	6	100
Sabetha 2,532—Nemaha	Gen	Church	100	11	50	32	1,244
St Anthony Murdock Memorial Hospital	Gen	Church	100	11	50	32	1,244
Salina 20150—Saline	Gen	Church	49	12	98	82	963
Azbury Protestant Hospital	Gen	Church	49	12	98	82	963
St John's Hospital	Gen	Church	49	12	98	82	963
Spencer 703—Ford	Gen	NPAasn	10	3	12	5	182
Perkins Hospital	Gen	NPAasn	10	3	12	5	182
Stafford 1614—Stafford	Gen	Part	14	4	32	6	268
Community Hospital	Gen	Part	14	4	32	6	268
Sterling 1868—Rice	Gen	NPAasn	20	4	21	5	359
Sterling Hospital	Gen	NPAasn	20	4	21	5	359
Syracuse 1,933—Hamilton	Gen	County	25	6	57	7	307
Douglas Memorial Hospital	Gen	County	25	6	57	7	307
Topeka 61120—Shawnee	Indus	NPAasn	140			78	1,978
A. T. & S. F. Railway Hosp	Indus	NPAasn	140			78	1,978
Christ's Hospital	Gen	Church	60			42	100
Hillcrest Sanatorium	Gen	Church	60			42	100
Jane O. Stormont Hospital	Gen	NPAasn	60			42	100
Menninger Sanitarium	Gen	NPAasn	60			42	100
St. Francis Hospital	Gen	Church	75	13	162	50	1,305
Security Benefit Assn Hospital	Gen	Frat	200			62	1,837
Peoria State Hospital	Ment	State	1,827			1,644	318
Veterans Administration Home	Gen	Vet	741			433	3,034
Veterans Admin Facility	Gen	Vet	741			433	3,034
Wamego 1,647—Pottawatomie	Gen	City	16	5	26	6	200
Wamego Hospital	Gen	City	16	5	26	6	200
Wellington 7403—Sumner	Gen	NPAasn	80	6	30	9	377
Haicher Hospital	Gen	NPAasn	80	6	30	9	377
St. Luke's Hospital	Gen	NPAasn	80	6	30	9	377
Wichita, 111,110—Sedgwick	Gen	Indiv	15	3	26	4	
Coffman Hospital	Gen	Church	325	25	338	113	3,814
St. Francis Hospital	Gen	County	60	8	24	41	1,827
Sedgwick County Hospital	Gen	County	60	8	24	41	1,827
Veterans Admin Facility	Gen	Vet	160			160	
Ellsworth, 2,012—Ellsworth	Inst	State	30			23	12
Mother Bickerdike Home and Hospital	Inst	State	30			23	12
Ft Dodge 515—Ford	Inst	State	30			14	200
Kansas State Soldiers Home	Inst	State	30			14	200
Lansing 813—Leavenworth	Ment	State	90			57	2
Asylum for Dangerous Insane	Ment	State	90			57	2
Kansas State Penitentiary	Inst	State	50			22	571
Lawrence 723—Douglas	Inst	I A	40			5	310
Haskell Institute Hospital	Inst	I A	40			5	310
Watkins Memorial Hospital	Inst	State	40			12	916
Leavenworth 17406—Leavenworth	N&M	Indiv	30			6	
Evergreen Sanitarium	N&M	Indiv	30			6	
U. S. Penitentiary Hospital	Inst	Fed	180			117	1,074
Lebanon 723—Smith	Gen	Indiv	10	2	2	1	40
Lebanon Hospital	Gen	Indiv	10	2	2	1	40
Lincoln, 1,733—Lincoln	Gen	Indiv	8	1		2	112
City Hospital	Gen	Indiv	7	3	12	1	122
Little River 618—Rice	Gen	City	18	2	7	3	83
Hoffman Memorial Hospital	Gen	City	18	2	7	3	83
Manhattan 10136—Riley	Inst	State	30			2	100
Kansas State College Hospital	Inst	State	30			2	100
Marysville 4,018—Marshall	Gen	Indiv	10	2	6	3	100
Marysville Hospital	Gen	Indiv	10	2	6	3	100
Nashville 234—Klingman	Gen	Indiv	9	1	10	2	126
Nashville Hospital	Gen	Indiv	9	1	10	2	126
Norwich 477—Klingman	Gen	Indiv	7	2	4	3	1,0
Norwich Hospital	Gen	Indiv	7	2	4	3	1,0
Olathe, 2,650—Johnson	Inst	State	18			1	129
State School for the Deaf	Inst	State	18			1	129
Parsons 14503—Labette	Gen	Indiv	6	2	8	4	62
Parsons Hospital and Mater	Gen	Indiv	6	2	8	4	62
City Home	Gen	Indiv	9	6	21	2	87
Scott City, 1,544—Scott	Gen	Indiv	9	6	21	2	87
Scott City Hospital	Gen	Indiv	9	6	21	2	87

Key to symbols and abbreviations is on page 1091

HOSPITALS REGISTERED BY THE AMERICAN MEDICAL ASSOCIATION

The following list contains the names of 6334 hospitals, sanatoriums and related institutions that are located in the United States and 221 in Alaska, Canal Zone, Guam, Hawaii, Philippine Islands, Puerto Rico and Virgin Islands. It omits the names of 569 hospitals which, after investigation, were not accepted. The inclusion of the name of any institution may be taken as an indication that evidence concerning irregular or unsafe practices in that institution has not come to the attention of the Council on Medical Education and Hospitals. The list in each state is given in two sections: (1) hospitals and sanatoriums, and (2) related institutions. The related institutions include some general hospitals lacking certain essentials, nursing homes, school infirmaries, prison infirmaries, custodial and other institutions designed to give some medical, nursing or convalescent care in an ethical and acceptable manner, but not strictly hospitals. In the statistics the two classifications are consolidated. The words "No data supplied" following the name of a hospital mean that no report was received although at least three requests were sent.

KEY TO SYMBOLS AND ABBREVIATIONS

- * Approved for general internship, the fifth year in medicine by the Council on Medical Education and Hospitals
- + Approved for certain residencies in specialties for graduates in medicine who have already had a general internship or its equivalent in private practice

- ◊ School of nursing accredited by state board of nurse examiners
- ◊ Affiliated for nurse training on state accredited basis

The column headed "Type of Service" tells what diseases or conditions are treated in each institution, as follows:

Ca	Cancer	ENT	Eye ear nose and throat	Inst	Institutional	Orth	Orthopedic
Card	Cardiac	Gen	General	Mat	Maternity	SKCa	Skin and cancer
Child	Children	GTB	General and tuberculosis	MatCh	Maternity and children	TB	Tuberculosis
Chr	Chronic	Inc	Incurable	McDe	Mentally deficient	TbIs	Tuberculosis and isolation
Conv	Convalescence and rest	Indus	Industrial	Ment	Mental	TbOr	Tuberculosis and orthopedic
Drug	Drug and alcoholic	Isol	Isolation	N&M	Nervous and mental	Ven	Venereal
Epi	Epileptic						

The column headed "Control" indicates for each institution the ownership, control, or auspices under which it is conducted, as follows:

GOVERNMENTAL			NONPROFIT ORGANIZATIONS			PROPRIETARY		
Federal		State	Church			Individual		
Indian Affairs		City	Fraternal			Partnership		
United States Army		County	Nonprofit association			Corporation		
United States Navy		City/County				(unrestricted as to profit)		
United States Public Health Service								
Veterans Administration Facility								

ABBREVIATIONS					
CyCo	City and county	Frat	Fraternal	NPAssn	Nonprofit association
Corp	Corporation unrestricted as to profit	IA	Office of Indian Affairs Department of the Interior	Part	Partnership
Fed	Federal	Indiv	Individual	USPHS	United States Public Health Service
				Vet	Veterans Administration Facility

Population of cities is based on the 1930 census of the United States Bureau of the Census. Consultation with the Bureau led to this decision. Population of states is based on estimates of the Bureau as of July 1934. (See note to maps.)

ALABAMA

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Albertville, 2,716—Marshall	Gen	Indiv	24	2	5	2	123
Sand Mountain Infirmary							
Alexander City 4,510—Tallapoosa	Gen	Indiv	54	4	20	8	400
Russell Hospital							
Anniston 22,345—Calhoun	Gen	City	66	6	92	30	1,507
Garner Hospital							
Clinton Hospital	Gen	Army	73			47	1,836
Atmore 303—Escambia							
Atmore General Hospital	Gen	Corp	18	3	18	8	340
Bellamy 317—Sumter							
Bellamy Hospital	Gen	Indiv	16	2	9	8	150
Deserem, 20,721—Jefferson							
Bessemer General Hospital	Gen	Corp	72	10	33	15	625
Birmingham 259,618—Jefferson							
Birmingham Baptist Hospital	Gen	Church	170	12	164	47	2,234
Children's Hospital	Chil	NPAssn	50			28	865
Hill Crest Sanitarium	N&M	Indiv	50			27	250
Hillman Hospital	Gen	County	439	40	1,737	356	9,441
Jefferson Sanatorium	TB	County	105			75	182
Norwood Hospital	Gen	Corp	210	16	119	70	3,677
St. Vincent's Hospital	Gen	Church	113	12	181	65	2,483
South Highlands Infirmary	Gen	Corp	110	17	407	60	3,023
Brewton, 2,518—Escambia							
Brewton Memorial Hospital	Gen	Indiv	20	2	8		
Clanton 1,847—Chilton							
Central Alabama Hospital	Gen	NPAssn	23	2	10	12	337
Decatur 15,533—Morgan							
Benevolent Society Hosp	Gen	NPAssn	44	3	43	20	636
Dothan, 18,046—Houston							
Dr. M. S. Davis's Private Hospital	Gen	Indiv	50	6	No data supplied		
Fraser Ellis Hospital	Gen	Indiv	60	8	43	53	2,474
Moody Hospital	Gen	Indiv	100	6	52	53	1,951
Enterprise, 8,702—Coffee							
Gibson Hospital	Gen	Indiv	80	3	16	8	417
Eufaula 5,708—Dawson							
Britt Infirmary	Gen	Indiv	50	4		15	
Salter Hospital	Gen	Indiv	40	8	22	15	568

ALABAMA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Fairfield 11,039—Jefferson							
Employees Hospital of the Tennessee Coal Iron and Railroad Company	Gen	Corp	257	23	331	135	5,456
Florida, 2,580—Covington							
Young Infirmary and Lakeview Hospital	Gen	Indiv	40	4	No data supplied		
Florence 11,729—Lauderdale							
Eliza Coffee Memorial Hosp	Gen	City	50	6	57	16	737
Gadsden 24,042—Etowah							
Forrest General Hospital	Gen	Corp	75	12	55	31	1,275
Holy Name of Jesus Hospital	Gen	Church	75	6	70	32	2,064
Greenville 8,985—Butler							
Spelz Hospital	Gen	Indiv	30	6	11	2	209
Stabler Infirmary	Gen	Indiv	20	3	No data supplied		
Huntsville 11,554—Madison							
Huntsville Hospital	Gen	NPAssn	71	4	39	14	767
Jackson, 1,828—Clarke							
South Alabama Infirmary	Gen	Corp	12	1	10	4	130
Jasper, 5,313—Walker							
Walker County Hospital	Gen	Corp	50	4	26	33	1,155
Langdale, 510—Chambers							
Langdale Hospital	Surg	Corp	15		2	6	140
Mobile 68,202—Mobile							
City Hospital	Gen	City	188	18	330	95	6,536
Mobile County Tuberculosis Sanitarium	TB	CyCo	55			33	47
Mobile Infirmary	Gen	NPAssn	90	10	52	40	8,330
Providence Infirmary	Gen	Church	88	12	130	50	1,784
U. S. Marine Hospital	Gen	USPHS	100			127	1,172
Montgomery 66,079—Montgomery							
Highland Park Sanatorium	Gen	Indiv	40	12	216	21	1,179
Montgomery Tuberculosis Sanatorium	TB	NPAssn	60			33	48
St. Margaret's Hospital	Gen	Church	130	14	240	80	3,608
Station Hospital	Gen	Army	20		19	10	413
Mt. Vernon 510—Mobile							
Searcy Hospital (col.)	Ment	State	1,000			1,520	491

Key to symbols and abbreviations is at top of this page

KENTUCKY—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Madisonville 6 908—Hopkins	Gen	Corp	20	3	10	9	512
Madisonville Hospital	Gen	Corp	20	3	10	9	512
Martin 789—Floyd	Gen	Indiv	60	5	50	36	2 900
Beaver Valley Hospital	Gen	Indiv	60	5	50	36	2 900
Mayfield 8 177—Graves	Gen	Corp	1	4	18	8	369
Fuller Gilliam Hospital	Gen	Corp	40	2	30	14	627
Mayfield Hospital	Gen	Part	1	4	18	8	369
Maysville 6,557—Mason	Gen	NPAasn	43	6	39	13	602
Hayswood Hospital	Gen	NPAasn	43	6	39	13	602
Middlesboro 10 3,0—Bell	Gen	Part	60	4	50	14	800
Middlesboro Hospital	Gen	Part	60	4	50	14	800
Mt Sterling 4 350—Montgomery	Gen	City	17	3	15	0	182
Mary Chiles Hospital	Gen	City	17	3	15	0	182
Murray, 2 691—Calloway	Gen	Part	2	3	9	8	350
Keys Houston Clinic Hospital	Gen	NPAasn	50	9	29	29	658
Wm Mason Memorial Hosp	Gen	NPAasn	50	9	29	29	658
Outwood—Christian	TB	Vet	375			2.0	700
Veterans Admin Facility	TB	Vet	375			2.0	700
Owensboro 22 705—Davies	Gen	City	97	13	120	46	1,641
Owensboro City Hospital	Gen	City	97	13	120	46	1,641
Paducah 33,541—McCracken	Gen	Corp	90	2	0	24	1 402
Illinois Central Hospital	Gen	Corp	120	8	171	21	1 200
Billeville Hospital	Gen	Corp	120	8	171	21	1 200
Paintsville 2,411—Johnson	Gen	Corp	50	2	24	20	607
Paintsville Hospital	Gen	Corp	50	2	24	20	607
Paris 6 204—Bourbon	Gen	City	40	4	3	22	461
W W Masie Memorial Hos	Gen	City	40	4	3	22	461
pitalo	Gen	City	40	4	3	22	461
Pewee Valley 582—Oldham	Gen	NPAasn	3	3	6	12	172
Pewee Valley Sanitarium and	Gen	NPAasn	3	3	6	12	172
Hospital	Gen	NPAasn	3	3	6	12	172
Pikeville 3 3,6—Pike	Gen	Church	50	5	10	25	1 300
Methodist Hospital	Gen	Church	50	5	10	25	1 300
Pineville 3 567—Bell	Gen	Corp	30	3			
Pineville Community Hospital	Gen	Corp	30	3			
Richmond 6 435—Madison	Gen	Indiv	20		4	12	12
Gibson Hospital	Gen	Indiv	20		4	12	12
Pattie A. Clay Infirmary	Gen	NPAasn	35	4		18	0.4
U S Public Health Service	Gen	NPAasn	35	4		18	0.4
Trachoma Hospital	Trach	FedState	34			30	3.4
Shelbyville 4 033—Shelby	Gen	NPAasn	30	6	4	12	2.0
Kings Daughters Hospital	Gen	NPAasn	30	6	4	12	2.0
Somerset 5,606—Futaski	Gen	Corp	20	2	13	11	290
Somerset General Hospital	Gen	Corp	20	2	13	11	290
Versailles 2,244—Woodford	Gen	CyCo	20	4	40	12	320
Woodford Memorial Hospital	Gen	CyCo	20	4	40	12	320
Waverly Hills—Jefferson	TB	CyCo	523			502	522
Waverly Hills Sanatorium	TB	CyCo	523			502	522
Winchester 8,233—Clark	Gen	NPAasn	35	5	No data supplied		
Clark County Hospital	Gen	NPAasn	35	5	No data supplied		
Guerrant Clinic and Hospital	Gen	NPAasn	20	4	9	5	156

Related Institutions

Barbourville 2,380—Knox	Gen	Indiv	12	2	12	3	75
Logan Hospital	Gen	Indiv	12	2	12	3	75
Eddyville 1,990—Lyon	Inst	State	39			No data supplied	
Kentucky Penitentiary Hosp	Inst	State	39			No data supplied	
Fleming 1 389—Letcher	Indus	Corp	2			5	144
Fleming Hospital	Indus	Corp	2			5	144
Florence 450—Boone	Gen	Indiv	20	2			6
Highway Medical Hospital	Gen	Indiv	20	2			6
Frankfort 11 626—Franklin	Inst	State	10			36	1 650
Kentucky State Reformatory	Inst	State	10			36	1 650
Hospital	Inst	State	10			36	1 650
State Institution for the Fee	MeDe	State	800			780	40
bleminded	MeDe	State	800			780	40
Fulton 3 502—Fulton	Gen	Indiv	10	1	4	1	41
Curran Nell Hospital	Gen	Corp	10	2	8	3	204
Fulton Hospital	Gen	Corp	10	2	8	3	204
Grayson 1 022—Carter	Gen	Indiv	10	1	3	4	122
J Q Stovall Memorial Hosp	Gen	Indiv	10	1	3	4	122
Cuerrant 27—Breathitt	Gen	Church	10			1	2 740
Highland Institution Hospital	Gen	Church	10			1	2 740
Hopkinsville 10 746—Christian	Ment	State	1 920			1 898	646
Western State Hospital	Ment	State	1 920			1 898	646
Lakeland 65—Jefferson	Ment	State	2,340			2 312	508
Central State Hospital	Ment	State	2,340			2 312	508
Lebanon 3,248—Marion	Gen	Indiv	7	1		New	
Baute Infirmary	Gen	Indiv	7	1		New	
Lexington 45 736—Fayette	Ment	State	1,870			1,837	663
Eastern State Hospital	Ment	State	1,870			1,837	663
Louisville 307 745—Jefferson	Inc	NPAasn	96			91	
Kings Daughters Home for In	Inc	NPAasn	96			91	
curables	Inc	NPAasn	96			91	
Mt St Agnes Sanitarium	N&M	Church	30			No data supplied	
Susan Speed Davis Home and	MatCh	Church	26	23	110		120
Hospital	MatCh	Church	26	23	110		120
Princeton 4 764—Caldwell	Gen	NPAasn	15	4	No data supplied		
Princeton Hospital	Gen	NPAasn	15	4	No data supplied		
Seco 1 100—Letcher	Indus	Indiv	9		4	5	197
Seco Hospital	Indus	Indiv	9		4	5	197
Shelbyville 4 033—Shelby	Inst	Frat	18			6	29
Old Masons Home of Kentucky	Inst	Frat	18			6	29
Hospital	Inst	Frat	18			6	29
Smiths Grove 718—Warren	Gen	Indiv	12	1	1	1	26
Lucy T Owen Hospital	Gen	Indiv	12	1	1	1	26

Summary for Kentucky

Hospital* and sanatoriums	Number	Beds	Average Patients	Patients Admitted
Related Institutions	79	6 144	3 495	78 601
	21	7 404	6,925	5 634
Totals	100	13 548	10 420	84 235
Refused registration..	10	133		

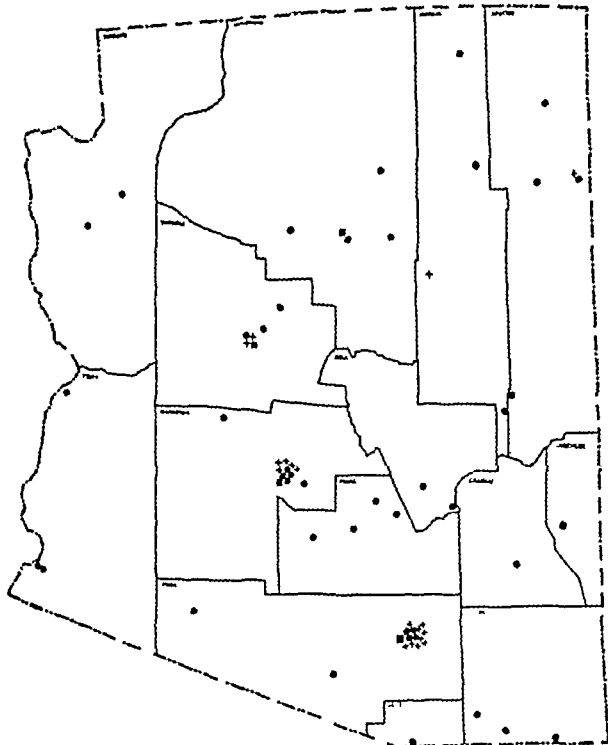
LOUISIANA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Alexandria 23 025—Rapides	Gen	Church	3	4	113	16	980
Baptist Hospital	Gen	Church	3	4	113	16	980
Veterans Admin Facility	Gen	Vet	470			416	1 020
Bastrop 5 121—Morehouse	Gen	Indiv	2	4	9	5	300
Bastrop General Hospital	Gen	Indiv	2	4	9	5	300
Baton Rouge 30 720—East Baton	Gen	NPAasn	70	5	123	30	1,340
Baton Rouge General Hosp	Gen	NPAasn	70	5	123	30	1,340
Our Lady of the Lake Sault	Gen	Church	100	10	107	56	2 330
Bogalusa 14 029—Washington	Gen	Church	100	10	107	56	2 330
Elizabeth Sullivan Memorial	Gen	Corp	84	12	228	76	3,808
Hospitalo	Gen	Corp	84	12	228	76	3,808
Carville 308—Iberville	Lepro	USPHS	425			3.6	61
U S Marine Hospital+	Lepro	USPHS	425			3.6	61
Converse 291—Sabine	Gen	Indiv	20	4	20	7	730
Allen Sanitarium	Gen	Indiv	20	4	20	7	730
Covington 3,208—St Tammany	N&M	Indiv	64			No data supplied	
New Fenwick Sanitarium	N&M	Indiv	64			No data supplied	
Crowley 7 056—Acadia	Gen	NPAasn	15	2	30	8	500
Crowley Sanitarium	Gen	NPAasn	15	2	30	8	500
De Ridder 3,737—Beauregard	Gen	Corp	18	1	5	3	173
De Ridder Sanitarium	Gen	Corp	18	1	5	3	173
Ferriday 2,502—Concordia	Gen	Part	7	2	13	3	1.2
Ferriday Hospital	Gen	Part	7	2	13	3	1.2
Greenwell Springs—East Baton Rouge	TB	State	96			88	91
Greenwell Springs Sanatorium	TB	State	96			88	91
Haynesville 2 541—Claiborne	Gen	Corp	2	2	12	7	2
Haynesville Hospital	Gen	Corp	2	2	12	7	2
Jackson 8 900—East Feliciana	Ment	State	3 530			3 240	700
East Louisiana State Hosp +	Ment	State	3 530			3 240	700
Lafayette 14 030—Lafayette	Gen	Corp	2	2	16	6	869
Lafayette Sanitarium	Gen	Corp	2	2	16	6	869
St John Hospital	Gen	Indiv	25	2	86	5	1 040
Lake Charles 15 791—Calcasieu	Gen	Church	85	15	95	28	1,000
St Patrick's Hospital	Gen	Church	85	15	95	28	1,000
Lecompte 1 247—Rapides	Gen	Part	20	2	72	5	400
Lecompte Sanitarium	Gen	Part	20	2	72	5	400
Mansfield 3 837—De Soto	Gen	NPAasn	32	2	26	6	813
Mansfield Sanitarium	Gen	NPAasn	32	2	26	6	813
Minden 5 023—Webster	Gen	Corp	3	2	20	0	3.4
Minden Sanitarium	Gen	Corp	3	2	20	0	3.4
Monroe 20 029—Ouachita	Gen	NPAasn	35	4	No data supplied		
Monroe General Hospital	Gen	NPAasn	35	4	No data supplied		
St Francis Sanitarium	Gen	Church	120	15	167	50	2,794
Vaughan Wright Dental Clinic	Gen	Part	25	10	56	15	1 370
Natchitoches 4,547—Natchitoches	Gen	NPAasn	20	5	24	2	318
Natchitoches Hospital	Gen	NPAasn	20	5	24	2	318
New Iberia 8 003—Iberia	Gen	Indiv	20	2	50	9	390
Daurivie Hospital	Gen	Indiv	20	2	50	9	390
New Orleans 453 763—Orleans	Gen	State	1,814	99	3 453	2,103	50,437
Charity Hospital*	Gen	State	1,814	99	3 453	2,103	50,437
City Hospital for Mental Dis	Ment	City	100			73	6.2
cases	Ment	City	100			73	6.2
De Paul Sanitarium	N&M	Church	200			250	2.4
Eye Ear Nose and Throat	N&M	Church	200			250	2.4
Hospital+	FNT	Corp	70			15	3,208
Flint Goodridge Hospital of	Gen	NPAasn	83	12	97	29	1 032
Dillard University (col)*	Gen	NPAasn	83	12	97	29	1 032
French Hospital	Gen	Frat	63	12	160	18	8.2
Hotel Dieu Hospital*	Gen	Church	238	25	432	112	5,539
Illinois Central Hospital	Indus	Corp	60			25	762
Mercy Hospital Soniat Memo-	Gen	Church	125	28	317	62	1 911
ria*	Gen	Church	125	28	317	62	1 911
New Orleans Hospital and Dis	Gen	NPAasn	34	10	345	26	1,360
pensary for Women and Chil	Gen	NPAasn	34	10	345	26	1,360
dren	Gen	NPAasn	34	10	345	26	1,360
Southern Baptist Hospital*	Gen	Church	168	24	387	110	6,612
Touro Infirmary**	Gen	Corp	322	44	723	180	6,706
U S Marine Hospital*	Gen	USPHS	672			330	3 424
Opelousas 0 299—St Landry	Gen	Part	20			18	
St Rita's Infirmary	Gen	Part	20			18	
Pineville 3 612—Rapides	Ment	State	1 780			1 770	407
Central Louisiana State Hosp	Ment	State	1 780			1 770	407
Plaquemine 5 124—Iberville	Gen	Corp	2	7	20	8	960
Plaquemine Sanitarium	Gen	Corp	2	7	20	8	960
Ruston 4 400—Lincoln	Gen	NPAasn	2	2	27	5	223
Ruston Lincoln Sanitarium	Gen	NPAasn	2	2	27	5	223
Shreveport 76 655—Caddo	Gen	Corp	100	8	154	40	2,832
Highland Sanitarium	Gen	Corp	100	8	154	40	2,832
North Louisiana Sanitarium	Gen	Corp	100	10	131	51	1 942
Pines Sanitarium	TB	NPAasn	130			70	110
T E Schumpert Memorial Sani	Gen	Church	150	12	243	50	3,047
tarium*	Gen	Church	150	12	243	50	3,047
Shreveport Charity Hospital*	Gen	State	470	48	1 063	460	13,315
Shriners Hospital for Crippled	Orth	Frat	60			57	1.4
Children*	Orth	Frat	60			57	1.4
Tri State Hospital	Gen	Corp	100	5	132	50	2 121
Winnboro 1 965—Franklin	Gen	Corp	25	1			
Winnboro Sanitarium	Gen	Corp	25	1			

ARIZONA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Sacaton, 316—Pinal	Gen	IA	50	10	132	36	689
Pima Indian Hospital							
Bafford, 1706—Graham	Gen	Corp	20	2	9	5	147
Morris Squibb Hospital							
San Carlos Indian Hospital	Gen	IA	20	0	22	17	497
Sells, 61—Pima							
Indian Oasis Hospital	Gen	IA	46	5	21	28	352
Superior, 2525—Pinal							
Magma Hospital	Gen	Corp	15	4	5	3	98
Tuba City, 100—Coconino							
Western Navajo Hospital	Gen	IA	46	6	18	20	600
Tucson 32506—Pima							
Anson Rest Home	TB	Part	20			16	25
Bardfield Sanatorium	TB	Indiv	22			12	22
Desert Sanatorium and Institute of Research	Gen	NPAasn	80	No data supplied			

ARIZONA



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• General Hospital + Tuberculosis
▲ Nervous and Mental ■ Other Special Hospital

Total hospitals in Arizona, 66, general, 36, general beds occupied, 61.3 per cent, population per general bed, 255

St. Luke's in the Desert Sanatorium	TB	Church	35			18	25
St. Mary's Hospital and Sanatorium	G&TB	Church	150	15	310	91	2,630
San Xavier Indian Sanatorium	TB	IA	20				33
Southern Methodist Hospital and Sanatorium	G&TB	Church	70	12	50	33	900
Southern Pacific Sanatorium	TB	NPAasn	82			43	68
Veterans Admin. Facility	G&TB	Vet	308			323	713
Whipple—Yavapai							
Veterans Admin. Facility	G&TB	Vet	600			203	1,042
Whitewater, 62—Navajo							
Ft. Apache Agency Hospital	Gen	IA	46	6	29	27	712
Winslow, 3,917—Navajo							
Winslow Sanatorium	TB	IA	40			30	95
Yuma 4,892—Yuma							
Ft. Yuma Indian Hospital	Gen	IA	82	2	13	23	370
Yuma County General Hosp	Gen	County	60	6	No data supplied		

Related Institutions

Chin Lee 65—Apache							
Chin Leo General Hospital	Gen	IA	20	2	13	13	455
Flagstaff 3,891—Coconino							
Coconino County Hospital	Inst	County	20	No data supplied			
Mercy Hospital	Gen	Indiv	14	3	24	8	346
Kayenta 16—Yavapai							
Kayenta Sanatorium	Gen	IA	52	2	2	44	334
McNary 114—Apache							
McNary Hospital	Indus	NPAasn	9			1	19

ARIZONA—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Parker, 475—Yuma							
Colorado River Indian Agency Hospital	Gen	IA	84	4	No data supplied		
Phoenix, 48 118—Maricopa							
Harrisholm	Conv	Indiv	7			6	20
Helen Lee Sanatorium	TB	Indiv	9			6	13
Maricopa County Tuberculosis Hospital	TB	County	37	No data supplied			
Prescott 5 517—Yavapai							
Yavapai County Hospital	Inst	County	70	4	26	55	265
Tucson, 32,506—Pima							
Arizona State Elks Association Hospital	TB	Frat	35			15	33
Comstock Hospital	TB	NPAasn	30	No data supplied			
La Casa del Encanto	Conv	Indiv	4			2	5
Pima County Hospital	TB	County	45			43	72
Reardon Sanatorium	TB	Indiv	16			10	81
Valentine 168—Mohave							
Truxton Canon Indian Hosp	Gen	IA	11			5	230
Wickenburg, 784—Maricopa							
Wickenburg Hospital	Gen	Indiv	11	3	No data supplied		
Williams 2,166—Coconino							
Williams Hospital	Gen	Indiv	10	1	10	1	56

Summary for Arizona

Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted
Related Institutions	48	4,280	2,811	29,310
	17	424	304	2,466
Totals	66	4,709	3,115	31,796
Refused registration	3	61		

ARKANSAS

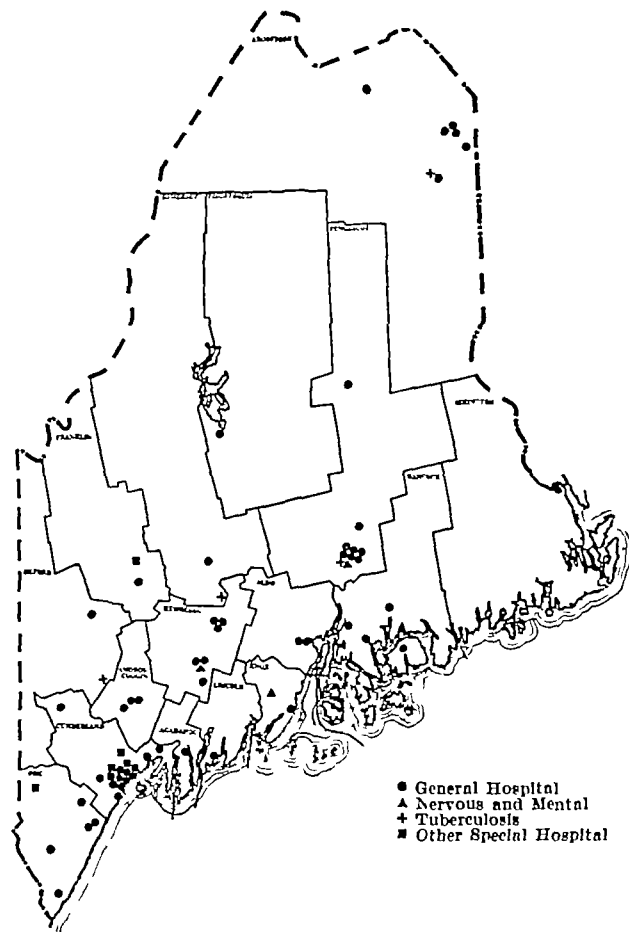
Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Alexander 141—Pulaski							
McRae Memorial Sanatorium (col.)	TB	State	32			32	44
Arkadelphia, 3,380—Clark							
Townsend Hospital	Gen	Indiv	16	4	15	4	216
Datesville 4,384—Independence							
Dr. Gray's Infirmary	Gen	Indiv	18		5	6	212
Johnston and Craig Hospital	Gen	Part	10	1	5	3	295
Bauxite 2,200—Saline							
Republic Mining and Manufacturing Company Hospital	Gen	NPAasn	20	1	18	4	65
Benton 3 445—Saline							
Blakely's Sanitarium	Gen	Indiv	15	2	24	6	231
Blytheville 10 098—Mississippi							
Blytheville Hospital	Gen	City	45	8	49	8	837
Camden 7 273—Ouachita							
Camden Hospital	Gen	NPAasn	25	9	95	9	706
Charleston 851—Franklin							
Bollinger Hospital	Gen	Indiv	15		20	4	100
Clarksville 3,031—Johnson							
Johnson County Hospital	Gen	Corp	19	2	No data supplied		
Conway, 5,534—Faulkner							
Faulkner County Hospital	Gen	Corp	20	6	24	9	372
Crossett, 2,811—Ashley							
Crossett Hospital	Gen	Corp	26	6	34	11	206
DeQueen, 2,038—Sevier							
Archer Hospital	Gen	Part	25	2	8	6	151
Dumas 1,609—Desha							
Dumas Hospital	Gen	Indiv	10	1	No data supplied		
El Dorado 16,421—Union							
Henry O. Rosamond Memorial Hospital	Gen	Part	21	5	73	14	897
Warner Brown Hospital	Gen	Church	75	6	137	51	1,033
Eureka Springs 2,276—Carroll							
Don Sawyer Memorial Hosp	Surg	Corp	20		12	1	111
Fayetteville, 7,304—Washington							
Fayetteville City Hospital	Gen	City	50	6	101	25	1,196
Veterans Admin. Facility	Gen	Vet	208			200	953
Ft. Smith, 31 429—Sebastian							
St. Edward's Mercy Hospital	Gen	Church	100	15	143	51	2,262
Sparks Memorial Hospital	Gen	NPAasn	110	10	34	13	967
Helena 8,816—Phillips							
Helena Hospital	Gen	NPAasn	33	4	63	15	670
Hope 6,006—Hempstead							
Josephine Hospital	Gen	Indiv	22	3	12	5	229
Julia Chester Hospital	Gen	CyCo	15	3		7	240
Hot Springs National Park 20 238—Garland							
Army and Navy General Hosp	Gen	Fed	412	2	5	121	1,606
Leo N. Levi Memorial Hosp	Gen	Frat	60	3	44	55	820
Ozark Sanatorium	Gen	Corp	60	4	20	12	505
St. Joseph's Hospital	Gen	Church	144	6	34	53	1,300
Woodmen of Union Hospital (col.)							
Gen	Frat		30	No data supplied			
Jonesboro 10,326—Craighead							
St. Bernard's Hospital	Gen	Church	100	8	89	53	1,757
Lake Village 1,882—Chicot							
Lake Village Infirmary	Gen	Part	30	2	21	9	616
Little Rock 61,676—Pulaski							
Arkansas Children's Home and Hospital	Chil	NPAasn	76			30	718
Baptist State Hospital	Gen	Church	300	15	180	54	2,644
Granite Mountain Hospital	Gen	Indiv	20	2	10	4	167
Little Rock City Hospital	Gen	City	123	12	79	52	1,891
Missouri Pacific Hospital	Indus	NPAasn	125			25	1,188
St. Vincent's Infirmary	Gen	Church	135	15	261	85	3,483

Key to symbols and abbreviations is on page 1091

MAINE—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Castine 726—Hancock	Gen	NPAasn	10	6	40	10	657
Castine Community Hospital	Gen	NPAsn	20	5	40	6	200
Ellsworth 3,557—Hancock	Gen	Corp	134			1.3	200
Hurley Private Hospital	Gen	Corp	49	10	49	10	560
Fairfield 3,529—Somerset	Gen	Corp	18	5	30	7	400
Central Maine Sanatorium	TB	State	40	12	162	17	610
Farmington 1,737—Franklin	Gen	NPAasn					
Franklin County Memorial Hospital	Gen	NPAasn					
Ft Fairfield 2,616—Aroostook	Gen	Corp					
Ft Fairfield Clinic	Gen	Corp					
Gardiner 5,609—Kennebec	Gen	NPAasn					
Gardiner General Hospital	Gen	NPAasn					

MAINE



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Total hospitals in Maine, 68, general, 54, general beds occupied, 589 per cent, population per general bed, 279

Greenville Junction 345—Piscataquis	Gen	NPAasn	23	5	32	8	240
Charles A Dean Ho pital	Gen	NPAsn	150			143	101
Greenwood Mountain—Oxford	TB	State	40	10	67	20	748
Western Maine Sanatorium*	Gen	Corp	33	7	50	17	505
Houlton 6,865—Aroostook	Gen	Corp	157	28	413	130	3,137
Aroostook Ho pital	Gen	Corp	150	12	144	82	2,571
Madigan Memorial Hospital	Gen	Church				61	423
Lewiston 34,948—Androscoggin	Gen	NPAasn	100	12	154	115	1,161
Central Maine General Ho p *	Gen	Corp	110	20	246	64	2,302
St. Mary's General Hospital	Gen	NPAsn	234	27	402	203	5,350
Portland 70,810—Cumberland	Gen	NPAsn	45	12	92	30	1,260
Children's Hospital	Chil	NPAasn	75	15	95	50	1,041
Farrington Hospital	Gen	Corp	50	12	65	43	984
Dr Leighton's Private Ho p	Mat	Corp	72			64	484
Maine Eye and Ear Infirmary	Gen	NPAsn					
Maine General Hospital	Gen	Corp					
Queen's Hospital	Gen	Corp					
St Barnabas Hospital	Gen	Corp					
State Street Hospital	Gen	Corp					
U S Marine Hospital	Gen	USPHS					
Presque Isle 4,662—Aroostook	TB	State	118			112	111
Northern Maine Sanatorium	TB	NPAasn	50	10	114	32	1,081
Presque Isle General Hospital	Gen	NPAasn					

MAINE—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Rockland 9,075—Knox	Gen	NPAasn	66	7	63	28	876
Knox County General Hosp	Gen	NPAasn	75	8	115	27	789
Rumford, 10,340—Oxford	Gen	NPAasn	50	8	56	10	801
Rumford Community Ho p *	Gen	NPAasn	37	5	12	29	1,333
Sanford 13,992—York	Gen	NPAasn	30	4	20	15	664
Henrietta D Goodall Hospital	Gen	NPAasn	18	5	60	11	420
Skowhegan 6,433—Somerset	Gen	Indiv	20	0	57	9	290
Kennebec Valley Hospital	Gen	Indiv					
Waterville 15,454—Kennebec	Gen	Indiv					
Elm City Hospital	Gen	Church					
Sisters Hospital	Gen	Corp					
Thayer Hospital	Gen	Corp					
Westbrook, 10,807—Cumberland	Gen	Corp					
Westbrook Hospital	Gen	Corp					
York Village 1,230—York	Gen	NPAasn					
York Hospital	Gen	NPAasn					

Related Institutions

Auburn 18,571—Androscoggin	Gen	Indiv	10	6	34	2	89
Auburn Private Hospital	Gen	Indiv	20	2	No data supplied		
Bangor 28,748—Penobscot	Gen	Indiv	12	4	10	4	215
Fellows Private Hospital	Gen	Indiv	15	5	7		
Friendship Hospital	Gen	Indiv	20	11	No data supplied		
Laura Purcell Hospital	Gen	Indiv					
Stinson Private Hospital	Gen	Indiv					
Bridgton 2,609—Cumberland	Gen	NPAasn	5	4	18	1	45
Northern Cumberland Memorial Hospital	Gen	NPAasn	32			25	414
Eagle Lake 1,780—Aroostook	Gen	Church					
Northern Maine General Hosp	Gen	Church					
East Parsonfield 806—York	Conv	Indiv	16		No data supplied		
Restland	Conv	Indiv					
Freeport 973—Cumberland	Gen	Part	8	2	16	3	84
Freeport Hospital	Gen	Part					
Millinocket 5,830—Penobscot	Gen	Indiv	7	3	30	6	238
Bryant Hospital	Gen	Indiv	9	2	11	3	109
Old Town 7,266—Penobscot	Gen	Indiv					
Deering Private Hospital	Gen	Indiv					
Portland 70,810—Cumberland	Gen	Indiv					
Isolation Cottage	Iso	City	29			2	
Dr C P Wescott Sanatorium	Conv	Indiv	14			8	30
Pownal 462—Cumberland	MeDe	State	820			700	30
Pownal State School	MeDe	State					
Strong 878—Franklin	Surg	Indiv	10	3	5	5	175
Dr Bell's Private Hospital	Surg	Indiv					
Union 1,060—Knox	N C M	Corp	80			20	4
Jones Sanitarium	N C M	Corp					

Summary for Maine

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums*	52	5,677	4,494	46,608
Related institutions	16	1,037	880	1,876
Totals	68	6,634	5,304	48,484
Refused registration	7	129		

MARYLAND

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Aberdeen Proving Ground 215—Harford	Gen	Army	12			3	123
Station Hospital	Gen	Army					
Annapolis 12,531—Anne Arundel	Gen	State	85	16	199	34	1,534
Annapolis Emergency Hospital	Gen	State	224			64	1,391
U S Naval Hospital	Gen	Navy					
Baltimore 804,874—Baltimore City	Gen	City	750	4	126	657	5,411
Baltimore City Hospitals (General)*	Gen	City					
Baltimore City Hospitals (Psychopathic)*	Ment	City	320			25	353
Baltimore City Hospitals (Tuberculosis)*	TB	City	170			164	451
Baltimore Eye Ear and Throat	ENT	NPAasn	60			24	2,478
Charity Hospital	Gen	Church	110	20	2,8	54	1,775
Bon Secours Hospital**	Gen	Church	120			00	281
Children's Hospital School	Orth	NPAasn	162	22	300	100	2,484
Church Home and Infirmary**	Gen	Church	114	16	253	77	2,075
Franklin Square Hospital*	Gen	NPAasn					
Good Shepherd General Hospital (col)	Gen	Indiv	57	5	76	20	271
Gundry Sanitarium	N C M	Indiv	40			No data supplied	
Hospital for Women*	Gen	NPAasn	108	24	469	70	1,643
Howard A Kelly Hospital	SkCa	Corp	27			11	568
James Lawrence Kernan Hospital and Industrial School for Crippled Children	Orth	NPAasn	60			67	106
Johns Hopkins Hospital**	Gen	NPAasn	789	71	1,174	580	13,311
Johnston Memorial Children's Hospital (Children's Dept of Union Memorial Hosp)	Gen	Church	207	22	352	185	4,362
Maryland General Hospital**	Gen	Church	260	30	378	20	4,970
Mercy Hospital**	Gen	Church	600			600	107
Mt Hope Retreat	N & M	Church					
Phipps Psychiatric Clinic (Psychiatric Dept of Johns Hopkins Hosp)							

Key to symbols and abbreviations is on page 1091

ARKANSAS—Continued

Related Institutions	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Russellville, 5,025—Pope Hane Eye Ear, Nose and Throat Hospital	ENT	Indiv	10			3	100
Texarkana 10,764—Miller Jamison Sanitarium (col)	Gen	Indiv	10	2	No data supplied		
Tucker 210—Jefferson Arkansas State Penitentiary Hospital	Inst	State	20			10	672
Summary for Arkansas							
Hospitals and sanatoriums	56		8,090	6,153		39,647	
Related institutions	11		563	456		2,266	
Totals	67		8,653	6,609		41,913	
Refused registration	0		252				

CALIFORNIA

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Agnew, 316—Santa Clara Agnew State Hospital+	Ment	State	3,000			2,803	840
Abwahnee 20—Madera Ahwahnee Tri County Tuberculosis Sanatorium	TB	County	108			98	103
Alameda 3,033—Alameda Alameda Sanatorium on the South Shore	Gen	Corp	80	21	200	33	1,693
Albany 8,569—Alameda Humboldt Hospital	Gen	Part	28	10	117	15	577
Alhambra, 29,472—Los Angeles Alhambra Hospital	Gen	Corp	40	12	177	14	513
Angel Island 400—Marin Station Hospital	Gen	Army	68			20	537
Antioch 3,563—Contra Costa Antioch Hospital	Gen	Indiv	15	5	43	5	309
Artesia 1,709—Humboldt Trinity Hospital	Gen	Church	20	4	32	9	400
Arlington 1,540—Riverside Riverside County Hospital	G&TB	County	320	10	167	266	2,682
Artesia, 3,891—Los Angeles Artesia Hospital	Gen	Indiv	20	4	57	9	466
Aubrey 153—Fresno Wishiah Sanatorium	TB	County	60			71	94
Auburn 2,661—Placer Highlands Sanatorium	Gen	Part	20	4	No data supplied		
Bakersfield 20,016—Kern Bakersfield Emergency Hospital	Gen	Indiv	20	4	6	4	144
Kern General Hospital	Gen	County	3,000	23	4,600	360	5,485
Mercy Hospital	Gen	Church	75	20	107	25	975
San Joaquin Hospital	Gen	Corp	40	6	42	20	518
Banning 2,752—Riverside Banning Hospital and Sanat	TB	Indiv	20			10	20
Southern Sierras Sanatorium	TB	Indiv	30			11	20
Bell 7,834—Los Angeles Gage Hospital	Gen	Indiv	30	11	116	8	419
Belmont 984—San Mateo Alexander Sanitarium	N&M	Corp	50			38	80
California Sanatorium	TB	Corp	100				
Twain Plines Sanitarium	N&M	Corp	20			15	43
Berkeley 82,100—Alameda Alta Bates Hospital	Gen	Corp	100	30	413	40	2,021
Berkeley General Hospital	Gen	Corp	100	12	120	25	1,062
E V Cowell Memorial Hosp	Gen	State	100			26	1,314
Brawley 10,439—Imperial Brawley Community Hospital	Gen	Indiv	15	8	43	9	830
Burbank 16,060—Los Angeles Burbank Hospital	Gen	Indiv	30	8	90	13	473
Calistoga 1,000—Napa Silverado Sanatorium	TB	Indiv	50			34	52
Carmel 2,900—Monterey Peninsula Community Hosp	Gen	NPAasn	25	6		New	
Chico 7,061—Butte Enloe Hospital	Gen	Indiv	22	0	97	14	729
Colfax 912—Placer Bushnell Sanatorium	(Unit of Colfax School for the Tuberculous)						
Colfax Hospital	(Unit of Colfax School for the Tuberculous)						
Colfax School for the Tuberculous	TB	Indiv	06			No data supplied	
Housekeeping Cottage Colony	(Unit of Colfax School for the Tuberculous)						
Kathlamet Sanatorium	(Unit of Colfax School for the Tuberculous)						
Colusa 2,116—Colusa Colusa Memorial Hospital	Gen	County	24	8	40	13	383
Compton 19,516—Los Angeles Compton Sanitarium+	N&M	Corp	155			41	204
Las Campanas Hospital	Gen	Corp	30	10	104	16	469
Coronado 5,425—San Diego Station Hospital	Gen	Army	30			15	310
Covina 2,744—Los Angeles Covina Hospital	Gen	Part	40	8	111	15	690
Crecent City 1,720—Del Norte Knapp Hospital	Gen	NPAasn	18	5	20	7	267
Culver City 5,829—Los Angeles University Hospital	Gen	Corp	50	17	50	7	256
Duarte, 620—Los Angeles Los Angeles Sanatorium	TB	NPAasn	150			150	124
Dunsmuir 2,010—Siakiyou Dunsmuir Hospital and Sanat	Gen	Corp	17	4	27	3	434
El Centro 8,434—Imperial La Solana Hospital	Gen	Indiv	20	8	39	2	392

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
El Monte, 3,479—Los Angeles Ruth Home	Mat	NPAasn	104	40	14	88	169
Eureka 15,702—Humboldt General Hospital	Gen	Part County	42	8	43	2	780
Humboldt County Hospital	Gen	County	103	18	No data supplied		
Humboldt County School for the Tuberculous	TB	County	65			51	47
St Joseph Hospital	Gen	Church	63	12	126	27	1,482
Ft Bidwell 460—Modoc Ft Bidwell Sanatorium	G&TB	I A	38	1	2	31	104
Ft Bragg 3,022—Menocino Redwood Coast Hospital	Gen	Corp	20	5	37	5	213
French Camp 218—San Joaquin San Joaquin General Hospital	Gen	County	500	24	600	519	7,543
Fresno 52,513—Fresno Burnett Sanitarium	Gen	Corp	125	12	275	54	2,501
Fresno County General Hospital	Gen	County	510	18	553	437	6,210
St Agnes Hospital	Gen	Church	70	13	233	31	1,347
Fullerton 10,860—Orange Fullerton Hospital	Gen	Church	28	6	45	6	260
Gilroy 3,592—Santa Clara Wheeler Hospital	Gen	NPAasn	25	7	48	8	345
Glendale 62,736—Los Angeles Glendale Sanitarium and Hos	Gen	Church	230	24	240	107	2,185
Physicians and Surgeons Hosp	Gen	Corp	60	20	303	24	1,173
Grass Valley, 3,817—Nevada W C Jones Memorial Hosp	Gen	Corp	20	4	33	11	863
Hanford 7,028—Kings Hanford Sanitarium	Gen	Corp	30	4	54	7	247
Kings County Hospital	Gen	County	95	11	85	91	1,005
Sacred Heart Hospital	Gen	Church	20	6	35	10	260
Hayward 5,530—Alameda Hayward Hospital	Gen	Indiv	16	4	47	4	516
Healdsburg 2,200—Sonoma Healdsburg General Hospital	Gen	Corp	15	6	38	4	192
Hermosa Beach, 4,790—Los Angeles Hermosa Redondo Hospital	Gen	Corp	22	9	No data supplied		
Hollister 3,757—San Benito Hazel Hawkins Memorial Hosp	Gen	NPAasn	15	3	3	3	102
Hoopa 20—Humboldt Hoopa Valley Indian Hospital	Gen	I A	36	5	23	16	365
Huntington Park 24,591—Los Angeles Mission Hospital	Gen	Corp	31	10	274	22	1,127
Imola, Napa Napa State Hospital	Ment	State	3,357			3,227	902
Indio 1,875—Riverside Coachella Valley Hospital	Gen	Indiv	15	4	76	7	619
Inglewood 19,480—Los Angeles Centinela Hospital	Gen	Indiv	22	8	149	17	560
Keene 164—Kern Stony Brook Retreat	TB	County	100			97	109
King City 1,483—Monterey Community Hospital	Gen	Indiv	10	2	14	8	123
La Crescenta 1,510—Los Angeles Hillcrest Sanatorium	TB	NPAasn	65			40	140
La Vina—Los Angeles La Vina Sanatorium	TB	NPAasn	55			65	157
Lindsay 3,678—Tulare Lindsay Hospital	Gen	Indiv	10	4	14	3	200
Livermore 3,119—Alameda Arroyo Sanatorium	TB	County	180			177	233
Livermore Sanitarium+	N&M	Corp	114			83	100
St Pauls Hospital	Gen	Indiv	12	3	30	3	98
Veterans Admin Facility	G&TB	Vet	318			274	536
Lodi 6,785—San Joaquin Dr Buchanan's Sanitarium	Gen	Indiv	15	4	25	3	151
Mason Hospital	Gen	Indiv	15	4	22	6	204
Loma Linda 2,500—San Bernardino Loma Linda Sanitarium and Hospital	Gen	Church	112	12	143	63	1,847
Long Beach 142,032—Los Angeles Harriman Jones Clinic and Hospital	Gen	Indiv	20	6		15	641
Long Beach Community Hosp	Gen	NPAasn	100	20	464	67	2,743
St Mary's Long Beach Hosp	Gen	Church	23	7	95	13	600
Seaside Hospital	Gen	Corp	202	43	845	99	6,194
Los Angeles, 1,238,048—Los Angeles Barlow Sanatorium	TB	NPAasn	100			89	79
California Babies Hospital	Chil	NPAasn	20	10	35	4	314
California Hospital	Gen	Church	270	23	767	147	5,210
Cedars of Lebanon Hospital+	Gen	NPAasn	248	40	804	183	5,995
Children's Hospital	Chil	NPAasn	103			143	4,231
Ex Patients Home of the Jewish Consumptive Relief Association	TB	NPAasn	60			54	78
Eye and Ear Hospital	ENT	Corp	21			9	3,200
French Hospital	Gen	NPAasn	60	20	243	27	1,943
Golden State Hospital	Gen	Indiv	69	3	29	34	975
Hollywood Clara Barton Memorial Hospital	Gen	Corp	214	60	743	110	4,220
Hospital of the Good Samaritan	Gen	Church	250	45	433	154	5,901
Japanese Hospital	Gen	Corp	39	6	15	15	712
Lincoln Hospital	Gen	NPAasn	29	8	172	12	611
Los Angeles County Hosp	Gen	County	3,206	144	3,103	1,897	40,859
Los Angeles County Psychopathic Hospital	(Ward of Los Angeles County Hospital)						
Los Angeles Sanitarium	Gen	Indiv	80			20	225
Maternity Cottage	Mat	NPAasn	28	80	226	7	224
Methodist Hospital of Southern California	Gen	Church	120	40	627	70	2,833
Orthopaedic Hospital School	Orth	NPAasn	65			74	1,729
Pahl Hospital	Gen	Indiv	15	3	48	8	427
Queen of Angels Hospital	Gen	Church	180	35	654	180	4,608

Key to symbols and abbreviations is on page 1091

MARYLAND—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Relay, 2 000—Baltimore Relay Sanitarium	N&M	Part	40			12	51
Rockville 1 422—Montgomery Waverley Sanatorium	Conv	Indiv	10			13	67
Summary for Maryland							
Hospitals and sanatoriums—Related institutions	Number	Beds	Average Patients	Patients Admitted			
	67	16 041	13 371	102 989			
	15	1 732	1 430	2 203			
Totals	82	17 773	14 801	105 192			
Refused registration	4	71					

MASSACHUSETTS

Hospitals and Sanatorium	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Acushnet (New Bedford P O) 4 092—Bristol Acushnet Sanitarium and Hosp	Gen	Indiv	23	6	54	17	300
Adams 12 697—Berkshire W B Plunkett Memorial Hosp	Gen	City	50	15	148	23	698
Amesbury 11 899—Essex Amesbury Hospital	Gen	City	30	6	80	18	823
Arlington 38 094—Middlesex Ring Sanatorium and Hosp	N&M	Corp	60			30	230
Symmes Arlington Hospital	Gen	Corp	70	20	204	30	1 271
Attleboro 21 769—Bristol Bristol County Tuberculosis Hospital	TB	County	60			65	88
Sturdy Memorial Hospital	Gen	NPAssn	102	23	295	47	1 288
Ayer 3 060—Middlesex Community Memorial Hospital	Gen	NPAssn	22	7	73	14	327
Bedford 2 603—Middlesex Veterans Admin Facility	Ment	Vet	813			808	168
Belmont, 21 748—Middlesex McLean Hospital	N&M	NPAssn	232			189	110
Beverly 25 086—Essex Beverly Hospital	Gen	NPAssn	121	20	299	62	2 470
Boston 781 188—Suffolk Adams Nervine	Nerv	Corp	30			30	140
Bay State Hospital	Gen	Corp	21	6	45	9	412
Beth Israel Hospital	Gen	NPAssn	215			188	5 022
Boston City Hospital	Gen	City	1 596	166	3 618	1 404	88 020
Boston Floating Hospital	Chil	NPAssn	50			30	1 370
Boston Lying In Hospital	Mat	NPAssn	217	217	3 000	139	3 683
Boston Psychopathic Hosp	Ment	State	110			74	2 019
Boston State Hospital	Ment	State	2 426			2 248	823
Carney Hospital	Gen	Church	164	24	263	63	2 491
Channing Home	IB	NPAssn	27			23	50
Children's Hospital	Chil	NPAssn	283			181	5 789
Collis P Huntington Memorial Hospital	SkCa	NPAssn	20			14	1 541
Diagnostic Hospital of the Boston Dispensary	Gen	NPAssn	20			10	721
Emerson Hospital	Gen	Corp	33	15	102	18	742
Evangeline Booth Maternity Hospital and Home	Mat	Church	30	30	474	24	760
Faulkner Hospital	Gen	NPAssn	129	21	404	113	3 323
Fenway Hospital	Gen	Part	40	3	20	30	918
Glenside Hospital	N&M	Corp	70			73	169
Greater Boston Bikur Cholim Hospital	Chr	NPAssn	42			29	70
Harley Private Hospital	Gen	Corp	60	21	370	40	1 870
Hart Hospital	Gen	Corp	47	25	79	11	408
House of the Good Samaritan	Card	NPAssn	80			73	268
Infants Hospital	Chil	NPAssn	50			38	767
Long Island Hospital	Gen	City	467	4	28	427	1 735
MacLeod Hospital	Gen	Corp	20	2	18	9	304
Massachusetts Eye and Ear Infirmary	ENT	NPAssn	219	12		143	7 274
Massachusetts General Hospital	Gen	NPAssn	416			372	9 129
Massachusetts General Hospital Baker Memorial	Gen	NPAssn	226	31	457	160	4 423
Massachusetts General Hospital Phillips House	Gen	NPAssn	78	23	100	57	1 710
Massachusetts Memorial Hospital	Gen	NPAssn	331	36	562	208	6 122
Massachusetts Women's Hosp	Gen	NPAssn	62	20	260	26	841
New England Baptist Hosp	Gen	NPAssn	100	20	190	109	3 914
New England Deaconess Hospital	Gen	Church	285			187	5 112
New England Hospital for Women and Children	Gen	NPAssn	185	70	1 145	105	4 131
Palmer Memorial Hospital (Included in New England Deaconess Hosp)	Gen	NPAssn	246			177	4 272
Peter Bent Brigham Hosp	Gen	Indiv	32		9	4	102
Riverbank Hospital	Gen	NPAssn	115			56	304
Robert Breck Brigham Hosp	Gen	Church	250	50	723	169	4 138
St Elizabeth's Hospital	Gen	Church	50	50	406	40	1 071
St Margaret's Hospital	Gen	Church	63	12	126	23	144
St Mary's Maternity Hospital	Match	Church					
Salvation Army Roxbury Hospital and Clinic	Gen	Church	30	9	60	13	709
Sanatorium Division of Boston City Hospital	TB	City	616			584	533
South Dept for Infectious Diseases of the Boston City Hospital	(Included in Boston City Hospital)						
Vincent Memorial Hospital	Gen	NPAssn	22			16	326
Bridgewater 9 035—Plymouth Bridgewater State Hospital	Ment	State	9-3			923	66

MASSACHUSETTS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Brockton 63 767—Plymouth Brockton Hospital	Gen	NPAssn	131	27	344	82	2 346
Goddard Hospital	Gen	Corp	58	15	339	42	1 430
Moore Hospital	Gen	Indiv	20	9	64	12	410
Brookline 47 490—Norfolk Bournewood Hospital	Nerv	Indiv	18			11	None
Brookline General Hospital	Gen	NPAssn	40	12	No data supplied		
Brooks Hospital	Gen	Corp	43			39	91
Corey Hill Hospital	Gen	NPAssn	51			31	371
Free Hospital for Women	Gyn	NPAssn	67			64	1 603
Trumbull Hospital	Gen	NPAssn	50	10		27	1 030
Cambridge 113 643—Middlesex Cambridge City Hospital	Gen	City	200	42	661	168	5 100
Cambridge Hospital	Gen	NPAssn	241	66	703	132	4 429
Cambridge Sanatorium	TB	City	85			85	4
Charlesgate Hospital	Gen	NPAssn	80	12	9	10	300
Chester Hospital	Gen	Corp	40	20	171	12	437
Canton 5 816—Norfolk Massachusetts Hospital School	Orth	State	3-0			301	343
Chelsea 45 816—Suffolk Captain John Adams Hospital at Soldiers Home	Gen	State	241			191	830
Chelsea Memorial Hospital	Gen	NPAssn	80	20	363	58	1 980
U S Marine Hospital	Gen	USPHS	167			142	1 424
U S Naval Hospital	Gen	Navy	641			81	307
Clinton 12 817—Worcester Clinton Hospital	Gen	NPAssn	67	20	177	24	840
Cohasset, 3 083—Norfolk Cohasset Private Hospital	Gen	Corp	24	9	62	11	301
Concord 7 477—Middlesex Emerson Hospital	Gen	NPAssn	30	12	167	18	544
Valleyhead	Nerv	Indiv	30			11	167
Danvers 12 057—Essex Hunt Memorial Hospital	Gen	City	17	6	45	10	283
Everett 48 424—Middlesex Whidden Memorial Hospital	Gen	NPAssn	90	21	442	8	2 588
Fall River 115 274—Bristol Fall River General Hospital	G&TB	City	281			223	2 180
St Anne's Hospital	Gen	Church	90	26	204	60	1 409
Truesdale Hospital	Gen	NPAssn	115	10	223	71	2 040
Union Hospital	Gen	NPAssn	150	30	490	115	2 060
Pitchburg 40 692—Worcester Burbank Hospital	Gen	NPAssn	189	22	487	142	3 474
Forest Hills (Boston P O)—Suffolk Forest Hills Hospital	Gen	Corp	115	30	No data supplied		
Ft Devens (Ayer P O)—Middlesex Station Hospital	Gen	Army	40			26	1 178
Foxboro 5 847—Norfolk Foxboro State Hospital	Ment	State	1 174			1 130	231
Frammingham 22 210—Middlesex Frammingham Union Hospital	Gen	Corp	130	30	372	50	2 964
Gardner 19 309—Worcester Gardner State Colony	Ment	State	1 342			1 322	196
Henry Heywood Memorial Hospital	Gen	NPAssn	100	19	208	47	1 590
Gloucester 24 204—Essex Addison Gilbert Hospital	Gen	NPAssn	75	15	192	30	1 079
Great Barrington 5 034—Berkshire Fairview Hospital	Gen	Corp	50	15	62	21	581
Greenfield 15 500—Franklin Franklin County Public Hosp	Gen	NPAssn	96	17	192	50	1 159
Groton 2 434—Middlesex Groton Hospital	Gen	Indiv	14	4	83	4	100
Hathorne 171—Essex Danvers State Hospital	Ment	State	2 220			2 161	911
Haverhill 48 710—Essex Benson Hospital	Gen	Indiv	26	2	12	10	272
Haverhill Municipal Hospital	Gen	City	108	18	372	98	3 871
Haydenville 1 300—Hampshire Hampshire County Sanatorium	TB	County	100			80	94
Holbrook 3 853—Norfolk Elmhurst Hospital and Sanit	Nerv	Indiv	18			10	34
Holden 3 871—Worcester Holden District Hospital	Gen	NPAssn	30	6	70	14	634
Holyoke 50 537—Hampden Holyoke Hospital	Gen	NPAssn	130	20	281	78	2 008
Holyoke Tuberculosis Sanat	TB	City	18			30	23
Providence Hospital	Gen	Church	115	20	339	100	4 010
Hyannis 1 800—Barnstable Cape Cod Hospital	Gen	Corp	43	12	102	30	840
Ipswich 5 599—Essex Benjamin Stickney Cable Memorial Hospital	Gen	NPAssn	25	7	60	14	396
Lawrence 85 068—Essex Clover Hill Hospital	Gen	Corp	30	8	151	10	536
Lawrence General Hospital	Gen	NPAssn	132	20	307	82	2 789
Lawrence Municipal Hospital	Gen	City	98	7	138	40	1 480
Leominster 21 810—Worcester Leominster Hospital	Gen	NPAssn	61	12	131	31	1 170
Lowell 100 234—Middlesex Lowell General Hospital	Gen	NPAssn	150	30	279	71	2 964
St Johns Hospital	Gen	Church	143	20	263	102	3 240
St Joseph's Hospital	Gen	Church	95	16	217	64	2 091
Shaw Hospital	Gen	Indiv	20	7	63	9	104
Ludlow 8 876—Hampden Ludlow Hospital	Gen	Corp	29	11	90	8	401
Lynn 102 320—Essex Lynn Hospital	Gen	NPAssn	159	40	612	114	4 298
Union Hospital	Gen	NPAssn	60	16	291	20	1 030
Malden 58 036—Middlesex Malden Hospital	Gen	NPAssn	187	42	334	87	2 446
Marblehead 5 668—Essex Mary A. Alley Emergency Hosp	Gen	City	15	8	62	11	466
Marlboro 15 057—Middlesex Marlboro Hospital	Gen	NPAssn	58	22	213	27	920

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Palo Alto 13 62—Santa Clara	Gen	NPA*sn	75	15	186	35	1 090
Palo Alto Hospital	Ment	Vet	1 000			1 015	766
Veterans Admin Facility	Gen	Corp	80			62	182
Pasadena 70 086—Los Angeles	Gen	NPA*sn	140	24	420	101	4 114
La Fielmas Sanitarium	Gen	Church	75	20	329	30	1 470
Pasadena Hospital*o	Mnt	NPA*sn	14	14	223	6	234
St Luke's Hospital							
Woman's Hospital							
Patton 210—San Bernardino	Ment	State	3 697			3 647	1 380
Patton State Hospital							
Placerville 2 322—Fildorado	Gen	Indiv	21	3	24	8	360
Placerville Sanatorium							
Pomona 20 04—Los Angeles							
Pomona Valley Community Hospital	Gen	NPA*sn	82	21	153	23	1 090
Portola 1 012—Plumas							
Western Pacific Railway Hosp	Gen	Corp	30	3	41	18	436
Red Bluff 3 517—Fehama							
St Elizabeth's Mercy Hospital	Gen	Church	20	4	60	16	510
Tehama County Hospital	Gen	County	50	5	40	42	500
Redding 4 189—Shasta							
Dozier Sanitarium	Gen	Indiv	15	3			
St Caroline Sanitarium	Gen	NPA*sn	22	3	9	6	369
Redwood City 8 902—San Mateo							
Canyon Sanatorium	TB	Indiv	70			30	60
Hassler Health Home	TB	CyCo	82			80	93
Richmond 20 023—Contra Costa							
Richmond Cottage Hospital	Gen	Part	50	14		New	
Riverside 20 636—Riverside							
Riverside Community Hospital	Gen	NPA*sn	54	16	158	21	1 357
Sherman Institute Hospital	Gen	IA	60			13	681
Rosemead 2 717—Los Angeles							
Alhambra Sanatorium	N&M	Indiv	12			8	53
Ross 1 300—Marin							
Ross General Hospital	Gen	Corp	60	8	80	20	690
Sacramento 93 750—Sacramento							
Mercy Hospital*	Gen	Church	134	27	283	50	2 240
Sacramento County Hosp**o	Gen	County	400	25	672	420	7 942
Sutter Hospital	Gen	Corp	170	30	520	106	4 405
Salinas 10 263—Monterey							
Park Lane Hospital	Gen	Indiv	26	0	70		490
Salinas Valley Hospital	Gen	Part	23	0	123	10	1 200
San Bernardino 31 481—San Bernardino							
St Bernardine's Hospital	Gen	Church	125	12	93	22	819
San Bernardino County Charity Hospital**o	Gen	County	312	16	389	250	2 059
San Diego 147 390—San Diego							
Gracewood General Hospital	Gen	Indiv	16	5	31	4	79
Mercy Hospital*	Gen	Church	250	40	930	122	6 432
San Diego County General Hospital**o	Gen	County	640	32	690	472	7 323
San Diego Hospital	Gen	Corp	85	18	25	25	960
Scripps Memorial Hospital	Gen	NPA*sn	50	6	51	21	701
Scripps Metabolic Clinic	Metab	NPA*sn	26			14	590
U S Naval Hospital	Gen	Navy	800			781	6 047
San Fernando 7 507—Los Angeles							
San Fernando Hospital	Gen	Part	12	5	35	5	204
Veterans Admin Facility	TB	Vet	244			214	320
San Francisco 634 334—San Francisco							
Chinese Hospital	Gen	NPA*sn	75	10	51	22	522
Dante Sanatorium	Gen	NPA*sn	130	10	39	28	1 170
Franklin Hospital*	Gen	Frat	225	15	241	118	3 388
French Hospital*o	Gen	Frat	225	21	165	325	1
Green's Eye Hospital	LNT	Part	29			14	889
Hospital for Children**o	Gen	NPA*sn	215	44	619	94	3 339
Letterman General Hospital*	Gen	Army	600	10	104	460	4 807
Mary's Help Hospital*o	Gen	Church	120	30	393	77	3 200
Mt Zion Hospital**o	Gen	NPA*sn	163	26	318	97	1 633
Park Sanitarium	N&M	Corp	38			15	530
St Elizabeth's Infant Hospital	MatCh	Church	25	10	53	11	51
St Francis Hospital*	Gen	Corp	300	55	627	154	5 574
St Joseph's Hospital*o	Gen	Church	215	28	473	166	3 957
St Luke's Hospital**o	Gen	Church	200	25	407	132	4 571
St Mary's Hospital*o	Gen	Church	255	40	630	153	6 411
San Francisco Hospital**o	Gen	CyCo	1 396	55	1 327	1 268	13 783
Shriners Hospital for Crippled Children*o	Orth	Frat	60			68	330
Southern Pacific General Hospital*	Indus	NPA*sn	400			251	4 510
Stanford University Hospitals (Including Lane Hospital)**o	Gen	NPA*sn	297	26	547	178	7 645
Sutter Hospital	Gen	Corp	60	12	78	41	3 043
U S Marine Hospital*	Gen	USPHS	403			409	3 754
University of California Hospital**o	Gen	State	251	30	485	161	5 013
Veterans Admin Facility	Gen	Vet	334			New	
Sanitarium 415—Napa							
St Helena Sanitarium and Hospital*o	Gen	Church	140	6	73	61	1 482
San Jacinto 1 346—Riverside							
Soboba Indian Hospital	Gen	IA	30	3	29	25	351
San Jose 57 601—Santa Clara							
Alum Rock Sanatorium	TB	Corp	30			22	67
O Connor Sanitarium*	Gen	Church	101	30	230	69	2 653
San Jose Hospital	Gen	Corp	110	22	396	49	2 317
Santa Clara County Hosp**o	Gen	County	473	24	631	400	5 969
Santa Clara County Sanat	TB	County	96			85	91
San Leandro 11 450—Alameda							
Fairmont Hospital of Alameda County*o	G&TB	County	900			884	1 606

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
San Luis Obispo 8 276—San Luis Obispo	Gen	Indiv	25	4	10	5	216
Mountain View Hospital	Gen	County	87	12	112	38	
San Luis Obispo General Hosp	Gen	Indiv	30	6	30	15	400
San Luis Sanitarium							
San Mateo 13 444—San Mateo							
Community Hospital of San Mateo County	Gen	County	102	10	162	144	1 953
Mills Memorial Hospital	Gen	Church	75	20	312	40	1 790
San Pedro—Los Angeles							
San Pedro Hospital	Gen	Corp	83	22	505	49	2 055
Station Hospital	Gen	Army	31		6	2	779
U S Ship Relief	Gen	Navy	397			144	5 300
San Rafael 8 022—Marin							
San Rafael Cottage Hospital	Gen	Indiv	35	11	124	20	750
Santa Ana 30 322—Orange							
San Ana Valley Hospital	Gen	Corp	40	16	80	14	533
Santa Barbara 33 013—Santa Barbara							
St Francis Hospital*	Gen	Church	85	15	162	39	1 324
Santa Barbara Cottage Hos pital*o	Gen	NPA*sn	250	32	181	69	2 426
Santa Barbara General Hosp *	Gen	County	216	10	119	171	1 093
Santa Cruz 14 300—Santa Cruz							
Hanly Hospital	Gen	Indiv	31	10	44	8	346
Santa Cruz County Hospital	G&TB	County	35	6	93		900
Santa Monica 37 146—Los Angeles							
St Catherine's Hospital	Gen	Corp	35	9	50	27	330
Santa Monica Hospital	Gen	Corp	94	12	819	50	2 670
Wiltshire Hospital	Gen	Corp	31	10	141	14	441
Santa Rosa 10 636—Sonoma							
General Hospital	Gen	Indiv	25	8	63	10	592
Santa Rosa Hospital	Gen	Indiv	17	3	42	5	299
Scotia 2 024—Humboldt							
Scotia Hospital	Indus	Corp	52	4		12	460
Selma 3 047—Fresno							
Selma Sanitarium	Gen	Corp	14	3	62	7	569
Sonoma 2 248—Tuolumne							
Sonoma Hospital	Gen	Indiv	24	2	19	12	523
South Gate 19 632—Los Angeles							
Suburban Hospital	Gen	NPA*sn	40	16	No data supplied		
South San Francisco 6 193—San Mateo							
South San Francisco Hospital	Gen	Corp	22	5	30	8	437
Spadna 30—Los Angeles							
Pacific Colony State Narcotic Hospital	DrugMeDe	State	1 006			740	247
Springville—Tulare							
Tulare Kings County Joint Tubercular Hospital	TB	County	105			82	103
Stockton 47 963—San Joaquin							
Dameron Hospital	Gen	Corp	77	12	179	36	1 537
St Joseph's Home and Hosp*	Gen	Church	125	18	206	50	1 621
Stockton State Hospital*	Ment	State	3 559			3 503	1 025
Susannah 1 355—Lassen							
Riverside Hospital	Gen	Indiv	35	6	50	5	356
Talmage 29—Mendocino							
Mendocino State Hospital*	Ment	State	2 700			2 523	2 958
Torrance 7 271—Los Angeles							
Jared Sidney Torrance Memorial Hospital	Gen	Corp	38	12	161	17	727
Trona 775—San Bernardino							
Trona Hospital	Gen	Corp	10	1	10	2	133
Tulare 6 907—Tulare							
Bellevue Hospital	Gen	Indiv	20	3	40	6	235
Tulare County General Hosp	Gen	County	69	9	238	69	1 516
Tulare Hospital	Gen	Indiv	14	3	32	5	207
Turlock 4 26—Stanislaus							
Emanuel Hospital	Gen	Church	40	6	70	15	590
Lillian Collins Hospital	Gen	Indiv	15	8	33	5	202
Ventura 11 432—Ventura							
Foster Memorial Hospital	Gen	NPA*sn	68	10	75	17	1 173
Ventura County Hospital	Gen	County	182	8	190	141	2 067
Vineburg 164—Sonoma							
Burndale Hospital	Gen	Indiv	10	2	30	5	300
Vizalla 7 263—Tulare							
Kaweah Hospital	Gen	Corp	18	4	68	10	365
Watsonville 8 344—Santa Cruz							
Watsonville Hospital	Gen	Indiv	23	5	99	11	577
Weed 4 227—Siskiyou							
Weed Hospital	Gen	Indiv	24	4	38	7	357
Welman 32—Placer							
Welman Joint Sanatorium	TB	County	474			454	597
West Los Angeles—Los Angeles							
Veterans Admin Facility	G&TB	Vet	1 232			863	3 441
Westwood 4 062—Lassen							
Westwood Hospital	Gen	Indiv	30	9	70		
Willits 1 424—Mendocino							
Frank R Howard Memorial Hospital	Gen	NPA*sn	12	5	54	7	320
Woodland 5 542—Yolo							
Woodland Clinic Hospital	Gen	Corp	50	10	92	23	1 160
Yosemite National Park 200—Mariposa							
Lewis Memorial Hospital	Gen	Indiv	14	2	14	5	238
Yreka 2 126—Siskiyou							
Siskiyou County General Hosp	Gen	County	50	5	No data supplied		
Yuba City 3 600—Sutter							
Yuba City General Hospital	Gen	Indiv	12	4	63	7	407
Related Institutions							
Alcatraz 171—San Francisco							
U S Penitentiary Hospital	Inst	Fed	23			New	
Alta Loma 115—San Bernardino							
Our Lady of Lourdes Sanat	TB	Indiv	24			8	19

Key to symbols and abbreviations is on page 1091

MASSACHUSETTS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Westboro 6 409—Worcester							
Westboro State Hospital	Ment	State	1 594		1,503	552	
Westfield 19 775—Hampden							
Noble Hospital	Gen	NPAasn	91	17	150	27	614
Westfield State Sanatorium+	FB	State	270		251	140	
Westwood 2 097—Norfolk							
Westwood Lodge	N&M	Corp	21			15	50
Weymouth, 20,882—Norfolk							
Weymouth Hospital	Gen	NPAasn	46	18	307	34	1 209
Whittinsville 6 090—Worcester							
Whittinsville Hospital	Gen	Corp	15	7	90	15	522
Winchendon, 0 202—Worcester							
Millers River Hospital	Gen	Corp	25	0	37	14	538
Winchester 12 719—Middlesex							
Winchester Hospital	Gen	NPAasn	65	20	223	29	927
Winthrop 16,852—Suffolk							
Station Hospital	Gen	Army	100	5	52	71	617
Winthrop Community Hosp	Gen	NPAasn	38	20	253	32	878
Winchester 12 719—Middlesex							
Charles Choate Memorial Hos- pital	Gen	NPAasn	41	19	234	22	700
Worcester 195 311—Worcester							
Belmont Hospital+	TbIs	City	275			151	1 205
Fairlawn Hospital	Gen	NPAasn	45	19	150	22	739
Harvard Private Hospital	Gen	NPAasn	25	7	25	11	307
Louis Pasteur Hospital	Gen	NPAasn	30	6	50	8	243
Memorial Hospital**	Gen	NPAasn	185	30	454	116	4 152
St Vincent Hospital*	Gen	Church	225	25	396	160	4 704
Worcester City Hospital*	Gen	City	360	40	1,001	351	8 625
Worcester County Sanatorium	TB	County	130			107	118
Worcester Hahnemann Hospi- tal*	Gen	NPAasn	111	20	422	61	1 800
Worcester State Hospital	Ment	State	2,260	6	12 230	1	831
Related Institutions							
Acushnet (New Bedford P O) 4 092—Bristol							
Ashley Sanitarium	Inst	Indiv	17			12	20
Aldenville (Chilcopee Falls P O)—Hampden							
Chilcopee Hospital	Gen	Indiv	35	8	39	11	384
Baldwinsville 2,360—Worcester							
Hospital Cottages for Chil- dren	Ohl	NPAasn	135			101	20
Belchertown 3 139—Hampshire							
Belchertown State School+	McDe	State	1,300			1 255	104
Boston 781 188—Suffolk							
Boston Home for Incurables	Inc	NPAasn	58			58	10
Deer Island Hospital	Inst	CyCo	25			22	302
Dorchester Cottage Hospital	Gen	Corp	12		8	No data supplied	
Florence Crittenton Home and Hospital	Mat	NPAasn	21	47	90	11	109
Massachusetts State Prison Hospital	Inst	State	40				
New England Home for Little Wanderers	Inst	NPAasn	44	0		10	377
Prendergast Preventorium	TB	NPAasn	30			29	185
St Luke's Home for Conva- lescents	Conv	Church	25			15	340
Strong Hospital	Gen	Indiv	22		14	No data supplied	
Talitha Cumi Home	Mat	NPAasn	32	17	62	9	68
Dr Taylor's Private Hospital	Drug	Indiv	18			6	393
Washingtonian Home	Alcoh	NPAasn	35			10	520
Brookton 63 797—Plymouth							
Ducy Hospital	Gen	Indiv	18		4	No data supplied	
Brookline 47 400—Norfolk							
Board of Health Hospital	TbIs	City	45			25	101
Cambridge 113,643—Middlesex							
Holy Ghost Hospital for In- curables	Inc	Church	215			204	245
Homberg Infirmary	Inst	NPAasn	10			No data supplied	
Chilcopee 43 690—Hampden							
Health Department Hospital	TB	City	25			20	10
Dracut (Lowell P O) 6,912—Middlesex							
Blanchard Private Hospital	Mat	Indiv	8	6	26	3	35
Egypt 340—Plymouth							
Children's Sunlight Hospital	Orth	NPAasn	72			64	191
Framingham 22,210—Middlesex							
Reformatory for Women	Inst	State	38		3	25	914
Woodside Cottages	Conv	Corp	15			10	29
Greenfield, 15 500—Franklin							
Greenfield Isolation Hospital	Iso	City	20			1	31
Haverhill 48 710—Essex							
Haverhill City Infirmary	Inst	City	64			64	
Haverhill Municipal Hospitals	Iso	City	40			2	385
Lowell 100,254—Middlesex							
Chelmsford Street Hospital	Inst	City	145		6	No data supplied	
Lowell Tuberculosis Hospital	TbIs	City	84			46	
Malden 58 036—Middlesex							
Malden Contagious Hospital	Iso	City	40			15	170
Marblehead 8,608—Essex							
Children's Island Sanitarium	Conv	NPAasn	94			94	104
Medford 59 714—Middlesex							
Dearborn Hospital	Conv	Indiv	20			22	
Methuen, 21 060—Essex							
Mary E Barr Sanitarium	Gen	Indiv	24	7	22	8	684
Newton 65 276—Middlesex							
New England Peabody Home for Crippled Children	TbOr	NPAasn	100			80	24
Woodlawn Sanitarium	Epil	Indiv	10			5	1
Norfolk 1,429—Norfolk							
Hospital of Norfolk State Prison Colony	Inst	State	75			34	831
North Adams 21 612—Berkshire							
Dr Vrooman's Sanitarium	Conv	Indiv	12				

MASSACHUSETTS—Continued

Related Institutions	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Pittsfield 49 677—Berkshire							
Frederic S Coolidge Memorial Home	TB	NPAasn	8			4	7
Pittsfield Anti Tuberculosis Hospital	TB	NPAasn	14			10	14
Quincy 71 938—Norfolk							
Whitehouse Maternity Hosp	Mat	Indiv	12	12	No data supplied		
Rutland 2 442—Worcester							
Rutland Cottage Sanatoria	TB	Indiv	113			15	51
Salem 43,353—Essex							
Health Department Hospital for Contagious Diseases	Iso	City	40			1	10 234
Shirley 2,427—Middlesex							
Industrial School for Boys	Inst	State	24			7	339
Somerville, 103,908—Middlesex							
Chandler Street Hospital	Gen	Indiv	15	10	20	1	50
Somerville Contagious Disease Hospital	Iso	City	60			15	149
Springfield 149 900—Hampden							
Bussell Nursing Home	Conv	Indiv	20			10	20
Hampden County Children's Preventorium	TB	NPAasn	225			9	5 22
Revere Wilson Private Hosp	Gen	Part	9	5	22	2	135
Waltham 39,247—Middlesex							
Dr Cousens Hospital	Gen	Indiv	13		5	No data supplied	
Teresian Lying In Hospital	Mat	Indiv	10	6	104	6	104
Walter E Fernald State School	McDe	State	1 750			1 738	523
Waltham Baby Hospital	Ohl	NPAasn	22			7	62
Wellesley 11 439—Norfolk							
Convalescent Home of the Children's Hospital	Ohl	NPAasn	83			71	447
Simpson Infirmary of Wellesley College	Inst	NPAasn	20			8	419
Westboro 6 409—Worcester							
Lyman School Hospital	Inst	State	30				501
West Concord 1 851—Middlesex							
Massachusetts Reformatory Hospital	Inst	State	50			3	511
Williamstown 3 900—Berkshire							
Williams College Infirmary	Inst	NPAasn	21			2	123
Worcester 160,311—Worcester							
Maple Hall Sanitarium	Conv	Part	20				
Wrentham 3,584—Norfolk							
Wrentham State School	McDe	State	1 750			1 763	192
Summary for Massachusetts							
Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted			
Related institutions	211	49 125	41 323	338 166			
	61	7,289	0,310	11 125			
Totals	272	56 414	47 633	349 291			
Refused registration	16	421					

MICHIGAN

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Adrian 13 064—Lenawee							
Emma L Birby Hospital	Gen	City	33	10	140	20	850
Albion 8,324—Calhoun							
James W Sheldon Memorial Hospital	Gen	City	40	10	35	12	483
Alma 6 734—Gratiot							
Carney Wilcox Hospital	Gen	Part	28	5	21	12	816
R B Smith Memorial Hosp	Gen	NPAasn	11	4		New	
Alpena 12 166—Alpena							
Donald McRae Hospital	Gen	NPAasn	22	5	18	11	341
Ann Arbor 20 944—Washtenaw							
Cowle Hospital	Gen	Indiv	12	1		2	150
Merewood Sanitarium	N&M	Church	40			20	121
St Joseph's Mercy Hospital*	Gen	Church	100	15	207	53	2 018
State Psychopathic Hospital at the University of Mich							
Igan+							
University Hospital**	Ment	State	64			60	205
Bad Axe 2 332—Huron	Gen	State	1,201	34	204	1 032	20 949
Hubbard Memorial Hospital	Gen	County	23	0	54	16	518
Battle Creek 43 513—Calhoun							
American Legion Hospital+	TB	State	355			162	106
Battle Creek Sanitarium**	Gen	NPAasn	1 000			164	3,308
Calhoun County Public Hosp	TB	County	75			69	83
Lella 1 Post Montgomery Hospital	Gen	Church	158	17	197	64	1,803
Nicholas Memorial Hospital	Gen	NPAasn	75	10	214	42	2,409
Bay City 47,355—Bay							
Bay City General Hospital	Gen	City	25	4	44	10	631
Bay City Samaritan Hospital	Gen	NPAasn	43	4	22	24	1,327
Mercy Hospital*	Gen	Church	145	10	114	47	1,522
Benton Harbor 15,434—Berrien							
Benton Harbor Hospital	Gen	NPAasn	40	10	130	23	1 222
Big Rapids, 4 671—Mecosta							
Community Hospital	Gen	City	13	4	14	7	393
Brighton 1 287—Livingston							
Mellus Hospital	Gen	Indiv	15	4	20	9	300
Cadillac 9,570—Wexford							
Mercy Hospital	Gen	Church	45	8	66	21	1,014
Wexford County Hospital	G&TB	County	20			No data supplied	
Calumet 1,657—Houghton							
Calumet and Hecla Hospital	Indus	Corp	20			10	467
Camp Custer—Kalamazoo							
Veterans Admin Facility	Ment	Vet	635			518	200

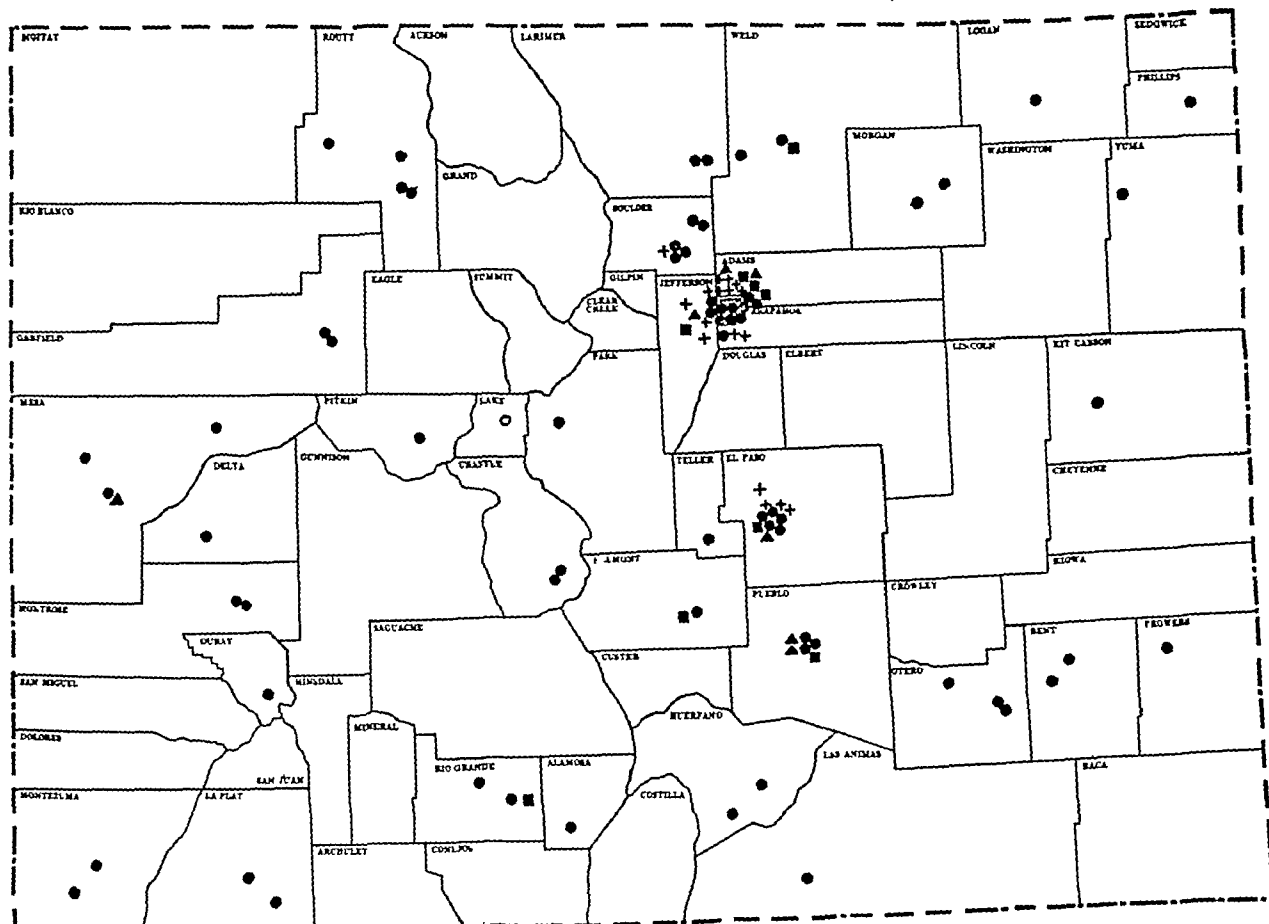
COLORADO

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Alamosa 5307—Alamo ⁿ Lutheran Hospital	Gen	Church	20	5	49	14	835
Aspen 705—Pitkin Citizens Hospital	Gen	Indiv	15	2	7	6	98
Boulder 11223—Boulder and Hospital ^o Sanatorium	Gen	Church	101	0	50	20	1 123
Community Hospital	Gen	NPA ^{ssn}	60	8	60	15	601
Brush 2312—Morgan Eben Exer Hospital	Gen	Church	20	8	40	13	470
Canon City 5033—Fremont Graves Hospital	Gen	Indiv	24	0	No data supplied		
Colorado Springs 33 237—El Paso Beth El General Hospital ^o	Gen	Church	02	12	360	04	2 013
Colorado Springs Psychopathic Hospital	N&M	Part	150			85	164

COLORADO—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Denver 297,801—Denver Bethesda Sanatorium	TB	Church	68			28	42
Beth Israel Hospital	Gen	NPA ^{ssn}	50	10	40	29	048
Children's Hospital ^o	Chil	NPA ^{ssn}	147	18		122	3 102
Colorado General Hospital ^o	Gen	State	158	20	327	127	2,807
Colorado Psychopathic Hospital ^o	Ment	State	76			69	785
Denver General Hospital ^o	Gen	CyCo	559	30	008	303	15 174
Lx Patients Tubercular Home	TB	NPA ^{ssn}	72			46	24
Elizabeth General Hospital ^o	G&TB	Army	1 180	0	68	784	3,202
Mercy Hospital ^o	Gen	Church	200	25	347	120	3,880
Mt Atry Sanatorium	N&M	Corp	60			36	323
National Jewish Hospital ^o	TB	NPA ^{ssn}	202			241	218
Porter Sanatorium and Hosp	Gen	Church	100	15	150	36	1 068
Presbyterian Hospital ^o	Gen	Church	100	20	367	70	2 811
St Anthony's Hospital ^o	Gen	Church	200	25	330	88	2,033

COLORADO



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- General Hospital
- + Tuberculosis
- ▲ Nervous and Mental
- Other Special Hospital

Total hospitals in Colorado, 103, general, 65 general beds occupied, 57.6 per cent, population per general bed, 212

Cragmor Sanatorium	TB	Corp	130		49	80
Creighton Heights Sanatorium and Hospital	Gen	Indiv	20	6		
Glockner Sanatorium and Hospital ^o	G&TB	Church	100	14	118	131 1 185
National M E Sanatorium for Tuberculosis	TB	Church	77		49	78
St Francis Hospital and Sanatorium ^o	G&TB	Church	120	10	104	78 890
Sunnyrest Sanatorium	TB	NPA ^{ssn}	54			157 77
Union Printers Home and Tuberculosis Sanatorium ^o	G&TB	NPA ^{ssn}	170			
Cortez 921—Montezuma Johnson Hospital	Gen	Indiv	14	1	20	5 380
Cripple Creek 1427—Teller Cripple Creek Hospital	Gen	NPA ^{ssn}	34	6	23	8 222
Del Norte 1410—Rio Grande St Joseph's Hospital and Sanatorium	Gen	Church	20	6	33	8 260
Delta 2,938—Delta Western Slope Memorial Hosp	Gen	NPA ^{ssn}	12	4	10	4 145

St Joseph's Hospital ^o	Gen	Church	200	25	277	132 4 010
St Luke's Hospital ^o	Gen	Church	210	30	413	111 4 029
Standa House	TB	NPA ^{ssn}	48			36 30
Steele Memorial Hospital	Iso	CyCo	85			24 600
Durango 5400—LaPlata Mercy Hospital ^o	Gen	Church	43	7	60	23 081
Edgewater 1473—Jefferson Craig Colony	TB	NPA ^{ssn}	50			45 21
Englewood 7,050—Arapahoe Swedish National Sanatorium	TB	NPA ^{ssn}	78			63 95
Fairplay 221—Park Fairplay Hospital	Gen	Indiv	12	2	10	8 297
Ft Logan 1,625—Arapahoe Station Hospital	Gen	Army	46			12 894
Ft Lyon 26—Bent Veterans Admin Facility	Ment	Vet	609			417 495
Ft Morgan 4423—Morgan Ft Morgan Hospital	Gen	Indiv	25	0	75	10 384
Glenwood Springs 1,820—Garfield Glenwood Springs Sanatorium	Gen	Corp	35	4		30
Dr Porter's Hospital	Gen	Indiv	15	3	20	8 341

Key to symbols and abbreviations is on page 1091

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Ishpeming 9,235—Marquette							
Ishpeming Hospital	Gen	Corp	37	0	60	14	520
Jackson 65,187—Jackson							
W A Foote Memorial Hosp *	Gen	City	134	22	316	83	4,036
Jackson County Sanatorium+	TB	County	64		63		54
Mercy Hospital	Gen	Church	100	20	242	45	2,720
Kalamazoo, 54 7-8—Kalamazoo							
Borgess Hospital	Gen	Church	214	27	401	110	3,040
Bronson Methodist Hospital	Gen	Church	113	30	388	50	1,087
Fairmount Hospital	TB	County	151		89		330
Kalamazoo State Hospital+	Ment	State	2,760		2,741		703
Lake Linden 1714—Houghton							
Lake Superior General Hosp	Gen	NPAasn	12	3	10	7	150
Lakeview 850—Montcalm							
Kelsey Hospital	Gen	Indlv	11	2	5	4	231
Lansing 78,394—Ingham							
Edward W Sparrow Hosp *	Gen	NPAasn	115	20	415	73	2,770
Ingham Sanatorium	TB	County	110		81		123
St Lawrence Hospital+	Gen	Church	100	28	330	70	2,200
Laurium 4,916—Houghton							
Calumet Memorial Hospital	Gen	NPAasn	30	5	60	9	472
Ludington 4,916—Mason							
Paulina Stearns Hospital	Gen	NPAasn	22	3	50	14	458
Manistee 8,078—Manistee							
Mercy Hospital and Sanit	Gen	Church	54	0	70	26	1,080
Manistee 5,108—Schoolcraft							
Shaw General Hospital	Gen	Indlv	20	3	23	10	340
Marenisco 510—Gogebic							
Charcoal Iron Co Hospital	Indus	Indlv	18				Nodata supplied
Marquette 14,789—Marquette							
Morgan Heights Sanatorium+	TB	County	90		72		131
St Luke's Hospital	Gen	NPAasn	83	10	92	50	2,583
St Mary's Hospital	Gen	Church	60	12	156	30	678
Marshall 5,019—Calhoun							
Oak Lawn Hospital	Gen	NPAasn	13	4	50	7	320
Menominee 10,320—Menominee							
St Josephs Hospital	Gen	Church	50	12	187	20	1,453
Monroe 18,110—Monroe							
Mercy Hospital	Gen	Church	58	12	72	21	666
Monroe Hospital	Gen	NPAasn	38	8	73	30	1,103
Mt Clemens, 13,497—Macomb							
St Joseph's Hospital and Sanit	Gen	Church	150	12	104	49	1,419
Station Hospital	Gen	Army	30			15	510
Mt Pleasant 5,211—Isabella							
Bronckletter Memorial Hosp	Gen	Part	20	4	60	19	688
Mt Pleasant General Hospital	Gen	Indlv	40	5			Nodata supplied
Munising 3,906—Alger							
Munising Hospital	Gen	NPAasn	18	3	42	12	409
Muskegon 41,890—Muskegon							
Hackley Hospital+	Gen	NPAasn	108	17	410	54	2,131
Mercy Hospital+	Gen	Church	100	24	323	61	2,009
Muskegon County Sanatorium	TB	County	70		68		63
Negaunee 6,562—Marquette							
Twin City Hospital	Gen	Part	15	3			Nodata supplied
Newberry 2,400—Luce							
Newberry State Hospital	Ment	State	1,200		1,107		242
Perry-Spinks Hospital	Gen	Part	13	6	40	8	300
Niles 11,326—Berrien							
Pawling Hospital	Gen	NPAasn	33	10	78	13	520
Northville 2,566—Wayne							
East Lawn Sanatorium	TB	Indlv	93		86		61
Wm H Maybury Sanatorium+	TB	City	830		800		664
Norway 4,016—Dickinson							
Penn Iron Mining Co Hospital	Gen	Corp	13	5	37	7	199
Ontonagon 1,937—Ontonagon							
Ontonagon Hospital	Gen	Indlv	13	4			Nodata supplied
Oshkosh 125—Kalamazoo							
Pine Crest Sanatorium	TB	Corp	116		106		91
Owosso 14,406—Shawasssee							
Memorial Hospital	Gen	NPAasn	80	10	242	54	1,789
Petoskey 5,740—Emmet							
Lockwood Hospital	Gen	City	32	6	91	28	804
Petoskey Hospital	Gen	NPAasn	40	0	78	24	829
Pinckney 433—Livingston							
Pinckney Sanitarium	Gen	Indlv	8	4	24	3	120
Plainwell 2,278—Allegan							
Wm Crispe Hospital	Gen	City	19	6	81	12	463
Pontiac 64,928—Oakland							
Oakland County Contagious	Iso	County	80		51		703
Hospital							
Oakland County Tuberculosis	TB	County	180		167		278
Sanatorium	Gen	City	90	25	230	19	203
Pontiac General Hospital	Gen	State	176		1,700		218
Pontiac State Hospital+	Ment	State	176	25	260	90	2,772
St Joseph Mercy Hospital+	Gen	Church	170		160		2,772
Port Huron 31,361—St Clair							
Port Huron Hospital	Gen	NPAasn	50	10	132	49	1,693
Powers 300—Menominee							
Pinecrest Sanatorium	TB	County	100		90		97
Reed City 1,792—Oscoda							
Reed City Hospital	Gen	NPAasn	12	4	20	10	220
Royal Oak 22,804—Oakland							
Royal Oak Private Hospital	Gen	Indlv	19	4	23	13	487
Saginaw 80,170—Saginaw							
Saginaw City Hospital	Gen	City	28	5	99	20	529
Saginaw County Contagious	Iso	County	70		24		253
Hospital							
Saginaw County Tuberculosis	TB	County	26		20		24
Hospital	Gen	NPAasn	133	23	297	56	1,922
Saginaw General Hospital+	Gen	Church	60	11	157	80	1,174
St Luke's Hospital	Gen	Church	160	20	279	54	3,388
St Mary's Hospital+	Gen	Church	160	20	279	54	3,388
St Johns 3,929—Clinton							
Clinton Memorial Hospital	Gen	NPAasn	50	10	51	10	633

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
St Joseph, 8,840—Berrien							
St Joseph Sanitarium	Gen	City	38	4			Nodata supplied
Sandusky 1,300—Sanilac							
Tweedie Hospital	Gen	Part	10	2	8	6	322
Sault Ste Marie 13,700—Chippewa							
Chippewa County War Memorial	Gen	County	68	14	163	30	1,213
Hospital	Gen	Army	40				20
Station Hospital							
South Haven 4,804—Van Buren							
City Hospital	Gen	City	30	0	53	8	280
Penoyar Memorial Hospital	Gen	Indlv	12	0	20	5	200
Stambaugh 2,400—Iron							
General Hospital Company of	Gen	NPAasn	27	6	57	10	570
Iron River District							
Sturgis 6,950—St Joseph							
Sturgis Memorial Hospital	Gen	City	38	0	130	16	598
Three Rivers 6,863—St Joseph							
Three Rivers Hospital	Gen	City	30	5	66	10	455
Traverse City 12,539—Grand Traverse							
James Decker Munson Hosp *	Gen	State	56	11	126	21	800
Traverse City State Hosp *	Ment	State	1,000		2,282		320
Trimountain 3,541—Houghton							
Copper Range Hospital	Gen	NPAasn	20	1	10	8	155
Wakefield 8,677—Gogebic							
Wakefield Hospital	Gen	Corp	12	4	24	4	73
West Branch 1,164—Ogemaw							
Tolfree Memorial Hospital	Gen	City	16	3	9	5	496
Wyandotte 28,368—Wayne							
Wyandotte General Hospital	Gen	City	160	30	213	38	1,430
Ypsilanti 10,143—Washtenaw							
Beyer Memorial Hospital	Gen	City	20	6	84	13	600
Leland Sanatorium	TB	NPAasn	138			98	67
Ypsilanti State Hospital+	Ment	State	1,480		1,477		443
Zeeland 2,850—Ottawa							
Thomas G Huizinga Memorial	Gen	NPAasn	13	3	15	3	134
Hospital							
Related Institutions							
Addison 432—Lenawee							
Addison Community Hospital	Gen	County	5	2	15	2	98
Adrian, 13,064—Lenawee							
Lenawee County Tuberculosis	TB	County	26				20
Sanatorium							
Allegan 3,941—Allegan							
Emergency Hospital	Gen	Indlv	8	4			Nodata supplied
Alma, 6,734—Gratiot							
Michigan Masonic Home and	Inst	Frnt	50			21	85
Hospital							
Charlevoix 227—Charlevoix							
Charlevoix Hospital	Gen	City	20	7			Nodata supplied
Cheboygan 4,923—Cheboygan							
Cheboygan General Hospital	Gen	Indlv	12	3	24	1	230
Coldwater 6,730—Branch							
Branch County Infirmary and	Inst	County	62			59	89
Hospital	State		45				Nodata supplied
Michigan State Public School							
Crystal Falls, 2,000—Iron							
Iron County Infirmary	Gen	County	12			12	72
Detroit 1,508,662—Wayne							
Memorial Hospital	SKCo	Part	6			1	110
Mercy Hospital (col)	Gen	Indlv	40	0	16	14	113
Pennsylvania Avenue Sanit	Conv	Indlv	8			3	20
St Luke's Convalescent Home	Conv	Church	28			16	77
Saratoga General Hospital	Gen	NPAasn	30	10			53
Sheppard Sanitarium	Conv	Indlv	19	2	9	5	63
William Booth Memorial Hosp	Mat	Church	40	32	209	38	342
Douglas 368—Allegan							
Douglas Hospital	Gen	Indlv	9	4	8	2	61
East Lansing 4,389—Ingham							
Hospital of Michigan State							
College	Inst	State	30				283
Edmore 397—Montcalm							
Edmore Hospital	Gen	Indlv	10	2	15	4	270
Farmington, 1,243—Oakland							
Children's Hospital Conval-	Conv	NPAasn	240			170	434
escent Home	TB	Indlv	23			12	37
Weberkel Convalescent Home							
Flint 156,492—Genesee							
Genesee County Infirmary	Inst	County	185	6	101	150	249
Michigan Society for the Deaf	Inst	State	88			7	481
Grand Rapids 103,892—Kent							
Kent County Receiving Hosp	N&M	County	32			19	521
Michigan Soldiers Home Hosp	Inst	State	200			130	
Municipal Isolation Hospital	Iso	City	50			17	114
Salvation Army Evangeline							
Booth Home and Hospital	Mat	Church	31	7	82		124
Harbor Beach 1,892—Huron							
Harbor Beach Hospital	Gen	NPAasn	15	3	30	4	276
Harrieville 428—Alcona							
Dr A R Millers Private	Gen	Indlv	5			1	60
Hospital							
Ironia 6,562—Ironia							
Michigan State Reformatory	Inst	State	22			21	1,023
Iron Mountain 11,602—Dickinson							
Ford Motor Company Industrial	Indus	Corp	5			2	75
Hospital							
Jackson 60,187—Jackson							
Florence Crittenton Home and	Mat	NPAasn	35	19	36	15	36
Hospital							
Jackson County Contagious	Iso	CyCo	33			13	143
Hospital	Inst	State	232			109	2,176
Michigan State Prison Hosp							
Lansing 78,397—Ingham							
Boys Vocational School Hosp	Inst	State	50			10	714
Lansing City Hospital	Iso	City	60				319

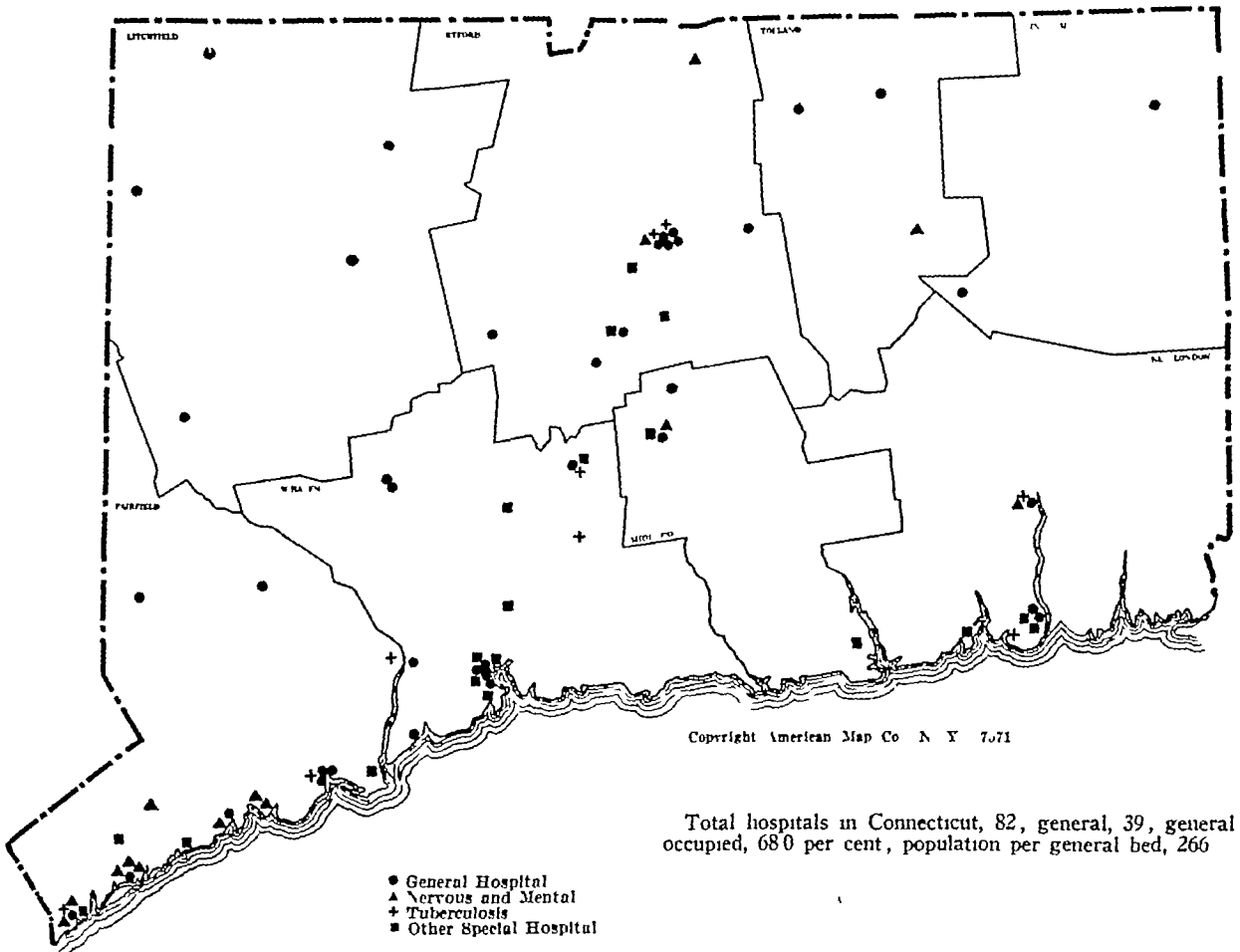
CONNECTICUT—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
South Norwalk 8,068—Fairfield	N&M	Indiv	20	12	121	18	440
Dr Wadsworth's Sanitarium							
Stamford Springs 3,492—Tolland	Gen	NPAsen	30	12	121	18	440
Cyril and Julia C Johnson Memorial Hospital							
Stamford 40,346—Fairfield	N&M	Corp	60	120	176	169	169
Dr Barnes Sanitarium							
Stamford Hall	Gen	Corp	224	30	509	114	3,017
Stamford Hospital							
Tophamsee Grange	N&M	Corp	20	14	14	14	9
Thompsonville 8,525—Hartford							
Elmercroft—Dr Vail's Sanat	N&M	Corp	20	14	14	14	12
Torrington 20,040—Litchfield							
Charlotte Hungerford Hospital	Gen	NPAsen	130	20	282	60	1,560
Wallingford 11,170—New Haven							
Gaylord Farm Sanatorium	TB	NPAsen	142			141	106

CONNECTICUT—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Hamden 5,000—New Haven	Inst	NPAsen	34				
Children's Community Center							
Mansfield Depot 306—Tolland	McDe	State	1,200			1,164	97
Mansfield State Training School and Hospital							
Meriden 38,491—New Haven	Inst	State	24			8	40
Connecticut School for Boys							
Middletown 24,554—Middlesex	Inst	State	9			4	182
Long Lane Farm							
New Canaan 2,372—Fairfield	Nerv	Corp	15				
Silver Hill							
New Haven 102,000—New Haven	Inst	NPAsen	89			82	33
Jewish Home for the Aged							
Springside Home and Hospital	Inst	City	70			7	515
Yale Infirmary							

CONNECTICUT



Total hospitals in Connecticut, 82, general, 39, general beds occupied, 680 per cent, population per general bed, 266

- General Hospital
- ▲ Nervous and Mental
- + Tuberculosis
- Other Special Hospital

Waterbury 99,905—New Haven	Gen	Church	220	41	831	163	7,175
St Mary's Hospital	Gen	NPAsen	321	36	572	170	4,365
Waterbury Hospital	TB	State	190			64	58
Waterford 4,740—New London							
The Seaside	N&M	Corp	80			62	116
Westport 6,073—Fairfield							
Westport Sanitarium	Gen	NPAsen	70	16	140	38	1,235
Williamantic 12,102—Windham							
Windham Community Memorial Hospital	Gen	NPAsen	75	12	137	34	837
Winsted 7,883—Litchfield							
Litchfield County Hospital	G&N&M	City	200			260	1,000
Bridgeport 140,716—Fairfield							
Hillside Home and Hosp	Inst	State	27			5	100
Cheshire 3,263—New Haven							
Connecticut Reformatory	Conv	Indiv	10			8	17
Essex 4,777—Middlesex							
Pettipaug Lodge and Sanit	Conv	Indiv	15			13	14
Greenwich 5,081—Fairfield							
Dr Bowman's Sanatorium	N&M	Corp	22			22	194
Crest View Sanitarium							
Municipal Hospital	TB	City	61	2			

New London 20 640—New London							
Connecticut College Infirmary	Inst	Corp	12			4	400
Niantic 1 697—New London							
Connecticut State Farm for Women							
Noroton Heights 700—Fairfield	Inst	State	40	70	40	32	178
Soldiers Hospital	Inst	State	131			118	1,300
Springdale 663—Fairfield							
Nestledown Home	Conv	Indiv	12				12
Stratford 19 212—Fairfield							
Sunnyside Sanitarium	Conv	Indiv	15			7	47
West Hartford 24 941—Hartford							
St Agnes Home	Mat	Church	11	12	62	2	71
West Haven 24 803—New Haven							
West Haven Conv Home	Conv	Indiv	6			6	10
Wethersfield 7 512—Hartford							
Connecticut State Prison Hosp	Inst	State	34			16	2,4
Summary for Connecticut							
	Number	Beds	Average Patients		Patients Admitted		
Hospitals and sanatoriums	60	15,236	12,575		114,562		
Related institutions	22	2,313	2 009		5 464		
<hr/>							
Totals	82	17 549	14 584		120 026		
Refused registration	2	51					

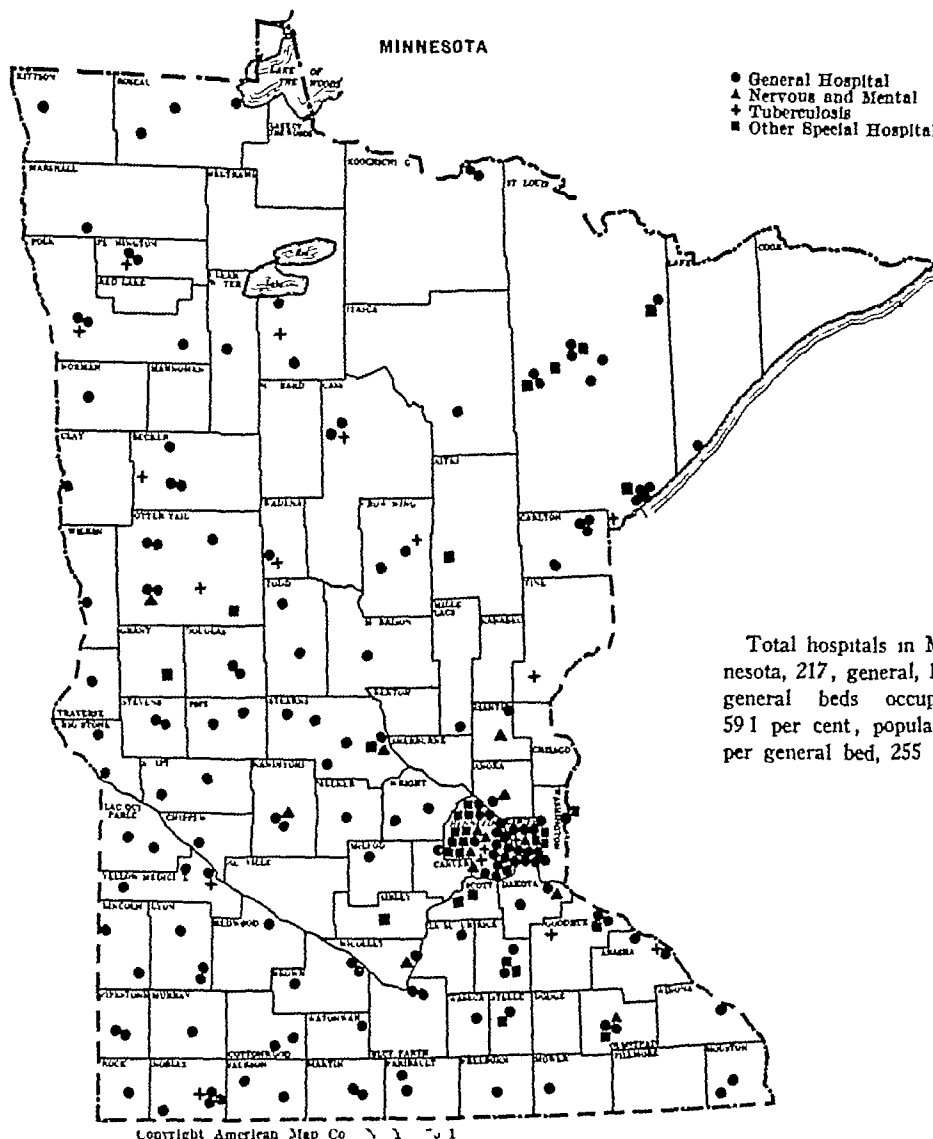
Key to symbols and abbreviations is on page 1091

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Shriners Hospital for Crippled Children	Orth	Frat	60			58	238
Swedish Hospital*	Gen	NPAasn	271	42	540	127	3,898
University Hospitals*	Gen	State	420	30	370	334	7,610
Monterideo, 4 319—Chippewa	Gen	NPAasn	40	10	132	20	838
Monterideo Hospital	Gen	NPAasn	40	10	132	20	838
Moorhead 7 651—Clay	Gen	Church	42	8	100	34	1,002
St. Ansgars Hospital*	Gen	Church	42	8	100	34	1,002

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Perham 1,411—Otter Tail	Gen	Church	40	5	68	20	830
St. James Hospital	Gen	Church	40	5	68	20	830
Pipestone 3,489—Pipestone	Gen	CyCo	43	0	61	31	888
Ashton Memorial Hospital	Gen	CyCo	43	0	61	31	888
Pokegama, Pine	Gen	CyCo	43	0	61	31	888
Pokegama Sanatorium	TB	NPAasn	56			22	53
Princeton, 1 630—Mille Lacs	Gen	Indlv	30	4	12	6	200
Northwestern Hospital	Gen	Indlv	30	4	12	6	200



Total hospitals in Minnesota, 217, general, 157, general beds occupied, 591 per cent, population per general bed, 255

Moose Lake, 742—Carlton	Gen	Indlv	12	3	45	4	195
Moose Lake Community Hosp	Gen	Indlv	12	4	20	6	407
Morris 2,474—Stevens	Gen	Indlv	12	4	20	6	407
Morris Hospital	Gen	Indlv	12	4	20	6	407
Mountain Lake, 1,388—Cottonwood	Gen	Church	21	5	68	0	232
Bethel Hospital	Gen	Church	21	5	68	0	232
New Prague 1 543—Le Sueur	Gen	NPAasn	20	4	34	7	240
New Prague Community Hosp	Gen	NPAasn	20	4	34	7	240
New Ulm 7,300—Brown	Gen	Church	40	8	69	22	661
Loretto Hospital	Gen	Church	40	8	69	22	661
Union Hospital	Gen	NPAasn	50	10	84	20	815
Nopeming 334—St. Louis	TB	County	230			226	234
Nopeming Sanatorium*	TB	County	230			226	234
Northfield 4 153—Rice	Gen	City	10	4	29	4	137
Northfield City Hospital	Gen	City	10	4	29	4	137
Oak Terrace—Hennepin	TB	County	700			700	420
Glen Lake Sanatorium*	TB	County	700			700	420
Onigum, 19—Cass	Gen	I A	21	3			
Onigum General Hospital	Gen	I A	21	3			
Ortonville 2 017—Big Stone	Gen	Church	20	4	28	0	269
Ortonville Evangelical Hosp	Gen	Church	20	4	28	0	269
Owatonna, 7 604—Steele	Gen	City	40	0	124	22	811
Owatonna City Hospital	Gen	City	40	0	124	22	811
Paynesville 1 121—Stearns	Gen	Indlv	15	3	0	8	100
Paynesville Hospital	Gen	Indlv	15	3	0	8	100

Pupposky 63—Beltrami	TB	County	63			53	67
Lake Julia Tuberculosis Sanat	TB	County	63			53	67
Redlake 214—Beltrami	Gen	I A	23	6	68	17	738
Red Lake Indian Hospital	Gen	I A	23	6	68	17	738
Red Wing 9 621—Goodhue	Gen	City	38	6	62	26	830
Red Wing Hospital	Gen	City	38	6	62	26	830
St. John's Hospital	Gen	NPAasn	76	10	154	20	895
Redwood Falls 2,532—Redwood	Gen	Part	16	4	20	5	414
Redwood Falls Hospital	Gen	Part	16	4	20	5	414
Richmond 608—Stearns	Gen	Corp	10			4	288
Richmond Hospital	Gen	Corp	10			4	288
Rochester 20 621—Olmsted	Gen	Corp	270			178	6,716
Colonial Hospital	Gen	Corp	270			178	6,716
Rochester State Hospital	Ment	State	1 500			1,500	890
St. Mary's Hospital	Gen	Church	600	24	382	200	7 139
Worral Hospital	SkCaENT	Corp	191			76	5 428
Roseau, 1 028—Roseau	Gen	Indlv	15	2	10	6	315
Budd Hospital	Gen	Indlv	15	2	10	6	315
St. Cloud 21 000—Stearns	Gen	Church	181	30	280	110	2,479
St. Cloud Hospital	Gen	Church	181	30	280	110	2,479
Veterans Admin Facility	Ment	Vet	746			686	271
St. Paul 271 608—Ramsey	Gen	CyCo	1 000	60	1,314	760	9,070
Ancker Hospital*	Gen	Church	100	20	400	73	2,878
Bethesda Hospital*	Gen	Church	100	20	400	73	2,878
Charles T. Miller Hospital*	Gen	NPAasn	195	21	353	97	5,441

Key to symbols and abbreviations is on page 1091

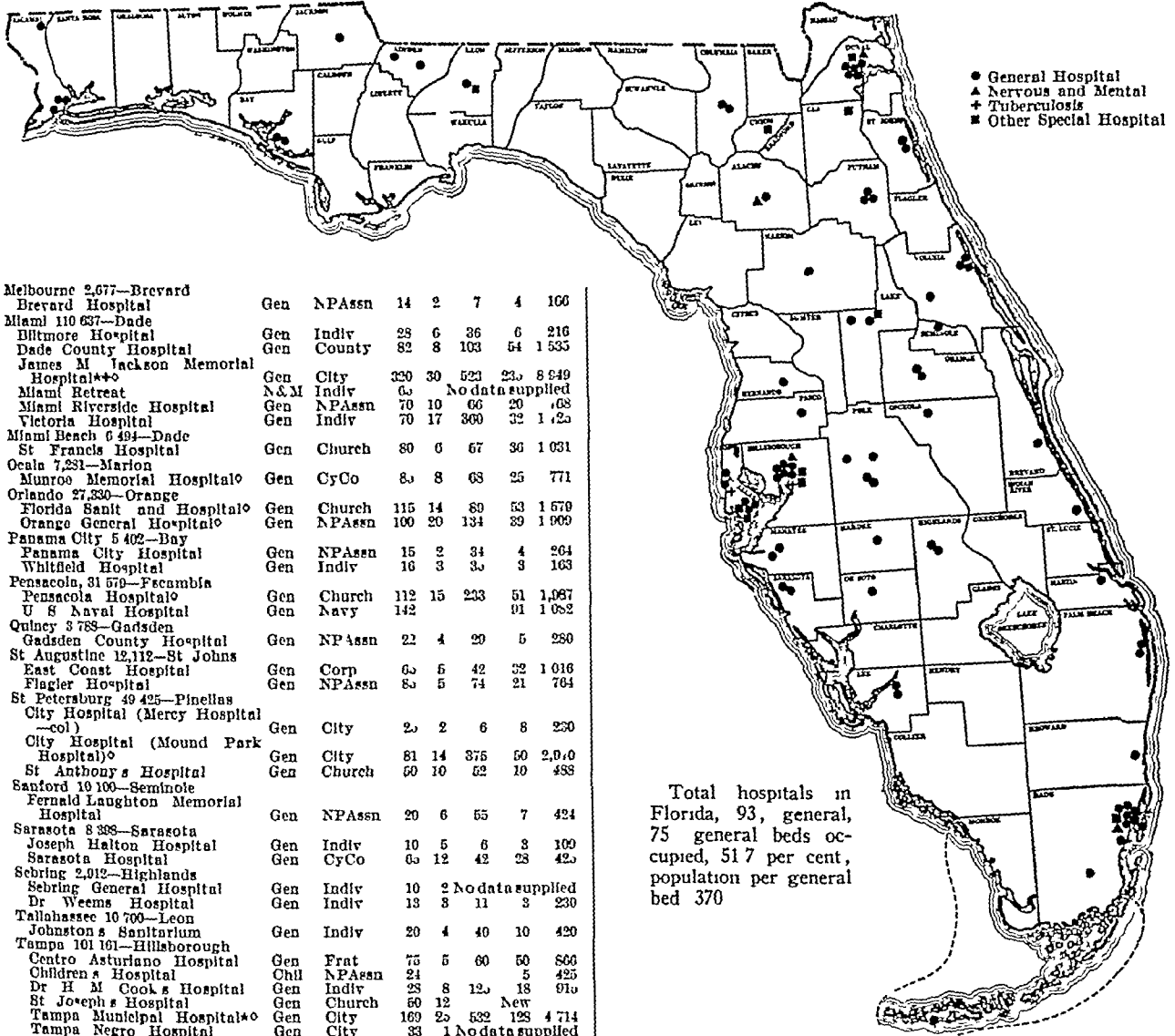
FLORIDA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated	Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Dr. Randolph's Sanitarium	N&M	Indiv	10				6	30
Riverdale Hospital ^o	Gen	Corp	40	0	50	21	862	
St. Luke's Hospital ^o	Gen	NP Assn	163	22	423	71	2,838	
St. Vincent's Hospital ^o	Gen	Church	200	40	410	88	2,913	
Key West 19831—Monroe								
U. S. Marine Hospital	Gen	USPHS	60			33	451	
Lake City 4416—Columbia	Gen	NP Assn	15	5	17	7	271	
Lake Shore Hospital	Gen	Vet	307			218	2,143	
Veterans Admin. Facility								
Lakeland 19,544—Polk								
Morrell Memorial Hospital	Gen	City	72	10	87	27	1,122	
Manatee 3210—Manatee	Gen	Indiv	30	3	20	5	325	
Riverside Hospital								
Marianna 3,372—Jackson								
Baltzell Hospital	Gen	Indiv	12	1	4	2	140	

FLORIDA—Continued

Related Institutions	Type of Service	Control	Beds Rated	Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Homestead 2,310—Dade								
Post Graduate Hospital	Gen	Part	10	4				
Jacksonville 129,549—Duval								
Hope Haven	Orth	NP Assn	21				19	122
Kissimmee 3163—Osceola								
Osceola Hospital	Gen	Indiv	15	4	2	9	350	
Largo 1429—Pinellas								
Pinellas County Home	TB	County	13					
Leesburg 4113—Lake								
Theresa Holland Clinic	Gen	Indiv	18	4	61	0	183	
Miami 110,637—Dade								
Christian Hospital (col.)	Gen	NP Assn	20	4	53	10	343	
Sun Ray Park Health Resort	Conv	Corp	70					
Orange Park 661—Clay								
Moosehaven Hospital	Inst	Frat	40				25	100

FLORIDA



Melbourne 2,677—Brevard	Gen	NP Assn	14	2	7	4	100	
Brevard Hospital								
Miami 110,637—Dade	Gen	Indiv	28	6	36	6	216	
Blithmore Hospital	Gen	County	82	8	103	54	1,533	
Dade County Hospital								
James M. Jackson Memorial Hospital ^o	Gen	City	320	30	523	230	8,249	
Miami Retreat	N&M	Indiv	60				No data supplied	
Miami Riverside Hospital	Gen	NP Assn	70	10	66	20	1,08	
Victoria Hospital	Gen	Indiv	70	17	360	32	1,120	
Miami Beach 6494—Dade								
St. Francis Hospital	Gen	Church	80	0	67	30	1,031	
Ocala 7,531—Marion								
Munroe Memorial Hospital ^o	Gen	CyCo	80	8	63	25	771	
Orlando 27,330—Orange								
Florida Sanit. and Hospital ^o	Gen	Church	115	14	80	53	1,670	
Orange General Hospital ^o	Gen	NP Assn	100	20	134	29	1,000	
Panama City 5402—Bay								
Panama City Hospital	Gen	NP Assn	15	2	34	4	264	
Whitfield Hospital	Gen	Indiv	16	3	30	3	163	
Pensacola 31,570—Escambia								
Pensacola Hospital ^o	Gen	Church	112	15	233	51	1,067	
U. S. Naval Hospital	Gen	Navy	142			01	1,082	
Quincy 3,788—Gadsden								
Gadsden County Hospital	Gen	NP Assn	22	4	20	5	280	
St. Augustine 12,112—St. Johns								
East Coast Hospital	Gen	Corp	60	5	42	32	1,016	
Flagler Hospital	Gen	NP Assn	80	5	74	21	764	
St. Petersburg 49,425—Pinellas								
City Hospital (Mercy Hospital—col.)	Gen	City	20	2	6	8	230	
City Hospital (Mound Park Hospital ^o)	Gen	City	81	14	375	50	2,000	
St. Anthony's Hospital	Gen	Church	60	10	52	10	433	
Sanford 10,100—Seminole								
Fernald Loughton Memorial Hospital	Gen	NP Assn	20	6	55	7	424	
Sarasota 8,308—Sarasota								
Joseph Halton Hospital	Gen	Indiv	10	5	6	3	100	
Sarasota Hospital	Gen	CyCo	60	12	42	23	420	
Sebring 2,912—Highlands								
Sebring General Hospital	Gen	Indiv	10	2	No data supplied			
Dr. Weems Hospital	Gen	Indiv	13	3	11	3	230	
Tallahassee 10,700—Leon								
Johnston's Sanitarium	Gen	Indiv	20	4	40	10	420	
Tampa 101,161—Hillsborough								
Centro Asturiano Hospital	Gen	Frat	75	5	60	50	566	
Children's Hospital	Chil	NP Assn	24			5	425	
Dr. H. M. Cook's Hospital	Gen	Indiv	23	8	120	18	910	
St. Joseph's Hospital	Gen	Church	60	12		New		
Tampa Municipal Hospital ^o	Gen	City	169	20	532	123	4,714	
Tampa Negro Hospital	Gen	City	33	1	No data supplied			
Umatilla 907—Lake								
Lake County Medical Center	Gen	NP Assn	25	6	33	9	433	
West Palm Beach 20,010—Palm Beach								
Good Samaritan Hospital ^o	Gen	NP Assn	110	14	122	38	1,400	
Pine Ridge Hospital (col.)	Gen	NP Assn	27	5	5	10	363	

Related Institutions

Brooksville 1400—Hernando								
Hernando General Hospital	Gen	NP Assn	12	2	No data supplied			
Daytona Beach 16,508—Volusia								
Daytona Beach Sanitarium	Gen	Indiv	10	1	16	2	62	
Ft. Myers 9,082—Lee								
Jones-Walker Hospital (col.)	Gen	NP Assn	10		No data supplied			
Gainesville 10,463—Alachua								
Florida Farm Colony for Epileptic and Feeble-minded	MeDe	State	530			520	17	

Palatka 6,600—Putnam								
Glendale Terrace Hospital	Gen	Part	16	4	No data supplied			
Mary Lawson Sanat (col.)	Gen	Indiv	25	0	10	4	60	
Parkview Hospital	Gen	Indiv	28	6	15	4	134	
Raiford 460—Union								
Florida State Farm Hospital	Inst	State	44				16	964
St. Petersburg 40,420—Pinellas								
American Legion Hospital for Crippled Children	Orth	State	30				16	91
Earle Restorium	Conv	Indiv	20				12	80
Stuart 1,924—Martin								
St. Lucie Sanitarium	Gen	County	10	3	0	6	136	

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MISSISSIPPI—Continued

REGISTERED HOSPITALS

MISSISSIPPI—Continued

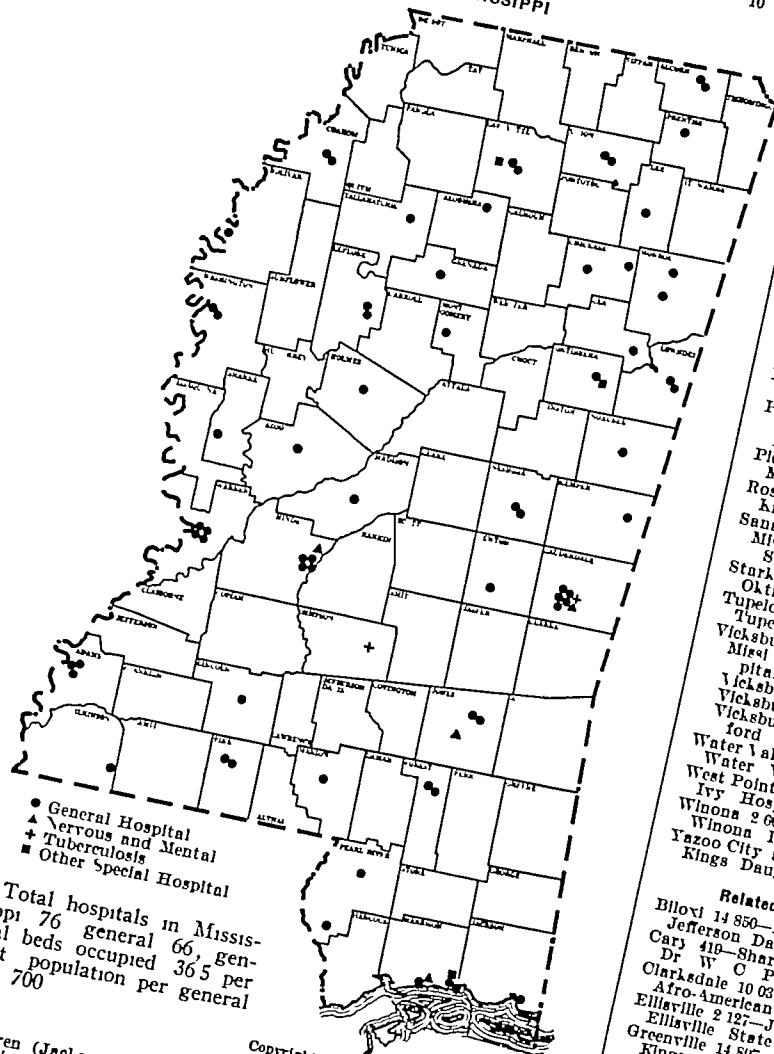
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MARCH 30 1935

Hospitals and Sanatoriums

Centerville 1,344—Wilkinson
Field Memorial Hospital
Charleston 2,014—Tallahatchie
Charleston Hospital
Clarksdale 10,034—Conhoma
Clarksdale Hospital
Columbia 4,833—Marion
Columbia Clinic Hospital
Columbus 10,743—Lowndes
Columbus Hospital
Fite Hospital
Corinth 6,250—Alcorn
Corinth Hospital
McRae Hospital
Electric Mills 1,084—Kemper
George C. Hixon Memorial
Hospital

Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Gen	Part	28	4	33	1.3	4.1
Gen	Indiv	10	2	6	3	1.0
Gen	NPAsn	19	5	50	5	642
Gen	Indiv	35	4	3.3	15	618
Gen	Indiv	22	3	16	6	721
Gen	Indiv	30	5	27	16	4.0
Gen	Indiv	12	3	17	3	204
Gen	NPAsn	60	5	19	11	323
Gen	Corp	50	0	50	10	307

MISSISSIPPI



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Hospitals and Sanatoriums

Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Gen	NPAsn	10	5	50	5	642
Gen	Indiv	35	4	3.3	15	618
Gen	Indiv	22	3	16	6	721
Gen	Indiv	30	5	27	16	4.0
Gen	Indiv	12	3	17	3	204
Gen	NPAsn	60	5	19	11	323
Gen	Corp	50	0	50	10	307
Gen	Indiv	20	2	12	7	403
Gen	Indiv	20	2	9	7	211
Gen	Indiv	28	4	48	11	803
Gen	Indiv	25	2	20	10	575
Gen	Indiv	45	5	48	9	567
Gen	Indiv	90	10	74	50	1,000
Gen	Indiv	55	12	50	10	820
Gen	Indiv	50	6	3.3	12	492
Gen	Indiv	50	6	52	13	808
Gen	Indiv	50	7	75	20	900
Gen	Indiv	110	6	153	42	1,673
Gen	Indiv	50	6	26	14	678
Gen	Indiv	30	2	2	9	634
Gen	Indiv	12	2	2	7	362
Gen	Indiv	2.3	3	2.3	3	238
Gen	Indiv	30	5	17	12	82
Gen	Indiv	2.3	4	2.3	11	301
Gen	Indiv	23	9	41	18	700
Gen	Indiv	9	4	24	4	380
Gen	Indiv	24	2	2	2	101
Gen	Indiv	10	2	12	3	101
Gen	Indiv	480				310
Gen	Indiv	20	2	10	5	251
Gen	Indiv	3.3	2	63	10	510
Gen	Indiv	8.3	5	220	68	2,175
Gen	Indiv	50	6	32	18	1,162
Gen	Indiv	70	5	55	42	1,800
Gen	Indiv	75	6	50	32	1,400
Gen	Indiv	2.3	4	8	0	241
Gen	Indiv	2.3	6	30	12	3.6
Gen	Indiv	40	2	21	12	410
Gen	Indiv	30	4	20	5	382
Gen	Indiv	60				7
Gen	Indiv	7				1
Gen	Indiv	12				50
Gen	Indiv	208				60
Gen	Indiv	6.3				2.3
Gen	Indiv	12				26
Gen	Indiv	12				4
Gen	Indiv	47				68
Gen	Indiv	10				35
Gen	Indiv	20				50
Gen	Indiv	44				5
Gen	Indiv	17				10

Related Institutions

Biloxi 14,850—Harrison	Gen	State	60			
Cary 419—Sharkey	Gen	Indiv	7			5
Clarkdale 10,034—Conhoma	Gen	Indiv	12			50
Ellaville 2,127—Jones	Gen	Indiv	208			60
Greenville 14,807—Washington	Gen	Indiv	6.3			2.3
Kings Daughters Hosp (col)	Gen	Indiv	12			4
Greenwood 11,123—Leflore	Gen	Indiv	47			68
Meridian 31,054—Lauderdale	Gen	Indiv	10			35
Kings Daughters Tuberculosis	Gen	Indiv	20			50
Okolona 2,235—Chickasaw	Gen	Indiv	44			5
Wicks Hospital	Gen	Indiv	17			10
Poplarville 1,498—Pearl River	Gen	Indiv	30			35
Pearl River County Hospital	Gen	Indiv	10			1
State College 300—Oktibbeha	Gen	Indiv	20			2
James Z. George Memorial	Gen	Indiv	44			5
Hospital	Gen	Indiv	17			10
University of Mississippi Hosp	Gen	Indiv	44			5
University of Mississippi Hosp	Gen	Indiv	17			10

Summary for Mississippi

Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted
Refused registration	65	7,340	5,352	48,300
	11	592	365	1,302
	76	7,934	5,717	49,602

Key to symbols and abbreviations is on page 1091

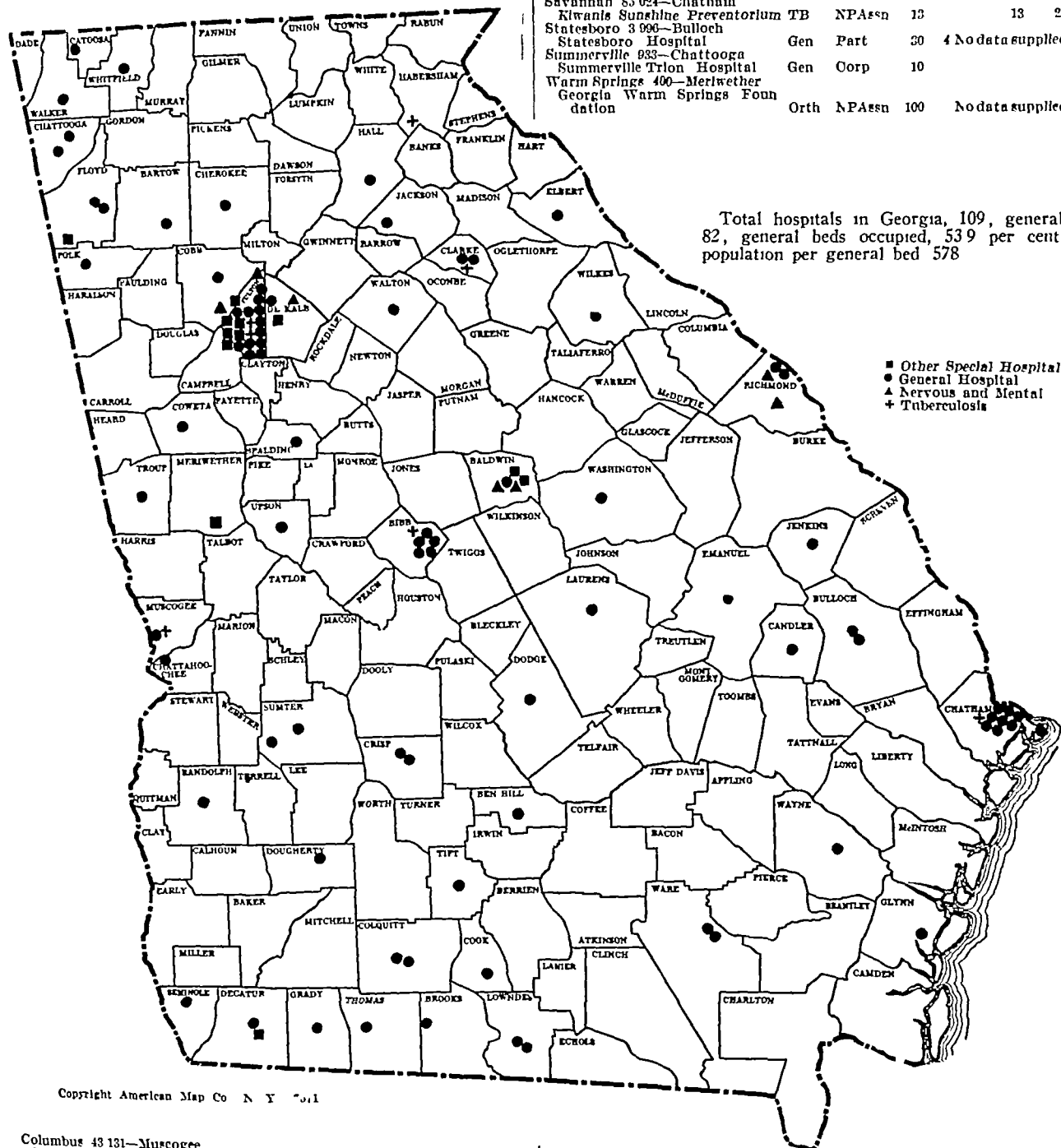
GEORGIA—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Darwick 409—Brooks							
Sanchez Private Sanitarium	Gen	Indiv	15	2	12	7	6.0
Cartersville 5,250—Bartow							
Dr Lowry's Emergency Hosp	Gen	Indiv	8	4	No data supplied		
Cave Spring, 723—Floyd							
Georgia School for the Deaf	Inst	State	30			4	200

GEORGIA—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
La Fayette 2800—Walker							
La Fayette Sanitarium	Gen	Indiv	10	2	6	2	104
Milledgeville 5534—Baldwin							
Georgia State Penitentiary Gen	Inst	State	60		No data supplied		
eral Hospital							
Georgia State Penitentiary Tu	Inst	TB State	7		65		184
bercular Hospital							
Moultrie 8027—Colquitt							
Daniel Emergency Sanitarium	Gen	Indiv	10	2	8	4	170
Savannah 8024—Chatham							
Kiwanis Sunshine Preventorium	TB	NPAasn	13			13	23
Statesboro 3096—Bulloch							
Summersboro Hospital	Gen	Part	30	4	No data supplied		
Summersville 837—Chattooga							
Summersville Trilon Hospital	Gen	Corp	10				
Warm Springs 400—Meriwether							
Georgia Warm Springs Found	Orth	NPAasn	100		No data supplied		
dation							

GEORGIA



Total hospitals in Georgia, 109, general 82, general beds occupied, 53.9 per cent, population per general bed 578

■ Other Special Hospital
● General Hospital
▲ Nervous and Mental
+ Tuberculosis

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Columbus 43131—Muscogee
Muscogee County Tuberculosis
Sanatorium TB County 30
Cordele 6,830—Crisp
Cordele Sanatorium Gen Corp 11 2 99
Gillespie Hospital (col) Gen Church 14 1 5 3 1.6
Gracewood 91—Richmond
Georgia Training School for
Mental Defectives MeDe State 2.6 2.6 20

Summary for Georgia

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	87	13,165	10,240	104,947
Related institutions	22	896	617	5,386
Totals	109	14,061	10,857	110,333
Refused registration	1	14		

Key to symbols and abbreviations is on page 1091

MISSOURI—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Kansas City Tuberculosis Hospital	TB	City	168			160	198
Menorah Hospital*	Gen	NPAasn	144	23	296	61	2,394
Ralph Sanitarium	Drug	Indiv	22			6	120
Research Hospital*	Gen	NPAasn	205	20	288	100	3,613
Robinson Neuropsychiatric Clinic	N&M	NPAasn	50			20	133
St Joseph Hospital*	Gen	Church	230	26	296	112	3,784
St Luke's Hospital*	Gen	Church	208	26	426	89	3,042
St Mary's Hospital*	Gen	Church	160	16	240	107	2,990
St Vincent's Maternity Hosp	Mat	Church	42	30	330	12	350
Simpson Major Sanitarium	N&M	Part	35			17	149
Trinity Lutheran Hospital*	Gen	Church	125	24	320	64	1,916
Vineyard Park Hospital	Surge	Indiv	35		No data supplied		
Wesley Hospital	Gen	NPAasn	92	10	85	23	845
Wheatley Provident Hospital (col)*	Gen	Corp	67	1	7	22	427
Willows Maternity Sanitarium	Mat	ChIndiv	75	75	127	33	164
Kirksville 8293—Adair	Gen	Corp	40	2	16	14	537
Grim Smith Hospital and Clinic	Gen	Indiv	25	3	35	8	385
Stickler Hospital	Gen	Indiv	25	3	35	8	385
Lebanon 3562—Laclede	Gen	NPAasn	24	4		New	
Louise G Wallace Hospital	Gen	NPAasn	24	4		New	
Louisiana 3540—Pike	Gen	County	50	11	25	0	450
Pike County Hospital	Gen	County	50	11	25	0	450
Macon 3,851—Macon	Gen	County	50	11	25	0	450
Samaritan Hospital	Gen	Indiv	25	6	No data supplied		
Marcelline 3556—Linn	Gen	Indiv	15	3	12	7	850
B B Putnam Memorial Hosp	Gen	Indiv	15	3	12	7	850
Marshall 8103—Saline	Gen	NPAasn	40	5	35	9	435
John Fitzgibbon Memorial Hospital	Gen	NPAasn	40	5	35	9	435
Maryville 5217—Nodaway	Gen	Church	50	6	83	17	517
St Francis Hospital*	Gen	Church	50	6	83	17	517
Moberly 13772—Randolph	Gen	Indiv	40	5	30	13	455
McCormick Hospital	Gen	Indiv	40	5	30	13	455
Wabash Employee's Hospital	Indus	NPAasn	50				
Woodland Hospital	Gen	Corp	35	5	23	15	510
Monett, 4,000—Barry	Gen	Indiv	18	4	12	4	150
Dr William M West's Hospital	Gen	Indiv	18	4	12	4	150
Mt Vernon 1,342—Lawrence	Gen	Indiv	18	4	12	4	150
Missouri State Sanatorium	TB	State	405			334	406
Neosho 4,485—Newton	Gen	Indiv	11	3	85	6	843
Sale Hospital	Gen	Indiv	11	3	85	6	843
Nevada, 7,448—Vernon	Gen	Indiv	12	3	11	4	124
Nevada Medical and Surgical Sanitarium	Gen	Indiv	12	3	11	4	124
State Hospital No 3	Ment	State	1,704			1,614	324
Pine Lawn—St Louis	Gen	Indiv	20	9	30	10	125
Thornon Hospital and Clinic	Gen	Indiv	20	9	30	10	125
Poplar Bluff 7,551—Butler	Gen	Indiv	40	4	20	10	500
Brandon Hospital	Gen	Corp	23	6	14	18	600
Robertson 714—St Louis	TB	NPAasn	80			75	50
Jewish Sanatorium	TB	NPAasn	80			75	50
Rolla 3,610—Phelps	Gen	Indiv	40	10	71	30	730
Rolla Hospital	Gen	Indiv	40	10	71	30	730
U S Trachoma Hospital	Frach	USPHS	34			24	283
St Charles 10,491—St Charles	Gen	Church	50	7	73	30	1,070
St Joseph's Hospital	Gen	Church	50	7	73	30	1,070
St James 1,294—Phelps	Gen	Indiv	17	7	18	10	175
St James Hospital	Gen	Indiv	17	7	18	10	175
St Joseph 80,035—Buchanan	Gen	Indiv	30			11	50
Dr Byrd's Sanitarium	N&M	Indiv	30			11	50
Missouri Methodist Hospital*	Gen	Church	200	20	323	108	4,520
St Joseph's Hospital*	Gen	Church	125	16	251	76	2,315
State Hospital No 2*	Ment	State	2,430			2,416	557
St Louis 821,900—St Louis City	Gen	Church	250			109	1,577
Alexian Brothers Hospital*	Gen	Indiv	35	12	60	14	1,382
American Hospital	Gen	Indiv	35	12	60	14	1,382
Barnard Free Skin and Cancer Hospital*	SkCa	NPAasn	44			37	744
Barnes Hospital*	Gen	Church	270			200	6,590
Bethesda General Hospital*	Gen	NPAasn	105	15	188	80	882
Central Hospital	Gen	NPAasn	32	10	170	25	743
Christian Hospital*	Gen	NPAasn	104	25	223	63	1,610
City Isolation Hospital*	TbIs	City	230			6	102
City Sanitarium*	Ment	City	3,460			3,402	722
De Paul Hospital*	Gen	Church	250	35	608	140	4,098
Evangelical Deaconess Home and Hospital*	Gen	Church	150	30	414	105	3,882
Firmen Desloge Hospital*	Gen	Church	226	24	1	171	3,072
Frisco Employee Hospital	Indus	NPAasn	100			50	1,223
Jewish Hospital*	Gen	NPAasn	207	33	381	140	4,231
Josephine Heitkamp Memorial Hospital	Gen	Church	35	7	74	12	531
Lutheran Hospital*	Gen	Church	150	30	350	68	3,070
Missouri Baptist Hospital*	Gen	Church	409	41	290	184	4,656
Missouri Pacific Hospital	Indus	NPAasn	300			111	3,400
Mt St Rose Sanatorium*	TB	Church	135			120	208
Peoples Hospital (col)	Gen	Corp	50	6	14	22	324
Robert Koch Hospital*	TB	City	500			493	336
St Ann's Lying In Hospital	Mat	Church	45	85	462	20	515
St Anthony's Hospital*	Gen	Church	200	50	711	97	3,167
St John's Hospital*	Gen	Church	252	34	419	102	5,246
St Louis Children's Hosp +0	Chil	NPAasn	203			139	3,568
St Louis City Hospital*	Gen	City	750	56	1,571	502	21,504
St Louis City Hospital No 2 (col)*	Gen	City	300	40	587	296	7,108
St Louis Maternity Hosp +0	Mat	NPAasn	88	18	1,559	54	1,850
St Luke's Hospital*	Gen	Church	178	32	493	117	3,445
St Mary's Hospital*	Gen	Church	315	40	546	195	4,422
St Mary's Infirmary (col)	Gen	Church	122	24	169	90	1,583
St Vincent's Sanitarium	N&M	Church	300			222	155

MISSOURI—Continued

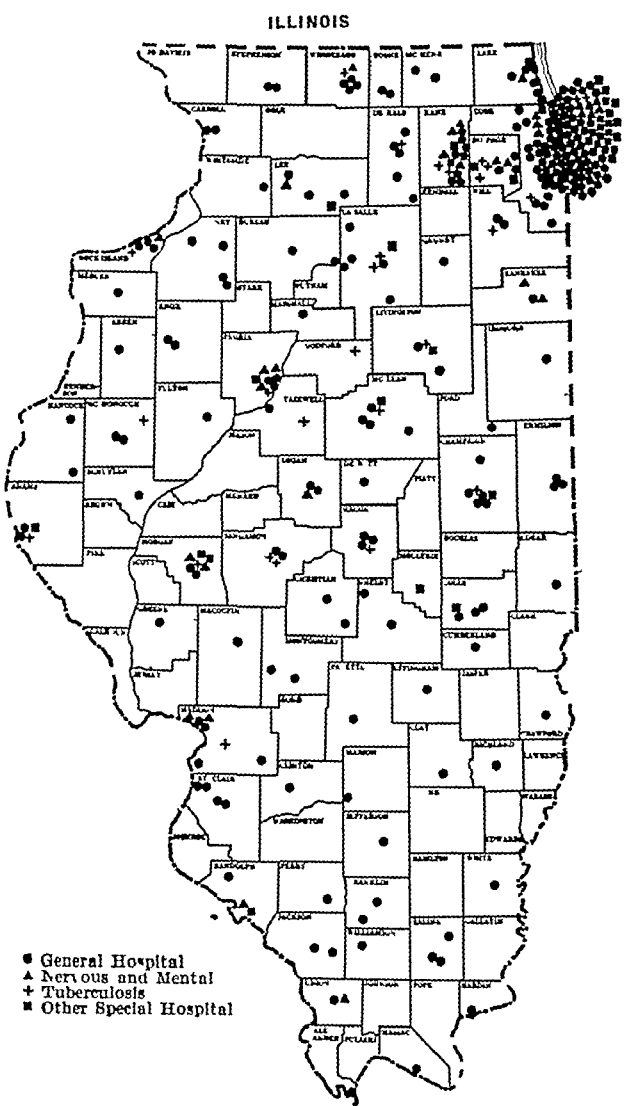
Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Shriners Hospital for Crippled Children*	Orth	Gen	100			110	424
U S Marine Hospital	Gen	Frat	100			79	625
Sedalia 20,800—Pettis	Gen	USPHS	100				
John H Bothwell Memorial Hospital	Gen	City	120	12	77	26	885
Springfield 57,527—Greene	Gen	Church	85	10	69	10	628
Burge Hospital*	Gen	Church	100	12	246	62	2,370
St John's Hospital*	Gen	Church	88	12	103	50	1,810
Springfield Baptist Hospital*	Gen	Corp					
U S Hospital for Defective Delinquents	Ment	Fed	705			185	347
Stella 228—Newton	Gen	Indiv	20	4			
O Cardwell Hospital	Gen	Indiv	20	2	4	6	170
Trenton 6,092—Grundy	Gen	Indiv	15	4	6	6	170
Cullers Hospital	Gen	Indiv	15	4	6	6	170
Wright Hospital	Gen	Indiv	15	4	6	6	170
Washington 5,018—Franklin	Gen	Church	30	6	70	20	707
St Francis Hospital	Gen	Church	30	6	70	20	707
Webb City 6,870—Jasper	Gen	Indiv	18	2	7	6	209
Jasper County Tuberculosis Hospital	TB	County	103			102	110
Webster Groves 16,487—St Louis	N&M	Corp	45			22	52
Glenwood Sanatorium	N&M	Corp	45			22	52
West Plains 3,335—Howell	Gen	Indiv	18	2	7	6	209
Christa Hogan Hospital	Gen	Indiv	18	2	7	6	209
Related Institutions							
Diamond 516—Newton	Gen	Indiv	8		12	2	72
Dr Riley F Cheatham's Hosp	Gen	Indiv	8		12	2	72
Highlandsville 3,330—Lafayette	Inst	State	50			No data supplied	
Confederate Home Hospital	Inst	State	50			No data supplied	
Independence 15,206—Jackson	N&M	Corp	18				
Vale Sanitarium	N&M	Corp	18				
Jefferson City 21,506—Cole	Inst	State	70				623
Missouri State Penitentiary	Inst	State	70				623
Kansas City 309,740—Jackson	Inst	Corp	35			12	32
Baptist Hospital	Inst	Corp	35			12	32
Florence Crittenton Home	Mat	NPAasn	14	14			
Florence Crittenton Home (col)	Mat	NPAasn	15	10	43		90
Trowbridge Training School for Nervous and Backward Children	MeDe	Indiv	25			17	19
Liberty 3,516—Clay	Inst	Frat	85			72	250
Missouri Odd Fellows Home	Inst	Frat	85			72	250
Marshall 8,103—Saline	MeDe	State	1,163			1,098	92
Missouri State School—Epilepsy and Feeble-minded	MeDe	State	1,163			1,098	92
Marthasville 394—Warren	MeDe	Church	125			101	14
Evangelical Emmaus Home for Epileptics and Feeble-minded	MeDe	Church	125			101	14
Mountain Grove 2,229—Wright	Gen	Indiv	7	1	6	2	60
Ryan Hospital	Gen	Indiv	7	1	6	2	60
Ozark 883—Christian	Gen	Indiv	12			No data supplied	
Ozark Sanitarium	Gen	Indiv	12			No data supplied	
Paris 1,301—Monroe	Gen	Indiv	8	1	No data supplied		
McMurry Hospital	Gen	Indiv	8	1	No data supplied		
Parkville 630—Platte	Inst	NPAasn	22			1	300
Waverly Hospital	Inst	NPAasn	22			1	300
Pomona 337—Howell	Gen	Indiv	15	3	0	4	162
Pomona Hospital	Gen	Indiv	15	3	0	4	162
Rogersville 461—Webster	Gen	Indiv	5	2	4	1	18
Rogersville Hospital	Gen	Indiv	5	2	4	1	18
Rolla 3,670—Phelps	Inst	State	11			1	93
Missouri School of Vines Hosp	Inst	State	11			1	93
St Charles 10,491—St Charles	MeDe	Church	142			127	17
Evangelical Emmaus Home for Epileptics and Feeble-minded	MeDe	Church	142			127	17
St James 1,294—Phelps	Inst	State	49				
State Federal Soldiers Home	Inst	State	49				
St Joseph 80,035—Buchanan	TbIs	City	27			13	190
Sunnyslope Hospital	TbIs	City	27			13	190
St Louis 821,900—St Louis City	Inst	City	90			90	422
City Infirmary	Inst	City	123			90	422
Hospital of Masonic Home	Inst	Frat	85			50	150
Night and Day Rest Camp	Conv	NPAasn	85			50	150
St Louis Training School	MeDe	City	508			500	45
Salvation Army Women's Home and Hospital	Mat	Church	65	10	60	49	105
Sedalia 20,800—Pettis	Gen	City	12	2	1	3	61
City Hospital No 2 (col)	Gen	City	12	2	1	3	61
Springfield 57,527—Greene	ENT	Corp	14			6	1,900
Anderson Home Infirmary	ENT	Corp	14			6	1,900
Greene County Tuberculosis Sanatorium	TB	County	15			15	21
Warrensburg 5,146—Johnson	Gen	Indiv	8	2	10	1	78
Oak Hill Sanitarium	Gen	Part	10			8	72
Warrensburg Clinic	Gen	Part	10			8	72
Webster Groves 16,487—St Louis	Conv	Frat	30			18	301
Miriam Convalescent Home	Conv	Frat	30			18	301
West Plains 3,335—Howell	Gen	Indiv	7	8	17	2	63
Cottage Hospital	Gen	Indiv	7	8	17	2	63
Summary for Missouri							
Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted			
Related institutions	121	24,673	10,263	183,717			
	33	2,953	2,456	5,774			
Totals	154	27,626	21,719	189,491			
Refused registration	24	1,226					

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated	Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Berwyn 47 027—Cook	Gen	NPAasn	75	18	273	23	1 464	
Berwyn Hospital								
Bloomington 20 030—McLeun	Gen	Church	78	11	166	42	1 269	
Memnonite Hospital*	Gen	Church	50	20	297	130	3 014	
St Joseph Hospital*								
Blue Island 16 534—Cook	Gen	Church	80	15	200	20	1 180	
St Francis Hospital								
Breeze 19 97—Clinton	Gen	Church	20	3	13	10	334	
St Joseph Hospital								
Bushnell 2 530—McDonough	TB	County	30			28	83	
Elmhurst Sanatorium								
Calto 13 832—Alexander	Gen	Church	100	0	54	30	891	
St Mary's Hospital*								
Canton 11 718—Fulton	Gen	NPAasn	48	8	133	27	1 333	
Graham and Murphy Hospital*								
Carbondale 7 528—Jackson	Gen	Church	60	5	70	15	578	
Holden Memorial Hospital*								
Carlinville 4 144—Macoupin	Gen	Indiv	20	0	52	10	480	
Macoupin Hospital								
Carmi 2 632—White	Gen	Corp	10	2	3	3	120	
Carmi Hospital								
Centralia 12 683—Marion	Gen	Church	40	4	54	10	767	
St Mary's Hospital								
Champaign 20 342—Champaign	Gen	City	74	17	244	41	2 415	
Burnham City Hospital*								
Charleston 8 012—Coles	Gen	NPAasn	21	4	21	8	301	
M A Montgomery Memorial								
Sanatorium	Gen	Indiv	23	4	11	5	210	
Oakwood Hospital								
Chicago 3 376 438—Cook								
Albert Merritt Billings Hospital (Medical and Surgical Department of University of Chicago Clinics)	Gen	Church	206	20	120	68	3 014	
Alexian Brothers Hospital*	Gen	NPAasn	150	24	180	24	1 021	
American Hospital*	Gen	Corp	100	24	180	24	1 021	
Auburn Park Hospital	Gen	Church	350	20	418	144	4 353	
Augustana Hospital**	Gen	Corp	100	30	800	43	2 318	
Belmont Hospital*	Gen	Church	14	2	16	9	215	
Bethany Home Hospital	Gen	Church	34	16	147	10	823	
Bethany Sanit and Hosp*	Gen	Children (Pediatric Department of University of Chicago Clinics)	40	6	No data supplied			
Bobs Roberts Memorial Hospital for								
Barrows Hospital	Gen	Indiv	40	6	No data supplied			
Chicago Eye, Ear, Nose and Throat Hospital	FNT	Corp	75			4	841	
Chicago Fresh Air Hospital	TB	NPAasn	100			21	57	
Chicago Lying in Hospital and Dispensary*	Mat	NPAasn	102	160	9 076	97	3 742	
Chicago Memorial Hospital*	Gen	NPAasn	88	20	224	45	1 809	
Chicago Polyclinic (see Henrotin Hospital)								
Chicago State Hospital*	Ment	State	4 113	4	3 445	1 644		
Children's Memorial Hosp**	Chil	NPAasn	204			160	3 080	
City of Chicago Municipal Tuberculosis Sanitarium*	TB	City	1 200			1 120	1 720	
Columbus Hospital*	Gen	Church	160	22	222	80	3 100	
Cook County Children's Hospital (Included in Cook County Hospital)	Gen	County	3 300	222	4 576	2 756	73 068	
Cook County Hospital*								
Cook County Psychopathic Hospital*	N&M	County	85			30	127	
Edgewater Hospital*	Gen	Corp	120	20	392	67	2 510	
Englewood Hospital*	Gen	NPAasn	103	30	305	54	2 410	
Evangelical Deaconess Hosp*	Gen	Church	66	20	115	24	699	
Frangelical Hospital*	Gen	Church	200	60	802	93	4 230	
Frances E Willard Hospital*	Gen	NPAasn	115	25	589	65	3 038	
Franklin Boulevard Hospital*	Gen	Corp	60	20	188	44	1 654	
Garfield Park Community Hospital*	Gen	NPAasn	150	32	445	63	3 175	
Grant Hospital*	Gen	NPAasn	231	40	648	96	3 575	
Henrotin Hospital*	Gen	NPAasn	75	8	75	34	1 622	
Holy Cross Hospital*	Gen	Church	85	24	608	64	2 624	
Hospital of St Anthony de Padua*	Gen	Church	200	40	686	107	3 630	
Illinois Central Hospital*	Gen	Corp	255	21	305	120	3 460	
Illinois Eye and Ear Infirmary*	FNT	State	200			178	5 272	
Illinois Masonic Hospital*	Gen	Frat	169	20	274	65	2 376	
Jackson Park Hospital*	Gen	NPAasn	220	33	450	61	3 040	
John B Murphy Hospital*	Gen	Church	100	20	377	69	1 662	
Lake View Hospital*	Gen	Corp	110	30	197	41	1 781	
La Rabida Jackson Park Sanatorium	CardCh	NPAasn	66			30	127	
Lewis Memorial Maternity Hospital	Mat	Church	114	114	2 161	67	2 474	
Lutheran Deaconess Home and Hospital*	Gen	Church	174	42	466	75	3 114	
Lutheran Memorial Hosp*	Gen	Church	175	30	327	52	1 991	
Martha Washington Hospital	Gen	NPAasn	53	12	69	23	605	
Mercy Hospital*	Gen	Church	360	30	323	156	4 770	
Michael Reese Hospital**	Gen	NPAasn	558	71	1 443	302	11 024	
Misericordia Hospital and Home for Infants*	MatCh	Church	17	26	374	9	350	
Mother Cabrini Memorial Hospital*	Gen	Church	150	18	205	62	3 073	
Mt Sinai Hospital*	Gen	NPAasn	160	44	864	101	4 526	
Municipal Contagious Disease Hospital*	Iso	City	488			278	3 832	
Nancy Adele McElwee Memorial and Gertrude Dunn Hilda Memorial Hospital (Orthopedic Department of University of Chicago Clinics)	Gen	Indiv	14	2	7	6	225	
Nelson Morris Hospital (Included in Michael Reese Hospital)	Gen	NPAasn	148	32	526	70	2 844	
North Avenue Hospital	N&M	Corp	50			28	230	
Norwegian American Hosp**	Gen	NPAasn	300	43	433	66	3 542	
Parasavant Memorial Hosp**	Gen	Indiv	54	4	9	9	488	
Peoples Hospital	N&M	NPAasn	60			20	145	
Pine Sanitarium								
Post Graduate Hospital and Medical School	Gen	NPAasn	80	3	15	13	670	
Presbyterian Hospital**	Gen	Church	412	60	680	241	8 685	

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated	Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Provident Hospital (col)**	Gen	NPAasn	133	22	347	76	2 491	
Ravenswood Hospital*	Gen	NPAasn	150	48	777	81	3 007	
Research and Educational Hospital*	Gen	State	357	20	376	348	6 010	
Roseland Community Hosp**	Gen	Corp	101	32	502	53	2 832	
St Anne's Hospital*	Gen	Church	235	60	1 000	139	5 188	
St Bernard's Hospital*	Gen	Church	200	30	513	90	5 292	
St Elizabeth Hospital*	Gen	Church	263	40	716	155	3 740	
St Joseph Hospital*	Gen	Church	150	35	448	74	2 573	
St Luke's Hospital**	Gen	NPAasn	627	32	687	236	9 000	
St Mary of Nazareth Hosp**	Gen	Church	162	38	538	120	3 418	



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Total hospitals in Illinois, 320, general, 219, general beds occupied, 589 per cent, population per general bed, 283

St Vincent's Infant and Maternity Hospital*	MatCh	Church	41	10	112	11	124	
Sarah Morris Hospital for Children (Included in Michael Reese Hosp)								
Shriners Hospital for Crippled Children	Orth	Frat	60			60	200	
South Chicago Community Hospital*	Gen	NPAasn	69	15	147	18	836	
South Shore Hospital*	Gen	Corp	100	25	447	40	1 823	
Surgical Institute for Crippled Children (Included in Research and Educational Hospital)								
Swedish Covenant Hospital*	Gen	Church	167	42	556	54	2 180	
U S Marine Hospital*	Gen	USPHS	186			158	1 195	
University Hospital*	Gen	Corp	100	21	109	36	1 394	
University of Chicago Clinics**	Gen	NPAasn	262			177	5 061	
Washington Boulevard Hospital*	Gen	NPAasn	100	10	93	46	1 612	

MONTANA—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Twain Bridges 671—Madison State Orphans Home Hospital Inst	State	State	25	6		2	180
White Sulphur Springs 575—Meagher McKay Hospital	Gen	Indiv	10	5	22	2	194
Summary for Montana							
Hospitals and sanatoriums	44		4 688		3 219		87,160
Related institutions	10		787		606		1,422
Totals	54		5 475		3,825		88 582
Refused registration	6		106				

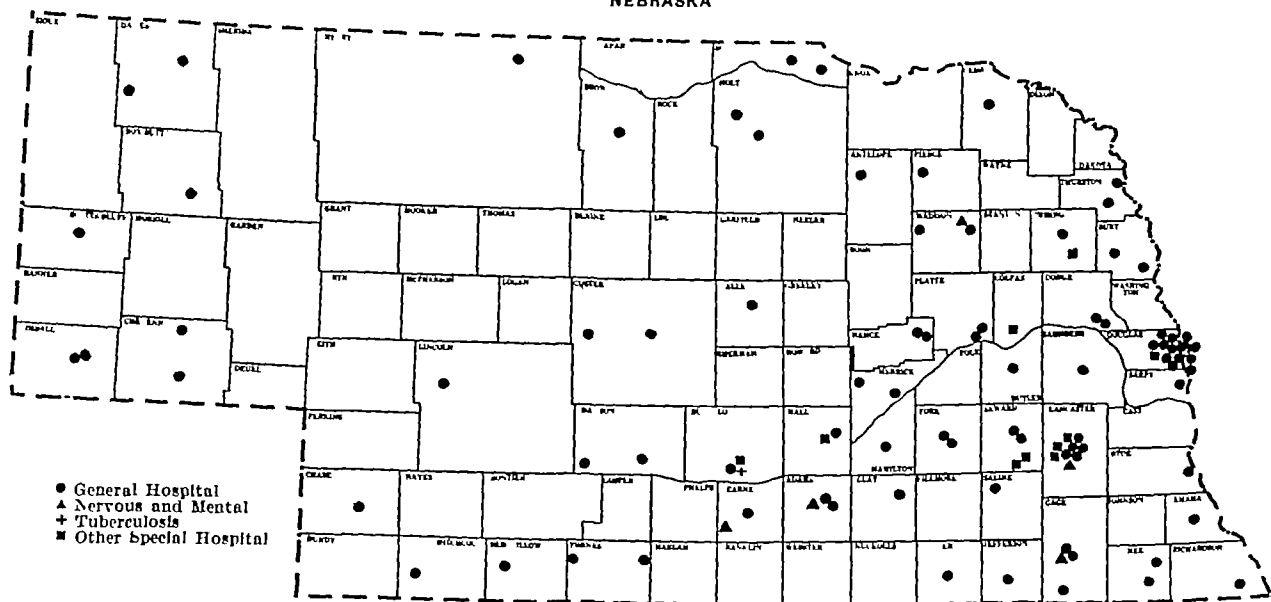
NEBRASKA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Ainsworth 1,378—Brown Ainsworth Hospital	Gen	Indiv	25	3	80		401
Alliance 6 689—Box Batt. St. Joseph's Hospital	Gen	Church	112	12	81	50	1 228
Arnold 899—Custer Arnold Hospital	Gen	Indiv	17	2	No data supplied		

NEBRASKA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Imperial 946—Chase Imperial Community Hospital	Gen	NP Assn	12	4	25	4	123
Ingleside, 30—Adams Hastings State Hospital	Ment	State	1 600			1 408	213
Kearney 8 575—Buffalo Good Samaritan Hospital	Gen	Church	61	10	75	15	723
Hospital for the Tuberculous Lincoln 75 933—Lancaster Bryan Memorial Hospital	Gen	Church	100	14	203	66	1,841
Green Gables Dr. Benj. F. Bailey Sanatorium	Gen	Corp	110	4	23	65	602
Lincoln General Hospital	Gen	City	145	20	291	75	2 458
Lincoln State Hospital	Ment	State	1,200			1 230	206
Nebraska Orthopedic Hospital	Orth	State	110			94	571
St. Elizabeth's Hospital	Gen	Church	170	20	240	107	3,479
Veterans Admin. Facility Lynch 498—Boyd Sacred Heart Hospital	Gen	Vet	197			184	857
McCook 6 688—Redwillow St. Catherine of Senna Hosp	Gen	Church	25	3	6	3	185
Minden 1 716—Kearney Seeley Hospital	Gen	Church	60	10	50	19	750
Nebraska City 7 230—Otoe St. Mary's Hospital	Gen	Indiv	20	6	51	8	317
Norfolk 10 717—Madison Norfolk State Hospital	Gen	Church	30	10	153	18	906
Verges Sanatorium	Ment	State	1 044			1 019	184
Oakland 1 433—Burt Oakland Community Hospital	Gen	Indiv	30	3		8	153
	Gen	Indiv	12	3	21	3	142

NEBRASKA



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Total hospitals in Nebraska, 102 general, 87, general beds occupied, 52.2 per cent, population per general bed, 319

Auburn 3 065—Nemaha Auburn Hospital	Gen	Indiv	9	4	10	3	172
Aurora 2,715—Hamilton Aurora Hospital	Gen	Part	16	0	18	6	214
Beatrice 10 297—Gage Beatrice Sanatorium	Gen	Indiv	25	5	10	7	193
Lutheran Hospital	Gen	Church	65	11	104	10	567
Broken Bow 2 715—Custer Broken Bow Hospital	Gen	Indiv	30	4	13	8	192
Cambridge 1 203—Furnas Republican Valley Hospital	Gen	Indiv	25	2	10	2	118
Chadron 4 606—Dawes Chadron Municipal Hospital	Gen	City	21	7	18	6	239
Columbus 6,898—Platte Columbus Hospital	Gen	NP Assn	25	4	64	14	530
St. Mary's Hospital	Gen	Church	120	10	93	62	1,247
David City 2,335—Butler David City Hospital	Gen	NP Assn	13	3	23	4	267
Fairbury 6 492—Jefferson Taylor Hospital	Gen	Indiv	20	2	9	8	94
Falls City 5,787—Richardson Falls City Hospital	Gen	Indiv	30	10	20	7	315
Ft. Crook 719—Sarpy Station Hospital	Gen	Army	50				637
Genoa 1 058—Nance Genoa Hospital	Gen	Indiv	10	4	22	5	68
Grand Island 18 041—Hall St. Francis Hospital	Gen	Church	136	10	138	40	1 571
Hartington 1 560—Cedar St. John's Hospital	Gen	Indiv	16	4	4	10	100
Hastings 15 400—Adams Mary Lanning Memorial Hosp	Gen	NP Assn	80	15	210	54	1,890

Omaha 214 000—Douglas Bishop Clarkson Memorial Hos	Gen	Church	100	8	135	71	1,047
pital	Gen	Church	357	33	488	176	5,277
Creighton Memorial St. Joseph's Hospital	Gen	Church	400	12	121	330	2,830
Douglas County Hospital	Gen	Church	113	12	192	43	1 681
Evangelical Covenant Hosp	Gen	Church	124	20	303	76	3,053
Immanuel Deaconess Institute	Gen	Indiv	100	12	70	43	1,580
Lord Lister Hospital	Gen	Church	100	12	120	30	1 214
Lutheran Hospital	Gen	Church	171	24	404	103	3 630
Nebraska Methodist Episcopal Hosp and Deaconess Home	Gen	Church	150	20	263	86	3 177
St. Catherine's Hospital	Gen	Army	12			6	140
Station Hospital	Gen	State	177	20	488	149	3 150
University of Nebraska Hos	Gen	Indiv	15	3	12	8	260
pital	Gen	Corp	14	5	22	7	210
Ord 2,228—Valley Ord Hospital	Gen	Indiv	26	4	43	12	502
Oxford 1 105—Furnas Oxford General Hospital	Gen	Indiv	20	5	14	3	120
Pawnee City 1,573—Pawnee Pawnee Hospital	Gen	Indiv	20	5	35	6	270
Scottsbluff 8 465—Scotts Bluff West Nebraska Methodist Epls	Gen	Church	50	10	132	33	1 407
copal Hospital	Gen	Part	20	5	14		
Seward 2,737—Seward Morrow and Clarke Hospital	Gen	Indiv	12	4	31	3	120
Seward Hospital	Gen	Indiv	20	5	35	6	270
Sidney 3,300—Cheyenne Taylor Hospital	Gen	Indiv	20	5	35	6	270

Key to symbols and abbreviations is on page 1091

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Robinson 3 065—Crawford Robinson Hospital	Gen	Part	18	3	13	3	114
Rockford 5,564—Winnebago Rockford Hospital	Gen	NPAsen	0	15	164	36	1 007
Rockford Municipal Tuberculosis Sanatorium	TB	CyCo	110			99	101
St Anthony's Hospital	Gen	Church	180	3	412	80	2 309
Swedish American Hospital	Gen	NPAsen	80	12	1 0	36	1 24
Wilgus Sanitarium	N&M	Indiv	3			21	120
Winnebago County Hospital	Gen	iso County	90	6	122	60	1 000
Rock Island 37 03—Rock Island Rock Island County Tuberculosis Sanatorium	TB	County	76			55	74
St Anthony's Hospital	Gen	Church	100	18	100	62	1 04
Rowle 1 76—Hardin Rowle Hospital	Gen	Indiv	10	2	10	3	102
Rushville 2,388—Schuyler Culbertson Hospital	Gen	Indiv	2		8	4	168
St Charles 5,371—Kane St Charles City Hospital	Gen	NPAsen	20	6	41	5	102
Sanwich 2 611—De Kalb Horatio A. Woodward Memorial Hospital	Gen	NPAsen	26	10	70	10	265
Savanna 5 66—Carroll Savanna Public Hospital	Gen	City	14	5	26	4	144
Shelby 3 491—Shelby Shelby County Memorial Hosp	Gen	County	18	5	22	9	211
Springfield 17,864—Sangamon Palmer Sanatorium	TB	Corp	60			3	90
St John's Hospital	Gen	Church	568	32	684	361	11,103
St John's Sanitarium	ThOr	Church	32			No data supplied	
Springfield Hospital	Gen	NPAsen	8	1	227	56	1,653
Spring Valley 5 270—Bureau St Margaret's Hospital	Gen	Church	68	7	96	36	1 063
Sterling 10 012—Whiteside Public Hospital	Gen	City	51	12	176	24	937
Streator 14 738—La Salle St Mary's Hospital	Gen	Church	100	12	202	56	2 200
Sublette 261—Lee Angier Maternity Hospital	Mat	Indiv	10	6	29	3	504
Sycamore 4 021—De Kalb Sycamore Municipal Hospital	Gen	City	23	7	51	11	367
Taylorville 7,316—Christian St Vincent Hospital	Gen	Church	65	11	12	36	1 342
Urbana 13 000—Champaign Carl Memorial Hospital	Gen	Corp	2	6	39	16	708
Champaign County Hospital	Gen	County	55	8	84	15	706
Merced Hospital	Gen	Church	88	12	183	37	1 842
The Outlook	TB	County	48			3	29
Vandalia 4 84—Fayette Mark Greer Hospital	Gen	Indiv	20	6	62	16	575
Waterman 520—De Kalb East Side Hospital	Gen	Indiv	2	7	53	13	243
Watseka 3,144—Iroquois Iroquois Hospital	Gen	County	30	8	70	20	761
Waukegan 33 400—Lake Lake County General Hospital	Gen	County	90	1		No data supplied	
St Theresa's Hospital	Gen	Church	135	10	314	44	2 290
Victory Memorial Hospital	Gen	NPAsen	76	14	212	24	1 022
Winfield 44—Du Page Winfield Sanatorium	TB	NPAsen	120			89	126
Zace Sanatorium	TB	Corp	50			20	60
Woodstock 5 471—McHenry Woodstock Public Hospital	Gen	NPAsen	20	7	86	7	311
Zeigler 3,816—Franklin Zeigler Hospital	Gen	NPAsen	18	2	5	3	92
Related institutions							
Aledo 2,203—Mercer Aledo Hospital	Gen	Indiv	10	2	14	3	113
Arrowsmith 270—McLean L. M. Johnson Hospital	Gen	Indiv	10	2	7	2	46
Augusta 1 011—Hancock Augusta Hospital	Gen	NPAsen	12	3		No data supplied	
Chicago 3,376 433—Cook Beverly Hills Rest Home	Conv	Indiv	7			4	18
Chicago Home for Convalescent Women and Children	Conv	NPAsen	53			51	476
Chicago Home for Incurables	Inc	NPAsen	206			283	68
Ellis Avenue Rest Home	Conv	Indiv	18			9	66
House of Correction Hospital	Gen	City	70			60	2 117
Illinois Steel Company Hosp	Indus	NPAsen	2			11	43
Infirmery of Clearing House							
Illinois Emergency Relief	Gen	State	350				
Isolation Hospital	SmPox	City	33				14
Lawrence Hall	Inst	Church	16			3	1 0
Marks Nathan Jewish Orphan Home	Inst	NPAsen	23			4	1 533
Methodist Episcopal Old Peoples Home	Inst	Church	2			21	
Myian Sanitarium	N&M	Indiv	12			5	30
St Mary of Providence Institute	MeDe	Church	110			90	36
Salvation Army Women's Home and Hospital	Mat	Church	22	12	190	14	307
Washington and Jane Smith Home	InstGen	NPAsen	21			9	103
Dixon 9,008—Lee Dixon State Hospital	MeDe	State	3,323	10	11	3 102	64
Eldorado 4 432—Saline Ferrell Hospital	Gen	Indiv	16	1		No data supplied	
Evansville 63,338—Cook The Cradle	Chil	NPAsen			24	22	372
Grove House for Convalescents	Conv	NPAsen	38			1	162

ILLINOIS—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Fairbury 2,310—Livingston Fairbury Hospital	Gen	NPAsen	8	4	38	3	176
Flora 4 303—Clay Flora Hospital	Gen	Indiv	7	2	20	4	208
Geneva 4 607—Kane State Training School for Girls	Inst	State	17	2		15	312
Godfrey 201—Madison Beverly Farm	MeDe	Corp	75			59	9
Henry 1 633—Marshall Drs Coggeshall and Dysart Hospital	Gen	Part	7	4	24	3	14
Hinsdale 6 023—Du Page West Suburban Home for Girls	Mat	NPAsen	20	16	31	6	34
Jacksonville 17 747—Morgan Illinois School for the Blind	Inst	State	20			4	103
Lincoln 12,866—Logan Lincoln State School and Colony	MeDe	State	3 777	6	17	3 402	367
Mattoon 14 031—Coles Independent Order Odd Fellows	Inst	Frat	54			40	120
Old Folks Home Hospital	Inst	State	525			606	6
Menard 22—Randolph Illinois Security Hospital	Inst	State	36			15	400
Southern Illinois Penitentiary Hospital	Inst	State	38				
Metropolis 5 573—Massac Fishier Hospital	Gen	Indiv	9	2		No data supplied	
Minonk 1 010—Woodford Woodford County Tuberculosis Sanatorium	TB	County	11				7
Moosheart 1 519—Kane Moosheart Hospital	Chil	Frat	80			51	2,070
Mt Prospect 1 22—Cook Mt Prospect General Hospital	Gen	Corp	20	4	10	1	100
Normal 6 708—McLenn Soldiers and Sailors Children's School	Inst	State	2			15	2 000
Paxton 2,592—Ford Paxton Community Hospital	Gen	NPAsen	10	4	23	6	224
Peoria 104 969—Peoria Peoria Isolation Hospital	Iso	City	50				5
Pontiac 8 272—Livingston Illinois State Reformatory Hospital	Inst	State	38			22	694
Quincy 39 241—Adams Illinois Soldiers and Sailors Home and Hospital	Inst	State	243			121	870
St Charles 5,371—Kane St Charles School for Boys	Inst	State	30			19	640
Savanna 5 066—Carroll Station Hospital	Gen	Army	10			8	120
Sullivan 2,339—Moultrie Illinois Masonic Home	Inst	Frat	41			83	40
Urbana 13,000—Champaign McKinley University Hospital	Inst	State	85			23	1 410
Wedron 202—La Salle St Joseph's Health Resort	Conv	Church	60			30	570
West Chicago 3 477—Du Page Country Home for Convalescent Crippled Children	Orth	NPAsen	120			97	214
Wheaton 7 248—Du Page Howe Home	N&M	Part	15			6	1
Mary E Pogue Sanitarium	N&M	Indiv	40				
Wheaton Health Resort	Gen	Part	30	12	14	7	48
Wheeling 467—Cook Wheeling Hospital	Gen	Indiv	9	5	12	2	140
White Hall 2,92—Greene White Hall Hospital	Gen	Indiv	6	5	81	6	239
Winnetka 12,106—Cook North Shore Health Resort	Conv	Corp	75				50
Summary for Illinois							
Hospitals and sanatoriums			264	69 770		47 035	480 107
Related institutions			56	10 156		8 633	20,250
Totals			320	69,926		55 668	506,352
Refused registration			41	1,391			

INDIANA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Anderson 39,804—Madison St John's Hickey Memorial Hospital	Gen	Church	88	12	199	62	1 643
Angola 2,665—Steuben Cameron Hospital	Gen	Indiv	20	4	26	8	510
Argos 1 211—Marshall Kelly Hospital	Gen	Indiv	10	4	12	4	150
Auburn 5 038—De Kalb Dr Bonnell M Souder Hosp	Gen	Indiv	20	7	22	5	113
Batesville 2,338—Ripley Margaret Mary Hospital	Gen	Church	50	10		No data supplied	
Bedford 13 263—Lawrence Dunn Memorial Hospital	Gen	NPAsen	25	6	54	12	560
Beech Grove 3 52—Marion St Francis Hospital	Gen	Church	140	25	300	49	1 2

NEVADA—Continued

Related Institutions
Stewart 412—Ormsby
Carson Indian School Hospital
Yerington 1005—Lyon
Lyon County Hospital

Summary for Nevada

Hospitals and sanatoriums
Related Institutions

Totals

Refused registration

NEW HAMPSHIRE

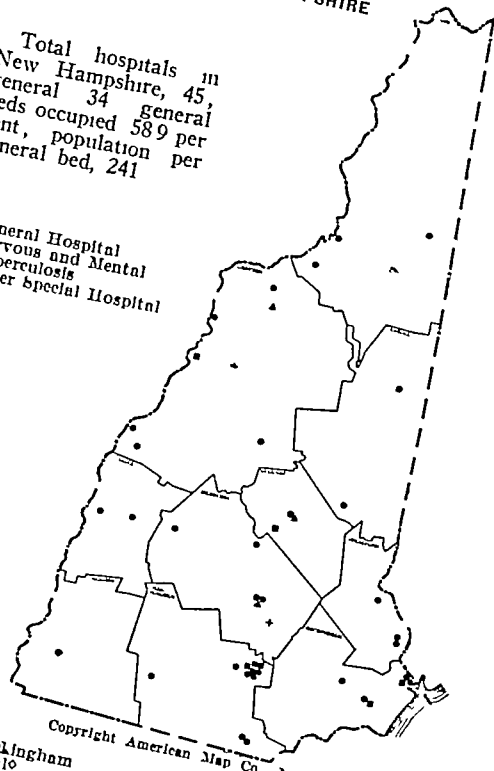
Hospitals and Sanatoriums

Berlin, 20 018—Coos
St. Louis Hospital
Claremont 12 377—Sullivan
Claremont General Hospital
Concord 25 228—Merrimack
Margaret Pillsbury
Hospital
New Hampshire Memorial Hos-
pital
New Hampshire State Hosp
Dover 13 573—Strafford
Hayes Hospital
Wentworth Hospital

NEW HAMPSHIRE

Total hospitals in
New Hampshire, 45,
general 34 general
beds occupied 58.9 per
cent, population per
general bed, 241

- General Hospital
- ▲ Nervous and Mental
- + Tuberculosis
- Other Special Hospital



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Exeter 45,2—Rockingham
Exeter Hospital
Franklin 6,578—Merrimack
Franklin Hospital
Glencroft 55—Grafton
New Hampshire State Sanato-
rium for the Treatment of
Tuberculosis
Grafton 200—Hillsboro
Hillsborough County General
Hospital
Hanover 3,043—Grafton
Mary Hitchcock Memorial Hos-
pital
Keene 13 794—Cheshire
Elliot Community Hospital
Laconia 12 471—Belknap
Laconia Hospital
Lancaster 2,857—Coos
Lancaster Hospital

Key to symbols and abbreviations is on page 1091

REGISTERED HOSPITALS

NEW HAMPSHIRE—Continued

Year A M A
March 30 1935

Hospitals and Sanatoriums

Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Littleton 4 558—Grafton	Gen	30	11	306	11	74
Littleton Hospital	Gen	16	11	306	11	74
Manchester 70,834—Hillsboro	Gen	11	11	306	11	74
Elliot Hospital for Children	Chil	11	11	306	11	74
Elliot Hospital	Chil	11	11	306	11	74
Hospital Notre Dame De	Chil	11	11	306	11	74
Lucy Hastings Hospital	Chil	11	11	306	11	74
Our Lady of Perpetual Help	Chil	11	11	306	11	74
Sacred Heart Hospital	Chil	11	11	306	11	74
Nashua 31 403—Hillsboro	Gen	11	11	306	11	74
Nashua Memorial Hospital	Gen	11	11	306	11	74
New London 512—Merrimack	Gen	11	11	306	11	74
Newport 4 609—Sullivan	Gen	11	11	306	11	74
Carrie R. Sullivan	Gen	11	11	306	11	74
North Conway 62—Carroll	Gen	11	11	306	11	74
Memorial Hospital	Gen	11	11	306	11	74
Pembroke 50—Merrimack	Gen	11	11	306	11	74
Peterboro 2 521—Hillsboro	Gen	11	11	306	11	74
Peterboro Hospital	Gen	11	11	306	11	74
Plymouth 2 470—Grafton	Gen	11	11	306	11	74
Portsmouth 14 405—Rockingham	Gen	11	11	306	11	74
Portsmouth Hospital	Gen	11	11	306	11	74
U. S. Naval Hospital	Gen	11	11	306	11	74
Rockefeller 10,200—Strafford	Gen	11	11	306	11	74
Irish Memorial Hospital	Gen	11	11	306	11	74
Whitefield 1 693—Coos	Gen	11	11	306	11	74
Morrison Hospital	Gen	11	11	306	11	74
Wolfeboro 2,338—Carroll	Gen	11	11	306	11	74
Douglas Hospital	Gen	11	11	306	11	74
Woodsville 12,5—Grafton	Gen	11	11	306	11	74
Cottage Hospital	Gen	11	11	306	11	74

Related Institutions

Lippitt 1 672—Rockingham
Rockingham County Hospital
Exeter 4,572—Rockingham
Lamont Infirmary
Laconia 114—Grafton
The Johnsons
Haverhill 60—Grafton
Grafton County Hospital
Laconia 12,411—Belknap
Laconia State School
Alice Peck Day Memorial Hosp
Manchester 70,834—Hillsboro
Portsmouth 14 405—Rockingham
Portsmouth Hospital
Merrimack 2,338—Carroll
Douglas Hospital
Woodsville 12,5—Grafton
Cottage Hospital

Summary for New Hampshire

Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted
Related Institutions	30	4 077	3,100	31 600
Totals	45	4 080	3,501	32,662
Refused registration	1	2	3,501	32,662

NEW JERSEY

Hospitals and Sanatoriums

Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Allenwood 168—Monmouth	Gen	102	100	185	100	185
Allenwood Sanatorium and Mon- mouth County Hospital for Tuberculosis	Gen	102	100	185	100	185
Atlantic City, 66,188—Atlantic	Gen	102	100	185	100	185
Children's Hospital	Gen	102	100	185	100	185
Atlantic City Seashore House at Atlantic City for Invalid Chil- dren	Gen	102	100	185	100	185
Bayonne 83,900—Hudson	Gen	102	100	185	100	185
Bayonne Hospital and Dispen- sary	Gen	102	100	185	100	185
Swiney Sanatorium	Gen	102	100	185	100	185
Belle Mead 51—Somerset	Gen	102	100	185	100	185
Belle Mead Sanatorium and Farm	Gen	102	100	185	100	185
Bellerille, 26 074—Essex	Gen	102	100	185	100	185
Essex County Hospital for Con- tagious Diseases	Gen	102	100	185	100	185
Bernardsville 3 330—Somerset	Gen	102	100	185	100	185
Shannon Lodge	Gen	102	100	185	100	185
Boundbrook 7 512—Somerset	Gen	102	100	185	100	185
Boundbrook Hospital	Gen	102	100	185	100	185
Bridgeton 15 600—Camden	Gen	102	100	185	100	185
Brown Mills Hospital	Gen	102	100	185	100	185
Deborah Sanatorium	Gen	102	100	185	100	185
Camden 118 700—Camden	Gen	102	100	185	100	185
Bellevue Private Hospital	Gen	102	100	185	100	185

INDIANA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Richmond, 32 493—Wayne	Gen	NPAasn	121	12	214	50	2 261
Reid Memorial Hospital	Gen	State	1,304			1 331	281
Richmond State Hospital	TB	County	50				
Smith Eves Memorial Hospital	Gen	Indiv	15	2	18	0	3 30
Rochester, 3,518—Fulton	TB	State	211			200	189
Woodlawn Hospital	Gen	City	8	3	20	3	15 15
Rockville, 1,832—Parke	Gen	Corp	23	4	7	18	580
Indiana State Sanatorium	Gen	City	2	4	25	11	607
Rushville 5,709—Rush	Gen	NPAasn	150	37	38	60	2 4 8
Rushville City Hospital	TB	County	215			202	315
Seymour, 7 588—Jackson	N&M	Indiv	18			5	2 3
Schneck Memorial Hospital	Gen	Church	12	12	336	64	2 180
Shelbyville, 10 618—Shelby	Gen	County	50	7	67	28	883
W S Major Hospital	Gen	Indiv	10	2	11	2	136
South Bend 104,183—St Joseph	Gen	Indiv	10	2	12	3	175
Spencer Hospital	Gen	Church	139	23	237	60	2,100
Healthwin Hospital	Gen	NPAasn	154	20	203	60	2,250
Pennington Sanitarium	Gen	Indiv	1	4	3	0	222
St Joseph Hospital	Gen	Church	20	5	41	0	34
Sullivan 6,306—Sullivan	Gen	County	02	7	5	28	1 080
Mary Sherman Memorial Hosp	Gen	County	30	6	43	13	4 5
Tell City, 4,572—Perry	Gen	Indiv	18	4	50		506
Parkview Hospital	Gen	County	50	0	70	10	731
Terre Haute 6,810—Vigo	Gen	County	29	4	5	13	515
Hoover's Sanatorium (col)	Gen	Part	18	4	19	10	314
St Anthony's Hospital	Gen	Church					
Union Hospital	Gen	Church					
Union City 3,084—Randolph	Gen	Indiv	1	4	3	0	222
Union City Hospital	Gen	Church	20	5	41	0	34
Valparaiso, 8,070—Porter	Gen	County	02	7	5	28	1 080
Christian Hospital	Gen	County	30	6	43	13	4 5
Vincennes 17,564—Knox	Gen	County	50	0	70	10	731
Good Samaritan Hospital	Gen	County	29	4	5	13	515
Wabash 2,840—Wabash	Gen	County	50	0	70	10	731
Wabash County Hospital	Gen	County	29	4	5	13	515
Warren 5 730—Kosciusko	Gen	County	50	0	70	10	731
McDonald Hospital	Gen	County	29	4	5	13	515
Washington 9 070—Davies	Gen	County	50	0	70	10	731
Davies County Hospital	Gen	County	29	4	5	13	515
Winchester 4 457—Randolph	Gen	County	29	4	5	13	515
Randolph County Hospital	Gen	County	29	4	5	13	515
Wolfske 367—Noble	Gen	County	29	4	5	13	515
Lucky Hospital	Gen	County	29	4	5	13	515
Related Institutions							
Anderson, 39,504—Madison	TB	County	55				
Ellis B Kehr Hospital	MeDe	State	600			600	180
Battleville 450—Jennings	Gen	Corp	100			52	
Murensatuck Colony	Gen	Indiv	10	1	3	1	37
Dillsboro 502—Dearborn	Gen	Indiv	10	1	3	1	37
Dillsboro Sanitarium	Gen	Indiv	10	1	3	1	37
Eransville 101,940—Vanderburgh	Gen	Indiv	10	1	3	1	37
Highland Private Hospital	Gen	Indiv	10	1	3	1	37
St Wayne 114,040—Allen	Gen	Indiv	10	1	3	1	37
St Wayne and Allen County	Gen	Indiv	10	1	3	1	37
Isolation Hospital	Gen	Indiv	10	1	3	1	37
St Wayne State School	Gen	Indiv	10	1	3	1	37
Grace Convalescent Hospital	Gen	Indiv	10	1	3	1	37
Franklin 5,682—Johnson	Gen	Indiv	10	1	3	1	37
Eastern Star Hospital	Gen	Indiv	10	1	3	1	37
Greencastle 4 615—Putnam	Gen	Indiv	10	1	3	1	37
Indiana State Farm Hospital	Gen	Indiv	10	1	3	1	37
Greensburg 5 702—Decatur	Gen	Indiv	10	1	3	1	37
Odd Fellows Home Hospital	Gen	Indiv	10	1	3	1	37
Indianapolis 304 161—Marion	Gen	Indiv	10	1	3	1	37
Florence Crittenton Home	Gen	Indiv	10	1	3	1	37
Indiana Girls School	Gen	Indiv	10	1	3	1	37
Indianapolis Orphan Asylum	Gen	Indiv	10	1	3	1	37
Indiana State School for the Deaf	Gen	Indiv	10	1	3	1	37
Julietta Insane Hospital	Gen	Indiv	10	1	3	1	37
Knightstown 2,209—Henry	Gen	Indiv	10	1	3	1	37
Indiana Sailors and Soldiers Children's Home	Gen	Indiv	10	1	3	1	37
LaFayette 26 240—Tippecanoe	Gen	Indiv	10	1	3	1	37
Indiana State Soldiers Home Hospital	Gen	Indiv	10	1	3	1	37
Lagrange 1,640—Lagrange	Gen	Indiv	10	1	3	1	37
Erwin Hospital	Gen	Indiv	10	1	3	1	37
Michigan City 30 780—LaPorte	Gen	Indiv	10	1	3	1	37
Indiana Hospital for Insane Criminals	Gen	Indiv	10	1	3	1	37
Indiana State Prison Hospital	Gen	Indiv	10	1	3	1	37
Mooreville 1 910—Morgan	Gen	Indiv	10	1	3	1	37
Dr J E Comer's Hospital	Gen	Indiv	10	1	3	1	37
Newcastle 14 027—Henry	Gen	Indiv	10	1	3	1	37
Indiana Village for Epileptics	Gen	Indiv	10	1	3	1	37
Pendleton, 1 538—Madison	Gen	Indiv	10	1	3	1	37
Indiana State Reformatory	Gen	Indiv	10	1	3	1	37
Plainsfield 1,617—Hendricks	Gen	Indiv	10	1	3	1	37
Indiana Boys School Hospital	Gen	Indiv	10	1	3	1	37
Wilkinson 310—Hancock	Gen	Indiv	10	1	3	1	37
Dr Charles Titus Sanitarium	Gen	Indiv	10	1	3	1	37
Winona Lake 454—Kosciusko	Gen	Indiv	10	1	3	1	37
Franconia Convalescent and Rest Home	Gen	Indiv	10	1	3	1	37
Summary for Indiana							
Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted			
Related institutions	112	18,310	13,077	124,875			
	27	4 706	4,214	7 612			
Totals	139	23,016	18 101	132 487			
Refused registration	18	707					

IOWA

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Akron, 1,304—Plymouth							
Akron Hospital	Gen	Indiv	14	3	14	5	167
Albia 4 425—Monroe							
Miner's Hospital	Gen	Indiv	2	4	No data supplied		
Algona, 7 083—Kossuth							
Kossuth Hospital	Gen	Indiv	26	5	50	15	520
Alerton 784—Wayne							
Parker Hospital	Gen	Indiv	8	2	5	3	98
Alta 1 297—Buena Vista							
Alta Community Hospital	Gen	NPAasn	14	5	25	6	170
Anamosa, 3 500—Jones							
Mercy Hospital	Gen	Church	3	12	60	18	420
Atlantic 5,650—Cass							
Atlantic Hospital	Gen	Corp	2	0	35	10	420
Battle Creek 804—Ida							
New Battle Creek Hospital and Sanitarium	Gen	Indiv	10	3	25	12	181
Boone 11 880—Boone							
Boone County Hospital	Gen	County	45	10	100	15	640
Burlington 26 700—Des Moines							
Burlington Protestant Hosp	Gen	NPAasn	105	20	122	53	1 168
Mercy Hospital	Gen	Church	125	20	150	51	1,170
St Francis Hospital	Gen	Church	43	8	73	12	750
Carroll 4 631—Carroll							
St Anthony Hospital	Gen	Church	108	22	224	50	2,030
Cedar Falls 7,362—Black Hawk							
Sartori Memorial Hospital	Gen	City	35	6	62	12	521
Cedar Rapids, 6 097—Linn							
Mercy Hospital	Gen	Church	150	25	300	50	1 645
St Luke's Methodist Hosp	Gen	Church	130	20	327	68	2 500
Centerville, 8 147—Appanoose							
St Joseph's Mercy Hospital	Gen	Church	47	6	96	26	948
Chariton 5,350—Lucas							
Locom Hospital	Gen	Indiv	10	4	30	10	
Charles City 8,600—Floyd							
Cedar Valley Hospital	Gen	City	25	5	68	12	685
Cherokee 6 443—Cherokee							
Cherokee State Hospital	Ment	State	1,670			1,632	564
Sioux Valley Hospital	Gen	NPAasn	35	7	116	20	740
Clarinda 4,062—Page							
Clarinda State Hospital	Ment	State	1 400			1,693	668
Clinton 25 720—Clinton							
Janet Lamb Memorial Hosp	Gen	Corp	100	12	160	51	1 467
St Joseph Mercy Hospital	Gen	Church	8	12	227	60	2,200
Colfax 2 213—Jasper							
Colfax Sanitarium	Gen	Corp	20		No data supplied		
Council Bluffs 4 048—Pottawattamie							
Jennie Edmundson Memorial Hospital	Gen	NPAasn	125	14	101	61	1 684
Mercy Hospital	Gen	Church	135	12	185	94	2,414
St Bernard's Hospital	N.A.M.	Church	240			163	210
Creco, 3 060—Howard							
St Joseph Mercy Hospital	Gen	Church	20	5	56	7	284
Creston 5 615—Union							
Greater Community Hospital	Gen	NPAasn	50	5	25	14	551
Davenport 60 751—Scott							
Mercy Hospital	Gen	Church	125	20	330	59	2 069
Pine Knoll Sanitarium	TB	County	100			60	137
St Luke's Hospital	Gen	Church	81	10	106	28	1,115
Decorah 4 651—Winnebago							
Decorah Hospital	Gen	NPAasn	30	6	55	15	391
Denison 3 900—Crawford							
Denison Hospital	Gen	Indiv	15	3	23	4	244
Des Moines 142,550—Polk							
Broadlawn Polk County Public Hospital, Contagious Department	Iso	County	47	3		16	333
Broadlawn Polk County Public Hospital	Gen	County	05	12	401	92	3 701
Broadlawn Polk County Public Hospital Tuberculosis Department	TB	County	100			52	63
Iowa Lutheran Hospital	Gen	Church	135	25	280	71	2 945
Iowa Methodist Hospital	Gen	Church	239	40	663	144	6 987
Mercy Hospital	Gen	Church	163	23	354	78	2,692
The Retreat	N.A.M.	Corp	50			25	91
Veterans Admin Facility	Gen	Vet	300			250	972
Dubuque 41 670—Dubuque							
Finley Hospital	Gen	NPAasn	91	10	128	46	1 628
St Joseph's Mercy Hospital	Gen	Church	125	18	230	60	1 631
St Joseph Sanitarium	N.A.M.	Church	200			149	396
Sunny Crest Sanitarium	TB	County	70			65	90
Eldora 3 200—Hardin							
Fidora Booth Memorial Hosp	Gen	NPAasn	20	6	35	4	283
Emmettsburg, 2 805—Palo Alto							
Palo Alto Hospital	Gen	NPAasn	14	3	27	6	283
Estherville 4 940—Emmet							
Blrney Hospital	Gen	Indiv	12	2	36	8	208
Coleman Hospital	Gen	NPAasn	3	6	42	12	600
Fairfield, 6 019—Jefferson							
Jefferson County Hospital	Gen	County	24	6	106	18	604
Forest City 2,016—Winnebago							
Irish Hospital	Gen	Indiv	12	5	52	0	812
Ft Des Moines 700—Polk							
Stanton Hospital	Gen	Army	60			75	1 070
Ft Dodge, 21,595—Webster							
Lutheran Hospital	Gen	Church	58	17	123	20	1,414
St Joseph Mercy Hospital	Gen	Church	114	16	115	31	1 216
Ft Madison 13,779—Lee							
A T & S F Railway Hosp	Indus	NPAasn	00			17	360
Sacred Heart Hospital	Gen	Church	65	10	114	25	982
Grinnell 4 640—Powshelek							
Grinnell Community Hospital	Gen	NPAasn	54	6	78	17	640
St Francis Hospital	Gen	Church	40	6	52	18	462

NEW JERSEY—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Rahway 16 011—Union							
Rahway Memorial Hospital	Gen	NPAasn	100	20	170	42	1 409
Red Bank 11 022—Monmouth							
Riverview Hospital	Gen	NPAasn	28	10	133	10	615
Ridgewood 12 188—Bergen							
Bergen Pines Bergen County Hospital	TbIs	County	330			2.0	789
Riverside 4 010—Burlington							
Zurbrugg Memorial Hospital	Gen	NPAasn	12	5	31	3	154
Salem 8 047—Salem							
Salem County Memorial Hosp	Gen	NPAasn	40	0	201	20	1 103
Scotch Plains 1 010—Union							
Bonnie Burn Sanatorium	TB	County	301			360	503
Secaucus 8 930—Hudson							
Hudson County Contagious Disease Hospital	Iso	County	200			0.	67.0
Hudson County Hospital	Gen	County	250	22		229	801
Hudson County Hospital for Mental Diseases	Ment	County	1 430			1,523	341
Hudson County Tuberculosis Hospital and Sanatorium	TB	County	207			203	770
Skillman 23—Somerset							
New Jersey State Village for Epileptics	Epil	State	1 307			1 311	196
Somers Point 2,073—Atlantic							
Atlantic Shores Hospital	Gen	NPAasn	60	0	71	20	2,311
Somerville 8,250—Somerset							
Somerset Hospital	Gen	NPAasn	76	14	364	50	3 182
South Amboy 8 476—Middlesex							
South Amboy Memorial Hosp	Gen	NPAasn	30	6	60	10	600
Summit, 14 550—Union							
Fair Oaks Sanatorium	Nerv	Corp	42			27	139
Overlook Hospital	Gen	NPAasn	112	31	314	63	1 770
Sussex 1 410—Sussex							
Alexander Linn Hospital	Gen	City	20	5	30	7	260
Teaneck 3,200—Bergen							
Holy Name Hospital	Gen	Church	178	44	600	102	3 020
Trenton 123,350—Mercer							
Chambersburg General Hosp	Gen	NPAasn	20	6	87	11	320
Charles Private Hospital	N&M	Corp	40			31	490
Mercer Hospital	Gen	NPAasn	217	30	662	180	3 008
New Jersey State Hospital	Ment	State	2 700			2 600	884
Orthopaedic Hospital and Dispensary	Orth	NPAasn	50			24	241
St Francis Hospital	Gen	Church	282	32	501	160	4 060
Trenton Municipal Hospital	Iso	City	404			200	620
William McKinley Memorial Hospital	Gen	NPAasn	146	30	400	60	2 520
Union City 58 600—Hudson							
Hamilton Sanitarium	Gen	Corp	20	10	42	0	200
Verona 7,161—Essex							
Essex Mountain Sanatorium	TB	County	414			412	432
Vineland 7 500—Cumberland							
Newcomb Hospital	Gen	NPAasn	60	15	230	41	1,107
Weehawken (Union City P O) 14,807—Hudson							
North Hudson Hospital	Gen	NPAasn	140	20	132	00	2 080
Woodbury 8 172—Gloucester							
Brewer Hospital	Gen	Indiv	10	0	50	10	360
Underwood Hospital	Gen	Corp	40	20	104	20	1 000

Related Institutions

Atlantic City 66 198—Atlantic							
Dr Leonard's Private Sanit	Drug	Indiv	20				57
Municipal Hospital	Iso	City	60			No data supplied	
Bridgeton 15 699—Cumberland							
Cumberland County Hospital for Insane	Ment	County	212			107	47
Ivy Hall Sanitarium	N&M	Indiv	20			20	12
Ivy Manor	Conv	Indiv	20			12	
Browns Mills 313—Burlington							
Browns Mills Nursing Cottage	TB	Corp	51			45	50
Mrs Leonard's Manor Nursing Cottage	TB	Indiv	20			23	20
Sycamore Hall Sanatorium	TB	Indiv	18			New	
Burlington 10 844—Burlington							
Masonic Home	Inst	Frat	30			30	70
Caldwell 5 144—Essex							
Theresa Grotta Home for Convalecents	Conv	NPAasn	42			28	333
Camden 118,700—Camden							
Municipal Hospital for Contagious Diseases	Iso	City	100			30	404
Chatsworth 982—Burlington							
The Pines Sanatorium	TB	Indiv	30				
Farmingdale 629—Monmouth							
Tuberculosis Preventorium for Children	TB	NPAasn	247			170	674
Haddonfield 8,857—Camden							
Bancroft School	MeDe	NPAasn	100			91	29
Jamesburg 2 048—Middlesex							
New Jersey State Home for Boys	Inst	State	20			13	1 020
Jersey City 316 715—Hudson							
Jersey Eye, Ear, Nose and Throat Hospital	ENT	NPAasn	10			No data supplied	
Salvation Army Door of Hope Home and Hospital	Mat	Church	8	9	46	6	53
Lakewood 8 000—Ocean							
Lakewood Sanatorium	N&M	Indiv	15			10	3
Longport 228—Atlantic							
Betty Bacharach Home for Afflicted Children	Orth	Frat	110			27	50
Menlo Park 305—Middlesex							
New Jersey Home for Disabled Soldiers	Inst	State	100			85	71

NEW JERSEY—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Morristown 15 197—Morris							
Aurora Health Institute	Conv	Corp	90			20	382
Newark 442,337—Essex							
Newark City Almshouse	Inst	City	38			30	848
Newark Convalescent Hospital	Conv	City	153			151	97
New Brunswick 34 500—Middlesex							
Rutgers Infirmary	Inst	NPAasn	18			7	78
Newfoundland 564—Morris							
Idylcree Sanatorium	TB	Corp	60			31	44
New Lisbon 181—Burlington							
Burlington County Hospital for the Insane	Ment	County	273			247	54
State Colony for Feeble-minded Males	MeDe	State	700			743	140
Northfield 2,804—Atlantic							
Atlantic County General Hosp	Inst	County	120			87	83
North Wildwood (Wildwood P O) 2 040—Cape May							
Margaret Mace's Hospital	Gen	Indiv	30	10	No data supplied		
Ocean City 5,525—Cape May							
Ocean City Seashore Home for Babies	Chil	NPAasn	40		No data supplied		
Ocean Grove 3 000—Monmouth							
Methodist Episcopal Home for Aged	Inst	Church	10			10	41
Passaic 62 900—Passaic							
Passaic Municipal Hospital	Iso	City	25	2		2	60
Paterson 138,513—Passaic							
Paterson City Hospital	TbIs	City	110			60	120
Princeton 6 062—Mercer							
Isabella McCosh Infirmary	Inst	NPAasn	55			17	1 484
Rahway 16 011—Union							
New Jersey Reformatory Hosp	Inst	State	16			6	865
Roseland, 1 600—Essex							
Mountain View Rest	N&M	Corp	22			14	80
Sea Isle City 800—Cape May							
Sea Isle Hospital and Training School	N&M	Corp	20	2	3		116
Totowa (Little Falls P O) 4 600—Passaic							
State Training School	MeDe	State	668			528	100
Trenton 123 300—Mercer							
New Jersey State Prison Hosp	Inst	State	45			32	597
State Home for Girls	Inst	State	50	8	26	38	420
Upper Montclair—Essex							
Montclair Sanitarium	Gen	Part	10			6	90
Vineland 7 500—Cumberland							
Maplehurst School	MeDe	Indiv	15			15	None
New Jersey Memorial Home for Disabled Soldiers, Sailors, Marines and Their Wives and Widows	Inst	State	65			42	417
Training School at Vineland	MeDe	NPAasn	530			510	40
Vineland State School	MeDe	State	1 350			1 279	117
West Englewood, 2 207—Bergen							
Englewood Sanitarium (Lynwood Lodge)	N&M	Corp	40			17	29
Woodbine 2,164—Cape May							
Woodbine Colony for Feeble-minded Males	MeDe	State	665			600	74

Summary for New Jersey

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	120	33,814	27 228	239 832
Related institutions	47	6 621	5 364	8 747
Totals	172	40,335	32 592	268 579
Refused registration	7	117		

NEW MEXICO

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Albuquerque 29 570—Bernalillo							
Albuquerque Indian Sanat	TB	IA	104			60	178
A T & S F Hospital	Indus	NPAasn	67			20	313
Children's Home and Hosp	Orth	NPAasn	36	12		15	150
Methodist Deaconess Sanat	TB	Church	65			150	90
St Joseph Sanatorium and Hospital	G&TB	Church	196	12	173	85	2,148
Southwestern Presbyterian Sanatorium	G&TB	Church	130	10	160	29	1 413
U S Indian School Hospital	Gen	IA	74	8	29	40	1 114
Veterans Admin Facility	G&TB	Vet	259			212	1 245
Black Rock (Zuni P O)—McKinley							
Zuni Sanatorium	Gen	IA	15	2	12	3	271
Carlsbad, 3,708—Eddy							
St Francis Hospital	Gen	Church	40	5	40	15	552
Clayton 2 518—Union							
St Joseph Hospital	Gen	Church	20	5	10	6	318
Clovis 8 927—Curry							
A T & S F Hospital	Indus	NPAasn	32			14	251
Baptist Hospital	Gen	Church	30	10	28	10	644
Crownpoint 62—McKinley							
Eastern Navajo Agency Hosp	Gen	IA	24	4	32	27	776
Dawson 2 602—Colfax							
Phelps Dodge Corporation Hospital	Gen	Corp	80	4	11	5	98
Deming 3,377—Luna							
Deming Ladies Hospital	Gen	NPAasn	24	3	12	3	152
Holy Cross Sanatorium	TB	Church	100			63	56
Dulce 101—Rio Arriba							
Mearilla Agency Hospital	Gen	IA	10	5	6	10	142

IOWA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basins	Number of Births	Average Patients	Patients Admitted
Spencer, 4019—Clay Spencer Hospital	Gen	NP Assn	21	5	27	8	610
Toledo 1,825—Tama Sae and Fox Tuberculosis Sanatorium	TH	LA	68			63	52
Vinton 3,372—Benton Virginia Gay Hospital	Gen	City	20	5	30	5	210
Washington 4,814—Washington Washington County Hospital	Gen	County	27	7	80	13	464
Waterloo 46,101—Black Hawk Allen Memorial Hospital	Gen	Church	70	8	177	20	863
Presbyterian Hospital	Gen	NPA Assn	31	10	177	22	1,031
St. Francis Hospital	Gen	Church	71	10	167	33	1,521
Waverly 3,632—Bremer St. Joseph Mercy Hospital	Gen	Church	50	6	62	11	683
West Union 2,646—Fayette West Union Community Hosp	Gen	City	10	2	13	2	107
Williamsburg 1,910—Iowa Watts Hospital	Gen	Indiv	21	2	20	3	121
Related Institutions							
Ames, 10,261—Story Iowa State College Hospital	Inst	State	90			8	711
Anamosa, 3,570—Jones Reformatory Hospital	Inst	State	31			14	818
Belmond 1,733—Wright Belmond Hospital	Gen	Indiv	8			3	174
Bettendorf 2,768—Scott Masonic Sanitarium	Conv	Frat	50			41	17
Burlington 26,711—Des Moines Des Moines County Asylum	Ment	County	60				
Clarion 2,078—Wright Tompkins and Walker Hosp	Gen	Part	10	3			
Council Bluffs 42,048—Pottawattamie Christian Home Orphanage	Inst	NPA Assn	31	2		12	413
Iowa School for the Deaf in Bismarck	Inst	State	31			18	683
Davenport 60,711—Scott Iowa Soldiers Orphans Home Hospital	Inst	State	11	24		18	1,200
Des Moines 142,513—Polk Benedict Home	Mat	NPA Assn	30	11	18	22	20
Junior League Convalescent Home for Children	Conv	NPA Assn	11			13	31
Salvation Army Rescue Home and Maternity Hospital	Mat	Church	31	20	88	4	101
Eldora 3,200—Hardin Iowa Training School for Boys Hospital	Inst	State	31			12	1,462
Elkader 1,382—Clayton Clayton County Asylum	Ment	County	44			44	None
Ft Madison 13,770—Lee Iowa State Penitentiary Hosp	Inst	State	38			17	360
Glenwood 4,293—Miller Iowa Institution for Feeble- minded Children	McDe	State	1,600		1	21	99
Harlan 3,116—Shelby Harlan Hospital	Gen	Indiv	11	3	16	2	337
Hawarden 2,410—Sioux Hawarden Hospital	Gen	Part	6	4	6	1	50
Holstein 1,300—Iowa Holstein Hospital	Gen	Indiv	5	2	2	1	12
Indianola 3,483—Warren Community Hospital	Gen	Indiv	6	3	5	2	51
Manchester 3,413—Delaware Koehler Hospital	Gen	Indiv	7	2	14	1	51
Marshalltown 17,377—Marshall Iowa Soldiers Home Hospital	Inst	State	210			121	610
Odebolt 1,888—Sae Odebolt Hospital	Gen	Indiv	10	3	7	2	60
Orange City 1,727—Sioux De Beyer Hospital	Gen	Part	10	2	6	2	121
Doornick Hospital	Gen	Indiv	10	2	6	2	149
Orange 2,064—Mitchell Nissen Hospital	Gen	City	8	3	23	3	144
Postville 1,060—Allamakee Postville Community Hospital	Gen	Corp	13	2			
Pringhar 903—O'Brien Ward Memorial Hospital	Gen	Indiv	8	1			data supplied
Red Oak 5,778—Montgomery Powell School for Backward and Nervous Children	McDe	Part	60			31	5
Sioux City 79,183—Woodbury Florence Crittenton Home	Mat	NPA Assn	73	7	36	23	61
Toledo 1,825—Tama Iowa State Juvenile Home Hospital	Inst	State	24			2	708
Waukon 2,626—Allamakee Hall Hospital	Mat	Indiv	10	6	52	2	60
Rominger and Jeffries Fmer gency Hospital	Gen	Part	8			2	71
Winterset 2,821—Madison Winterset Hospital	Gen	Indiv	14	5	51	6	362
Woodward, 901—Dallas Hospital for Epileptics and School for Feeble-minded	McDe	State	1,221			1,101	161
Summary for Iowa							
Hospitals and sanatoriums			Number	Beds	Average Patients	Patients Admitted	
Related institutions			35	4,148	3,410	9,106	
Totals			159	19,614	11,563	126,361	
Refused registration			10	499			

KANSAS

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basins	Number of Births	Average Patients	Patients Admitted
Abilene 5,618—Dickinson Dickinson County Memorial Hospital	Gen	NPA Assn	21	4	48	9	437
Anthony 2,947—Harper Galloway Hospital	Gen	Indiv	30	7	60	30	537
Arkansas City 13,046—Cowley Mercy Hospital	Gen	NPA Assn	40	7	97	8	514
Stricklen Hospital	Gen	Indiv	28	5	15	1	217
Atchison 13,024—Atchison Atchison Hospital	Gen	NPA Assn	32	7	217	17	768
Atwood 1,169—Rawlins Henneberger Hospital	Gen	Indiv	12	2			
Belleville 2,313—Republic H. G. Patterson Memorial Hospital	Gen	Church	20	4	21	8	211
Beloit 3,662—Mitchell Community Hospital	Gen	NPA Assn	50	10	107	23	823
Chanute 10,277—Neosho Johnson Hospital	Gen	Corp	50	6	31	18	742
Coffeyville 16,108—Montgomery Southeast Kansas Hospital	Gen	NPA Assn	18	2	33	5	260
Columbus, 3,231—Cherokee Maude Norton Memorial City Hospital	Gen	City	13	2	5	4	109
Concordia, 5,792—Cloud St. Joseph's Hospital	Gen	Church	71	10	11	36	1,168
Dodge City 10,019—Ford St. Anthony Hospital	Gen	Church	60	12	172	38	1,747
Floradale 10,311—Butler Susan B. Allen Memorial Hos pital	Gen	NPA Assn	60	7	163	28	1,021
Filkhart 1,411—Morton Tucker Hospital	Gen	Indiv	20	3	16	4	200
Flinrath 2,072—Flinrath Flinrath Hospital	Gen	Corp	35	5	48	20	403
Emporia 14,067—Lyon Newman Memorial County Hos pital	Gen	County	63	14	166	30	1,274
St. Mary's Hospital	Gen	Church	75	6			data supplied
Ft. Leavenworth 5,021—Icavenworth Station Hospital	Gen	Army	142	6	51	72	1,711
Ft. Riley 2,610—Geary Station Hospital	Gen	Army	192	8	91	106	2,036
Ft. Scott 10,763—Bourbon Mercy Hospital	Gen	Church	100	10	131	75	2,011
Garden City 6,121—Finney Bailey Hospital	Gen	Indiv	10	3	5	3	60
St. Catherine's Hospital	Gen	Church	41	9	13	18	772
Girard 2,442—Crawford Girard General Hospital	Gen	City	10	2	16	1	132
Goesell 110—Marion Menonite Bethesda Hospital	Gen	Church	20	5	40	6	242
Goodland 7,626—Sherman Boothroy Memorial Hospital	Gen	Church	22	3	47	7	326
Great Bend, 5,648—Barton St. Rose Hospital	Gen	Church	70	12	224	41	1,262
Halsstead 1,373—Harvey Halsstead Hospital	Gen	Church	170	8	23	60	2,083
Hays 4,612—Falls Hays Protestant Hospital	Gen	Church	40	5	20	10	274
St. Anthony's Hospital	Gen	Church	100	22	216	70	1,916
Holington 3,001—Barton Atkin Hospital	Gen	Indiv	15	2	15	7	573
Horton 4,040—Brown Horton Hospital	Gen	Corp	15	3	105	10	164
Hutchinson 27,081—Reno Grace Hospital	Gen	Church	130	17	393	61	2,111
St. Elizabeth Mercy Hospital	Gen	Church	50	12	161	23	917
Independence 12,182—Montgomery Mercy Hospital	Gen	Church	65	15	61	22	938
Junction City 7,407—Geary Junction City Municipal Hosp	Gen	City	34	12	60	12	340
Kansas City 121,837—Wyandotte Bell Memorial Hospital	Gen	State	237	23	360	161	4,725
Bethany Methodist Hospital	Gen	Church	120	25	213	64	2,221
Douglas Hospital (col)	Gen	Church	21	2	19	10	443
Grandview Sanitarium	Gen	N&M	37			14	145
Providence Hospital	Gen	Church	81	15	163	55	1,641
St. Margaret's Hospital	Gen	Church	210	10	189	131	2,115
Larned 3,532—Pawnee Larned City Hospital	Gen	NPA Assn	15	3	46	4	233
Larned State Hospital	Ment	State	1,048			974	287
Lawrence 13,728—Douglas Lawrence Hospital	Gen	Indiv	21	2		5	502
Lawrence Memorial Hospital	Gen	City	52	10	106	21	1,192
Leavenworth 17,400—Leavenworth Cushing Memorial Hospital	Gen	NPA Assn	35	10	101	10	638
St. John's Hospital	Gen	Church	65	10	61	35	703
Liberal 5,291—Seward Edworth Hospital	Gen	Church	41	0	42	10	364
Lyons 2,933—Rice Lyons Hospital	Gen	NPA Assn	17	3	61	9	361
Manhattan 10,138—Riley Charlotte Swift Memorial Hos pital	Gen	NPA Assn	31	10	48	13	447
Marysville 4,013—Marshall Randell Hospital	Gen	Indiv	12	3	14	6	151
McPherson 6,147—McPherson McPherson County Hospital	Gen	County	50	13	169	26	1,230
Mulvane 1,612—Sumner A. T. & S. F. Railway Hosp	Indus	NPA Assn	60			32	412
Newton 11,034—Harvey Axtell Christian Hospital	Gen	Church	50	12	90	26	1,011
Bethel Deaconess Hospital	Gen	Church	48	12	146	27	694

Key to symbols and abbreviations is on page 1091

NEW MEXICO—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Toadlena 27—San Juan	Gen	I A	21	2	No data supplied		
U S Indian Service Hospital	Gen	I A	21	2	No data supplied		
Valmora—Mora	TB	NPAasn	80			35	54
Valmora Sanatorium	TB	NPAasn	80			35	54
Related Institutions							
Alamogordo 3,000—Otero	Gen	Part	8	1	9	5	118
Rousseau Hospital	Gen	Part	8	1	9	5	118
Dixon 301—Rio Arriba	Gen	Church	10	4	44	7	243
Brooklyn Cottage Hospital	Gen	Church	10	4	44	7	243
Dulce 101—Rio Arriba	TB	I A	53			71	91
Jicarilla Sanatorium	Gen	Indiv	13	2	No data supplied		
Lordsburg 2,000—Hidalgo	Gen	Indiv	13	2	No data supplied		
De Moss Hospital	Gen	Indiv	13	2	No data supplied		
Los Lunas 513—Valencia	Gen	Indiv	13	2	No data supplied		
New Mexico Home and Training School for Mental Defectives	MeDe	State	75			62	23
Santa Fe 11 176—Santa Fe	Inst	State	50			10	
New Mexico Penitentiary Hosp	Inst	State	50			10	
Springer, 557—Colfax	Gen	Indiv	10	3	21	2	82
Springer Hospital	Gen	Indiv	10	3	21	2	82
Taos 1 225—Taos	Gen	I A	12	0	4	0	400
Taos Indian Hospital	Gen	I A	12	0	4	0	400
Tohatchi 2,000—McKinley	Gen	I A	20	5	23	10	553
Tohatchi General Hospital	Gen	I A	20	5	23	10	553
Summary for New Mexico							
Hospitals and sanatoriums			41	3	689	2,144	20,312
Related institutions			9		203	175	1,397
Totals			50	3	8,92	2,319	21,609
Refused registration			0				

NEW YORK

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Albany 127 412—Albany	Gen	NPAasn	54	40	634	377	8,832
Albany Hospital**	Gen	NPAasn	54	40	634	377	8,832
Anthony N Brady Maternity Hospital	Mat	Church	50	60	1 127	43	1,204
Childs Hospital	Chil	Church	65			45	323
Memorial Hospital**	Gen	NPAasn	12	15	280	105	2,045
St Peter's Hospital**	Gen	Church	150			114	2,790
Albion 4 576—Orleans	Gen	NPAasn	24	11	71	10	332
Arnold Gregory Memorial Hosp	Gen	NPAasn	24	11	71	10	332
Amityville 4 437—Suffolk	Gen	NPAasn	87	16	242	50	1,821
Brunswick General Hospital	Gen	NPAasn	87	16	242	50	1,821
Long Island Home	N&M	Corp	200			119	64
Louden Knickerbocker Hall	N&M	Part	140			107	201
Reed General Hospital	Gen	Indiv	18	3	0	7	203
Amsterdam 34 817—Montgomery	Gen	Corp	70	15	192	40	1,363
Amsterdam City Hospital	Gen	Corp	70	15	192	40	1,363
Montgomery Sanatorium	TB	County	72			76	103
St Mary's Hospital	Gen	Church	125	21	210	65	1,040
Auburn 36 652—Cayuga	Gen	NPAasn	133	22	207	79	2,503
Auburn City Hospital**	Gen	NPAasn	133	22	207	79	2,503
Mersey Hospital	Gen	Church	80	14	124	30	756
Ballston Spa 4 591—Saratoga	Gen	NPAasn	18	6	72	8	232
Benedict Memorial Hospital	Gen	NPAasn	18	6	72	8	232
Batavia 17 375—Genesee	Gen	Church	60	12	199	37	1,447
St Jerome's Hospital	Gen	Church	60	12	199	37	1,447
Veterans Admin Facility	Gen	Vet	207			150	718
Woman's Hospital	Gen	NPAasn	59	12	118	29	696
Bath 4 015—Steuben	Gen	Part	45	8	86	33	1,090
Bath Hospital	Gen	Part	45	8	86	33	1,090
Pleasant Valley Sanatorium	TB	County	45			30	55
Veterans Admin Facility	Gen	Vet	400			309	1,334
Bay Shore 4 080—Suffolk	Gen	NPAasn	78	26	290	38	1,405
Southside Hospital	Gen	NPAasn	78	26	290	38	1,405
Beacon 11 933—Dutchess	N&M	Corp	77			51	65
Craig House	N&M	Corp	77			51	65
Highland Hospital	Gen	NPAasn	44	3	103	23	551
Matteawan State Hospital	Ment	State	1,275			1,249	141
Bedford Hills 1 000—Westchester	TB	NPAasn	230			226	249
Montefiore Hospital Country Sanatorium*	TB	NPAasn	230			226	249
Binghamton 76 662—Broome	Gen	City	460	40	878	301	8,203
Binghamton City Hospital**	Gen	City	460	40	878	301	8,203
Binghamton State Hospital**	Vent	State	2,9 4			2,842	631
Brentwood 534—Suffolk	Ment	State	5 702			5 407	1 161
Pilgrim State Hospital	Gen	Corp	35	2	7	15	142
Ross Sanatorium	Gen	Corp	35	2	7	15	142
Bronxville 6 851—Westchester	Gen	NPAasn	87	18	270	60	1,961
Lawrence Hospital	Gen	NPAasn	87	18	270	60	1,961
Brooklyn 2,500 401—Kings	Gen	Indiv	77	16	207	24	628
Adelphi Hospital	Gen	Corp	50	25	424	41	1,543
Bay Ridge Sanatorium	Gen	Corp	50	25	424	41	1,543
Bedford Maternity	Mat	Corp	20	20	102	4	124
Bensonhurst Maternity	Mat	Corp	20	20	102	4	124
Bethany Deaconess Hospital	Gen	Church	80	12	210	50	1,634
Beth El Hospital*	Gen	NPAasn	190	48	1 264	182	4,511
Beth Moses Hospital*	Gen	NPAasn	190	48	1 264	182	4,511
Boro Park General Hospital	Gen	Indiv	82	30	812	30	1,414
Brooklyn Eye and Ear Hosp	ENT	NPAasn	143			73	9,610
Brooklyn Home for Consumptives	TB	NPAasn	109			109	75
Brooklyn Hospital**	Gen	NPAasn	382	63	9 38	210	7,373
Brooklyn State Hospital**	Ment	State	1,900			1,241	1,809

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Brooklyn Women's Hospital	Mat	NPAasn	40	40	No data supplied		
Bushwick Hospital**	Gen	NPAasn	105	23	459	81	2,539
Caledonian Hospital*	Gen	NPAasn	100	30	283	37	1,273
Carson O Peck Memorial Hosp	Gen	NPAasn	89	31	469	48	1,577
Coney Island Hospital*	Gen	City	270	30	1 423	264	8,049
Crown Heights Hospital	Gen	NPAasn	115	27	553	89	3,311
Cumberland Hospital**	Gen	City	284	34	807	338	8,062
Evangelical Deaconess Hosp	Gen	Church	65	20	184	12	835
Greenpoint Hospital*	Gen	City	390	48	1,866	234	8,658
Harbor Hospital	Gen	NPAasn	50	12	No data supplied		
Hosp of the Holy Family	Gen	Church	62			56	1,355
House of St Giles the Cripple	Orth	Church	46			36	135
Israel Zion Hospital*	Gen	NPAasn	330	100	2 093	240	7,676
Jewish Hospital**	Gen	NPAasn	547	127	2 369	379	12,633
Kings County Hospital**	Gen	City	3 120	120	3,001	2,931	3,786
Kingston Avenue Hospital*	Isr	City	410			280	3,043
Kingsway Hospital	Gen	Indiv	22	10	160		
Liberty Hospital	Gen	Corp	45	24	562	23	604
Long Island College Hosp**	Gen	NPAasn	438	42	738	290	7,007
Lutheran Hospital	Gen	Church	62	22	432	43	2,806
Madison Park Hospital	Gen	Corp	74	30	707	47	1,070
Methodist Episcopal Hosp**	Gen	Church	320	80	1,561	345	7,626
Midwood Hospital	Gen	Corp	50	27	391	31	1,238
Norwegian Lutheran Deaconesses' Home and Hosp**	Gen	Church	164	30	728	133	3,405
Prospect Heights Hospital*	Gen	NPAasn	175	39	400	60	2,263
Riverdale Sanatorium	Gen	NPAasn	14	12	94	4	157
Riverdale Hospital	Gen	Indiv	50	38	333	12	635
St Catherine's Hospital*	Gen	Church	244	61	1 157	203	5,233
St Cecilia Hospital for Women	Mat	Church	56	60	432	31	1,130
St Charles Hospital Orthopedic Clinic	Orth	Church	50			53	211
St John's Hospital**	Gen	Church	204	30	815	159	4,039
St Mary's Hospital**	Gen	Church	262	64	691	194	5,043
St Peter's Hospital*	Gen	Church	200	14	150	150	2,648
Samaritan Hospital	Gen	Church	33	13	242	23	1,150
Samaritan Hospital Skene Division	Gen	Church	60	15	244	31	843
Shore Road Hospital	Gen	Corp	45	16	350		
Station Hospital	Gen	Army	50			81	480
Swedish Hospital	Gen	NPAasn	60	15	170	47	1,293
Trinity Hospital*	Gen	NPAasn	110	15	200	90	2,716
U S Naval Hospital	Gen	Navy	848			222	1,221
Unity Hospital	Gen	NPAasn	170	31	627	110	3,685
Victory Memorial Hospital	Gen	Corp	56	13	216	24	1,007
Dr Wade's Private Hospital	Gen	Indiv	40	14	65	20	280
Williamsburg Maternity Hosp	Mat	Corp	70	62	990	30	1,024
Wyckoff Heights Hospital**	Gen	NPAasn	170	30	No data supplied		
Buffalo 573 076—Erie	Gen	CyCo	1 025	78	738	967	10,492
Buffalo City Hospital**	Gen	NPAasn	78	6	71	64	1,741
Buffalo Columbus Hospital	Gen	NPAasn	450	23	673	300	7,891
Buffalo General Hospital**	Gen	NPAasn	450	23	673	300	7,891
Buffalo Hospital of the Sisters of Charity*	Gen	Church	215	20	238	150	4,136
Buffalo State Hospital**	Ment	State	2 764			2,501	600
Central Park Clinic	Gen	Corp	60	15	163	23	1,562
Children's Hospital*	Gen	NPAasn	211	39	502	154	4,809
Deaconess Hospital*	Gen	NPAasn	100	35	717	133	3,580
Emergency Hospital of the Sisters of Charity*	Gen	Church	105			89	2,510
Lafayette General Hospital	Gen	NPAasn	51	14	176	35	1,039
Memorial Hospital	Gen	NPAasn	55	10	194	40	894
Mersey Hospital**	Gen	Church	177	38	678	156	4,163
Millard Fillmore Hospital**	Gen	NPAasn	236	73	1 093	163	5,149
Providence Retreat	N&M	Church	200			106	34
St Mary's Infant Asylum and Maternity Hospital	MatCh	Church	70	65	996	52	1,077
State Institute for the Study of Malignant Disease	SkCa	State	30			23	2,242
U S Marine Hospital	Gen	USPHS	70			58	559
Callicoon 630—Sullivan	Gen	Indiv	10	4	47	4	173
Callicoon Hospital	Gen	Indiv	10	4	47	4	173
Cambridge 1 762—Washington	Gen	NPAasn	07	15	00	54	894
Mary McOlellan Hospital*	Gen	NPAasn	07	15	00	54	894
Cannadagua 7,641—Ontario	N&M	Corp	70			44	07
Brigham Hall Hospital	N&M	Corp	70			44	07
Frederick Ferris Thompson Hospital	Gen	NPAasn	103	17	248	77	1,580
Veterans Admin Facility	Ment	Vet	468			459	131
Cannastota 4 235—Madison	Gen	City	22	0	55	0	343
Cannastota Memorial Hospital	Gen	City	22	0	55	0	343
Cassadaga 480—Chautauque	TB	County	180			108	188
Newton Memorial Hospital	TB	County	180			108	188
Castle Point 23—Dutchess	TB	Vet	479			470	600
Veterans Admin Facility	TB	Vet	479			470	600
Otakill 5 082—Greene	Gen	County	20	8	108	21	993
Memorial Hospital of Greene County	Gen	County	20	8	108	21	993
Central Islip, 675—Suffolk	Ment	State	7 940	3	10 744	5	1,849
Central Islip State Hospital*	Ment	State	7 940	3	10 744	5	1,849
Central Valley 850—Orange	N&M	Corp	40			29	3
Falkirk in the Ramapo	N&M	Corp	40			29	3
Chenango Bridge 280—Broome	TB	County	120			106	110
Broome County Tuberculosis Hospital	TB	County	120			106	110
Clifton Springs 1,818—Ontario	Gen	NPAasn	474	8	32	105	2,102
Clifton Springs Sanatorium and Clinic*	Gen	NPAasn	474	8	32	105	2,102
Cohoes 23 226—Albany	Gen	NPAasn	59	10	130	36	940
Cohoes Hospital*	Gen	NPAasn	59	10	130	36	940
Cold Spring 1 784—Putnam	Gen	NPAasn	20	5	54	12	300
Julia L Butterfield Memorial Hospital	Gen	NPAasn	20	5	54	12	300
Cooperstown 2 000—Otsego	Gen	NPAasn	72	8	100	23	670
Mary Imogene Bassett Hosp	Gen	NPAasn	72	8	100	23	670

KANSAS—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Smith Center 1736—Smith Center Hospital	Gen	Indiv	8	2	1	4	07
Topeka 64120—Shawnee Florence Crittenton Home	Mat	NPA'ssn	20	20	23	10	23
Methodist Episcopal Home for the Aged	Inst	Church	60			50	100
Acile Johns Memorial Hospital (col)	Inst	State	10			10	27
State Industrial School for Boys	Inst	State	30			8	
Wichita 111110—Sedgwick Salvation Army Home and Hospital	Mat	Church	70	10	130	5	145
Sedgwick County Tuberculosis Sanitarium	TH	County	60			48	67
Suburban Rest Sanitarium	Conv	Indiv	30			6	20
Wichita Children's Home Hospital	Inst	NPA'ssn	20			10	343
Winfield 8,338—Conley State Training School	McDe	State	104			1 020	73
Summary for Kansas							
	Number	Beds	Average Patients	Patients Admitted			
Hospitals and sanatoriums	94	11 874	8 627	83 282			
Related institutions	31	2,002	1 609	6 744			
Totals	127	13 876	10 236	90 026			
Refused registration	27	602					

KENTUCKY

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Anchorage 564—Jefferson Ford Sanatorium	N&M	Indiv	50			34	07
Ashland 23 074—Boyd Kings Daughters Hospital	Gen	NPA'ssn	70	6	113	10	1 001
Stephenson Hospital and Clinic	Gen	Indiv	70	6	10	15	220
Berea 1,227—Madison Berea College Hospital	Gen	NPA'ssn	60	5	16	22	2 113

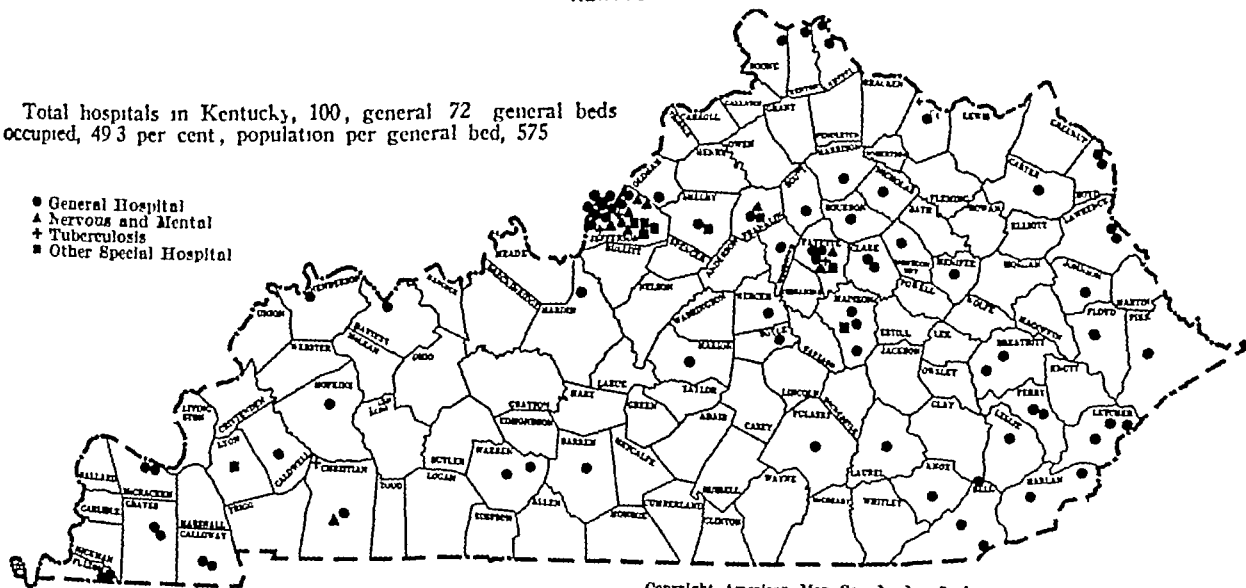
KENTUCKY—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Ft Thomas (Newport P O)—Campbell Station Hospital	Gen	Army	52	3	20	300	
Frankfort 11 076—Franklin Kings Daughters Hospital	Gen	NPA'ssn	30	5	48	15	623
Frenchburg 240—Menlee Frenchburg Hospital	Gen	Church	16	1	4	5	113
Georgetown 4 200—Scott John Graves Ford Memorial Hospital	Gen	CyCo	22	6	24	11	2,3
Glasgow 1 042—Barren F J Samson Community Hosp	Gen	NPA'ssn	45	14	39	18	996
Harlan 4,227—Harlan Harlan Hospital	Gen	Corp	50	6	6	6	6
Harrodsburg 4 020—Mercer A D Price Memorial Hospital	Gen	NPA'ssn	20	5	8	8	200
Hazard 7 021—Perry Hazard Hospital	Gen	Corp	50	8	15	18	009
Hurst Snyder Hospital	Gen	Corp	25	6			
Henderson 11 668—Henderson Henderson Hospital	Gen	Corp	42	5	40	20	8,0
Hopkinsville 10 746—Christian Jennie Stuart Memorial Hosp	Gen	NPA'ssn	27	2	16	13	573
Hyden 313—Leslie Frontier Nursing Service Hosp	Gen	NPA'ssn	12	6	31	12	377
Jackson 2,109—Brentthitt Bach Hospital	Gen	Indiv	28		17	12	680
Jenkins 8 460—Jetcher Jenkins Hospital	Gen	NPA'ssn	50	10	6	6	6
Lexington 4,736—Fayette Good Samaritan Hospital	Gen	Church	200	16	250	130	4 822
High Oaks Sanatorium	N&M	Indiv	35			18	164
Julius Marks Sanatorium	TH	County	80			81	116
St Joseph's Hospital	Gen	Church	100	20	23	113	4 716
Shriners Hospital for Crippled Children	Orth	Frat	20			23	112
Veterans Admin Facility	Gen	Vet	2,0			26	715
London 1 000—Laurel Pennington General Hospital	Gen	Corp	30	2	6	12	330
Louisville 1 901—Lawrence Louis General Hospital	Gen	Indiv	35	6	6	5	128
Riverview Hospital	Gen	Indiv	10		6	2	65
Louisville 307 745—Jefferson Beechurst Sanitarium	N&M	Indiv	20			8	60
Children's Free Hospital	Chil	NPA'ssn	70			68	090
Jewish Hospital	Gen	NPA'ssn	86	14	166	37	1 492

KENTUCKY

Total hospitals in Kentucky, 100, general 72 occupied, 49.3 per cent, population per general bed, 575

- General Hospital
- ▲ Nervous and Mental
- + Tuberculosis
- Other Special Hospital



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Beverly 69—Bell Red Bird Evangelical Hospital	Gen	Church	15	4	13	2	120
Bowling Green 12,448—Warren City Hospital	Gen	City	52	8	63	11	690
Carlisle 1 400—Nicholas Johnson Memorial Hospital	Gen	County	12	2	10	3	136
Covington 60,252—Kenton St Elizabeth Hospital	Gen	Church	203	27	68	120	3 606
Cynthiana, 4,386—Harrison Harrison Memorial Hospital	Gen	NPA'ssn	30	7	46	12	263
Danville 6 720—Boyle Danville and Boyle County Hospital	Gen	CyCo	50	5	53	20	
Dayton 9 071—Campbell Speer Memorial Hospital	Gen	County	100	15	207	53	2,146
Ft Knox 500—Hardin Station Hospital	Gen	Army	50		1	30	1,937

Kentucky Baptist Hospital	Gen	Church	130	20	207	75	2 686
Kosair Crippled Children Hosp	Orth	NPA'ssn	77			50	180
Louisville City Hospital	Gen	City	528	58	1 360	412	10 582
Louisville Neuropathic Sanat	N&M	Corp	24			20	2,2
Methodist Episcopal Deaconess Hospital	Gen	Church	64	8	139	40	1 237
Norton Memorial Infirmary	Gen	NPA'ssn	114	23	145	61	2 294
Red Cross Hospital (col)	Gen	NPA'ssn	60	6	8	26	206
St Anthony's Hospital	Gen	Church	135	22	308	73	1 902
St Joseph Infirmary	Gen	Church	320	30	277	140	4,309
Ss Mary and Elizabeth Hos	Gen	Church	130	19	340	63	2,100
State Tuberculosis Sanatorium	TH	State	80			51	146
Stokes Hospital	N&M	Corp	35				131
U S Marine Hospital	Gen	USPHS	100			45	463
Lynch 300—Harlan Lynch Hospital	Gen	Corp	50	4	30	11	403

Key to symbols and abbreviations is on page 1091

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Hempstead 12,600—Nassau Mercy Hospital	Gen	Church	20	11	204	10	408
Station Hospital	Gen	Army	3		2	7	348
Herkimer 10 448—Herkimer Herkimer Memorial Hospital	Gen	NPAasn	31	9	86	28	889
Holcomb 294—Ontario Oak Mount Sanatorium	TB	County	45		4		80
Holtville 260—Suffolk Suffolk Sanatorium	TB	County	104			104	110
Hornell 16,200—Steuben Bethesda Hospital	Gen	NPAasn	40	10	112	21	740
St James Mercy Hospital	Gen	Church	44	16	233	54	1,761
Hudson 12,337—Columbia Hudson City Hospital	Gen	NPAasn	92	15	200	72	2,163
Huntington 6 200—Suffolk Huntington Hospital	Gen	Corp	75	12	172	37	1,177
Illion 9,880—Herkimer Illion Hospital	Gen	NPAasn	25	0	54	13	621
Irrington 8 067—Westchester Irrington House	Card	NPAasn	84			41	101
Ithaca 20,709—Tompkins Tompkins County Memorial Hospital	Gen	NPAasn	10	20	233	63	2,062
Jamaica—Queens Mary Immaculate Hospital*	Gen	Church	2	56	1,210	10	6,676
Queensboro Hospital for Communicable Diseases	Iso	City	46		41	42	669
Van Wyck Hospital	Gen	Indiv	34	0	21	17	400
Jamestown 4 155—Chautauqua Jamestown General Hospital	Gen	City	100	15	3,7	61	2,843
Woman's Christian Association Hospital	Gen	NPAasn	104	32	410	55	2,217
Johnson City, 13 567—Broome Charles S Wilson Memorial Hospital*	Gen	NPAasn	104	26	512	153	3,807
Katonah 1 400—Westchester Four Winds	N&M	Indiv	3		23	46	
Hillbourne Farms	Nerv	NPAasn	1		2	4	
Kings Park 1 067—Suffolk Kings Park State Hospital*	Ment	State	4	6	1	4,24	1,561
Klifton 28 088—Ulster Benedictine Hospital	Gen	Church	84	16	19	64	3,12
Klifton Hospital*	Gen	NPAasn	118	1	252	81	2,420
Dr C O Sahler Sanitarium	Conv	Corp	100			31	83
Ulster County Tuberculosis Hospital	TB	County	56			56	89
Lackawanna, 23,948—Erie Moses Taylor Hospital	Gen	NPAasn	23		9	202	
Our Lady of Victory Hosp*	Gen	Church	134	16	230	82	1,840
Lake Kusaqua 10—Franklin Stony Wold Sanatorium	TB	NPAasn	14			140	108
Lake Placid 2,930—Essex Lake Placid General Hospital	Gen	City	26	6	69	12	280
Liberty 3 427—Sullivan Maimonides Hospital	Gen	NPAasn	24	6	38	15	413
Workmen's Circle Sanatorium	TB	Frat	100			49	93
Little Falls 11 100—Herkimer Little Falls Hospital	Gen	NPAasn	26	9	80	21	783
Livingston 240—Columbia Potts Memorial Hospital	TB	NPAasn	5			53	24
Lockport 23,100—Niagara Lockport City Hospital	Gen	City	68	14	2	50	1,50
Niagara County Sanatorium	TB	County	200			203	168
Long Beach 5 817—Nassau Long Beach Hospital	Gen	NPAasn	31	5	6	17	680
Long Island City—Queens Boulevard Sanitarium	Gen	Corp	73	28	633	40	2,517
Daly's Astoria Sanatorium	Gen	Corp	60	24	322	17	593
River Crest Sanitarium	N&M	Corp	132			98	202
St John's Long Island City Hospital*	Gen	Church	2	50	1,210	236	6,272
Loomis 200—Sullivan Loomis Sanatorium*	TB	NPAasn	12			99	147
Lowville 3 424—Lewis Lewis County General Hosp	Gen	StateCo	40	8	90	17	781
Lyons 3,506—Wayne Edward J Barber Hospital	Gen	Indiv	22	4	80	17	453
Lyons Hospital	Gen	Corp	20	5	48	13	280
Malone 8 657—Franklin Alice Hyde Memorial Hosp	Gen	NPAasn	75	10	101	39	969
Marcy 112—Oneida Marcy State Hospital	Ment	State	2,683			2	333
Medina 6 071—Orleans Medina Memorial Hospital	Gen	NPAasn	29	6	56	10	3
Middle Grove 280—Saratoga Saratoga County Tuberculosis Hospital	TB	County	90			86	184
Middletown 21,276—Orange Elizabeth A. Horton Memorial Hospital	Gen	NPAasn	80	18	226	43	1,561
Middletown Sanitarium and Hospital	Gen	Indiv	45	8	127	24	607
Middletown State Homeopathic Hospital*	Ment	State	3 607			3 033	336
Minerva 8 155—Nassau Nassau Hospital*	Gen	NPAasn	175	30	718	145	4,877
Minerville 837—Essex Minerville Hospital	Indus	NPAasn	14			No data supplied	
Monticello 3,450—Sullivan Hamilton Avenue Hospital	Gen	Indiv	12	4	50	8	814
Monticello Hospital	Gen	NPAasn	23	6	56	10	401
Mt Kisco 5 127—Westchester Northern Westchester Hospital	Gen	NPAasn	103	18	235	62	1,538
Mt McGregor—Saratoga Metropolitan Life Insurance Company Sanatorium*	G&TB Corp		360			237	337

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Mt Vernon 61 469—Westchester Mt Vernon Hospital*	Gen	NPAasn	1	3	40	743	162 3,683
Mt Vision 2 8—Otsego Otsego County Sanatorium	TB	County	20			17	26
Newburgh 31 275—Orange Estelle and Walter C Odell Memorial Sanatorium for Tuberculosis	TB	County	50			48	62
St Luke's Hospital	Gen	NPAasn	172	19	225	68	2,582
New Rochelle 54 000—Westchester New Rochelle Hospital*	Gen	NPAasn	121	26	50	133	4,461
New York City 4 211 699—New York Babies Hospital*	Chil	NPAasn	154			9	2,394
Beekman Street Hospital	Gen	NPAasn	100			3	2,451
Bellevue Hospital*	Gen	City	2,313	10	2,228	2,223	64,340
Beth David Hospital*	Gen	NPAasn	182	24	2	90	2,360
Beth Israel Hospital*	Gen	NPAasn	3	84	916	1	6,322
Broad Street Hospital	Gen	NPAasn	117	8	81	76	2,833
Bronx Eye and Ear Infirmary	ENT	NPAasn	30			13	2,490
Bronx Hospital*	Gen	NPAasn	2	59	1,309	190	7,634
Bronx Maternity and Woman's Hospital	Mat	NPAasn	30	30	455	13	496
Central Neurological Hosp*	Neur	City	470			466	1,016
Charles B Towns Hospital	Drug	Indiv	50	2	3	17	580
Columbus Hospital*	Gen	Church	260	40	297	12	2,467
Columbia Hospital Extension	Gen	Church	8	15	182	53	1,484
Community Hospital	Gen	NPAasn	90	18	195	36	1,193
Crotona Park Sanitarium	Gen	Corp	40	24	3	17	82
Doctors Hospital	Gen	NPAasn	2	50	528	80	2,948
Fifth Avenue Hospital*	Gen	NPAasn	300	40	632	162	6,008
Fitch Sanitarium	Gen	Corp	78	48	490	26	1,03
Fordham Hospital*	Gen	City	538	51	1,615	512	12,648
Franklin Maternity Sanitarium	Mat	Indiv	10	10	178	5	193
French Hospital*	Gen	Frat	200			145	3,564
Gelber Hospital	FNT	Indiv	24			2	497
Gouverneur Hospital*	Gen	City	200	20	417	187	5,080
Harlem Eye and Ear Hospital*	ENT	NPAasn	50			6	1,112
Harlem Hospital*	Gen	City	273	52	1 512	393	12,117
Herman Knapp Memorial Eye Hospital*	Eye	NPAasn	50			32	790
Hospital for Joint Diseases**	G&Or	NPAasn	3			802	5,161
Hunts Point Hospital	Gen	Corp	90	27	686	38	1,704
Jewish Maternity Hospital	Mat	NPAasn	43	48	1,012	31	1,134
Jewish Memorial Hospital	Gen	NPAasn	106	12	100	81	2,387
Kniekerbocker Hospital*	Gen	NPAasn	175	30	417	114	3,563
Lebanon Hospital*	Gen	NPAasn	162	20	346	101	3,166
Dr Leff's Maternity Hospital	Mat	Indiv	51	51	586	16	670
Lenox Hill Hospital*	Gen	NPAasn	514	56	309	232	7,571
Le Roy Sanitarium	Gen	Corp	54	10			
Lincoln Hospital*	Gen	City	233	32	1 288	28	7,670
Lutheran Hospital	Gen	NPAasn	100	22	144	29	877
Manhattan Eye Ear and Throat Hospital*	FNT	NPAasn	216			1	37 128
Manhattan General Hospital*	Gen	Corp	188	12	200	80	2,569
Manhattan State Hospital*	Ment	State	3 433			4 074	2,532
Memorial Hospital for the Treatment of Cancer and Allied Diseases*	Ca	NPAasn	103			64	2,440
Metropolitan Hospital*	Gen	City	1 502	58	1 503	1 736	12,160
Middtown Hospital	Gen	NPAasn	60	10	5	2	2,230
Misericordia Hospital*	Gen	Church	247	75	1 192	18	3,513
Montefiore Hospital for Chronic Diseases*	Gen	NPAasn	711			664	1,820
Morrisania City Hospital*	Gen	City	471	68	2,206	4	13,293
Mount Morris Park Hospital	Gen	Indiv	63	30	151	13	(2)
Mt Sinai Hospital*	Gen	NPAasn	780			580	13 791
Murray Hill Hospital	Gen	Corp	73	8			
Neurological Institute of New York*	Neur	NPAasn	211			147	3,260
New York City Cancer Institute Hospital*	Ca	City	182			102	866
New York City Hospital*	Gen	City	1 030	30	1 0	1,038	8,338
New York Eye and Ear Infirmary*	ENT	NPAasn	175			6	4,673
New York Foundling Hosp*	MatCh	Church	330	60	459	257	3,148
New York Homeopathic Medical College and Flower Hospital*	Gen	NPAasn	105	30	544	161	5,30
New York Hospital*	Gen	NPAasn	1,010	131	2 671	454	11 2
New York Infirmary for Women and Children*	Gen	NPAasn	12	37	714	76	2,121
New York Orthopaedic Dispensary and Hospital*	Orth	NPAasn	132			92	1,172
New York Polyclinic Medical School and Hospital*	Gen	NPAasn	369	37	699	217	7,907
New York Post Graduate Medical School and Hospital*	Gen	NPAasn	415			242	8 734
New York Society for the Relief of the Ruptured and Crippled*	Orth	NPAasn	269			100	3,260
New York State Psychiatric Institute and Hospital*	Ment	State	200			164	397
Park East Hospital	Gen	Corp	120	24	361	64	2,508
Parkway Latin Hospital	Gen	Corp	65	10	158	18	669
Park West Hospital	Gen	Corp	64	10	167	38	2,108
Payne Whitney Psychiatric Clinic	(Included in New York Hospital)					33	1,298
Peoples Hospital	Gen	NPAasn	53	5	77	439	10 746
Presbyterian Hospital*	Gen	NPAasn	648				
Reconstruction Hospital (Included in the New York Post-Graduate Medical School and Hospital)	TBIs	City	332			370	1,577
Riverside Hospital	Gen	NPAasn	379			208	5,008
Roosevelt Hospital*	Gen	Indiv	110	35	921	60	2,490
Royal Hospital	(Included in New York Foundling Hospital)						
St Ann's Maternity Hosp	Gen	Church	102	27	320	47	1,362
St Elizabeth's Hospital							

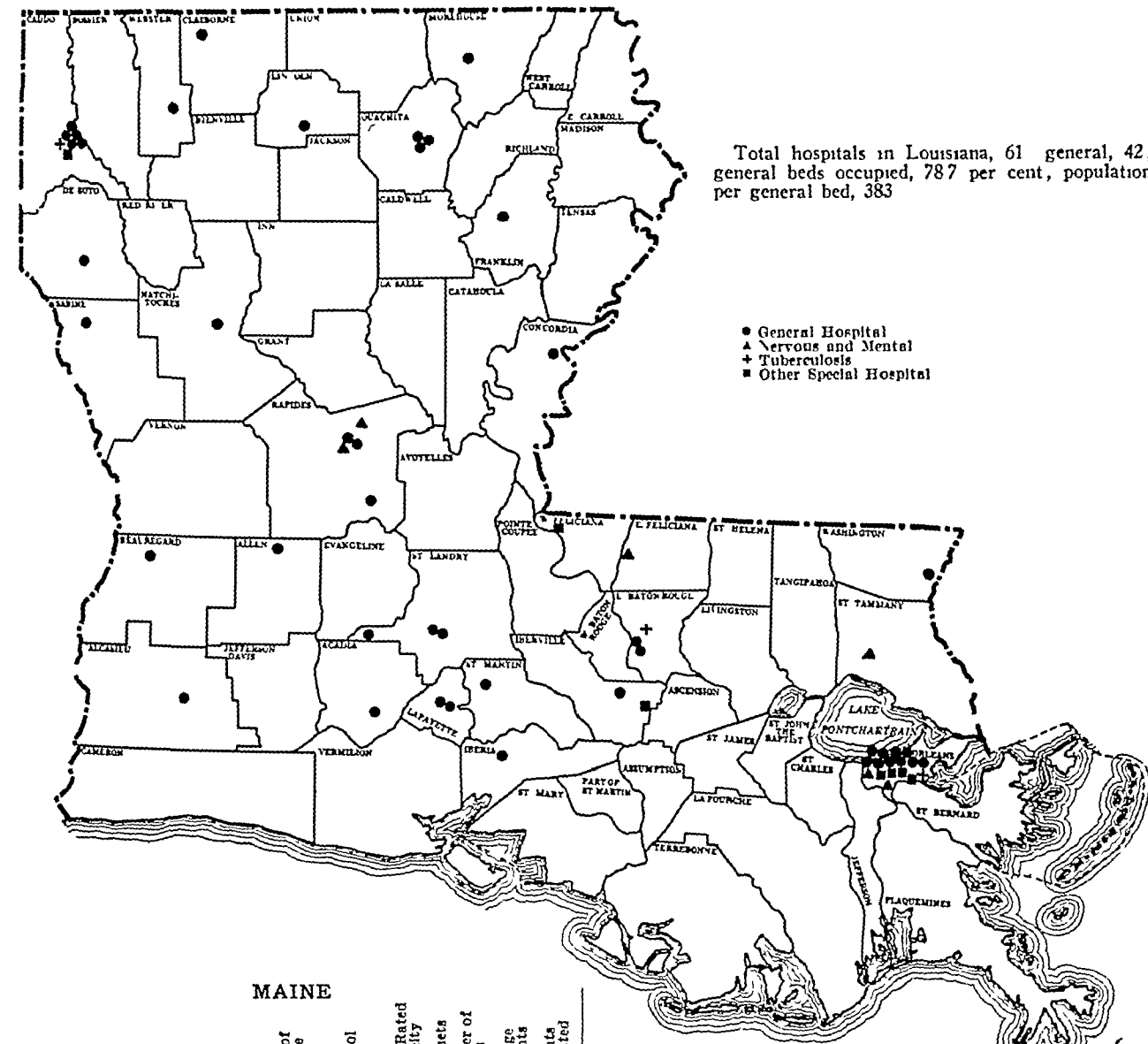
LOUISIANA—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
New Orleans 438 762—Orleans	Conv	NPAssn	30			20	300
New Orleans Convalescent Home							
New Orleans Home for Incurable	Inc	NPAssn	130		10	2	
Orleans Tuberculosis Hospital	TH	NPAssn	100		40		120
St Anna's Asylum	Inst	Church	10			0	
Opelousas 6250—St Landry	Gen	Indiv	15				
St Landry Sanitarium							
No data supplied							
Summary for Louisiana	Number	Beds	Average Patients	Patients Admitted			
Hospitals and sanatoriums	51	12 277	10 453	120 743			
Related institutions	10	800	740	838			
Totals	61	13,232	11 193	130 601			
Refused registration	2	22					

MAINE—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Bar Harbor 4480—Hancock	Gen	NPAssn	30	4	29	19	818
Mount Desert Island Hospital							
Bar Mills 165—York	Gen	Indiv	12	2	4	2	150
Buxton Hollis Hospital							
Bath 9110—Sagadahoc	Gen	NPAssn	50	10	72	17	446
Bath Memorial Hospital							
Belfast 4,093—Waldo	Gen	NPAssn	20	5	15	7	182
Bradbury Memorial Hospital	Gen	NPAssn	33	6	29	10	475
Waldo County General Hosp							
Biddeford 17 631—York	Gen	Corp	40	10	90	30	778
Trull Hospital	Gen	NPAssn	50	10	117	32	1 157
Webber Hospital							
Blue Hill 1 430—Hancock	Gen	NPAssn	20	6	29	11	671
Blue Hill Memorial Hospital							
Boothbay Harbor 2 076—Lincoln	Gen	Corp	20	6	15	2	167
St Andrews Hospital							

LOUISIANA



MAINE

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Augusta 17 108—Kennebec	Gen	NPAssn	60	12	132	31	1 007
Augusta General Hospital	Gen	Ment	1,300			1,207	286
Augusta State Hospital							
Veterans Admin Facility	Gen	Vet	200			181	1 030
Bangor 28 749—Penobscot	TB	NPAssn	30			14	24
Bangor Sanatorium	Ment	State	800			973	262
Bangor State Hospital	Gen	NPAssn	150	14	73	140	3,348
Eastern Maine General Hosp	Gen	Indiv	25	5	8	6	150
Paine Private Hospital							

Brunswick 6 144—Cumberland	Gen	Indiv	40	6		No data supplied	
Brunswick Hospital							
Calais 5 470—Washington	Gen	Indiv	50	5	49	30	897
Calais Hospital							
Cape Cottage 33—Cumberland	Gen	Army	64				3 082
Station Hospital							
Caribou 7 248—Aroostook	Gen	City	50	10	70	20	670
Cary Memorial Hospital							

Key to symbols and abbreviations is on page 1091

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NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Tupper Lake 5,271—Franklin Mercy General Hospital	Gen	Church	85	2	26	14	468
Tuxedo Park 2,000—Orange Tuxedo Memorial Hospital	Gen	NPAasn	29	8	30	17	463
Utica 101,740—Oneida Faxon Hospital	Gen	NPAasn	107	42	237	63	2,273
Masonic Soldiers and Sailors Memorial Hospital	Gen	Frat	200			117	466
Oneida County Tuberculosis Sanatorium	TB	County	132			129	115
St Elizabeth Hospital	Gen	Church	125	20	313	96	2,615
St Luke's Home and Hosp	Gen	Church	123	28	242	52	2,177
Utica General Hospital	Gen	City	127	8	115	101	3,136
Utica Memorial Hospital	Gen	NPAasn	62	13	130	30	1,370
Utica State Hospital	Ment	State	1,640			1,622	504
Valhalla, 620—Westchester Grasslands Hospital	Gen	County	883	15	356	644	6,291
Warsaw 3,477—Wyoming Wyoming County Community Hospital	Gen	County	62	11	138	46	1,350
Warwick 2,433—Orange Warwick Hospital and Clinic	Gen	Indiv	21	4	22	8	250
Waterloo 4,047—Seneca Waterloo Memorial Hospital	Gen	NPAasn	13	4	47	5	268
Watertown 22,200—Jefferson House of the Good Samaritans	Gen	NPAasn	122	13	176	81	2,302
Jefferson County Sanatorium	TB	County	78			80	69
Jefferson Hospital	Gen	Church	100	14	200	63	1,717
Waverly 5,662—Tioga Tioga County General Hosp	Gen	County	53	12	78	36	806
Wellsville 5,674—Allegany Memorial Hospital of Wm F and Gertrude F Jones	Gen	City	45	10	113	24	960
West Haverstraw 2,834—Rockland New York State Reconstruction Home	Orth	State	310			162	108
West Point, 1,250—Orange Station Hospital	Gen	Army	130	8	62	59	1,722
White Plains 3,530—Westchester Bloomingdale Hospital	N&M	NPAasn	300			228	227
New York Orthopaedic Dispensary and Hospital	Orth	NPAasn	160			160	420
St Agnes Hospital	Gen	Church	90	24	490	60	2,571
White Plains Hospital	Gen	NPAasn	120	22	220	58	2,168
Willard, 200—Seneca Willard State Hospital	Ment	State	2,692			2,616	440
Wingdale 156—Dutchess Harlem Valley State Hosp	Ment	State	3,012			2,129	1,467
Woodhaven—Queens St Anthony's Hospital	TB	Church	400			370	678
Wynantskill 167—Rensselaer Pawling Sanatorium	TB	County	102			132	130
Yonkers 134,646—Westchester Gray Oaks Hospital	TB	City	50			48	81
House of Rest at Sprain Ridge	TB	NPAasn	100			67	90
St John's Riverside Hosp	TB	NPAasn	170	24	330	124	3,702
St Joseph's Hospital	Gen	Church	100	20	338	52	2,894
Yonkers General Hospital	Gen	NPAasn	143	54	476	63	2,462

Related Institutions

Albany 127,412—Albany Albany Hosp for Incurables	Inc	NPAasn	85			84	42
Evergreens Sanatorium School	MeDe	Indiv	10			4	
St Margaret's House and Hosp	Inst	NPAasn	50			42	98
Van Rensselaer Preventorium	Chil	County	50			No data supplied	
Albion 4,878—Orleans Albion State Training School	MeDe	State	239	19	5	172	58
Orleans Welfare Hospital and Home	Gen	County	40	2	24	34	138
Amityville 4,437—Suffolk Brunswick Home Sanit	MeDe	Corp	378			No data supplied	
Anbourn 30,652—Cayuga Auburn State Prison Hospital	Inst	State	60			7	228
Bainbridge 1,324—Chenango Bainbridge Hospital	Gen	Indiv	15	6	42	10	297
Bay Shore 4,060—Suffolk Dr King's Private Hospital	Gen	Indiv	30	8		No data supplied	
Bedford Hills 1,000—Westchester Westfield State Farm	Inst	State	49	80	1	26	385
Binghamton 76,662—Broome Binghamton Training School for Nervous Backward and Mental Defectives	MeDe	Indiv	50			30	9
Dr Lyon's Sanatorium	N&M	Indiv	10			No data supplied	
Breeseport 495—Chemung Chemung County Home	Inst	County	30			32	175
Brewster 1,664—Putnam Mountainbrook Farm Sanit	Conv	Indiv	20			18	53
Brooklyn 2,500,401—Kings Brooklyn Hebrew Home and Hospital for Aged	Inst	NPAasn	460			440	174
Brooklyn Hebrew Orphan Asylum	Inst	NPAasn	60			14	946
Churchill Sanatorium	Gen	Indiv	12	3	30	3	109
Faith Home for Incurables	Inc	NPAasn	60			50	5
Hamilton Private Hospital	Gen	Indiv	24	3	28	8	441
Jewish Sanatorium for Incurables	Inc	NPAasn	350			247	102
Buffalo 573,076—Erie Buffalo Eye and Ear Infirmary and Wettlaufer Clinic	ENT	Corp	8	2		8	407
Parkside Sanatorium and Hospital	Conv	Indiv	40			20	115
Salvation Army Maternity Hospital and Home	Mat	Church	15	15	44	14	47

NEW YORK—Continued

Related Institutions	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Calcium 111—Jefferson Jefferson County Contagious Hospital	Iso	County	18			4	53
Camden 1,912—Oneida Healthforfe—Dr Bell's Private Rest Home	N&M	Indiv	15			1	4
Canandaigua 7,541—Ontario Canandaigua Health Home	Conv	Indiv	18			7	35
Castle 900—Wyoming Greene Sanatorium	Conv	Indiv	37			20	100
Corona—Queens Dr Combes Sanatorium	N&M	Corp	60			37	51
Cortland 15,043—Cortland Cortland Sanatorium	Gen	Part	12	1	3	6	188
Dannemora, 3,348—Clinton Clinton Prison General and Tuberculosis Hospital	Inst	State	230			20	785
Delhi 1,840—Delaware Delhi Hospital	Gen	NPAasn	11	3	26	4	100
Eastview, 161—Westchester Solomon and Betty Loeb Memorial Home for Convalescents	Conv	NPAasn	112			110	1,560
Edmeston 740—Otsego Otsego School for Backward Children	MeDe	Part	23			20	6
Elmira 47,337—Chemung Chemung County Preventorium	TB	County	22			21	46
Elmira Reformatory	Inst	State	97			20	1,104
Gleason Health Resort	Conv	Corp	40				
Far Rockaway—Queens Brooklyn Jewish Home for Convalescents	Conv	NPAasn	40			40	904
Wave Crest Convalescent Home and Seaside Hospital	Conv	NPAasn	76			72	107
Freeport 15,467—Nassau Freeport Nursing Home	Gen	Indiv	7	4		No data supplied	
Harrison 1,480—Westchester Miriam Osborn Memorial Home	Inst	NPAasn	22			18	
Herkimer 10,446—Herkimer Herkimer County Hospital	Gen	County	18			13	147
Hudson 12,337—Columbia New York State Training School for Girls	Inst	State	58	11	17	5	370
Industry—Monroe Industry General Hospital	Inst	State	50			23	770
Iroquois 40—Erie Thomas Indian School Hosp	Inst	State	30			10	444
Ithaca 20,708—Tompkins Conklin Sanatorium	Gen	Indiv	14			6	201
Reconstruction Home	Orth	Corp	70			60	68
Lake Ronkonkoma 49—Suffolk Gary de Vabre Academy	MeDe	Part	18			10	None
Lockport 23,160—Niagara Odd Fellows Home	Inst	Frat	30			44	40
Manlius 627—Cattaraugus Cattaraugus County Hospital	Inst	County	50				
Mamaroneck 11,766—Westchester Dr Wellington's House	N&M	Indiv	22			No data supplied	
Marey, 112—Oneida Camp Healthmore	TB	NPAasn	50			53	88
Margaretville 771—Delaware Margaretville Hospital	Gen	NPAasn	10	3	16	3	140
Millgrove 110—Erie Erie County Home and Infirmary	Inst	County	1,421			1,290	669
Mohegan Lake 105—Westchester Josephine Home	Conv	NPAasn	48			No data supplied	
Montour Falls 1,489—Schuyler Shepard Relief Hospital	Gen	NPAasn	15	6			
Mt Kisco 5,127—Westchester Restawhile	Conv	Indiv	14			No data supplied	
Mt Vernon 61,499—Westchester Blkur Chollin Convalescent Home for Greater New York	Conv	NPAasn	38			No data supplied	
Napanoch 633—Ulster Institution for Male Defective Delinquents	MeDe	State	965			965	835
Newark 7,649—Wayne Newark State School	MeDe	State	1,822	12	13	1,726	320
New Hartford 1,880—Oneida Children's Hospital Home of Utica	Orth	CyCo	80			18	48
New York City 4,211,699—New York Beth Abraham Home for Incurables	Inc	NPAasn	251			245	102
Bryant Sanatorium	Mat	Corp	10	10	109	3	109
Colored Orphan Asylum	Inst	NPAasn	20			5	266
Correction Hospital	Inst	City	150			No data supplied	
Harts Island Prison Hospital	Inst	City	59			51	440
Hebrew Convalescent Home	Conv	NPAasn	81			67	688
Home for Aged and Infirm Hebrews	Inst	NPAasn	23			28	416
Home for Hebrew Infants	Inst	NPAasn	61			59	1,063
Home for Incurables	Inc	Church	349			296	244
House of Calvary	Ca	Church	140			123	411
House of the Holy Comforter	Inc	Church	100			67	10
Jewish Home for Convalescents	Conv	NPAasn	115				
Mt Eden Hospital	Gen	Indiv	40	30	471	21	1,280
New York City Children's Hospital	MeDe	City	505			943	743
New York County Penitentiary Hospital	Inst	City	43			36	1,010
Dr Rogers Hospital	N&M	Indiv	25			7	118

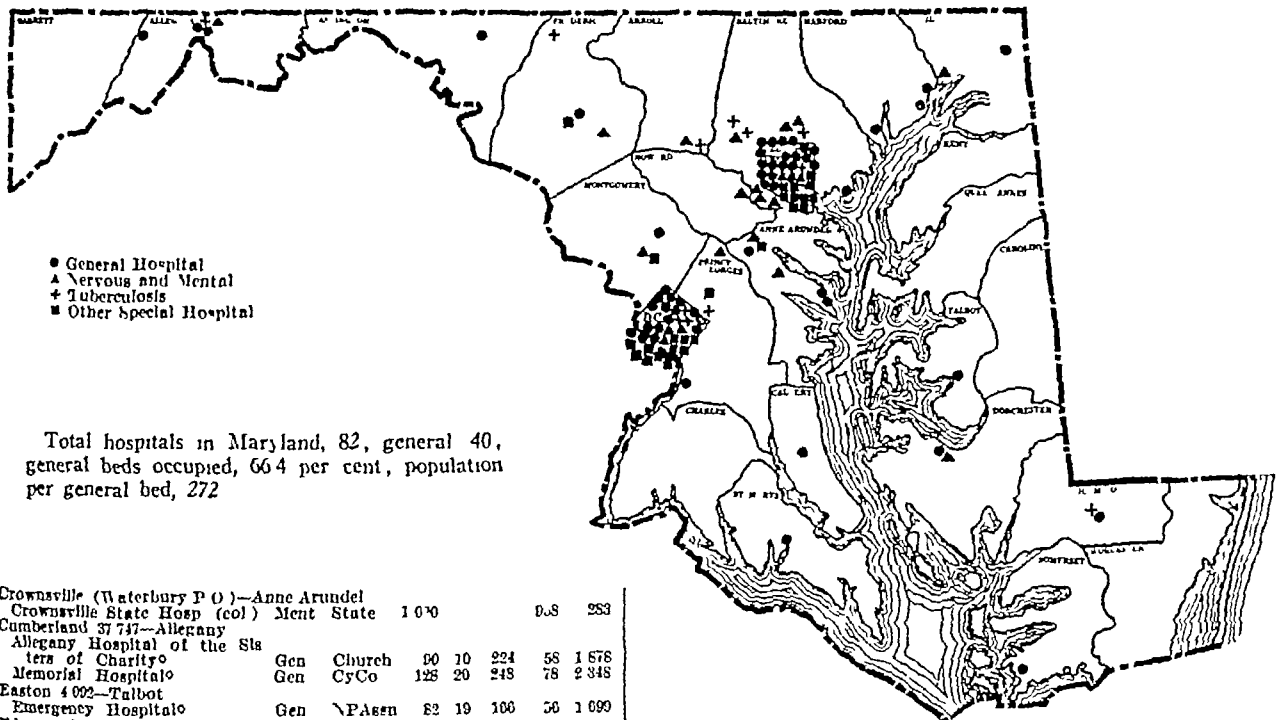
MARYLAND—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Presbyterian Eye Ear and Throat Charity Hospital	ENT	Church	40			9	2 34
Provident Hospital and Free Dispensary (col)***	Gen	NPAasn	120	0	212	50	1 670
St Agnes Hospital***	Gen	Church	300	23	173	130	3 355
St Joseph's Hospital***	Gen	Church	200	7	582	100	4 602
Sinal Hospital***	Gen	NPAasn	200	40	710	100	4 280
South Baltimore General Hospital***	Gen	NPAasn	100	15	157	77	2 502
Sydenham Hospital	Isr	City	110		1	60	1 352
Union Memorial Hospital***	Gen	NPAasn	312	24	282	108	5 694
U S Marine Hospital	Gen	USPHS	218			200	1 508
University Hospital***	Gen	State	400	50	334	104	5 117
Volunteers of America Hospital	Gen	NPAasn	31	1	333	22	1 171
West Baltimore General Hospital***	Gen	NPAasn	160	30	210	65	2 228
Cambridge, 6,511—Dorchester	Gen	NPAasn	60	14	174	37	631
Cambridge-Maryland Hospital	Gen	NPAasn	700			340	62
Eastern Shore State Hospital	Ment	State					
Catonville 4,000—Baltimore	N&M	Indiv	70			22	72
Harlem Lodge						1 638	502
Spring Grove State Hospital	Ment	State	1,000				
Crisfield 3,000—Somerset							
Edward W. McCready Memorial Hospital	Gen	NPAasn	31	5	70	17	378

MARYLAND—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Olney 83—Montgomery	Gen	NPAasn	40	8	123	35	1,300
Montgomery County General Hospital	Gen	NPAasn					
Perry Point 60—Cecil	N&M	Vet	1,016			1 042	173
Veterans Admin Facility	N&M	Vet					
Prince Frederick 200—Calvert	Gen	County	35	5	No data supplied		
Calvert County Hospital	Gen	County					
Relisterstown 1,030—Baltimore	TB	NPAasn	60			63	45
Mt Pleasant	TB	NPAasn					
Rockville 1,422—Montgomery	N&M	Indiv	35			25	81
Chestnut Lodge Sanitarium	N&M	Indiv					
Salisbury 10,977—Wicomico	TB	State	55				
Maryland Tuberculosis Sanatorium Eastern Shore Branch	Gen	NPAasn	84	16	200	70	2 004
Peninsula General Hospital	TB	State	510			603	769
State Sanatorium 200—Frederick	TB	State					
Maryland Tuberculosis Sanatorium	TB	State	2,600			2,503	404
Sylvestown 601—Carroll	Ment	State					
Springfield State Hospital	Nerv	Indiv	20			17	68
Towson 3,500—Baltimore	TB	NPAasn	100			187	234
Alburtis Manor	N&M	NPAasn	300			270	365
Hospital for Consumptives							
Sheppard and Pnoch Pratt Hospital							

MARYLAND



Total hospitals in Maryland, 82, general 40, general beds occupied, 664 per cent, population per general bed, 272

Crownsville (Waterbury P O)—Anne Arundel	Crownsville State Hosp (col)	Ment	State	1 070		0.8	253
Cumberland 37 747—Allegany	Allegany Hospital of the Sisters of Charity	Gen	Church	90	10	224	58 1 678
Memorial Hospital	Gen	CyCo	128	20	243	78	2 348
Easton 4 002—Talbot	Emergency Hospital	Gen	NPAasn	82	19	100	50 1 090
Edgewood 110—Harford	Station Hospital	Gen	Army	60			13 457
Elkton 3,331—Cecil	Union Hospital of Cecil County	Gen	NPAasn	45	8	144	37 709
Edicott City 1 216—Howard	Patapsco Manor Sanitarium	N&M	Corp	20			14 70
Ft George G Meade—Anne Arundel	Station Hospital	Gen	Army	100	5	34	42 1 216
Ft Howard 698—Baltimore	Station Hospital	Gen	Army	31	3	7	12 442
Ft Washington, 415—Prince Georges	Station Hospital	Gen	Army	28			7 226
Frederick 14 434—Frederick	Frederick City Hospital	Gen	NPAasn	113	12	121	46 1 641
Frederick 5,688—Allegany	Miners Hospital	Gen	State	39	5	40	10 523
Hagerstown 30,601—Washington	Washington County Hospital	Gen	NPAasn	107	18	170	82 2,423
Harre de Grace 3,385—Harford	Harre de Grace Hospital	Gen	NPAasn	45	10	68	40 960
Henrytown 27—Carroll	Maryland Tuberculosis Sanatorium (col)	TB	State	100			150 212
Hampsville 72—Frederick	Riggs Cottage Sanitarium	N&M	Indiv	20			20 14
Laurel 2,532—Prince Georges	Laurel Sanitarium	N&M	Corp	75			62 145
Mt Wilson—Baltimore	St Marys County Hospital	Gen	NPAasn	30	0	34	4 180
Mr Wilson Branch Maryland Tuberculosis Sanatorium	TB	State	175			175	123

Related Institutions							
Baltimore 604,874—Baltimore City	Baltimore City Jail Hospital	Inst	City	50		24	317
Happy Hills Convalescent Home for Children	Conv	NPAasn	60			61	224
Home for Incurables	Inc	NPAasn	118			118	27
Maryland Penitentiary Hosp	Inst	State	44			33	288
College Park 316—Prince Georges	University of Maryland Infirmary	Inst	State	10		4	136
Cumberland 37 747—Allegany	Allegany County Tuberculosis Sanatorium	TB	NPAasn	24		12	41
Sylvan Retreat	Ment	County	100			83	30
Frederick, 14 434—Frederick	Maryland State School for the Deaf	Inst	State	12		2	50
Hyattsville, 4,764—Prince Georges	Pinehurst Sanitarium	TB	Indiv	30		14	110
Jessups 101—Anne Arundel	Hill Top School	McDe	Part	14	6	No data supplied	
Maryland House of Correction	Hospital	Inst	State	48		50	604
Leonardtown 007—St Marys	St Marys County Hospital	Gen	NPAasn	30	0	34	4 180
Owings Mills 215—Baltimore	Rosewood State Training School	McDe	State	1 120		1 015	65

Key to symbols and abbreviations is on page 1091

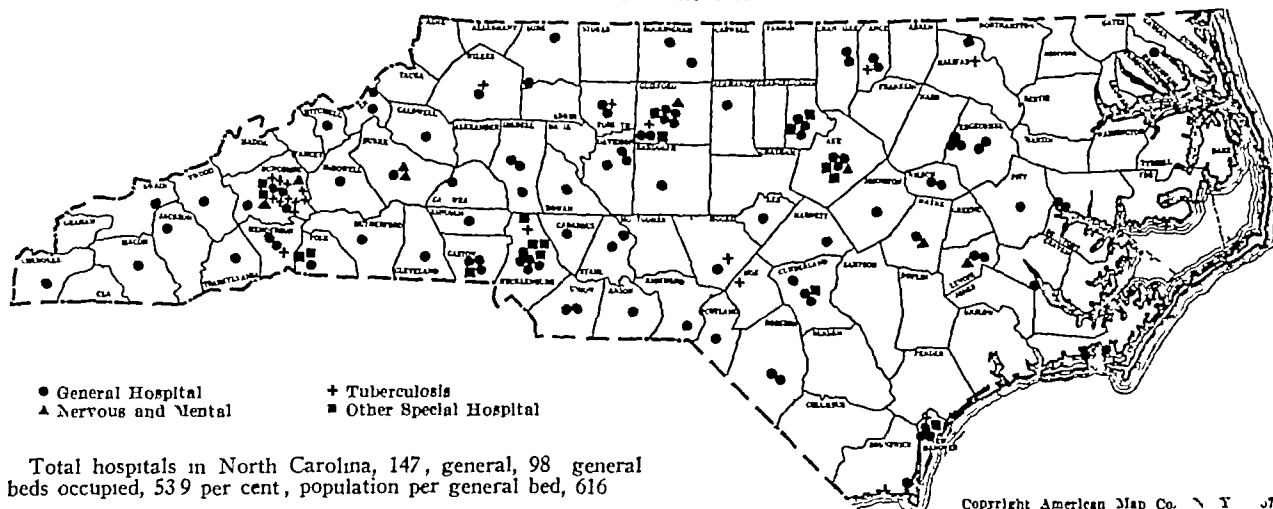
NORTH CAROLINA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
St Leo's Hospital	Gen	Church	80	0	70	50	1,056
Sternberger Children's Hospital	Chil	NPAasn	28	9	129	15	551
Wesley Long Hospital	Gen	NPAasn	45	5	60	23	995
Greenville 9194—Pitt							
Pitt Community Hospital	Gen	Corp	28	6	48	14	702
Hamlet 4,801—Richmond							
Hamlet Hospital	Gen	Corp	50	4			909
Henderson 6,345—Vance							
Jubilee Hospital (col.)	Gen	Church	33	4	24	19	342
Maria Parham Hospital	Gen	NPAasn	40	5	65	16	1162
Hendersonville 5070—Henderson							
Edgemont Sanatorium	TB	Indiv	24		No data supplied		
Patton Memorial Hospital	Gen	NPAasn	50	6	41	10	610
Hickory 7,363—Catawba							
Richard Baker Hospital	Gen	Indiv	35	6	58	17	712
High Point 36745—Gulford							
Burrus Memorial Hospital	Gen	NPAasn	68	7	89	44	1512
Gulford General Hospital	Gen	NPAasn	35	0	75	24	1601
Huntersville 800—Mecklenburg							
Mecklenburg Sanatorium	TB	County	162			147	123
Jamestown 157—Gulford							
Gulford County Sanatorium	TB	County	109			103	102
Kinston 11,362—Lenoir							
Memorial General Hospital	Gen	NPAasn	32	3	39	20	802
Parrott Memorial Hospital	Gen	NPAasn	50	10	70	22	740
Laurinburg 8,312—Scotland							
Laurinburg Hospital	Gen	NPAasn	30	3	15	11	415
Leaksville 1814—Rockingham							
Leaksville Hospital	Gen	NPAasn	32	3	38	20	1,038

NORTH CAROLINA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Raleigh 37,370—Wake							
Mary Elizabeth Hospital	Gen	Corp	32	7	76	14	631
Rex Hospital	Gen	NPAasn	110	10	202	73	2,783
St Agnes Hospital (col.)	Gen	Church	90	10	99	50	848
State Hospital	Ment	State	2,275			2,078	867
Reldaville 6,851—Rockingham							
Memorial Hospital	Gen	NPAasn	44	6	43	13	468
Roanoke Rapids 3404—Harris							
Roanoke Rapids Hospital	Gen	NPAasn	77	13	150	43	1,672
Rocky Mount 21412—Edgecombe							
Atlantic Coast Line Hospital	Indus	NPAasn	50			27	760
Park View Hospital	Gen	NPAasn	90	10	72	63	1,659
Rocky Mount Sanitarium	Gen	NPAasn	42	5	21	20	780
Rutherfordton 2020—Rutherford							
Rutherford Hospital	Gen	NPAasn	60	4	19	28	1,424
Salisbury, 16,931—Rowan							
Rowan General Hospital	Gen	NPAasn	50	10	69	34	895
Sanatorium 57—Hoke							
North Carolina Sanatorium	TB	State	484			430	613
Sanford 4,253—Lee							
Leo County Hospital	Gen	County	47	8	34	13	503
Shelby 10789—Cleveland							
Shelby Hospital	Gen	CyCo	44	6	99	26	1,005
Smithfield, 2,643—Johnston							
Johnston County Hospital	Gen	NPAasn	35	8	44	18	76
Southern Pines 2524—Moore							
Pine-Crest Manor Sanatorium	TB	Indiv	60			30	117
Southport, 1760—Brunswick							
Brunswick County Hospital	Gen	CyCo	45	5	40	15	641

NORTH CAROLINA



Lenoir 6532—Caldwell							
Caldwell Hospital	Gen	NPAasn	25	3	10	10	514
Dula Hospital	Gen	Indiv	15	2		New	
Lexington 9652—Davidson							
Davidson Hospital	Gen	Indiv	24	0	10	7	323
Lincolnton 3781—Lincoln							
Lincoln Hospital	Gen	Indiv	35	3	15	13	798
Lumberton 4140—Robeson							
Baker Sanatorium	Gen	NPAasn	60	5	108	42	1,772
Thompson Memorial Hospital	Gen	NPAasn	32	3	73	31	1,289
Marion 2,467—McDowell							
Marion General Hospital	Gen	NPAasn	30	3	30	13	409
Monroe 6,100—Union							
Ellen Fitzgerald Hospital	Gen	Indiv	45	5	22	26	600
Mooreville 5,619—Iredell							
Lowrance Hospital	Gen	NPAasn	36	4	68	26	998
Morehead City 3,483—Carteret							
Morehead City Hospital	Gen	City	28	3	50	12	490
Morganton 6001—Burke							
Broadoaks Sanatorium	N&M	Part	75			36	116
Grace Hospital	Gen	Church	52	10	127	26	1,321
State Hospital	Ment	State	2,089			1,680	823
Mt Airy 604—Surry							
Martin Memorial Hospital	Gen	Indiv	44	6	18	25	532
Murphy 1612—Cherokee							
Petree Hospital	Gen	Indiv	17	1	6	6	387
New Bern, 11,981—Craven							
St Luke's Hospital	Gen	NPAasn	31	2	175	20	823
North Wilkesboro 3,668—Wilkes							
Wilkes Hospital	Gen	Indiv	20	2	37	10	611
Oteen 504—Buncombe							
Veterans Admin Facility	TB	Vet	800			667	1,303
Oxford 4101—Granville							
Brantwood Hospital	Gen	NPAasn	30	6	15	10	367
Susie Clay Cheatham Memorial							
Hospital (col.)	Gen	NPAasn	14	2	15	9	278
Pinehurst 50—Moore							
Moore County Hospital	Gen	NPAasn	33	6	97	30	925

Statesville 10490—Iredell							
Davis Hospital	Gen	Corp	120	12	98	69	2,387
H F Long Hospital	Gen	NPAasn	46	4	31	29	1,070
Sylva 1,340—Jackson							
O J Harris Community Hosp	Gen	NPAasn	24	1	17	10	362
Tarboro 6370—Edgecombe							
Edgecombe General Hospital	Gen	NPAasn	53	5	21	10	697
Thomasville 10,090—Davidsen							
City Memorial Hospital	Gen	City	30	5	7	12	480
Tyron 1600—Polk							
St Luke's Hospital	Gen	NPAasn	28	3	31	8	377
Wadesboro, 3124—Anson							
Anson Sanatorium	Gen	NPAasn	25	5	61	21	744
Washington 7,030—Beaufort							
Riverview Hospital	Gen	Indiv	13	5	20	10	370
Tayloe Hospital	Gen	NPAasn	33	2	28	27	999
Waynesville 2414—Haywood							
Haywood County Hospital	Gen	County	60	6	97	43	966
Wilmington 32370—New Hanover							
Bulluck Hospital	Gen	Corp	35	4	12	5	263
Community Hospital (col.)	Gen	CyCo	26	4	49	17	542
James Walker Memorial Hos							
pital	Gen	NPAasn	138	14	571	84	3,544
Wilmington Red Cross Sanit	TB	NPAasn	36			25	26
Wilson 12,613—Wilson							
Moore Herring Hospital	Gen	Corp	50	4		No data supplied	
Winston-Salem, 75,274—Forsyth							
City Memorial Hospital	Gen	City	235	25	245	86	3,271
Forsyth County Sanatorium	TB	County	184			131	134
North Carolina Baptist Hosp	Gen	Church	100	10	230	60	2,533
Wrightsville Sound 23—New Hanover							
Bables Hospital	Chil	NPAasn	30			16	213
Related Institutions							
Asheville 50169—Buncombe							
Sunset Heights	TB	Corp	30			14	43
Violet Hill Sanatorium	TB	Indiv	37				
Bakersville 420—Mitchell							
McBee Clinic	Gen	Indiv	7		4	2	140

Key to symbols and abbreviations is on page 1091

MASSACHUSETTS—Continued

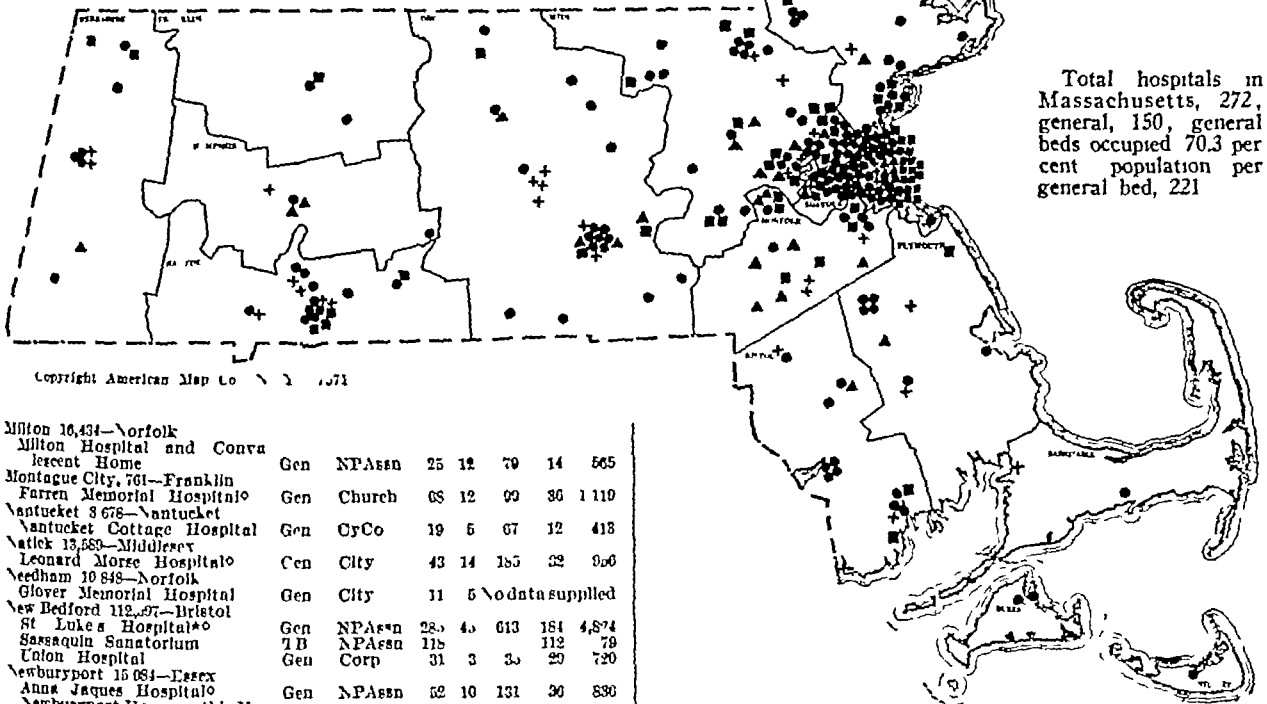
Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basiliets	Number of Births	Average Patients	Patients Admitted
Wendell 1666—Norfolk							
Wendell State Hospital*o	Ment	State	1,800		1 770	233	
Wendell 3714—Middlesex							
Wendell Memorial Hospital*o	Gen	NPAsen	70	34	618	53	2 033
Wendell 23,10—Middlesex							
Wendell Hospital*o	Gen	NPAsen	100	20	100	70	2,005
New England Sanitarium and Hospital*o	Gen	Church	130	17	245	70	1 681
Middleboro 8608—Plymouth							
Lakeville State Sanatorium	TB	State	304			282	292
St. Luke's Hospital	Gen	NPAsen	23	8	92	9	303
Middleton 1,712—Essex							
Essex Sanatorium	TB	County	300			341	300
Milford 14,41—Worcester							
Milford Hospital*o	Gen	NPAsen	40	10	104	32	1,160

MASSACHUSETTS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basiliets	Number of Births	Average Patients	Patients Admitted
Rutland Heights,--Worcester							
Veterans Admin Facility	TB	Vet	472			281	503
Salem 43,353--Essex							
North Shore Babies' Hospital	Chil	NPAsen	50			31	353
Salem Hospital*o	Gen	NPAsen	150	30	400	120	3 644
Sharon 3,351--Norfolk							
Balfour Sanatorium	TB	Indlv	20			6	6
Sharon Sanatorium	TB	NPAsen	50			34	20
Somerville, 103 908--Middlesex							
Central Hospital	Gen	Indlv	50	2	138	34	1,337
Somerville Hospital*o	Gen	NPAsen	115	24	2,5	42	1 500
South Braintree 3 540--Norfolk							
Norfolk County Hospital	TB	County	138			137	110
Southbridge 14 264--Worcester							
Harrington Memorial Hospital	Gen	NPAsen	40	8	71	21	780

MASSACHUSETTS

• General Hospital
▲ Nervous and Mental
+ Tuberculosis
■ Other Special Hospital



Total hospitals in Massachusetts, 272, general, 150, general beds occupied 70.3 per cent population per general bed, 221

Milton 16,434--Norfolk							
Milton Hospital and Convalescent Home	Gen	NPAsen	25	12	70	14	565
Montague City, 701--Franklin							
Farren Memorial Hospital*o	Gen	Church	68	12	99	36	1 110
Nantucket 8 678--Nantucket							
Nantucket Cottage Hospital	Gen	CrCo	19	5	67	12	418
Natick 13,589--Middlesex							
Leonard Morse Hospital*o	Gen	City	43	14	165	32	906
Nedham 10 848--Norfolk							
Glover Memorial Hospital	Gen	City	11	5	no data supplied		
New Bedford 112,07--Bristol							
St. Luke's Hospital*o	Gen	NPAsen	280	40	613	184	4,874
Sassaquin Sanatorium	TB	NPAsen	116			112	79
Union Hospital	Gen	Corp	31	3	30	29	720
Newburyport 15 081--Essex							
Anna Jaques Hospital*o	Gen	NPAsen	52	10	131	30	836
Newburyport Homoeopathic Hospital	Gen	NPAsen	20	5	48	11	303
Newton 6,076--Middlesex							
Newton Hospital*o	Gen	NPAsen	244	40	710	123	4 064
North Adams 21 021--Berkshire							
North Adams Hospital*o	Gen	NPAsen	70	20	223	43	1 410
Northampton 24 881--Hampshire							
Cooley Dickinson Hospital*o	Gen	NPAsen	132	24	390	70	2 227
Veterans Admin Facility	Gen	Vet	611			582	150
Northampton State Hospital	Ment	State	1 851			1,800	548
North Dighton 1 220--Bristol							
St. Hope Hospital	Gen	Corp	14	9	83	0	104
North Grafton 2,340--Worcester							
Grafton State Hospital*o	Ment	State	1 500			1 411	118
North Wilmington 472--Middlesex							
North Reading State Sanat	TB	State	297			269	203
Norwood 15 049--Norfolk							
Norwood Hospital	Gen	NPAsen	80	20	347	66	2 454
Oak Bluffs 1,333--Dukes							
Martha's Vineyard Hospital	Gen	NPAsen	26	10	77	10	410
Palmer 9,577--Hampden							
Monson State Hospital*o	Fppl	State	1,510			1 403	202
Wing Memorial Hospital	Gen	NPAsen	30	6	84	16	840
Peabody 21 345--Essex							
Joseph B. Thomas Hospital*o	Gen	City	52	12	207	34	838
Pittsfield 49,577--Berkshire							
Hillcrest Hospital*o	Gen	NPAsen	42	10	140	30	913
House of Mercy Hospital*o	Gen	NPAsen	100	32	3,9	78	2,501
St. Luke's Hospital*o	Gen	Church	166	33	362	70	1 010
Plymouth 30,048--Plymouth							
Jordan Hospital	Gen	NPAsen	66	10	122	27	827
Pocasset 80--Barnstable							
Barnstable County Sanat	TB	County	48			39	177
Quincy, 1 638--Norfolk							
Quincy City Hospital*o	Gen	City	240	50	810	104	4 774
Rutland 3,442--Worcester							
Central New England Sanat	TB	NPAsen	100			40	27
Rutland State Sanatorium*o	TB	State	370			341	300

South Dartmouth 1,815--Bristol							
Sole War Orthopedic Hospital for Children	Orth	NPAsen	100			56	29
South Hanson 831--Plymouth							
Plymouth County Hospital	TB	County	136			112	103
Springfield 149,000--Hampden							
City Hospital	Gen	City	100	12	17	67	378
Health Department Hospitals	TB	City	112			48	329
Mersey Hospital*o	Gen	Church	330	00	722	201	5,760
Shriners Hospital for Crippled Children*							
Springfield Hospital*o	Orth	Frat	60			60	33
Wesson Maternity Hospital	Gen	NPAsen	201	4	3	102	4,010
Wesson Memorial Hospital*o	Mat	NPAsen	62	60	1 047	30	1 180
Stockbridge 1 782--Berkshire							
Austen Riggs Foundation	Nerv	NPAsen	00			37	573
Taunton 37,305--Bristol							
Morton Hospital*o	Gen	NPAsen	63	12	100	30	1 644
Taunton State Hospital*o	Ment	State	1 543			1 001	582
Tewksbury 5 580--Middlesex							
State Infirmary*o	Gen	State	3,110	40	172	3 000	3 009
Vinyard Haven 1 500--Dukes							
U S Marine Hospital	Gen	USPHS	24			22	150
Walpole 7,273--Norfolk							
Pondville Hospital*	Ca	State	122			110	1 233
Waltham 39 247--Middlesex							
Metropolitan State Hospital	Ment	State	1 347			1 280	103
Middlesex County Sanatorium*	TB	County	202			206	169
Waltham Hospital*o	Gen	NPAsen	100	01	422	70	2,510
Ware 7,385--Hampshire							
Mary Lane Hospital	Gen	NPAsen	35	12	206	20	934
Webster 12,062--Worcester							
Webster District Hospital	Gen	NPAsen	20	7	84	17	0,244
Wellesley 11 430--Norfolk							
Channing Sanitarium	N&M	Corp	35			31	87
Weswall Sanatorium	N&M	Corp	30				

Key to symbols and abbreviations is on page 1091

NORTH DAKOTA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Northwood 971—Grand Forks	Gen	NPAasn	30	4	54	13	470
Northwood Deaconess Hospital	Gen	Church	20	5	24	8	228
Oakes, 1709—Dickey	Gen	Indiv	11		33	5	180
St Anthony's Hospital	Gen	NPAasn	20	6	75	9	500
Portia 512—Burke	Gen	Church	50	12	151	36	1,496
Parker Hospital	Gen	Church	205				
Rolette 428—Rolette	Gen	Church	75	11	71	35	1,300
Community Hospital	Gen	Church	23	5	40	13	468
Rugby 1,512—Pierce	Gen	Church	43	7	110	23	963
Good Samaritan Hospital	Gen	Church	75	12	78	34	1,040
San Haven—Rolette	Gen	Church	43	7	110	23	963
North Dakota State Tubercu- losis Sanatorium	TB	State	205			239	200
Valley City 5,268—Barnes	Gen	Church	75	11	71	35	1,300
Mercury Hospital	Gen	Church	23	5	40	13	468
Wahpeton 3176—Richland	Gen	Part	23	5	40	13	468
Wahpeton Hospital	Gen	Church	43	7	110	23	963
Williston 5106—Williams	Gen	Church	75	12	78	34	1,040
Good Samaritan Hospital	Gen	Church	43	7	110	23	963
Mercury Hospital	Gen	Church	75	12	78	34	1,040

Related Institutions

Ambrose 334—Divide	Gen	Church	10	4	47	10	458
Good Samaritan Hospital	Gen	Church	10	4	47	10	458
Arvilla 348—Grand Forks	Inst	County	40	4	12		72
Grand Forks County Hospital	Inst	County	40	4	12		72
Beach 1,263—Golden Valley	Gen	NPAasn	10	4	No data supplied		
Beach Hospital	Gen	NPAasn	10	4	No data supplied		
Bismarck 11,090—Burlingame	Inst	State	30			15	131
North Dakota State Peniten- tiary Hospital	Inst	State	30			15	131
Bowman 588—Bowman	Gen	Indiv	7	6	19	3	121
Bowman Hospital	Gen	Indiv	7	6	19	3	121
Cando 1,164—Towner	Gen	Indiv	9	2			
Cando Hospital	Gen	Indiv	9	2			
Elbowoods 139—McLean	Gen	I A	20	5	42	8	334
Pt Berthold Indian Hospital	Gen	I A	20	5	42	8	334
Elgin 505—Grant	Gen	Indiv	8	2	11	3	111
Dr F C Lorenzen Hospital	Gen	Indiv	8	2	11	3	111
Fargo 28,619—Cass	Gen	Indiv	15	10	67	3	87
Camp Maternity Hospital	Gen	Indiv	15	10	67	3	87
Cass County Hospital	Gen	County	30	3	46	20	8,400
City Detention Hospital	Gen	City	40			1	27
Florence Crittenton Home	Gen	NPAasn	40	30	64	32	120
Grafton 3136—Walsh	MeDe	State	784			930	137
Grafton State School	MeDe	State	784			930	137
Grand Forks 17,112—Grand Forks	Gen	City	19				28
Grand Forks City Hospital	Gen	City	19				28
Mayville 1,169—Traill	Gen	NPAasn	12	0	31	4	232
Union Hospital	Gen	NPAasn	12	0	31	4	232
Wahpeton 3,176—Richland	Gen	I A	24			11	300
Wahpeton Indian School Hosp	Gen	I A	24			11	300

Summary for North Dakota

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	38	4,245	3,097	88,300
Related institutions	17	1,199	941	4,042
Totals	55	5,444	4,038	92,342
Refused registration	3	56		

OHIO

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Arkon 20,040—Summit	Chil	NPAasn	110			64	2,106
Children's Hospital	Chil	NPAasn	110			64	2,106
City Hospital	Chil	NPAasn	110			64	2,106
Edwin Shaw Sanatorium	TB	County	208			211	123
Peoples Hospital	Gen	NPAasn	130	20	456	71	2,291
St Thomas Hospital	Gen	Church	143	40	370	91	2,780
Alliance 23,047—Stark	Gen	City	80	11	170	41	1,231
Alliance City Hospital	Gen	City	80	11	170	41	1,231
Amherst 2,844—Lorain	TB	County	96			97	102
Pleasant View Sanatorium	TB	County	96			97	102
Ashland 11,141—Ashland	Gen	NPAasn	20	12	107	15	628
Samaritan Hospital	Gen	NPAasn	20	12	107	15	628
Ashabula 23,301—Ashabula	Gen	NPAasn	78	14	91	31	1,024
Ashabula General Hospital	Gen	NPAasn	78	14	91	31	1,024
Athens 7,252—Athens	Gen	State	1,641			1,570	326
Athens State Hospital	Gen	State	1,641			1,570	326
Sheltering Arms Hospital	Gen	Indiv	29	5	34	10	488
Barberton 23,634—Summit	Gen	Corp	50	10	164	30	1,037
Citizens Hospital	Gen	Corp	50	10	164	30	1,037
Barnesville 4,602—Belmont	Gen	Corp	14	4	14	5	238
Barnesville General Hospital	Gen	Corp	14	4	14	5	238
Bedford 6,814—Cuyahoga	Gen	City	17	0	100	12	530
Bedford Municipal Hospital	Gen	City	17	0	100	12	530
Bellaire 13,327—Belmont	Gen	NPAasn	45	5	37	18	630
City Hospital	Gen	NPAasn	45	5	37	18	630
Berea 5,697—Cuyahoga	Gen	NPAasn	40	9	109	17	602
Community Hospital	Gen	NPAasn	40	9	109	17	602
Bucyrus 10,027—Crawford	Gen	City	37	6	33	10	301
Bucyrus City Hospital	Gen	City	37	6	33	10	301
Cambridge 14,618—Guernsey	Gen	Church	22			10	148
Wells Hospital	Gen	Church	22			10	148
Canton 104,906—Stark	Gen	NPAasn	130	24	247	57	1,936
Aultman Hospital	Gen	NPAasn	130	24	247	57	1,936
Mercury Hospital	Gen	Church	165	32	257	89	3,889
Molly Stark Sanatorium	TB	County	167			157	233
Celina 4,684—Mercer	Gen	Indiv	19	4	13	5	109
Otis Hospital	Gen	Indiv	19	4	13	5	109

OHIO—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Chillicothe 18,340—Ross	Gen	NPAasn	60	0	40	21	515
Chillicothe Hospital	Gen	NPAasn	60	0	40	21	515
Mt Logan Sanatorium	TB	County	58			52	47
U S Industrial Reformatory	Inst	USPHS	80			31	760
Veterans Admin Facility	Ment	Vet	944			870	342
Cincinnati 451,160—Hamilton	Gen	Church	109	40	627	123	1,909
Bethesda Hospital	Chil	Church	143	5	80	2,493	
Children's Hospital	Chil	Church	143	5	80	2,493	
Christ Hospital	Gen	Church	269	49	474	159	4,815
Christian R Holmes Hospital	Gen	City	50			10	639
Cincinnati General Hospital	Gen	City	800	60	1,911	608	10,777
Cincinnati Sanitarium	N&M	Corp	100			60	113
Deaconess Hospital	Gen	Church	150	20	837	84	2,844
Good Samaritan Hospital	Gen	Church	403	72	1,204	263	7,419
Grandview Hospital	N&M	Corp	403	72	1,204	263	7,419
Hamilton County Tuberculosis Sanatorium	TB	County	634			550	632
Jewish Hospital	Gen	NPAasn	225	37	518	111	8,500
Longview State Hospital	Ment	State	2,353			2,207	566
St Mary Hospital	Gen	Church	192	20	260	125	3,567
Circleville 7,360—Pickaway	Gen	City	20	4	33	7	840
Berger Hospital	Gen	City	20	4	33	7	840
Cleveland 600,420—Cuyahoga	(Included in University Hospitals)						
Babies and Childrens Hospital	Gen	Church	301			201	4,593
Charity Hospital	Gen	Church	301			201	4,593
City Hospital	Gen	City	1,640	50	1,449	1,341	14,307
Cleveland Clinic Foundation Hospital	Gen	NPAasn	220			101	3,250
Cleveland State Hospital	Ment	State	2,600			2,444	300
East 55th Street Hospital	Gen	Corp	60	12			
Evangelical Deaconess Hospital	Gen	Church	109	35	447	50	1,207
Evangelical Lutheran Hosp	Gen	Church	111	31	455	64	1,902
Fairview Park Hospital	Gen	Church	95	18	291	62	2,068
Glenview Hospital	Gen	NPAasn	88	18	181	50	1,600
Grace Hospital	Gen	NPAasn	32			1	16
Huron Road Hospital	Gen	NPAasn	104	16	240	50	1,969
Lakeside Hospital	(Included in University Hospitals)						
Maternity Hospital	(Included in University Hospitals)						
Mt Sinai Hospital	Gen	NPAasn	220	45	469	124	6,671
Polyclinic Hospital	Gen	NPAasn	90	15	154	40	2,964
Provident Hospital	Gen	Corp	12	12	92	5	179
St Alexis Hospital	Gen	Church	230			1	112
St Ann's Maternity Hospital	Mat	Church	40	40	1,031	31	1,187
St John's Hospital	Gen	Church	173	34	672	122	3,677
St Luke's Hospital	Gen	Church	337	55	908	163	6,090
Shaker Sanitarium	N&M	Corp	110			80	118
U S Marine Hospital	Gen	USPHS	201			141	1,561
University Hospitals	Gen	NPAasn	474	05	1,792	400	12,003
Windsor Hospital	N&M	Corp	110			101	142
Woman's Hospital	Gen	NPAasn	69	31	340	45	1,927
Columbus 290,664—Franklin	Chil	NPAasn	88	12		69	3,204
Children's Hospital	Chil	NPAasn	88	12		69	3,204
Columbus Radium Hospital	Gen	NPAasn	32	0	78	17	403
Columbus State Hospital	Ment	State	2,806			2,782	714
Franklin County Sanatorium	TB	County	210			205	226
Dr Gayer Sanitarium	N&M	Indiv	24			10	110
Grant Hospital	Gen	NPAasn	303	30	407	183	4,061
McMillen Sanitarium	N&M	Corp	80			22	120
Mercury Hospital	Gen	NPAasn	65	15	No data supplied		
Mt Carmel Hospital	Gen	Church	214	25	353	117	3,052
St Ann's Infant Asylum and Maternity Hospital	Mat	Church	25	25	288	9	269
St Anthony's Hospital	Gen	Church	230			200	458
St Clair Hospital	Gen	NPAasn	30	4	13	10	342
St Francis Hospital	Gen	Church	100				
Sanor Eye Ear Nose and Throat Hospital	ENT	Indiv	15				200
Starling Loving University Hos- pital	Gen	State	251	25	455	103	4,889
Station Hospital	Gen	Army	75	0	32	18	800
White Cross Hospital	Gen	Church	245	28	570	121	3,644
Conneaut 9,601—Ashtabula	Gen	NPAasn	30	5	62	10	459
Brown Memorial Hospital	Gen	NPAasn	30	5	62	10	459
Coshocton 10,908—Coshocton	Gen	City	36	8	No data supplied		
Coshocton City Hospital	Gen	City	36	8	No data supplied		
Crestline 4,425—Crawford	Gen	NPAasn	16	4	13	4	125
Crestline Emergency Hospital	Gen	NPAasn	16	4	13	4	125
Cuyahoga Falls 19,797—Summit	N&M	Corp	50			47	105
Fair Oaks Villa	N&M	Corp	50			47	105
Dayton, 200,882—Montgomery	Ment	State	1,680			1,517	460
Dayton State Hospital	Ment	State	1,680			1,517	460
Good Samaritan Hospital	Gen	Church	104	45	321	55	1,638
Grand Valley Hospital	Gen	NPAasn	295	48	1,070	217	8,237
Orchard Springs Sanitarium	N&M	Corp	20			7	64
St Elizabeth Hospital	Gen	Church	385	35	904	206	5,497
Stillwater Sanatorium	TB	County	94			93	131
Veterans Admin Facility	Gen	Vet	1,104			893	3,676
Defiance 6,818—Defiance	Gen	NPAasn	20	5	22	10	496
Defiance County Hospital	Gen	NPAasn	20	5	22	10	496
Dennison 4,529—Tuscarawas	Gen	NPAasn	30	5	14	9	320
Twin City Hospital	Gen	NPAasn	30	5	14	9	320
Dover 9,716—Tuscarawas	Gen	NPAasn	75	10	66	26	683
Union Hospital	Gen	NPAasn	75	10	66	26	683
East Liverpool 23,329—Columbiana	Gen	City	80	10	115	43	1,478
East Liverpool City Hospital	Gen	City	80	10	115	43	1,478
Elyria 2,633—Lorain	Gen	NPAasn	22	3	8	7	281
Elyria Clinic Hospital	Gen	NPAasn	22	3	8	7	281
Elyria Memorial Hospital	Gen	NPAasn	125	29	345	54	1,908</

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Caro 2,534—Tuscola	Gen	City	21	1	14	7	210
Caro Community Hospital	Gen	City	21	1	14	7	210
Cassopolis 1,448—Cass	Gen	Part	8	4	30	4	187
McCutcheon Hospital	Gen	Part	8	4	30	4	187
Charlotte 5,307—Eaton	Gen	County	13	6	42	6	610
Hayes Green Memorial Hosp	Gen	County	13	6	42	6	610
Coldwater 673—Branch	Gen	Indiv	20	5	33	11	540
Wade Memorial Hospital	Gen	Indiv	20	5	33	11	540
Crystal Falls 2,000—Iron	Gen	Indiv	14	2	16	6	187
Crystal Falls General Hospital	Gen	Indiv	14	2	16	6	187
Dearborn 50,238—Wayne	N&M	Church	7			320	521
St Joseph's Retreat	N&M	Church	7			320	521
Detroit 1,608 622—Wayne	TB	NP Assn	5			88	172
Bethesda Hospital (col)	TB	NP Assn	5			88	172
Charles Godwin Jennings Hos	Gen	NP Assn	60	0	39	24	900
pital	Gen	NP Assn	60	0	39	24	900
Chenik Hospital	G&TB	NP Assn	62			26	161

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Grand Rapids, 108 592—Kent	Gen	NP Assn	132	18	293	52	1,033
Wodgett Memorial Hosp **0	Gen	NP Assn	224	48	500	62	3,248
Butterworth Hospital**0	Gen	NP Assn	224	48	500	62	3,248
Christian Psychopathic Hosp	N&M	NP Assn	220			100	116
City General Hospital	Gen	City	34			30	725
Ferguson Droste Ferguson San	Proct	Corp	33			10	600
tarium	Gen	Church	218	30	497	133	4,315
St Mary's Hospital**0	TB	City	145			133	124
Sunshine Sanatorium	Gen	Church	30	5	25	9	570
Grayling 1,073—Crawford	Gen	Church	30	5	25	9	570
Grayling Mercy Hospital	Gen	Church	30	5	25	9	570
Greenville, 4,730—Montcalm	Gen	NP Assn	10	0	40	10	370
United Memorial Hospital	Gen	NP Assn	10	0	40	10	370
Hamtramck 56 268—Wayne	Gen	Church	50	0	50	28	638
St Francis Hospital	Gen	Church	50	0	50	28	638
Hancock 570—Houghton	Gen	Church	62	8	89	40	1,120
St Joseph's Hospital	Gen	Church	62	8	89	40	1,120

- General Hospital
- ▲ Nervous and Mental
- + Tuberculosis
- Other Special Hospital

Total hospitals in Michigan, 242
general, 153, general beds occupied,
548 per cent, population per general
bed, 350



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Children's Hospital**0	Child	NP Assn	239			200	6 005
City of Detroit Receiving Hos	Gen	City	00	14		672	21 000
pital**							
City of Detroit Receiving Hos	Gen	City	62		3	41	1,517
pital (Redford Branch)	Gen	NP Assn	45	13	222	20	1,374
Cottage Hospital	Gen	NP Assn	80	15	139	20	1,093
Delray General Hospital	Gen	NP Assn	160			133	117
Detroit Tuberculosis Sanat	TB	NP Assn	60	25	344	38	1,138
East Side General Hospital	Gen	Church	115	20	269	41	1,704
Evangelical Deaconess Hosp **0	TB	NP Assn	66			60	80
Fairview Sanatorium (col)	Gen	Indiv	210	100	1,061	61	1,074
Florence Crittenton Hospital	Gen	Indiv	43			40	400
General Hospital and Clinic	TB	Indiv	27			21	75
Good Samaritan Hosp (col)	Gen	NP Assn	300	53	715	213	7,445
Grace Hospital**0	Gen	Indiv	30	14	110	7	80
Grosse Pointe Hospital	Gen	NP Assn	600	100	940	202	11,240
Harper Hospital**0	Gen	NP Assn	560	50	552	200	6,242
Henry Ford Hospital**0	G&TB	City	1,330	00	1,608	1,022	6,890
Herman Kiefer Hospital**0	Gen	NP Assn	60	3	12	32	767
Jefferson Clinic and Diagnos	Gen	Corp	60	7	34	03	421
tic Hospital**	Gen	NP Assn	35			20	760
Lincoln Hospital	Gen	Corp	50	12	66	20	440
Michigan Mutual Hospital	Gen	Corp	20	11	244	8	300
Parkside Hospital (col)	Gen	Church	285	100	1,610	176	5,976
Pingree General Hospital	Gen	Church	200	40	443	76	2,765
Providence Hospital**0	Gen	Church	207	49	427	127	3,843
St. Joseph's Mercy Hosp **0	Gen	Church	133	3	2	51	889
St Mary's Hospital**0	Gen	Church	00			25	804
Shurly Eye Ear Nose and	Gen	USPHS	240			08	1,137
Throat Hospital	Gen	Indiv	18	3	30	8	
Station Hospital	Gen	Indiv	30	3	No data supplied		
U S Marine Hospital	Gen	Indiv	290	100	1,651	92	3,342
Warren Avenue Diagnostic Hos	Gen	NP Assn	20	3	20	9	322
pital	Gen	Church	32	4	20	9	322
West Side Sanatorium	Gen	Church	32	4	20	9	322
Woman's Hospital**0	Gen	Church	32	4	20	9	322
Dowagiac 5,500—Cass	Gen	Church	32	4	20	9	322
Lee Memorial Hospital	Gen	Church	32	4	20	9	322
Durand, 3,081—Shiawassee	Gen	Church	32	4	20	9	322
Durand Hospital	Gen	Church	32	4	20	9	322
Eaton Rapids 2,822—Eaton	Gen	Church	32	4	20	9	322
Harriet Chapman Memorial	Gen	Church	32	4	20	9	322
Hospital	Gen	Church	32	4	20	9	322
Eloise 710—Wayne	Gen	Church	32	4	20	9	322
Eloise Hospital for Mental	Gen	Church	32	4	20	9	322
Diseases	Gen	Church	32	4	20	9	322
Dr William J Seymour Hos	Gen	Church	32	4	20	9	322
pital**	Gen	Church	32	4	20	9	322
Escanaba 14,524—Delta	Gen	Church	32	4	20	9	322
Lalng Hospital	Gen	Church	32	4	20	9	322
St Francis Hospital	Gen	Church	32	4	20	9	322
Flint 150,489—Genesee	Gen	Church	32	4	20	9	322
Hurley Hospital**0	Gen	Church	32	4	20	9	322
St Joseph's Hospital	Gen	Church	32	4	20	9	322
Women's Hospital	Gen	Church	32	4	20	9	322
Fremont 2,157—Newaygo	Gen	Church	32	4	20	9	322
Gerber Memorial Hospital	Gen	Church	32	4	20	9	322
Goodrich 324—Genesee	Gen	Church	32	4	20	9	322
Goodrich General Hospital	Gen	Church	32	4	20	9	322
Grand Haven 8,340—Ottawa	Gen	Church	32	4	20	9	322
Elizabeth Hutton Memorial	Gen	Church	32	4	20	9	322
Hospital	Gen	Church	32	4	20	9	322

Hart 1,690—Oceana	Gen	NP Assn	20	6	44	8	423
Oceana Hospital	Gen	NP Assn	20	6	44	8	423
Hastings 5 237—Barry	Gen	NP Assn	27	8	101	10	530
Pennock Hospital	Gen	NP Assn	27	8	101	10	530
Highland Park 52 938—Wayne	Gen	NP Assn	27	8	101	10	530
Highland Park General Hos	Gen	NP Assn	27	8	101	10	530
pital**0	Gen	NP Assn	27	8	101	10	530
Hilledale 5,596—Hillsdale	Gen	NP Assn	27	8	101	10	530
Hilledale Hospital	Gen	NP Assn	27	8	101	10	530
Holland 14,346—Ottawa	Gen	NP Assn	27	8	101	10	530
Holland City Hospital	Gen	NP Assn	27	8	101	10	530
Houghton 3 757—Houghton	Gen	NP Assn	27	8	101	10	530
Copper Country Sanatorium	TB	County	53			62	27
Howell 3 615—Livingston	Gen	City	20	7	42	10	317
McPherson Memorial Hospital	Gen	City	20	7	42	10	317
Michigan State Sanatorium**	TB	State	401			450	191
Hudson 2,361—Lenawee	Gen	City	21	4	29	4	170
Thorn Memorial Hospital	Gen	City	21	4	29	4	170
Ionia 6,562—Ionia	Gen	City	21	4	29	4	170
Ionia State Hospital	Gen	City	21	4	29	4	170
Iron Mountain 11,052—Dickinson	Gen	City	21	4	29	4	170
Iron Mountain General Hosp	Gen	City	21	4	29	4	170
Ironwood 14 299—Gogebic	Gen	City	21	4	29	4	170
Grand View Hospital	Gen	City	21	4	29	4	170
Newport Hospital	Gen	City	21	4	29	4	170
Twin City Hospital	Gen	City	21	4	29	4	170

Key to symbols and abbreviations is on page 1091

OHIO—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Marietta 14,235—Washington	Gen	NPAasn	54	10	90	26	1,024
Marietta Memorial Hospital	Gen	City	38	12	88	23	814
Marion 31 084—Marion	N&M	Part	40			23	110
Marion City Hospital	Gen	NPAasn	70	5	87	43	2 038
Sawyer Sanatorium	Gen	NPAasn	92	14	2 00	46	2 114
Martins Ferry 14,530—Belmont	Gen	NPAasn	2,880			2,809	643
Martins Ferry Hospital	Gen	NPAasn	120			106	110
Massillon 20 400—Stark	Gen	NPAasn	160			107	64
Massillon City Hospital	Gen	NPAasn	88	14	330	61	1 885
Massillon State Hospital	Gen	Church	33	10	58	14	6 2
McCannysville 1 754—Morgan	Gen	Indiv	50	8	37	17	536
Rocky Glen Sanatorium	TB	State	240			231	399
Mentor 1,580—Lake	Gen	Church	33	10	58	14	6 2
Delhurst Sanatorium	N&M	Corp	160			107	64
Middletown 29 992—Butler	Gen	NPAasn	88	14	330	61	1 885
Middletown Hospital	Gen	NPAasn	88	14	330	61	1 885
Mt Vernon 9,370—Knox	Gen	Church	33	10	58	14	6 2
Mersey Hospital	Gen	Indiv	50	8	37	17	536
Mt Vernon Hospital Sanit	TB	State	240			231	399
Ohio State Sanatorium*	Gen	Church	33	10	58	14	6 2
Newark 30 596—Licking	Gen	Indiv	50	8	37	17	536
Licking County Tuberculosis	TB	State	240			231	399
Sanatorium	TB	County	56			51	124
Newark Hospital	Gen	NPAasn	88	14	330	61	1 885
North Royalton (Brecksville P O)	Cuyahoga	Corp	48			45	73
Mount Royal Sanatorium	Gen	NPAasn	27	9	57	12	390
Norwalk, 7 776—Huron	Gen	NPAasn	30	5	55	11	704
Norwalk Memorial Hospital	Gen	NPAasn	30	5	55	11	704
Oberlin 4 292—Lorain	Gen	NPAasn	30	5	55	11	704
Allen Hospital Oberlin College	Gen	NPAasn	30	5	55	11	704
Oxford 2,558—Butler	N&M	Corp	30			18	30
Oxford Retreat	Gen	Indiv	13	3	16	7	320
Perryburg 3 182—Wood	Gen	Indiv	13	3	16	7	320
Community Hospital	Gen	Indiv	13	3	16	7	320
Rheinfrank Hospital	Gen	Indiv	13	3	16	7	320
Piqua 18 009—Miami	Gen	NPAasn	52	6	117	20	880
Memorial Hospital	Gen	Indiv	10	4	14	13	320
Pt Clinton 4 468—Ottawa	Gen	Indiv	10	4	14	13	320
Pool Hospital	Gen	Indiv	10	4	14	13	320
Portsmouth 42 560—Scioto	Gen	Church	60	9	102	41	1 040
Mersey Hospital	Gen	City	90	10	140	40	1 841
Portsmouth General Hospital	Gen	NPAasn	44	6	26	21	127
Schlirman Hospital	Gen	NPAasn	44	6	26	21	127
Ravenna 8 019—Portage	Gen	County	42	8	81	20	6 4
Robinson Memorial Hospital	Gen	County	42	8	81	20	6 4
St Clairsville 2,440—Belmont	TB	County	50			53	41
Belmont Sanatorium	Gen	Corp	30	6	23	13	399
Salem 10 622—Columbiana	Gen	NPAasn	48	12	70	21	785
Central Clinic and Hospital	Gen	Corp	30	6	23	13	399
Salem City Hospital	Gen	NPAasn	48	12	70	21	785
Sandusky 24 622—Erie	Gen	Corp	55	9	140	31	940
Good Samaritan Hospital	Gen	Church	60	15	152	22	723
Providence Hospital	Gen	Church	60	15	152	22	723
Shelby 6,198—Richland	Gen	NPAasn	27	5	73	9	404
Shelby Memorial Hospital	Gen	NPAasn	27	5	73	9	404
Sidney 9 801—Shelby	Gen	NPAasn	22	5	41	12	400
Wilson Memorial Hospital	Gen	NPAasn	22	5	41	12	400
South Euclid 4 390—Cuyahoga	Gen	NPAasn	22	5	41	12	400
Rainbow Hospital for Crippled and Convalescent Children	Gen	NPAasn	22	5	41	12	400
Springfield 68 743—Clark	Gen	NPAasn	22	5	41	12	400
Clark County Tuberculosis Sanatorium	TB	County	120			110	208
Springfield City Hospital*	Gen	City	2 38	45	447	112	3 393
Steubenville 35 422—Jefferson	Gen	Church	28	2	36	15	723
Gill Memorial Hospital	Gen	NPAasn	115	10	259	79	2 647
Ohio Valley Hospital	Gen	NPAasn	115	10	259	79	2 647
Tiffin 18 428—Seneca	Gen	Church	35	8	64	20	708
Mersey Hospital	Gen	Church	35	8	64	20	708
Toledo 290 718—Lucas	Gen	NPAasn	41	4	20	15	678
East Side Hospital	Gen	Church	100	20	274	53	2 068
Flower Hospital*	Gen	County	282	33	550	218	3,689
Lucas County General Hosp.*	Gen	County	190			163	153
Lucas County Tuber Hospital	Gen	County	101	20	237	63	1 832
Mersey Hospital	Gen	Church	91	13	100	31	818
Robinson Memorial Hospital	Gen	Church	300	45	583	214	6 261
St Vincent's Hospital*	Gen	NPAasn	230	20	226	77	1 883
Toledo Hospital*	N&M	Corp	20			5	80
Toledo Sanatorium	Gen	State	2 532			2,440	650
Toledo State Hospital	Gen	State	2 532			2,440	650
Women's and Children's Hospital*	Gen	NPAasn	113	28	232	37	1 134
Troy 8 675—Miami	Gen	City	40	10	64	13	634
Stouder Memorial Hospital	Gen	City	40	10	64	13	634
Urbana 7 742—Champaign	Gen	County	35	5	35	10	310
Champaign County Hospital	Gen	County	35	5	35	10	310
Van Wert 8 472—Van Wert	Gen	County	44	6	34	22	585
Van Wert County Hospital	Gen	County	44	6	34	22	585
Wadsworth 5 630—Medina	Gen	City	25	12	80	15	580
Wadsworth Municipal Hospital	Gen	City	25	12	80	15	580
Warren 41 062—Trumbull	Gen	Church	40	10	163	24	1 119
St Joseph's Riverside Hospital	Gen	Church	40	10	163	24	1 119
Trumbull County Tuberculosis Sanatorium	TB	County	48			47	75
Warren City Hospital	Gen	NPAasn	101	18	164	58	1 800
Warrensville 1 507—Cuyahoga	Gen	NPAasn	101	18	164	58	1 800
Sunny Acres Cleveland Tuber culosis Sanatorium*	TB	CyCo	461			419	450
Wauseon 2 889—Fulton	Gen	NPAasn	46	7	53	24	703
De Ette Harrison Detweiler Memorial Hospital	Gen	NPAasn	46	7	53	24	703
Willard 4 514—Huron	Gen	City	24	6	49	8	300
Willard Municipal Hospital	Gen	City	24	6	49	8	300
Wilmington 5,332—Clinton	Gen	Indiv	17	7	3	3	115
Dr Kelley Hale Surgical Hosp	Gen	Indiv	17	7	3	3	115

OHIO—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Wooster 10 742—Wayne							
Kinney and Knestrick Hospital	Gen	Corp	25	5	40	10	390
Wooster Hospital	Gen	Corp	25	5	No data supplied		
Worthington 1 239—Franklin							
Harding Sanitarium	N&M	Corp	35			17	175
Xenia 10 507—Greene							
McClellan Hospital	Gen	Corp	20	5	39	11	3 37
Youngstown 170 002—Mahoning							
Mahoning Tuberculosis Sanat	TB	County	112			111	130
St Elizabeth's Hospital*	Gen	Church	246	54	406	109	3 635
Youngstown Hospital*	Gen	NPAasn	400	74	612	241	6 073
Zanesville 30 440—Muskingum							
Bethesda Hospital	Gen	Church	130	20	223	57	2 103
Good Samaritan Hospital	Gen	Church	125	20	230	66	2 178
Related Institutions							
Akron 205 040—Summit							
Akron Clinic	Gen	Part	12			5	840
Goodyear Hospital and Dispensary	Indus	NPAasn	25			3	117
Apple Creek 400—Wayne							
Institution for Feeble-minded	McDe	State	460			437	31
Bellefontaine, 9 543—Logan							
Harbert Hospital	ENT	Indiv	10			1	100
Bluffton 2,035—Allen							
Bluffton Community Hospital	Gen	NPAasn	9	4	24	4	117
Cambridge 14 613—Guernsey							
Childrens and Maternity Hosp	Mat	Corp	12	7	31	4	125
Swan Hospital	Gen	NPAasn	18	4			
Celina, 4 004—Mercer							
Gibbons Hospital	Gen	Indiv	11	2	11	5	237
Chagrin Falls 2 739—Cuyahoga							
Maynard Hospital	Chil	NPAasn	24			3	182
Chardon 1 818—Geauga							
Sperry Home	Mat	Indiv	10	5	No data supplied		
Cincinnati 451 160—Hamilton							
Catherine Booth Home and Hospital	Mat	Church	10	10	87	8	240
Child Guidance Home	N&M	Corp	15			10	116
Childrens Convalescent Home	Inst	NPAasn	100			72	251
Childrens Home	Inst	NPAasn	38			9	441
Evangeline Booth Home and Hospital	Mat	Church	34	4	19	8	71
Hamilton County Home and Chronic Disease Hospital	Inst	County	184			139	412
Home for Incurables	Inc	NPAasn	72			70	15
Jewish Convalescent Home	Conv	NPAasn	75	10	No data supplied		
Maple Knoll Hospital and Home for the Friendless	Mat	NPAasn	85	15	140	60	165
Ophthalmic Hospital	ENT	Indiv	12			2	220
Ridge Rest Home	N&M	Corp	30			22	162
St Francis Hospital for Incurables	Inc	Church	300			283	177
St Joseph Maternity Hospital and Infant Asylum	Mat	Church	40	30	102		63
St Michaels Convalescent Home	Conv	NPAasn	26			24	125
Cleveland 900 420—Cuyahoga							
Booth Memorial Home and Hospital	Mat	Church	13	12	160	5	2 40
Childrens Fresh Air Camp and Hospital	Conv	NPAasn	60			60	200
Convalescent Tuberculosis Hospital	TB	City	48			11	418
Emergency Hospital	Immer	Part	20			7	32
Florence Crittenton Home	Mat	NPAasn	15	13	19	7	32
Jewish Orphan's Home	Inst	Frat	40			5	411
St Luke's Convalescent Hospital for Children	Orth	Indiv	62			80	40
Columbus 290 564—Franklin							
Florence Crittenton Home	Mat	NPAasn	34	24	49	22	53
Franklin County Home	Inst	County	120			122	190
Institution for Feeble-minded	McDe	State	2,050			2 077	288
Ohio Penitentiary Hospital	Inst	State	132			110	1 949
Covington 1,507—Miami							
Covington Hospital	Gen	Part	8	2	11	3	77
Dayton 200,682—Montgomery							
Quarantine Hospital	Iso	City	25	1			
Delaware 8 875—Delaware							
Girls Industrial School Hosp	Inst	State	32			6	300
Euclid 12 751—Cuyahoga							
Ream Sanitarium	Conv	Corp	46			30	70
Rose Mary Home	Orth	Church	24				9
Fairfield 1 240—Greene							
Station Hospital	Gen	Army	50			1	37
Granville, 1 397—Licking							
Whisper Hall Memorial Hosp	Inst	NPAasn	20			2	223
Hamilton 52,176—Butler							
Ruth Hospital	Inst	NPAasn	15			4	171
Hicksville 2,445—Defiance							
Amaden Hospital	Gen	Indiv	10	2	10	1	88
Lakewood, 10 569—Cuyahoga							
Wright's Sanit (For Men)	N&M	Indiv	21			No data supplied	
Wright's Sanit (For Women)	N&M	Indiv	20			No data supplied	
Lancaster 18 716—Fairfield							
Boys Industrial School Hosp	Inst	State	100				783
Lebanon 3 222—Warren							
Blair Brothers Hospital	Gen	Part	10	3	90	4	200
Lima 42 237—Allen							
Herr's Hospital Clinic	Gen	Corp	8				
Mansfield 38,525—Richland							
Ohio State Reformatory	Inst	State	91			38	1 019
Marblehead 1 034—Ottawa							
Kelley Island Lime and Transport Company Hospital	Gen	Corp	6	2	2	1	34
Marietta 14,230—Washington							
Tremont Hospital	Gen	Indiv	10	4	7	2	40

MICHIGAN—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Lapeer 308—Lapeer	Gen	Part	12	2	No data supplied		
Lapeer City Hospital	Gen	Part	12	2	No data supplied		
Melhorn Home and Training School	McDe	State	34	5	1,074	354	
Marquette 14780—Marquette	Inst	State	18		7	224	
Hospital of the State House of Correction and Branch Prison	Inst	State	18		7	224	
Midan 1947—Washtenaw	Inst	Fed	21		3	100	
United States Detention Farm	Inst	Fed	21		3	100	
Mt Clemens 1349—Macomb	Orth	NP Assn	50		40	110	
Sigma Gamma Convalescent Home for Crippled Children	Orth	NP Assn	50		40	110	
Nahma 710—Delta	Indus	Corp	10		1	04	
Bay View Hospital	Indus	Corp	10		1	04	
Northville 2506—Wayne	McDe	County	600		640	705	
Wayne County Training School	McDe	County	600		640	705	
Okemos 216—Ingham	Conv	County	40		40	60	
Ingham County Infirmary	Conv	County	40		40	60	
Ontonagon 1937—Ontonagon	TB	County	10		14	5	
Bon Air Tuberculosis Sanat	TB	County	10		14	5	
Otter Lake 336—Lapeer	TB	Frat	100	10	100	240	
American Legion Children's Billet	TB	Frat	100	10	100	240	
Pompeii 319—Gratiot	Surg	NP Assn	12				
Pompeii Hospital	Surg	NP Assn	12				
Pontiac 6428—Oakland	Inst	County	100		5	227	
Oakland County Infirmary	Inst	County	100		5	227	
Port Huron 31361—St Clair	Isa	City	18	6	1	22	
Port Huron Emergency Hosp	Isa	City	18	6	1	22	
Rochester 3,554—Oakland	NA&M	Indiv	20		9	60	
"The Haven"	NA&M	Indiv	20		9	60	
Rogers City 3,278—Presque Isle	Gen	Indiv	6	1	6	3	70
Rogers City Hospital	Gen	Indiv	6	1	6	3	70
Royal Oak 22,004—Oakland	Gen	Indiv	12	7	68	7	240
Sunnybrook Hospital	Gen	Indiv	12	7	68	7	240
St Clair 3,359—St Clair	Gen	City	12		No data supplied		
St Clair Community Hospital	Gen	City	12		No data supplied		
Shelby 1142—Oceana	Gen	NP Assn	10		No data supplied		
Shelby Community Hospital	Gen	NP Assn	10		No data supplied		
Stockbridge 71—Ingham	Gen	Part	7	4	20	4	121
Rowe Memorial Hospital	Gen	Part	7	4	20	4	121
Unionville 478—Tuscola	Gen	Indiv	8		2	3	110
Unionville General Hospital	Gen	Indiv	8		2	3	110
Wahjamega 111—Tuscola	Gen	Indiv	8		2	3	110
Michigan Farm Colony for Epileptics	Epil	State	100		0	0	200

Summary for Michigan

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	150	34,691	20,089	245,938
Related institutions	10	7,430	0,503	12,433
Totals	242	42,121	33,102	461,371
Refused registration	16	478		

MINNESOTA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Ada 1,280—Norman	Gen	NP Assn	10	3	32	4	223
Norman County Memorial Hospital	Gen	NP Assn	10	3	32	4	223
Abwabachching 45—Cass	TB	State	300			2.7	2.6
Minnesota State Sanatorium	TB	State	300			2.7	2.6
Albert Lea 10,100—Freeborn	Gen	NP Assn	70	10	200	30	1,247
Verde Hospital	Gen	NP Assn	70	10	200	30	1,247
Alexandria 3,876—Douglas	Gen	NP Assn	70	6	31	10	323
Douglas County Hospital	Gen	NP Assn	70	6	31	10	323
St Luke's Hospital	Gen	Indiv	10	3	21	6	247
Anoka 4,501—Anoka	Gen	Indiv	7	6	40		320
Gates Hospital	Gen	Indiv	7	6	40		320
Appleton 1,625—Swift	Gen	Indiv	10		12	8	387
Kaufman Hospital	Gen	Indiv	10		12	8	387
Austin 12,276—Mower	Gen	Church	52	12	107	29	1,226
St Olaf Lutheran Hospital	Gen	Church	52	12	107	29	1,226
Bagley 885—Clearwater	Gen	Indiv	12	3	14	4	186
Clearwater Hospital	Gen	Indiv	12	3	14	4	186
Barrett 808—Grant	Surg	Indiv	10		3	100	
Powers Hospital	Surg	Indiv	10		3	100	
Battle Lake 532—Otter Tail	TB	County	44		33	26	
Otter Tail County Sanatorium	TB	County	44		33	26	
Bemidji 7,009—Beltrami	Gen	NP Assn	26	4	60	14	509
Lutheran Hospital	Gen	NP Assn	26	4	60	14	509
Benson 2,003—Swift	Gen	NP Assn	10	5	34	9	343
Swift County Hospital	Gen	NP Assn	10	5	34	9	343
Blwabik 1,883—St Louis	Gen	Indiv	12	5	22	2	112
Blwabik Hospital	Gen	Indiv	12	5	22	2	112
Blue Earth 2,884—Faribault	Gen	Indiv	10	3	23	3	170
Blue Earth Hospital	Gen	Indiv	10	3	23	3	170
Brainerd 10,221—Crow Wing	Gen	Church	70	10	178	44	1,340
St Joseph's Hospital	Gen	Church	70	10	178	44	1,340
Breckenridge 2,064—Wilkin	Gen	Church	50	8	97	20	887
St Francis Hospital	Gen	Church	50	8	97	20	887
Buffalo 1,400—Wright	Gen	Indiv	12	2	16	6	140
Cattlin Hospital	Gen	Indiv	12	2	16	6	140
Caledonia 1,554—Houston	Gen	Indiv	17		No data supplied		
Caledonia Hospital	Gen	Indiv	17		No data supplied		
Canby 1,738—Yellow Medicine	Gen	City	18	5	30	4	230
John Swenson Memorial Hosp	Gen	City	18	5	30	4	230

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Cannon Falls 1,128—Goodhue	TB	County	100		68	59	
Mineral Springs Sanatorium	TB	County	100		68	59	
Cloquet 6,882—Carlton	Gen	Part	20	4	37	21	480
Rond du Lac Indian Hospital	Gen	Part	20	4	37	21	480
Ralter Hospital	Gen	Part	20	4	37	21	480
Crookston 6,821—Polk	Gen	Church	40	8	60	21	640
Bethesda Hospital	Gen	Church	40	8	60	21	640
St Vincent's Hospital	Gen	Church	40	8	60	21	640
Sunnyrest Sanatorium	TB	County	60		60	60	
Crosby 1,451—Crow Wing	Gen	Indiv	20	6	45	4	162
Miner's Hospital	Gen	Indiv	20	6	45	4	162
Dawson 1,380—Lac qui Parle	Gen	Corp	25	4	50	9	160
Dawson Surgical Hospital	Gen	Corp	25	4	50	9	160
Deerwood 5,22—Crow Wing	TB	County	24		21	10	
Deerwood Sanatorium	TB	County	24		21	10	
Detroit Lakes 3,676—Becker	Gen	NP Assn	10	6	52	9	340
Community Hospital	Gen	NP Assn	10	6	52	9	340
Duluth 101,463—St Louis	Gen	City	50	8	New		
Miller Memorial Hospital	Gen	City	50	8	New		
St Luke's Hospital*	Gen	NP Assn	237	33	600	139	4,225
St Mary's Hospital*	Gen	Church	230	30	454	153	4,400
Webber Hospital	Gen	Indiv	40	10	2,200	20	1,200
Fly 6,156—St Louis	Gen	Part	15	6	20	4	211
Shipman Hospital	Gen	Part	15	6	20	4	211
Eveleth 7,044—St Louis	Gen	Corp	30	8	50	10	620
More Hospital	Gen	Corp	30	8	50	10	620
Fairmont 5,621—Martin	Gen	Indiv	12	4	13	2	154
Lairmont Hospital	Gen	Indiv	12	4	13	2	154
Gardner Hospital	Gen	Indiv	10	4	12	5	300
Faribault 12,707—Rice	Gen	Church	50	14	100	27	000
St Lucas Evangelical Deaconess Hospital	Gen	Church	50	14	100	27	000
Farmington 1,342—Dakota	Gen	Indiv	20	3	22	11	320
Community Hospital	Gen	Indiv	20	3	22	11	320
Fergus Falls 9,359—Otter Tail	Ment	State	1,800		1,876	004	
Fergus Falls State Hospital	Ment	State	1,800		1,876	004	
George B Wright Memorial Hospital	Gen	NP Assn	28	0	61	17	620
St Luke's Hospital	Gen	NP Assn	60	0	99	18	754
Ft Snelling 1,327—Hennepin	Gen	Army	100	5	32	72	2,360
Station Hospital	Gen	Army	100	5	32	72	2,360
Veterans Admin Facility	G&TB Vet		662			504	2,178
Foreston 978—Polk	Gen	Part	12	4	25	8	159
Foston Hospital	Gen	Part	12	4	25	8	159
Graceville 909—Big Stone	Gen	Corp	30	5	71	13	634
Western Minnesota Hospital	Gen	Corp	30	5	71	13	634
Grand Rapids 3,200—Itasca	Gen	County	52	10	120	34	1,000
Itasca Hospital	Gen	County	52	10	120	34	1,000
Granite Falls 1,701—Yellow Medicine	Gen	Indiv	10	5	28	6	220
Granite Falls Hospital	Gen	Indiv	10	5	28	6	220
Riverside Sanatorium	TB	County	54		00	39	
Hallrock 600—Kittson	Gen	County	20	6	37	20	489
Kittson War Veterans Memorial Hospital	Gen	County	20	6	37	20	489
Hastings 5,086—Dakota	Gen	Indiv	16	4	20	9	260
St Raphael Hospital	Gen	Indiv	16	4	20	9	260
Hendricks 702—Lincoln	Gen	NP Assn	14	4	34	6	700
Hendricks Hospital	Gen	NP Assn	14	4	34	6	700
Heron Lake 786—Jackson	Gen	Indiv	12	2	17	2	109
Southwestern Minnesota Hosp	Gen	Indiv	12	2	17	2	109
Hibbing 15,666—St Louis	Gen	Indiv	80	6	48	11	599
Adams Hospital	Gen	Indiv	80	6	48	11	599
Road Hospital	Gen	Indiv	40	10	100	17	833
Hutchinson 3,406—McLeod	Gen	NP Assn	22	6	88	10	330
Hutchinson Community Hosp	Gen	NP Assn	22	6	88	10	330
International Falls 6,036—Koochiching	Gen	Indiv	27	6	36	17	200
Craig Hospital	Gen	Indiv	27	6	36	17	200
Northern Minnesota Hospital	Gen	Corp	40		No data supplied		
Jackson 2,200—Jackson	Gen	Part	12	3	25	5	191
Halloran Hospital	Gen	Part	12	3	25	5	191
Lake City 3,210—Wabasha	Gen	NP Assn	10	5	43	12	411
Lake City Hospital	Gen	NP Assn	10	5	43	12	411
Lake Park 624—Becker	TB	County	46		44	30	
Sand Beach Sanatorium	TB	County	46		44	30	
Litchfield 2,580—Meeker	Gen	NP Assn	29	6	56	15	618
Litchfield Hospital	Gen	NP Assn	29	6	56	15	618
Little Falls 5,014—Morrison	Gen	Church	40	10	91	24	1,204
St Gabriel's Hospital	Gen	Church	40	10	91	24	1,204
Luverne 2,644—Rock	Gen	Part	15	6	37	4	247
Luverne Hospital	Gen	Part	15	6	37	4	247
Madison 1,016—Lac qui Parle	Gen	Church	20	5	22	7	280
Ebenezer Lutheran Hospital	Gen	Church	20	5	22	7	280
Mankato 14,038—Blue Earth	Gen	Church	60	10	122	28	947
Immanuel Hospital	Gen	Church	60	10	122	28	947
St Joseph's Hospital	Gen	Church	60	10	122	28	947
Marshall 3,250—Lyon	Gen	Corp	20	5	7	10	320
Marshall Hospital	Gen	Corp	20	5	7	10	320
Melrose 1,801—Stearns	Gen	Indiv	8	3	12	0	225
Melrose Hospital	Gen	Indiv	8	3	12	0	225
Minneapolis 464,306—Hennepin	Gen	Church	90	18	202	30	2,233
Abbott Hospital*	Gen	Church	127	18	902	60	2,081
Ashbury Hospital*	Gen	NP Assn	100	20	281	78	3,005
Ellet Hospital*	G&TB Church		200	20	3,000	37	7,000
Fairview Hospital*	Gen	NP Assn	50	80	73	19	94
Harriet Walker Hospital	Gen	NP Assn	48	20	103	19	612
Hill Crest Surgical Hospital	Gen	Church	120	80	391	62	3,041
Lutheran Deaconess Home and Hospital*	Gen	Church	120	80	391	62	3,041
Maternity Hospital	Gen	Church	120	80	391	62	3,041
Minneapolis General Hosp**	Gen	City	563	119	1,536	61	889
Minnesota General Hospital (See University Hospital*)	Gen	City	563	119	1,536	61	889
Northwestern Hospital*	Gen	NP Assn	165	20	332	102	3,307
St Andrew's Hospital*	Gen	Church	80	30	307	58	1,755
St Barnabas Hospital*	Gen	Church	150	16	301	63	2,060
St Mary's Hospital*	Gen	Church	240	30	427	120	3,131

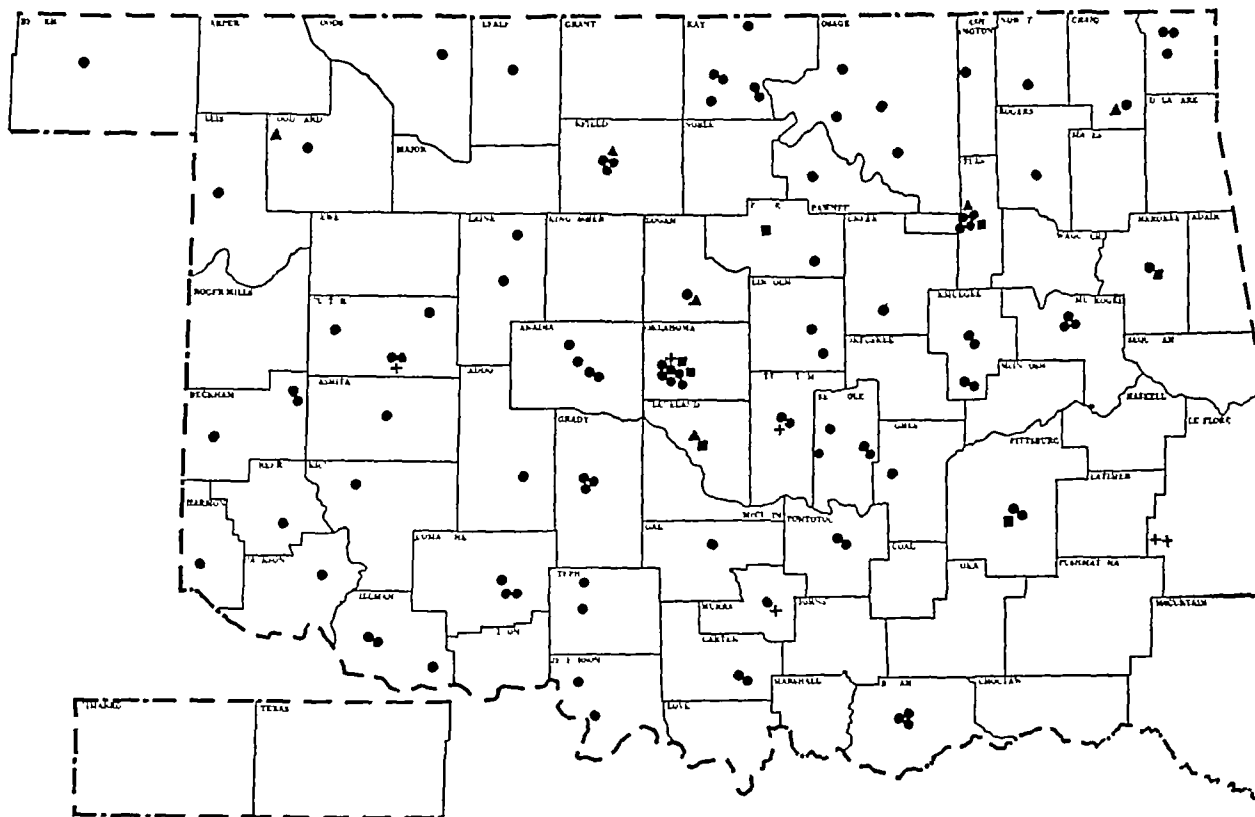
OKLAHOMA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Tulsa 141 258—Tulsa	Gen	Corp	29	12	274	10	854
Flower Hospital	Gen	Corp	22	24	536	138	5,171
Morningside Hospital*	Gen	Corp	40	6	No data supplied		
Municipal Hosp No 2 (col)	Gen	City	30			15	240
Oakwood Sanitarium	N&M	Corp	20	23	401	150	3,972
St John's Hospital*	Gen	Church	20			12	403
Sister Hospital	Orth	Indiv	20				
Vinita 4 268—Craig	Gen	State	2,300			2,136	570
Eastern Oklahoma Hospital	Gen	Part	14	3	22	7	388
Vinita Hospital	Gen	Part	14	3	22	7	388
Waurika 2 368—Jefferson	Gen	Indiv	24	2	7	10	380
Waurika Hospital	Gen	Indiv	24	2	7	10	380

OKLAHOMA—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Shidler 1 177—Osage	Gen	NPA's n	10	2	1	12	
Emergency Hospital of Phillips Petroleum Company	Gen	NPA's n	10	2	1	12	
Stillwater 7 016—Payne	Inst	State	50			2	536
Agriculture and Mechanical College Infirmary	Inst	State	50			2	536
Tablequah 2 945—Cherokee	Inst	I A	12				
Sequoyah Training School Hosp	Gen	Indiv	10	2	14	3	180
Tablequah Hospital	Gen	Indiv	10	2	14	3	180
Watonga 2 228—Blaine	Gen	Indiv	10	1	3	2	80
Watonga Hospital	Gen	Indiv	10	1	3	2	80

OKLAHOMA



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Total hospitals in Oklahoma, 118, general, 99, general beds occupied, 52.5 per cent, population per general bed 504

• General Hospital
▲ Nervous and Mental
+ Tuberculosis
■ Other Special Hospital

Wewoka, 10 401—Seminole	Gen	Corp	20	4	41	9	340
Knight Hospital	Gen	Indiv	23	4	50	6	320
Wewoka Hospital	Gen	Indiv	23	4	50	6	320
Woodward 5 006—Woodward	Gen	NPA's n	30	4	10	6	162
Woodward General Hospital	Gen	NPA's n	30	4	10	6	162

Related Institutions

Bristow 6 619—Creek	Gen	Corp	10	3		2	
Bristow General Hospital	Gen	Corp	10	3		2	
Chillico 250—Kay	Gen	I A	47			6	440
Chillico Indian School Hosp	Gen	I A	47			6	440
Davenport 1 072—Lincoln	Gen	Part	10				
Nickell Hospital	Gen	Part	10				
Durant 7 468—Bryan	Gen	Indiv	10		4	2	80
Bryan County Hospital	Gen	Indiv	10		4	2	80
Enid 23,290—Garfield	MeDe	State	1,000			740	60
Oklahoma Institution for the Feeble-minded	MeDe	State	1,000			740	60
Fairfax 2 134—Osage	Gen	Corp	12	2	16	4	310
Fairfax Hospital	Gen	Corp	12	2	16	4	310
Ft Reno (El Reno P O)—Canadian	Gen	Army	12			1	20
Station Hospital	Gen	Army	12			1	20
McAlester 11,504—Pittsburg	Inst	State	50			20	896
Oklahoma State Prison Hosp	Inst	State	50			20	896
Norman 9 663—Cleveland	Inst	State	48			10	672
Ellison Hall	Inst	State	48			10	672
Nowata 3 631—Nowata	Gen	Indiv	14	2	No data supplied		
Nowata Hospital	Gen	Indiv	14	2	No data supplied		
Okene 1 030—Blaine	Gen	Indiv	10	2	4	2	25
Okene Hospital	Gen	Indiv	10	2	4	2	25
Oklahoma City 153,389—Oklahoma	Mat	Church	22	30	160	12	449
Home of Redeeming Love	Mat	Church	22	30	160	12	449
Ryan 1,200—Jefferson	Gen	Indiv	10	2	No data supplied		
Ryan Hospital	Gen	Indiv	10	2	No data supplied		

Summary for Oklahoma

Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted
Related institutions	100	11,887	6,730	83,029
	18	1,347	809	4,662
Totals	118	13,234	7,539	87,691
Refused registration	18	452		

OREGON

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Albany 5 325—Linn	Gen	NPA's n	30	6	78	11	4,910
Albany General Hospital	Gen	NPA's n	30	6	78	11	4,910
Ashland 4 844—Jackson	Gen	City	18	2	20	8	420
Community Hospital	Gen	City	18	2	20	8	420
Astoria 10 348—Clatsop	Gen	Church	91	12	151	34	1,719
Columbia Hospital	Gen	Church	125	18	92	63	1,017
St Mary Hospital	Gen	Church	125	18	92	63	1,017
Baker 7,553—Baker	Gen	Church	20	4	45	12	539
Protestant Hospital	Gen	Church	20	4	45	12	539
St Elizabeth Hospital	Gen	Church	20	4	45	12	539
Bend 8,849—Deschutes	Gen	Church	20	4	45	12	539
St Charles Hospital	Gen	Church	20	4	45	12	539
Burns 2 020—Harney	Gen	Church	20	4	45	12	539
Valley View Hospital	Gen	Church	20	4	45	12	539
Corvallis 7 580—Benton	Gen	Indiv	21	3	26	6	333
Corvallis General Hospital	Gen	Indiv	21	3	26	6	333
Dallas 2 975—Polk	Gen	NPA's n	37	6	110	14	693
Dallas Hospital	Gen	NPA's n	37	6	110	14	693

Key to symbols and abbreviations is on page 1091

REGISTERED HOSPITALS

VOLUME 104
NUMBER 13

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Children's Hospital	Chil	NPA's'n	0			10	1 078
Gillette State Hospital for Crippled Children	Orth	State	250			228	561
Midway Hospital	Gen	Church	100	25	397	61	2 297
Mounds Park Sanatorium	Gen	Church	125	12	143	70	1 333
Northern Pacific Beneficial Association Hospital	Gen	NPA's'n	150	12	83	72	2 102
St John's Hospital	Gen	Church	75	15	165	50	1 409
St Joseph's Hospital	Gen	Church	240	24	643	80	5 446
St Luke's Hospital	Gen	NPA's'n	125	25	264	40	1 221
West Side General Hospital	Gen	Church	50	10	202	25	1 049
St Peter 4,811—Nicollet	Gen	Indiv	26	10	58	9	318
Corell Hospital	Ment	State	2 037			1 903	6 0
St Peter State Hospital	Gen	Part	18	4	32	8	260
Stayton 1100—Murray	Gen	Church	22	5	47	10	242
Home Hospital	Gen	Corp	15	5	82	6	291
Springfield 2 019—Brown	Gen	NPA's'n	18	3	70	6	2 40
St John's Hospital	Gen	CyCo	5	0	98	22	504
Spring Grove 867—Houston	Gen	Part	12	4	27	5	229
Spring Grove Hospital	Gen	Indiv	17	4	65	8	371
Starbuck 751—Pope	Gen	NPA's'n	12	5	60	0	342
New Minnecaska Hospital	Gen	Indiv	15	4	43	3	167
Stillwater 7,173—Washington	Gen	Part	20	6	112	22	493
Lakeview Memorial Hospital	Gen	Indiv	24	6	21	6	242
Thief River Falls 4,268—Pennington	Gen	Corp	34	4	23	12	410
Oakland Park Sanatorium	TB	County	38	0	37	15	452
Physicians Hospital	Gen	Church	31	5	70	18	567
St Luke's Hospital	Gen	NPA's'n	113	10	251	45	2 072
Tracy 2 510—Lyon	Gen	Indiv	2	6	32	7	257
Clinic Hospital	Gen	Church	30	6	37	10	358
Tracy Hospital	Gen	Indiv	20	8	80	10	300
Two Harbors 445—Lake	Gen	IA	20	6	112	22	493
Burns and Christensen Hosp	Gen	Indiv	24	6	21	6	242
Tyler 900—Lincoln	Gen	Corp	34	4	23	12	410
Tyler Hospital	Gen	NPA's'n	113	10	251	45	2 072
Virginia 11,963—St Louis	Gen	Indiv	2	6	32	7	257
Lenont Hospital	Gen	Church	30	6	37	10	358
Virginia General Hospital	Gen	Indiv	20	8	80	10	300
Wabasha 2,212—Wabasha	TB	County	38	0	37	15	452
Buena Vista Sanatorium	Gen	Church	31	5	70	18	567
St Elizabeth's Hospital	Gen	NPA's'n	113	10	251	45	2 072
Wadena 2,512—Wadena	TB	County	38	0	37	15	452
Fair Oaks Lodge Sanatorium	Gen	Church	31	5	70	18	567
Wesley Hospital	Gen	Indiv	2	6	32	7	257
Walker 618—Case	Gen	Church	30	6	37	10	358
Walker Hospital	Gen	Indiv	20	8	80	10	300
Warren 142—Marshall	Gen	IA	20	6	112	22	493
Warren Hospital	Gen	Indiv	24	6	21	6	242
Waseca 3,515—Waseca	Gen	Corp	34	4	23	12	410
Waseca Memorial Hospital	Gen	NPA's'n	113	10	251	45	2 072
White Earth 415—Becker	Gen	Indiv	2	6	32	7	257
White Earth Indian Hospital	Gen	Church	30	6	37	10	358
Willmar 6 173—Kandiyohi	Gen	Indiv	20	8	80	10	300
General Hospital	Gen	Corp	34	4	23	12	410
Willmar Hospital	Gen	NPA's'n	113	10	251	45	2 072
Windom 2 123—Cottonwood	Gen	Indiv	2	6	32	7	257
Windom Hospital	Gen	Church	30	6	37	10	358
Winnebago 1 701—Faribault	Gen	Indiv	20	8	80	10	300
Winnebago Community Hosp	Gen	IA	20	6	112	22	493
Winona 2,550—Winona	Gen	Indiv	2	6	32	7	257
Winona General Hospital	Gen	Church	30	6	37	10	358
Worthington 3,878—Nobles	TB	County	38	0	37	15	452
Southwestern Minnesota Sanat	Gen	Church	31	5	70	18	567
Worthington Clinic Hospital	Gen	Indiv	20	8	80	10	300
Worthington Hospital	Gen	NPA's'n	113	10	251	45	2 072

Related Institutions

Altkin 154—Altkin	Mat	Indiv	0	2	12	1	104
Beecroft Hospital	Ment	State	1 900			1 114	212
Anoka 4,851—Anoka	Gen	Indiv	12	5	39	6	274
Anoka State Asylum	Gen	Indiv	12	4	11	3	75
Bertha 400—Todd	Gen	Indiv	12	4	11	3	75
Thiel Hospital	Gen	Indiv	12	4	11	3	75
Braham 570—Isanti	Gen	Indiv	12	4	11	3	75
Braham Hospital	Gen	Indiv	12	4	11	3	75
Buhl 1 634—St Louis	Inst	County	52			32	268
St Louis County Hospital	Inst	County	52			32	268
Cambridge 1 183—Isanti	MeDe	State	678			701	267
Minnesota Colony for Epileptics	MeDe	State	678			701	267
Carlfield 892—Yellow Medicine	Gen	Indiv	10	4	20	6	162
Clarkfield Community Hosp	Gen	Indiv	10	4	24	2	70
Cloquet 6 782—Carlton	Gen	Indiv	15	3	7	2	61
Ennard Hospital	Gen	Indiv	15	3	7	2	61
Cokato 1 120—Wright	Gen	Indiv	15	3	7	2	61
Cokato Hospital	Gen	Indiv	15	3	7	2	61
Detroit Lakes 3,675—Becker	Gen	Indiv	7	3	4	2	93
Detroit Hospital	Gen	Indiv	7	3	4	2	93
Duluth 101 403—St Louis	Inst	County	75			69	1 194
Hearing Hospital	Gen	Indiv	10	3	10	2	36
Ellsworth 644—Nobles	Gen	Indiv	10	3	10	2	36
Ellsworth Hospital	Gen	Indiv	10	3	10	2	36
Ely 6,150—St Louis	Inst	County	16			1	24
Detention Hospital	Gen	Indiv	10	3	10	2	36
Faribault 1 767—Rice	Inst	State	20			1	300
Minnesota School for the Deaf	MeDe	State	2 200			2,210	404
Minnesota School for Feeble minded	MeDe	State	2 200			2,210	404
Gaylord 812—Sibley	Surg	Indiv	10			3	45
Gaylord Hospital	Surg	Indiv	10			3	45

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Glenwood 2 220—Pope	Gen	Part	7	3	8	5	179
Glenwood Hospital	Gen	Indiv	6	3	35	3	140
Greenbush 387—Rosenau	Gen	Indiv	6	3	35	3	140
General Hospital	Gen	Indiv	6	3	35	3	140
Hastings 5 080—Dakota	Ment	State	1 000			1 007	53
Hastings State Asylum	Ment	State	1 000			1 007	53
Hibbing 15 635—St Louis	Gen	City	10			4	54
Hibbing Detention Hospital	Gen	Indiv	9	2	6	2	138
Long Prairie 1 864—Todd	Gen	Indiv	9	2	6	2	138
Long Prairie Hospital	Gen	Indiv	9	2	6	2	138
Madella 1 337—Watsonwan	Gen	Indiv	13	4	61	2	186
Madella Hospital	Gen	Indiv	13	4	61	2	186
Minneapolis 404,256—Hennepin	Conv	NPA's'n	25			13	174
Barton Loring Home for Con	Conv	NPA's'n	25			13	174
Valerescents	Conv	NPA's'n	25			13	174
Homewood Hospital	Conv	NPA's'n	25			13	174
Minneapolis Sanatorium	N&M	Indiv	12			6	20
Minneapolis Sanatorium	N&M	Indiv	12			6	20
Minnesota Soldiers Home Hos	Inst	State	100			70	194
pitul	Chr	City	183			176	51
Parkview Sanatorium	N&M	Indiv	10			7	63
Portland Resthome	Conv	Indiv	17			14	20
Rest Home	N&M	Part	17			14	120
Rest Hospital	TB	NPA's'n	20			13	29
Sarahurst	Conv	NPA's'n	60			22	74
Vocational Nursing Home	Conv	NPA's'n	60			22	74
Morris 2 474—Stevens	Gen	Corp	14	0	45	7	255
Stevens County Hospital	Gen	Corp	14	0	45	7	255
Mudbaden—Scott	Conv	Corp	90			10	845
Mudbaden Sulphur Springs	Conv	Corp	90			10	845
Owatonna 7 644—Steele	Inst	State	40			15	783
Minnesota State Public School	Inst	State	40			15	783
Parkers Prairie 631—Otter Tail	Surg	Indiv	8			2	80
Leibold Hospital	Surg	Indiv	8			2	80
Pellenn Rapids 1 763—Otter Tail	Gen	Indiv	8	4	23	1	54
Dr. Boyen's Hospital	Gen	Indiv	7	3	25	3	105
Pellenn Rapids Hospital	Gen	Indiv	7	3	25	3	105
Pipestone 3 459—Pipestone	Gen	IA	25	6	2	21	760
Pipestone Indian School Hosp	Gen	IA	25	6	2	21	760
Red Wing 9 029—Goodhue	Inst	State	20			4	446
Minnesota State Training School	Inst	State	20			4	446
for Boys	Inst	State	20			4	446
St Cloud 21 000—Stearns	Inst	State	30				514
Minnesota State Reformatory	Inst	State	30				514
Hospital	Inst	State	30				514
St Paul 2,1 606—Ramsey	TB	CyCo	60			31	78
Children's Preventorium of	N&M	Indiv	12			10	26
Ramsey County	N&M	Indiv	12			10	26
Mrs. Robbins Rest Home	Mat	Church	65	5	70	5	85
Salvation Army Home and Hos	Mat	Church	65	5	70	5	85
pital	Mat	Church	65	5	70	5	85
Sauk Center 2,710—Stearns	Gen	Indiv	9	5	18	2	90
Long Hospital	Gen	Indiv	9	5	18	2	90
Shakopee 2 023—Scott	Conv	Corp	74			20	858
Mudera Sanatorium	Conv	Corp	74			20	858
Stillwater 7 173—Washington	Inst	State	50			35	421
Minnesota State Prison Hosp	Inst	State	50			35	421
Virginia 11 963—St Louis	Gen	City	30				10
City Detention Hospital	Gen	City	12	3	16	3	139
Warroad 1 184—Roseau	Gen	City	12	3	16	3	139
Warroad Hospital	Gen	City	12	3	16	3	139
Watertown 694—Carver	Gen	Indiv	6	3	9	2	96
Shrader and Lee Hospital	Gen	Indiv	6	3	9	2	96
Wayzata 1 100—Hennepin	Gen	NPA's'n	15	4	20	3	143
Minnetonka Hospital	Gen	NPA's'n	15	4	20	3	143
Wheaton 1 270—Traverse	Gen	Indiv	10	4	30	2	160
Wheaton Hospital	Gen	Indiv	10	4	30	2	160
Willmar 6 173—Kandiyohi	Ment	State	1 450			1,357	670
Willmar State Asylum	Ment	State	1 450			1,357	670
Worthington 3 878—Nobles	Gen	Indiv	6	3	25	3	104
Dolan Hospital	Gen	Indiv	6	3	25	3	104

Summary for Minnesota

Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted
Related institutions	162	18 738	14 183	176,862
	55	8 246	7 243	12 033
Totals	217	27 004	21 431	188,895
Refused registration	10	200		

MISSISSIPPI

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Aberdeen 3,925—Monroe	Gen	City	22	3	14	3	201
Aberdeen Hospital	Gen	City	22	3	14	3	201
Amory 3 214—Monroe	Gen	NPA's'n	35	3	81	13	585
Gilmore Sanatorium	Gen	NPA's'n	35	3	81	13	585
Blount 14,850—Harrison	Gen	NPA's'n	50	8	49	14	612
Blount Hospital	Gen	NPA's'n	50	8	49	14	612
Veterans Admin Facility	Gen	Vet	207			94	1 040
Booneville 1 703—Prentiss	Gen	NPA's'n	50	2	12	7	363
North East Mississippi Hosp	Gen	NPA's'n	50	2	12	7	363
Brookhaven 5,288—Lincoln	Gen	NPA's'n	50	7	33	7	404
Kings Daughters Hospital	Gen	NPA's'n	50	7	33	7	404
Canton 4 725—Madison	Gen	NPA's'n	21	5	10	6	300
Madison County Kings Daugh	Gen	NPA's'n	21	5	10	6	300
ters Hospital	Gen	NPA's'n	21	5	10	6	300

OREGON—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Chemawa 625—Marion							
Salem Indian School Hospital	Inst	I A	42	1	1	9	6.3
Corvallis 7380—Benton							
Oregon State Agricultural College Hospital	Inst	State	18			6	347
Klamath Falls, 16 633—Klamath							
Soule Sanitarium	Gen	Indiv	8	1	23	1	60
Lakeview 1 789—Lake							
Lakeview Public Hospital	Gen	Part	12	2			
Mill City 1 214—Marion							
Mill City Hospital	Gen	Indiv	8	2	4	4	52
Portland 301 St.—Multnomah							
E Henry Wemme White Shield	Mat	NP Assn	33	12	48	10	61
Isolation Hospital	Inst	City	70	6		20	441
Salvation Army White Shield Home	Mat	Church	70	5	90	20	68
Woman's Convalescent Home	Conv	NP Assn	15			9	167
Salem 26 266—Marion							
Oregon Fairview Home	MeDe	State	910			890	130
Oregon State Penitentiary Hosp	Inst	State	32			10	240
Oregon State School for the Deaf	Inst	State	10			5	2.0
Tillamook 2,549—Tillamook							
Tillamook General Hospital	Gen	Indiv	15	4	50	5	230
Waldport 367—Lincoln							
Waldport Community Hospital	Gen	Indiv	12	4	3	2	38

Summary for Oregon

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	50	8 415	0.39	67 534
Related institutions	16	1 301	1 008	3,183
Totals	75	9 716	7,547	70 717
Refused registration	12	407		

PENNSYLVANIA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Ablington 821—Montgomery							
Ablington Memorial Hosp *o	Gen	NP Assn	242	23	5.0	157	4 440
Allentown 92,563—Lehigh							
Allentown Hospital*o	Gen	NP Assn	300	20	446	210	6 031
Allentown State Hospital*o	Ment	State	1,510			1,532	498
Baer Hospital	Gen	Indiv	20	10	62	6	238
Sacred Heart Hospital*o	Gen	Church	280	20	431	120	2,988
Allenwood 362—Union							
Devitt's Camp for Tuberculosis	TB	NP Assn	110			74	201
Altoona 52 064—Blair							
Altoona Hospital*o	Gen	NP Assn	162	16	305	82	2 476
Mercy Hospital*o	Gen	NP Assn	109	15	312	50	1 706
Ambler 3 944—Montgomery							
Dufur Hospital	N&M	Indiv	50			39	66
Ashland 7 164—Schuylkill							
Ashland State Hospital*o	Gen	State	226	15	307	154	4 231
Asplawall (Pittsburgh P O) 4 263—Allegheny							
Veterans Admin Facility	G&I B Vet		501			3.3	1 247
Beaver Falls 17 147—Beaver							
Providence Hospital*o	Gen	Church	55	10	86	32	729
Bedford 2,933—Bedford							
Timmins Hospital	Gen	Indiv	15	2	16	8	296
Bellefonte 4 804—Center							
Center County Hospital*o	Gen	NP Assn	64	10	180	44	1,272
Bellevue 10,222—Allegheny							
Suburban General Hospital*o	Gen	NP Assn	104	14	215	46	1 697
Berwick 12 660—Columbia							
Berwick Hospital	Gen	NP Assn	50	10	120	23	840
Bethlehem 57,822—Northampton							
St Luke's Hospital*o	Gen	NP Assn	180	20	3.8	130	4 080
Bloomsburg 9 093—Columbia							
Bloomsburg Hospital*o	Gen	NP Assn	112	13	178	52	1 791
Blossburg 1 696—Tioga							
Blossburg State Hospital	Gen	State	90	10	119	60	1,393
Bradock 19,829—Allegheny							
Bradock General Hospital*o	Gen	NP Assn	120	16	440	60	1,846
Bradford 19,306—McKean							
Bradford Hospital*o	Gen	NP Assn	104	23	321	51	1 873
Brookville 4 387—Jefferson							
Brookville Hospital	Gen	NP Assn	36	4	53	23	687
Brownsville 2,569—Fayette							
Brownsville General Hospital*o	Gen	NP Assn	90	10	64	43	1 008
Bryn Mawr 3 046—Montgomery							
Bryn Mawr Hospital*o	Gen	NP Assn	238	24	482	123	3,583
Butler 23 563—Butler							
Butler County Memorial Hosp o	Gen	NP Assn	92	10	116	500	1 644
Canonsburg 12,538—Washington							
Canonsburg General Hosp o	Gen	NP Assn	56	10	140	33	948
Carbondale 20 061—Lackawanna							
Carbondale General Hospital	Gen	NP Assn	55	9	142	34	1 466
St Joseph's Hospital*o	Gen	Church	106	12	150	47	1 453
Carlisle 12,560—Cumberland							
Carlisle Hospital	Gen	NP Assn	82	15	212	40	1,300
Station Hospital	Gen	Army	38	1	21	16	837
Chambersburg 13 788—Franklin							
Chambersburg Hospital*o	Gen	NP Assn	85	15	169	39	1 461
Chester 59 164—Delaware							
Chester Hospital*o	Gen	NP Assn	200	30	640	121	3 497
J Lewis Crozer Home for Incurables and Homeopathic Hospital	Gen	NP Assn	65	10	148	24	733
Mercy Hospital	Gen	Indiv	20	4	No data supplied		

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Clarks Summit 2 604—Lackawanna							
Hillside Home and Hospital for Mental Diseases	Vent	City	1 200			1 020	440
Clearfield 9 221—Clearfield							
Clearfield Hospital*o	Gen	NP Assn	110	18	162	70	2,161
Clifton Heights 5 007—Delaware							
Burn Brae Hospital	N&M	Indiv	50			42	62
Coaldale 6 021—Schuylkill							
Coaldale State Hospital	Gen	State	130	18	230	86	1,001
Coatesville 14,582—Chester							
Coatesville Hospital*o	Gen	NP Assn	97	14	100	51	1 622
Veterans Admin Facility	Ment	Vet	1 136			1 107	404
Columbia 11,340—Lancaster							
Columbia Hospital	Gen	NP Assn	60	10	92	15	679
Colver 2 060—Cambria							
Colver Hospital	Gen	NP Assn	10	4	26	4	167
Confluence 989—Somerset							
Frantz Hospital	Gen	Indiv	15	3	21	0	100
Connellsville 13,200—Fayette							
Connellsville State Hospital	Gen	State	90	15	252	64	1 678
Corry 7 152—Erie							
Corry Hospital	Gen	NP Assn	40	6	137	15	694
Coudersport 2,740—Potter							
Coudersport General Hospital	Gen	NP Assn	14	5	27	14	477
Cresson 2 317—Cambria							
Pennsylvania State Sanatorium for Tuberculosis No 2	TB	State	840			8.2	893
Danville 7,165—Montour							
Danville State Hospital*o	Ment	State	1 947			1,830	403
Geo F Geislinger Memorial Hospital*o	Gen	NP Assn	180	18	370	118	3,682
Darby 9 890—Delaware							
Fitzgerald Mercy Hospital	Gen	Church	200	48	202	64	1 996
Devon 364—Chester							
Alcluyd Hospital	N&M	Indiv	25			18	23
Dixmont 1 200—Allegheny							
Dixmont Hospital	N&M	NP Assn	1 000			1,174	102
Drexel Hill 1 119—Delaware							
Delaware County Hospital	Gen	NP Assn	60	14	137	37	1,600
Du Bois 11 590—Clearfield							
Du Bois Hospital	Gen	Church	50	7	46	24	521
Maple Avenue Hospital	Gen	NP Assn	70	7	89	30	1 150
Englewood 184—Montgomery							
Englewood Sanatorium for Consumption*o	TB	NP Assn	188			1.0	190
Easton 31 468—Northampton							
Betts' Private Hospital	Gen	Indiv	40	10		19	
Easton Hospital*o	Gen	NP Assn	100	20	352	137	4 490
Easton Sanitarium	N&M	Indiv	80			12	43
East Stroudsburg 6 092—Monroe							
General Hospital of Monroe County	Gen	NP Assn	0	0	111	25	858
Elizabethtown 3,940—Lancaster							
Hospital for Crippled Children	Orth	State	120			106	168
Philadelphia Freemasons Memorial Hospital	Gen	Frat	165			100	610
Ellwood City 12,323—Lawrence							
Ellwood City Hospital	Gen	NP Assn	50	6	79	20	776
Erk 11,967—Erie							
Lamont Hospital*o	Gen	NP Assn	224	81	640	131	4,531
Louis Home Sanatorium	TB	NP Assn	10			16	23
St Vincent's Hospital*o	Gen	Church	182	33	670	125	5 003
Zem Zed Hospital for Crippled Children	Orth	Frat	50			33	61
Everett 1 874—Bedford							
Everett Hospital	Gen	Indiv	17	5	33	14	284
Franklin 10 244—Venango							
Franklin Hospital	Gen	NP Assn	47	10	84	18	608
Gettysburg 5 584—Adams							
Annie M Warner Hospital	Gen	NP Assn	54	6	79	21	506
Gladwyne 1 230—Montgomery							
Gladwyne Colony	N&M	Indiv	75			72	93
Greensburg 10 508—Westmoreland							
Westmoreland Hospital*o	Gen	NP Assn	148	12	301	101	3 015
Greenville 8 028—Mercer							
Greenville Hospital	Gen	NP Assn	51	12	80	11	467
Grove City 6,156—Mercer							
Grove City Hospital	Gen	NP Assn	30	6	38	7	204
Hamburg 3,637—Berks							
Hamburg State Sanatorium for Tuberculosis	TB	State	540			544	491
Hanover 11,800—York							
Hanover General Hospital	Gen	NP Assn	50	10	182	27	831
Harrisburg 80,339—Dauphin							
Harrisburg Hospital*o	Gen	NP Assn	214	32	497	158	4 406
Harrisburg Polyclinic Hosp *o	Gen	NP Assn	150	30	402	78	3 063
Harrisburg State Hospital	Ment	State	1,883			1 781	324
Keystone Hospital	Gen	Indiv	27	0	66	14	412
Hazleton 38 760—Luzerne							
Corrigan Maternity Hospital	Mat	Part	18	18	260	12	260
Hazleton State Hospital*o	Gen	State	141	14	301	134	5,365
Hollidaysburg 5,960—Blair							
Blair County Hospital for Mental Diseases	Ment	County	300			283	120
Homestead 20 141—Allegheny							
Homestead Hospital*o	Gen	NP Assn	08	20	184	55	1 439
Honesdale 5 490—Wayne							
Wayne County Memorial Hosp	Gen	NP Assn	20	7	71	14	576
Huntingdon 7,458—Huntingdon							
J C Blair Memorial Hosp o	Gen	NP Assn	70	13	227	51	1,544
Indiana 9 660—Indiana							
Indiana Hospital*o	Gen	NP Assn	139	15	90	101	2,000
Jersey Shore 5 781—Lycoming							
Jersey Shore Hospital	Gen	NP Assn	20	3	22	10	361
Sanford Hospital	Gen	Indiv	20	6	23	11	300

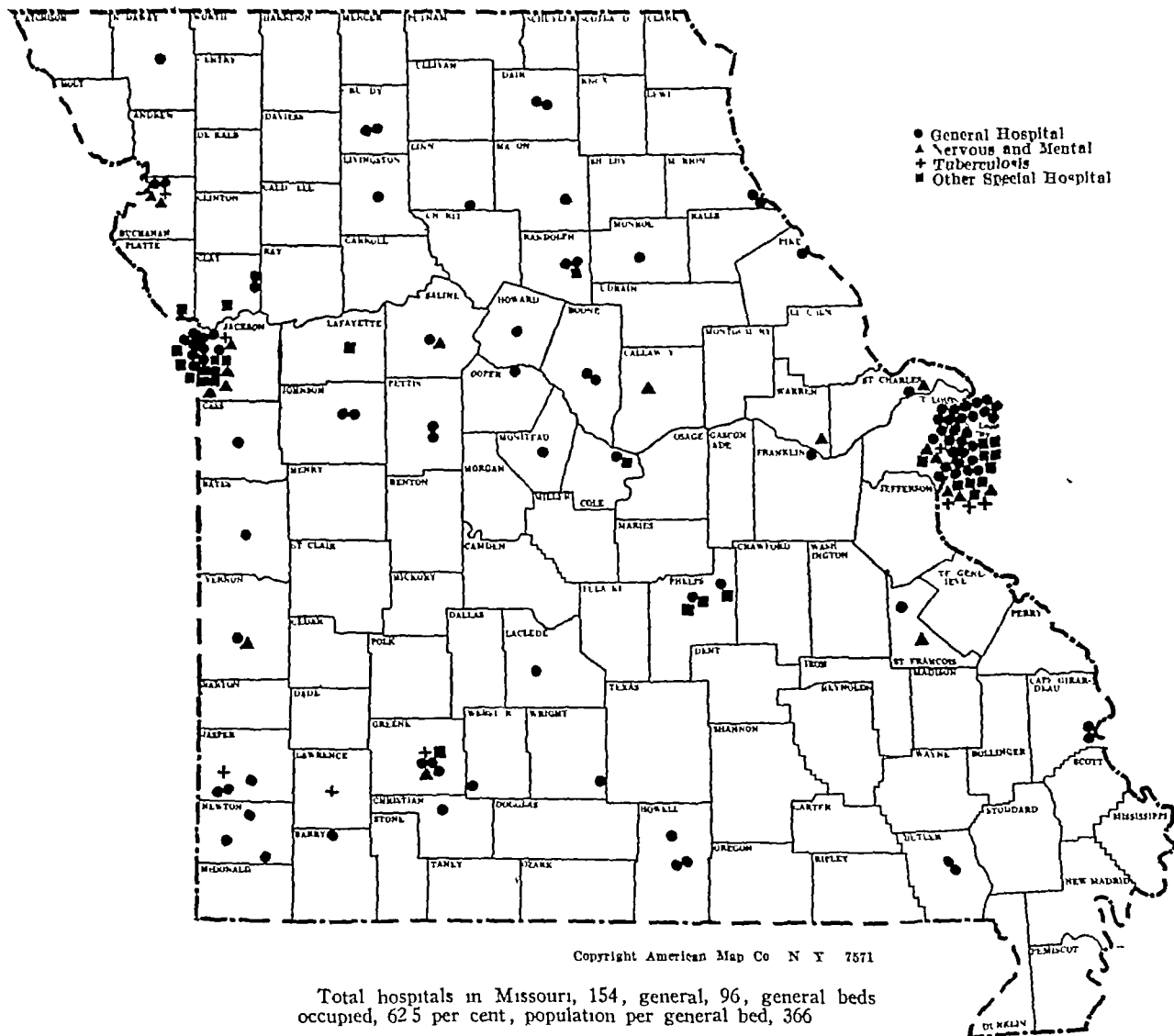
MISSOURI

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Bonne Terre, 4 021—St. Francis	Gen	Corp	30	7	41	11	348
Bonne Terre Hospital							
Boonville, 6 435—Cooper	Gen	Church	70	14	54	20	1 007
St. Joseph's Hospital							
Butler, 2 700—Bates	Gen	Indiv	16	2	51	8	430
Butler Memorial Hospital							
California, 2 384—Moniteau	Gen	Indiv	30	2	4	14	720
Latham Sanitarium							
Cape Girardeau 10,227—Cape Girardeau	Gen	Church	50	10	73	30	930
St. Francis Hospital							
Southeast Missouri Hospital	Gen	NPA'sen	70	12	90	30	1 127
Carthage, 0 730—Jasper	Gen	City	38	6	63	15	741
McCune-Brooks Hospital							

MISSOURI—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Fayette 2,630—Howard	Gen	Part	20	5	53	7	341
Leo Hospital							
Fulton 6100—Callaway	Ment	State	1,703		1 704		404
State Hospital No. 14							
Glendale (Kirkwood P O) 1 451—St. Louis	N&M	Corp	20			0	18
Oakland Park Hospital							
Manifal 22,761—Marion	Gen	City	78	18	00	23	1,200
Levering Hospital	Gen	Church	60	10	133	41	1 183
St. Elizabeth's Hospital							
Harrisonville 2,306—Cass	Gen	Indiv	10	2	9	3	140
Harrisonville Hospital							
Independence 10 206—Jackson	Gen	Church	68	12	219	47	1,206
Independence Saint and Hosp							

MISSOURI



Chillicothe, 8,177—Livingston	Gen	Part	25	2	13	8	308
Chillicothe Hospital							
Clayton 9 513—St. Louis	Gen	County	187	38	668	148	5 157
St. Louis County Hospital**							
Columbia, 14,267—Boone	Gen	County	40	4	72	17	709
Boone County General Hosp							
Noyes Hospital							
Parker Memorial Hospital							
State Hospital for Crippled Children							
University Hospitals*							
Excelsior Springs 4 565—Clay	Gen	State	100	8	51	40	1 980
Excelsior Springs Sanitarium and Hospital							
Veterans Admin Facility	Gen	Corp	40	1	6	30	410
Farmington, 8 001—St. Francis	Gen	Vet	202			243	925
Missouri State Hospital No. 4	Ment	State	1 160			1 127	359

Ironton 974—Iron	Gen	Church	20	4			N&M
St. Mary's of the Ozarks							
Jefferson Barracks 842—St. Louis	Gen	Army	126	4	28	90	2,108
Station Hospital							
Veterans Admin Facility	Gen	Vet	372			372	1,572
Jefferson City 21,590—Cole	Gen	Church	100	15	124	37	1,220
St. Mary's Hospital							
Joplin 33 464—Jasper	Gen	Church	90	12	91	32	1 171
Freeman Hospital							
St. John's Hospital	Gen	Church	125	10	102	40	1 649
Kansas City 399 746—Jackson	Chil	NPA'sen	163	12		150	2 473
Children's Mercy Hospital							
Fairmount Maternity Hospital	Mat	Corp	60	32	102	31	102
Kansas City General Hosp**	Gen	City	430	40	000	390	8 809
Kansas City General Hospital							
No. 2 (col) **	Gen	City	200	24	301	182	2 703
Kansas City Industrial Hosp	Gen	NPA'sen	12	4			no data supplied

Key to symbols and abbreviations is on page 1091

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Hahnemann Hospital*	Gen	NPAasn	515	77	1 707	438	10 911
Home for Consumptives	TB	Church	105			92	84
Hospital of the Protestant Episcopal Church*	Gen	Church	48	40	42	301	5 708
Hospital of the University of Pennsylvania**	Gen	State	502	32	642	324	8 390
Hospital of the Woman's Medical College of Pennsylvania*	Gen	NPAasn	140	27	395	73	2 564
Institute of the Pennsylvania Hospital	N&M	NPAasn	60			98	162
Jefferies Hospital*	Ca	NPAasn	68			54	515
Jefferson Medical College Hospital*	Gen	NPAasn	631	57	1 093	506	11 153
Jewish Hospital**	Gen	NPAasn	350	70	758	253	6 678
Joseph Price Memorial Hospo	Gen	NPAasn	60	10	7	3	630
Kensington Hospital for Women*	GynMat	NPAasn	66	35	683	45	1 473
Lankenau Hospital*	Gen	NPAasn	203	30	353	153	3 623
Memorial Hospital	Gen	NPAasn	100	16	192	63	2 301
Mercy Hospital (col)*	Gen	NPAasn	100	10	135	75	1 878
Methodist Episcopal Hospo	Gen	Church	197	45	374	121	3 050
Metropolitan Hospital	Gen	Corp	20	7	87	8	649
Misericordia Hospital*	Gen	Church	200	35	643	131	4 137
Mt. Sinai Hospital*	Gen	NPAasn	261	55	960	180	5 986
National Stomach Hospital	Gen	NPAasn	40	10	8	14	400
Northeastern Hospital*	Gen	NPAasn	76	25	380	75	1 099
Northern Liberties Hospital	Gen	NPAasn	68	11	63	33	1 410
Pennsylvania Hospital**	Gen	NPAasn	430	130	2 221	305	8 562
Pennsylvania Hospital Department for Mental and Nervous Diseases*	N&M	NPAasn	225			180	220
Philadelphia General Hospo	Gen	City	2,000	60	1,050	2 008	2, 108
Philadelphia Hospital for Contagious Diseases	Iso	City	1 100			302	3 785
Philadelphia Hospital for Mental Diseases	N&M	City	5,637			5 458	1 473
Philadelphia Orthopaedic Hospital and Infirmary for Nervous Diseases*	Orth&Neur	NPAasn	140			61	556
Presbyterian Hospital**	Gen	Church	383	42	523	187	4,825
Preston Retreat	Mat	NPAasn	60	35	537	35	455
Rush Hospital for Consumption and Allied Diseases	TB	NPAasn	178			72	541
St. Agnes Hospital*	Gen	Church	306	60	1 130	104	5 014
St. Christopher's Hospital for Children*	Chil	NPAasn	75			55	2,109
St. Joseph's Hospital*	Gen	Church	193	28	322	85	1,906
St. Luke's and Children's Hospital*	Gen	NPAasn	178	31	478	117	3 638
St. Mary's Hospital*	Gen	Church	195	40	495	134	3 680
St. Vincent's Hospital	Gen	Church	225	34	314	164	1 283
Shriners Hospital for Crippled Children	Orth	Frnt	100			68	222
Skin and Cancer Hospital	Sk&Ca	NPAasn	25			18	178
Stetson Hospital	Gen	NPAasn	62	10	127	32	1,200
Temple University Hospital*	Gen	NPAasn	390	61	1,172	204	8,231
U. S. Naval Hospital	Gen	Navy	640			177	1 740
Wills Hospital*	Eye	NPAasn	200			118	3 467
Woman's Hospital*	Gen	NPAasn	87	28	857	73	2 449
Women's Homeopathic Hospo	Gen	NPAasn	100	40	318	50	3 064
Philipsburg 3,600—Centre Dr. McGrath Sanitarium	Gen	Indiv	20	6	20	7	145
Philipsburg State Hospital*	Gen	State	100	12	232	94	2 620
Phoenixville 12,020—Chester Phoenixville Hospital*	Gen	NPAasn	59	8	124	30	700
Pittsburgh 689,517—Allegheny Allegheny General Hospital**	Gen	NPAasn	379	26	542	261	6 088
Belvedere General Hospital	Gen	NPAasn	32	10	39	9	393
Children's Hospital*	Chil	NPAasn	193			69	2,117
Elizabeth Steel Magee Hospo	Gen	NPAasn	291	136	2 389	175	4 453
Eyo and Ear Hospital*	ENT	NPAasn	101			36	3 024
Fairview Sanatorium	Corp	Corp	12			8	14
Haddon Maternity Hospital	Mat	Corp	20	12	140	8	375
Homeopathic Medical and Surgical Hosp and Dispensary*	Gen	NPAasn	281	45	617	149	3,849
Leech Farm Sanatorium	TB	City	293			275	273
Mercy Hospital**	Gen	Church	622	48	388	430	8 775
Montefiore Hospital*	Gen	NPAasn	164	31	527	124	4 100
Municipal Hospital for Contagious Diseases	Iso	City	250			88	1 105
Passavant Hospital*	Gen	Church	117	24	253	70	2 105
Pittsburgh Hospital*	Corp	Corp	178	28	434	182	3 193
Presbyterian Hospital*	Gen	Church	163			83	2 100
Rosealia Foundling and Maternity Hospital	MatCh	NPAasn	104	23	195	108	361
St. Francis Hospital**	Gen	Church	500	37	447	370	6 309
St. John's General Hospital*	Gen	Church	189	22	341	85	2,027
St. Joseph's Hospital and Dispensary*	Gen	Church	128	12	168	73	1 850
St. Margaret Memorial Hospo	Gen	Church	131	21	222	58	1 740
South Side Hospital*	Gen	NPAasn	210	15	314	122	3,548
Tuberculosis League Hospital	TB	NPAasn	180			147	188
U. S. Marine Hospital	Gen	USPHS	73			56	570
Western Pennsylvania Hospo	Gen	NPAasn	600	51	1 182	309	8 118
Pittston 18 246—Luzerne Pittston Hospital*	Gen	NPAasn	102	18	282	74	3 428
Pottstown 10 420—Montgomery Homeopathic Hospital*	Gen	NPAasn	52	10	95	18	485
Pottstown Hospital*	Gen	NPAasn	60	10	133	37	1 070
Pottsville 24 800—Schuylkill Lemon B. Warner Hospital	Gen	Indiv	78	12	92	20	500
A. C. Milliken Hospital	Gen	NPAasn	42	10	8	24	908
Pottsville Hospital*	Gen	NPAasn	128	12	233	88	2,771
Punkatunaway 9,266—Jefferson Adrian Hospital	Gen	NPAasn	73	11	119	33	1 153

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Quakertown 4,883—Bucks Quakertown Hospital	Gen	NPAasn	44	12	86	17	686
Ransom 57—Lackawanna Ransom Home and Mental Hosp	Ment	County	370			356	54
Reading 111 171—Berks Berks County Tuberculosis Sanatorium	TB	County	134			132	161
Homeopathic Medical and Surgical Hospital*	Gen	NPAasn	115	23	337	70	2 931
Reading Hospital**	Gen	Corp	230	38	503	142	4,293
St. Joseph's Hospital*	Gen	Church	180	25	487	134	3,369
Renovo 3 047—Clinton Renovo Hospital	Gen	NPAasn	30	5	65	10	650
Retreat 31—Luzerne Retreat Mental Hospital	N&M	County	1,000			907	217
Ridgway 6 313—Elk 11k County General Hospital	Gen	NPAasn	60	9	123	32	1 143
Ridley Park 3 850—Delaware Taylor Hospital	Gen	NPAasn	109	15	203	43	1,312
Roaring Spring 2 724—Blair Mason Hospital	Gen	NPAasn	56	6	83	25	767
Rochester 7 720—Beaver Rochester General Hospital*	Gen	NPAasn	100	12	216	70	2,680
St. Mary's 7,433—Elk Andrew Kaul Memorial Hosp	Gen	NPAasn	42	6	80	20	517
Sayre, 7 902—Bradford Robert Packer Hospital*	Gen	NPAasn	231	22	588	174	5 511
Schuylkill Haven 6 514—Schuylkill Schuylkill County Hospital for Mental Diseases	Ment	County	453			502	135
Scranton 147 433—Lackawanna Hahnemann Hospital*	Gen	NPAasn	109	10	364	51	2 610
Lackawanna County Tuberculosis Hospital	TB	County	140			137	129
Mercy Hospital*	Gen	Church	90	20	425	68	2,023
Moses Taylor Hospital**	Gen	NPAasn	100			75	1 490
St. Joseph's Children's and Maternity Hospital*	MatCh	Church	147	90	33	128	128
St. Mary's Keller Memorial Hospital*	Gen	Church	70	12	221	42	1 433
Scranton Private Hospital	Gen	Corp	40	6	6	8	640
Scranton State Hospital*	Gen	State	174	14	300	205	3,882
West Side Hospital*	Gen	NPAasn	65	10	334	70	2 112
Sellersville 2,063—Bucks Grand View Hospital*	Gen	NPAasn	58	7	106	29	754
Sewickley 5 590—Allegheny Valley Hospital*	Gen	NPAasn	103	20	250	72	1,972
Shamokin 20,274—Northumberland Shamokin State Hospital	Gen	State	85	8	119	88	3,079
Sharon 25,008—Mercer Christian H. Buhl Hospital*	Gen	NPAasn	108	17	323	65	2 497
Shenandoah 21 782—Schuylkill Locust Mountain State Hosp	Gen	State	70	10	109	62	1,854
Somerset 4 390—Somerset Somerset Community Hospital	Gen	NPAasn	39	6	83	20	1 112
South Mountain 29—Franklin Pennsylvania State Sanatorium for Tuberculosis	TB	State	1 035			934	1 422
Spangler, 2 761—Cambria Mifflin Hospital of Northern Cambria*	Gen	NPAasn	75	6	95	59	1 014
Sunbury 15 628—Northumberland Mary M. Packer Hospital	Gen	NPAasn	61	9	120	45	1 480
Susquehanna 3 203—Susquehanna Simon H. Barnes Memorial Hospital	Gen	NPAasn	15	5	35	9	217
Tarentum 9 551—Allegheny Allegheny Valley Hospital*	Gen	NPAasn	95	10	176	58	1 770
Taylor 10 428—Lackawanna Taylor Hospital	Gen	NPAasn	41	7	No data supplied		
Titusville 8 055—Crawford Titusville Hospital	Gen	NPAasn	37	0	124	15	714
Torrance 414—Westmoreland Torrance State Hospital	Ment	State	1 407			1 434	610
Uniontown 19 544—Fayette Uniontown Hospital*	Gen	NPAasn	200	25	203	123	3,345
Warren 14 843—Warren Warren General Hospital*	Gen	NPAasn	80	22	270	44	1 440
Warren State Hospital*	Ment	State	2 050			1 906	550
Washington 24 545—Washington Hillview Farms Sanitarium	Gen	Indiv	40			34	268
Washington Hospital*	Gen	NPAasn	138	28	180	71	2,320
Waymart 902—Wayne Farview State Hospital	Ment	State	708			743	134
Waynesboro 10 167—Franklin Waynesboro Hospital	Gen	NPAasn	35	10	156	26	825
Waynesburg 4 915—Greene Greene County Memorial Hosp	Gen	NPAasn	31	6	30	17	614
Wernersville 1 096—Berks Wernersville State Hospital	Ment	State	1 400			1,370	310
West Chester 12 825—Chester Chester County Hospital*	Gen	NPAasn	142	20	310	80	2 320
Homeopathic Hospital of Chester County*	Gen	NPAasn	67	10	157	40	1,310
West Grove 1,375—Chester West Grove Hospital	Gen	Indiv	24	15	80	8	504
White Haven 1 537—Luzerne White Haven Sanatorium*	TB	NPAasn	250			230	338
Wilkes Barre 86 626—Luzerne Mercy Hospital*	Gen	Church	195	25	462	135	4 457
Wilkes Barre General Hospo	Gen	NPAasn	366	41	692	223	7 210
Wyoming Valley Homeopathic Hospital*	Gen	NPAasn	70	10	296	46	1 775
Wilkesburg 29 539—Allegheny Columbia Hospital*	Gen	Church	174	26	364	84	2 110

Key to symbols and abbreviations is on page 1091

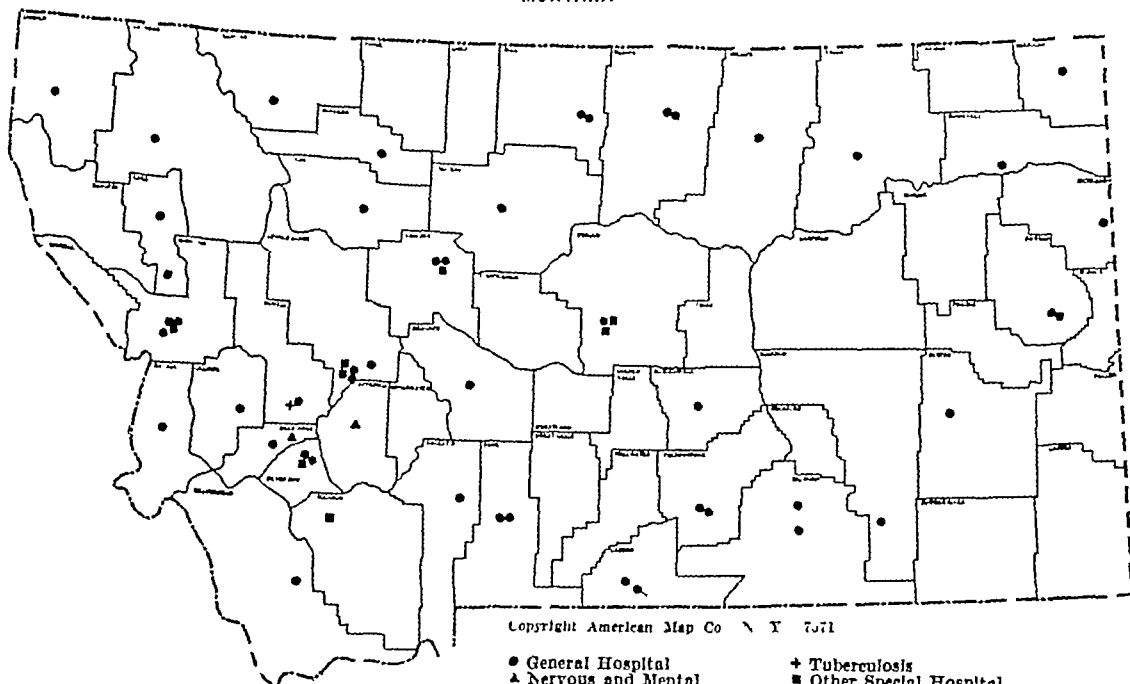
MONTANA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Anaconda, 12,491—Deerlodge St Ann's Hospital	Gen	Church	61	10	80	20	930
Billings 16,889—Yellowstone Buildings Deaconess Hospital	Gen	Church	60	12	211	70	1,347
St Vincent's Hospital	Gen	Church	90	12	103	98	1,636
Bozeman 6,833—Gallatin Bozeman Deaconess Hospital	Gen	Church	54	12	136	52	1,119
Browning 1,172—Glacier Blackfeet Hospital	Gen	I A	30	7	89	34	701
Butte, 39,531—Silver Bow Murray Hospital	Gen	Corp	120	12	63	37	1,230
St James Hospital	Gen	Church	141	16	313	72	1,929
Choteau 976—Teton Choteau Hospital	Gen	Indiv	10	3	23	6	251
Conrad 1,489—Pondera St Mary's Hospital	Gen	Church	34	10	67	13	537
Crow Agency 113—Big Horn Crow Indian Hospital	Gen	I A	18	0	34	20	620
Deer Lodge 8,510—Powell Montana State Tuberculosis Sanitarium	TB	State	150			137	196
St Joseph's Hospital	Gen	Church	70	6	79	16	263
Dillon 2,422—Beaverhead Barrett Hospital	Gen	NP Assn	22	4	48	6	379

MONTANA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Lame Deer 1,523—Rosebud Tongue River Agency Hospital	Gen	I A	47	3	21	19	539
Lewistown 2,738—Fergus St Joseph's Hospital	Gen	Church	81	15	103	40	1,630
Libby 1,752—Lincoln Libby General Hospital	Gen	Indiv	14	3	40	8	200
Livingston 6,391—Park Park Hospital	Gen	Indiv	22	6	15	12	450
Missoula 7,170—Custer Miles City Hospital	Gen	Church	81	7	156	52	1,475
Missoula 14,657—Missoula Northern Pacific Beneficial Association Hospital	Indus	NP Assn	75			30	1,004
St Patrick's Hospital	Gen	Church	106	12	157	63	1,833
Thornton Hospital	Gen	Part	28	8	93	19	662
Plentywood 1,230—Sheridan Sheridan Memorial Hospital	Gen	NP Assn	20	5	51	7	235
Poplar 1,046—Roosevelt Fort Peck Indian School Hosp	Gen	I A	38	8	No data supplied		
Red Lodge 3,025—Carbon Mt Maurice Hosp and Sanit	Gen	NP Assn	26	4	No data supplied		
Roundup 2,777—Muskegehell Musselshell Valley Hospital	Gen	Indiv	20	6	50	5	507
St Ignace 376—Lake Holy Family Hospital	Gen	Church	31	6	68	5	510

MONTANA



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● General Hospital + Tuberculosis
▲ Nervous and Mental ■ Other Special Hospital

Total hospitals in Montana, 59, general, 49 general beds occupied, 515 per cent, population per general bed, 187

Ft. Benton 1,100—Chouteau St. Clare Hospital	Gen	Church	40	0	60	23	392
Ft. Harrison—Lewis and Clark Veterans Admin Facility	Gen	Vet	403			179	613
Ft. Missoula (Missoula P O)—Missoula Station Hospital	Gen	Army	41			25	498
Glasgow 2,116—Valley Frances Mahon Deaconess Hospital	Gen	Church	50	0	101	30	1,084
Glendive 4,620—Dawson Dawson County Hospital	Gen	County	25	5	27	15	
Northern Pacific Hospital	Gen	NP Assn	60	8	26	32	1,120
Great Falls 28,822—Cascade Columbus Hospital	Gen	Church	200	50	403	141	3,200
Montana Deaconess Hospital	Gen	Church	149	26	342	98	2,071
Hamilton 1,539—Ravalli Marcus Daly Memorial Hosp	Gen	NP Assn	30	6	94	10	620
Hardin 1,768—Big Horn Hardin General Hospital	Gen	Corp	30	5			
Harlem 708—Blaine Ft Belknap Indian Hospital and Sanitarium	Gen	I A	43	8	34	26	585
Heave 6,372—Hill Kennedy Deaconess Hospital	Gen	Church	41	12	88	22	568
Sacred Heart Hospital	Gen	Church	75	9	130	48	1,444
Helena 11,803—Lewis and Clark St John's Hospital	Gen	Church	50	18	140	34	815
St Peter's Hospital	Gen	NP Assn	40	10	103	20	793
Helena 6,094—Flathead Helispell General Hospital	Gen	Church	54	6	47	16	593

Sidney 2,010—Richland Sidney Deaconess Hospital	Gen	Church	24	0	125	16	638
Warm Springs 110—Deerlodge Montana State Hospital	Ment	State	1776		No data supplied		

Related Institutions

Boulder 962—Jefferson Montana State Training School for Feeble-minded	MeDe	State	418			401	65
Butte 39,632—Silver Bow Silver Bow County Hospital	Inst	County	150	3		133	384
Great Falls 28,822—Cascade Detention Hospital	Iso	CyCo	33			4	65
Harlem 708—Blaine Harlem Hospital	Gen	Indiv	12	2	25	5	50
Helena, 11,803—Lewis and Clark Florence Crittenton Home	Mat	NP Assn	18	16	43	10	42
Lewis and Clark County Hosp	Inst	County	32	1	10	25	100
Lewistown 5,358—Fergus Attiv Clinic Hospital	Surg	Corp	16				
Fergus County Hospital	Gen	County	17	4	39	8	252
Livingston, 6,391—Park Robinson Hospital	Gen	Indiv	7	5	45	2	83
Malta 1,342—Phillips Malta Hospital	Gen	Indiv	3	3	45	6	401
Phillipsburg 1,300—Granite Granite County Hospital	Gen	County	8			6	4
Polson 1455—Lake St Joseph's Hospital	Gen	Church	25	10	No data supplied		

Key to symbols and abbreviations is on page 1091

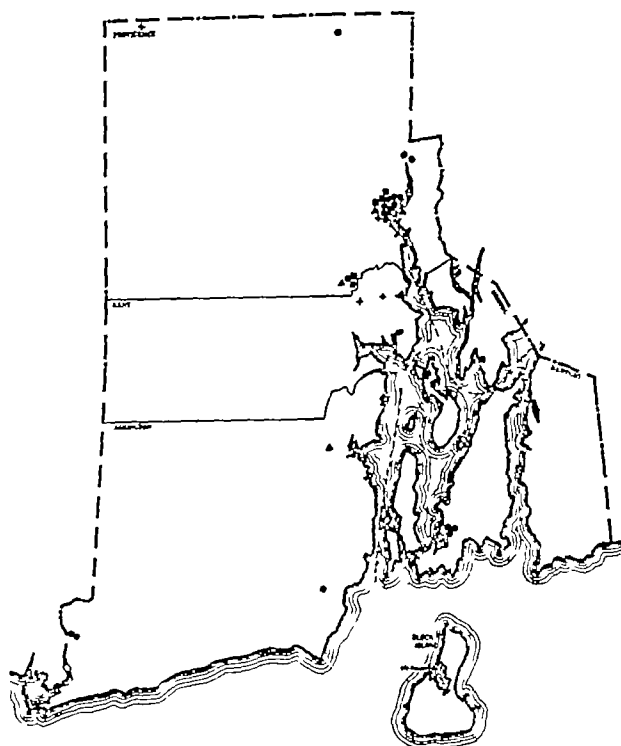
RHODE ISLAND—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Bassinets	Number of Births	Average Patients	Patients Admitted
Providence 252 081—Providence							
Butler Hospital*	N&M	NPAasn	174		140	147	
Charles V. Chapin Hospital*	TbIs	City	20		20	2,321	
Homeopathic Hospital*	Gen	NPAasn	166	34	554	92	3,304
Hope Hospital	Gen	Corp	88	2	17	589	
Jane Brown Memorial Hosp	(Included in Rhode Island Hospital)						
John W. Keefe Surgery	Surg	NPAasn	20		4	20	
Miriam Hospital	Gen	NPAasn	63	14	18	36	1,333
Providence Lying In Hospital	Mat	NPAasn	15	155	2,800	104	3,020
Rhode Island Hospital*	Gen	NPAasn	600		483	9,031	
St. Joseph's Hospital*	Gen	Church	300	43	543	101	3,894
Wakesfield 2 716—Washington	Gen	NPAasn	3	10	110	21	647
South County Hospital							
Wallum Lake 75—Providence	TB	State	430			416	380
Rhode Island State Sanat							
Westerly 10 097—Washington	Gen	Indiv	2		No data supplied		
Margaret Edward Anderson Hospital	Gen	NPAasn	61	12	143	24	767
Westerly Hospital	Gen	Corp	137	20	174	62	2,077
Woonsocket 49 376—Providence							
Woonsocket Hospital							

Related Institutions

Bristol 11 953—Bristol							
Rhode Island Soldiers Home	Inst	State	52				
Howard 2 200—Providence							
Rhode Island State Prison Hosp	Inst	State	24		28	450	

RHODE ISLAND



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● General Hospital + Tuberculosis
 ▲ Nervous and Mental ■ Other Special Hospital

Total hospitals in Rhode Island 32, general, 16, general beds occupied, 697 per cent, population per general bed, 229

Sockanogset School for Boys	Inst	State	9		5	203	
Hoxie 79—Kent							
Lakeside Preventorium	TB	NPAasn	00		47	251	
La Fayette 700—Washington							
Exeter School	MeDe	State	611		604	91	
Providence 2 2 981—Providence							
Broadway Hospital	Surg	Corp	11		2	66	
Heath Sanatorium	Conv	Indiv	20		17	17	
Heath Sanatorium Annex	Conv	Indiv	17		10	15	
St. Elizabeth Home for Incurables	Inc	Church	45		43	11	

Summary for Rhode Island

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	23	6,520	0,314	36,588
Related institutions	9	889	807	1,293
Totals	32	7,509	6,121	37,881
Refused registration	1	63		

SOUTH CAROLINA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Bassinets	Number of Births	Average Patients	Patients Admitted
Abbeville 4 414—Abbeville							
Abbeville County Memorial Hospital	Gen	NPAasn	18	2	23	6	215
Alken 6 033—Alken							
Alken County Hospital	Gen	County	29	2	37	24	1,080
Anderson 14 383—Anderson							
Anderson County Hospital	Gen	NPAasn	74	10	23	51	2,575
Bennettsville 3,667—Marlboro							
Marlboro County General Hospital	Gen	NPAasn	32	8	4	15	640
Camden 5 183—Kershaw							
Camden Hospital	Gen	NPAasn	44	6	80	27	1,163
Charleston 62,263—Charleston							
Baker Sanatorium	Gen	Corp	00	12	110	21	923
Roper Hospital*	Gen	NPAasn	205	30	712	2,3	0,361
St. Francis Xavier Infirmary	Gen	Church	50	18	73	2	588
Chester 5 528—Chester							
Pryor Hospital	Gen	NPAasn	66	6	17	10	409
Clinton 5 643—Laurens							
Dr. Hays Hospital	Gen	Indiv	10	2	18	5	208
Columbia 51 581—Richland							
Columbia Hospital	Gen	County	270	20	315	123	4,146
Good Samaritan Hosp (col)	Gen	NPAasn	65	0	10	30	1,674
South Carolina Baptist Hospital	Gen	Church	90	6	103	0	2,223
South Carolina State Hosp	Gen	State	2,003			3,464	989
Veterans Admin Facility	Gen	Vet	304			2,9	1,888
Waverly Sanitarium	N&M	Corp	30			24	215
Waverly Fraternal Hosp (col)	Gen	Frat	62	6	33	33	600
Conway 3 011—Horry							
Conway Hospital	Gen	NPAasn	39	6	80	19	1,490
Florence 14 774—Florence							
Florence-Darlington Tuberculosis Sanatorium	TB	County	46			43	57
McLeod Infirmary	Gen	NPAasn	130	8	113	75	2,798
Saunders Memorial Hosp	Gen	NPAasn	55	6	87	29	1,515
Gaffney 6 827—Cherokee							
City Hospital	Gen	NPAasn	35	2	12	10	234
Greenville 29 104—Greenville							
Greenville City Hospital	Gen	City	138	11	246	92	3,180
Greenville County Sanatorium	TB	County	70			67	100
Dr. Jervey's Private Hospital	ENT	Indiv	15			3	186
St. Francis Hospital	Gen	Church	02	8	177	41	1,411
Shriners Hospital for Crippled Children	Orth	Frat	60			60	390
Working Benevolent Hospital (col)	Gen	Frat	22	1	20	10	220
Greenwood, 11 020—Greenwood							
Brewer Hospital (col)	Gen	Church	20	2	26	10	200
Greenwood City Hospital	Gen	NPAasn	52	3	No data supplied		
Kingsree 2 392—Williamsburg							
Kelley Sanatorium	Gen	Indiv	20	4	21	7	400
Lake City, 1 942—Florence							
Lynch Infirmary	Gen	Indiv	12	2	20	4	180
Lancaster 3,545—Lancaster							
Lancaster Hospital	Gen	Indiv	25	3	7	12	822
Moncks Corner 623—Berkeley							
Berkeley County Hospital	G&TB	NPAasn	51	4	28	29	603
Moultrieville, 515—Charleston							
Station Hospital	Gen	Army	59			30	1,009
Mullins 3 158—Marion							
Mullins Hospital	Gen	NPAasn	50	4	67	24	1,093
Navy Yard 1 020—Charleston							
Pinehaven Sanatorium	TB	County	50			50	69
Newberry 7,288—Newberry							
Newberry County Hospital	Gen	NPAasn	25	5	26	18	478
Orangeburg 8 776—Orangeburg							
Tri County Hospital	Gen	NPAasn	57	4	10	21	750
Parris Island 395—Beaufort							
U. S. Naval Hospital	Gen	Navy	151	4	23	51	1,068
Ridgewood (Columbia P. O.)—Richland							
Ridgewood Tuberculosis Camp	TB	NPAasn	70			30	41
Rock Hill 11,323—York							
Fennell Infirmary	Gen	Indiv	35	2	No data supplied		
St. Mills 160—Pickens							
Dr. Peck's Hospital	Gen	Indiv	30	2	25	23	601
Spartanburg 28 723—Spartanburg							
Mary Black Memorial Hosp	Gen	NPAasn	37	3	31	20	917
Spartanburg General Hosp	Gen	County	206	24	214	147	3,574
State Park—Richland							
Palmetto Sanatorium (Colored Division of South Carolina Sanat)	TB	State	277				
Sumter 11 780—Sumter							
Thomey Hospital	Gen	NPAasn	00	8	69	42	1,107
Walterboro 2 592—Colleton							
Charles Es Dorn Hospital	Gen	Indiv	35	4	34	16	1,212

Related Institutions

Charleston 62,263—Charleston							
Charleston Orphan House	Inst	City	24			5	421
Citadel Hospital	Inst	State	31			8	2,003
Clinton 5 643—Laurens							
Leah Infirmary of Thornwell	Inst	Church	48				
Orphanage	MeDe	State	520			513	59
State Training School							
Columbia 51,581—Richland							
Wallace Thomson Infirmary	Inst	State	30				
Georgetown 5 082—Georgetown							
Florence Williams Hosp (col)	Gen	Indiv	15	1	1	2	52
Greenville 29,154—Greenville							
Dr. Tyler's Hospital	Surg	Indiv	10			No data supplied	
Webb Memorial Infirmary	Inst	NPAasn	42			18	139
Lexville 1,840—Lexington							
Lexville Infirmary	Gen	Corp	30	6	25	8	300
Summerville 2,579—Dorchester							
Arthur B. Lee Hosp (col)	Gen	NPAasn	12	1	16	5	134
Summerville Infirmary	Gen	NPAasn	10	5	26	5	270

Key to symbols and abbreviations is on page 1091

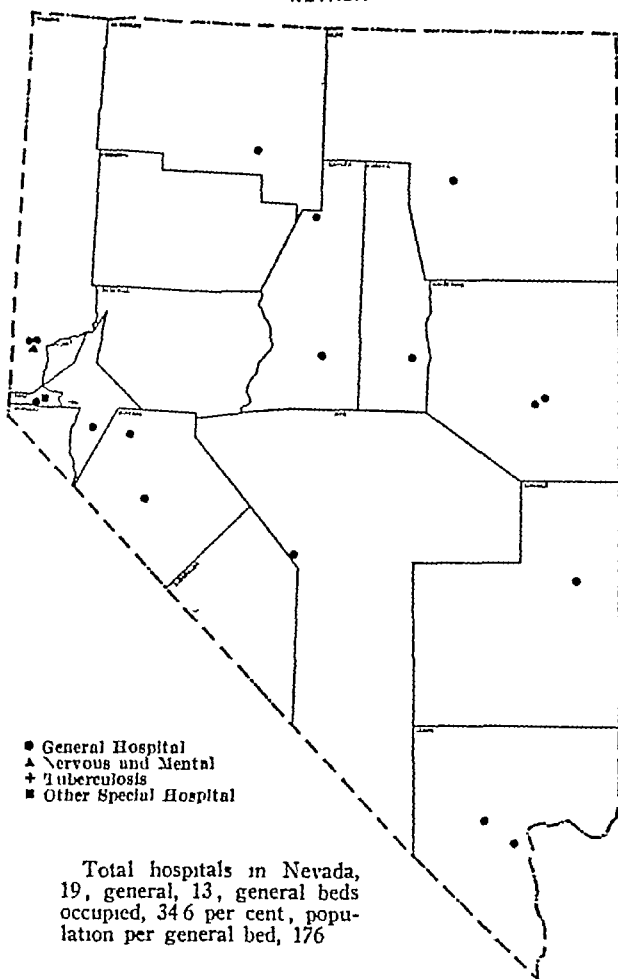
NEBRASKA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Spencer 633—Doyd Spencer Hospital	Gen	Part	10	1	No data supplied		
Stuart, 763—Holt Wilson Hospital	Gen	Indiv	20	3	22	12	440
Valentine 1672—Cherry Cherry County Hospital	Gen	Indiv	16	4	10	6	297
Wahoo 2 689—Saunders Community Hospital	Gen	Indiv	18	7	88	7	374
Winnebago, 63—Thurston Winnebago Indian Hospital	Gen	I A	68	8	75	32	1 048
York 5 712—York Lutheran Hospital	Gen	Church	60	10	41	15	610
York Clinic and Clinic Hosp	Gen	Part	12	4	12	2	103
Related Institutions							
Atkinson 1 144—Holt Atkinson General Hospital	Gen	Indiv	8	2	2	3	64
Axtell, 328—Hearney Bethphago Inner Mission	McDe	Church	1 8		No data supplied		
Beatrice 10 277—Gage Nebraska Institution for Feeble-minded	McDe	State	1 212			1 194	83
Beemer, 571—Cumling Beemer Hospital	Gen	Indiv	10	4	2	1	20
Central City, 2 44—Merrick J E Benton Hospital	Gen	Indiv	10				
Dalton 438—Chicotte Pioneer Memorial Hospital	Gen	Indiv	10	3	13	3	180
Farnam, 391—Dawson Reeces Memorial Hospital	Gen	Indiv	12	2	40	3	088
Fremont 11 407—Dodge Lutheran Good Samaritan Hospital	Gen	Church	2	5	58	21	621
Millitary Avenue Hospital	Gen	Indiv	22	6	46	7	416
Friend 1 214—Saline Lutheran Good Samaritan Warren Memorial Hospital	Gen	Church	14	4	36	5	171
Genoa 1 059—Yancey Emergency Hospital	Gen	Part	5	3	10	1	53
Grand Island 18 041—Hall Nebraska Soldiers and Sailors Home—Pershing Hospital	Inst	State	100			70	60
Hastings 15 490—Adams Dr Egbert Hospital	Gen	Indiv	10	2	6	6	114
Hebron, 1 504—Thayer Blue Valley Hospital	Gen	Indiv	10	5	34	9	341
Holdrege 2 263—Phelps Holdrege Hospital	Gen	Indiv	12	4			
Kearney 8 575—Buffalo State Industrial School for Boys	Inst	State	14			2	140
Kimball 1 711—Kimball Kimball Hospital	Gen	Indiv	12	4	24	8	208
Mockett and Everett Hospital	Gen	Part	11	4	38	6	201
Lexington 2 962—Dawson City General Hospital	Gen	Indiv	10	3	51	2	140
Lincoln 7 933—Lanester Isolation Hospital	Iso	City	18				4
Nebraska State Penitentiary Hospital	Inst	State	23			1	203
Millford 632—Seward Nebraska Industrial Home	Inst	State	15	11	53	3	53
Nebraska Soldiers and Sailors Home Hospital	Inst	State	56			40	100
Odell, 472—Gage Odell General Hospital	Gen	Indiv	9	3	18	5	840
Omaha 2 14 006—Douglas Frederick Hospital	Gen	Indiv	8	6			
Salvation Army Women's Home and Hospital	Mat	Church	80	15	101	33	119
South Side General Hospital	Gen	Indiv	25		No data supplied		
Orchard 50—Antelope Orchard Hospital	Gen	Indiv	10	3	6	1	79
Palmer 588—Merrick Coolidge Hospital and Sanat	Gen	NPAssn	10	2		2	40
Plainview 1 216—Pierce Plainview General Hospital	Gen	NPAssn	8	4	20	3	130
Schuyler 2 588—Colfax Kolouch Hospital	Surg	Indiv	15	3	No data supplied		
Stratton 603—Hitchcock Dr Stewart's Private Hospital	Gen	Indiv	14	2			
Sutherland 753—Lincoln Russell Hospital	Gen	Indiv	10	4	16	3	100
Sutton 1 540—Clay Sutton Hospital	Gen	Indiv	12	2	16	2	95
Table Rock 673—Pawnee McOrea Private Hospital	Gen	Indiv	10	2	11	1	21
Tekamah 1 504—Burt Tekamah General Hospital	Gen	Indiv	12	3	20	2	128
Tilden 1 106—Madison Tilden Hospital	Gen	Indiv	9	3	8	1	87
Walhalla 1 162—Thurston Dr Picotte Memorial Hospital	Gen	Indiv	12	4	7	2	70
Westpoint 2 225—Cumling St Joseph Home for Aged and Hospital	Inst	Church	10	1	32	5	247
Summary for Nebraska							
Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted			
Related institutions	64	8 093	6,167	67 600			
	38	2 633	1 599	4 768			
Totals	102	10 068	7,766	62,368			
Refused registration	21	514					

NEVADA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Austin, 1 000—Lander Lander County Hospital	Gen	County	10	1	1	5	23
Boulder City, 5 000—Clark Six Companies Inc Hosp	Indus	Corp	60			30	960
East Fly, 1 507—White Pine Steptoe Valley Hospital	Gen	Corp	40	7	21	13	166
Elko 3 217—Elko Elko General Hospital	Gen	County	48	4	60	10	450
Ely 3 045—White Pine White Pine County and Gen eral Hospital	Gen	County	50	4	33	21	480

NEVADA



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Hawthorne 323—Mineral Mineral County Hospital	Gen	County	15		6	4	140
Las Vegas 5 105—Clark Las Vegas Hospital	Gen	NPAssn	40	8	130	22	902
Reno 18 529—Washoe Nevada State Hospital for Mental Diseases	Ment	State	350			826	95
St Mary's Hospital	Gen	Church	52	12	131	34	1 285
Washoe General Hospital	Gen	County	185	8	66		2 046
Schurz, 75—Mineral Walker River Indian Hospital	Gen	I A	28	3	23	10	377
Stewart 412—Ormsby Carson Indian Hospital	Gen	I A	32	4	17	25	213
Tonopah 4 144—Nye Tonopah Mines Hospital	Gen	NPAssn	20	3	41	7	300
Winnemucca 1 989—Humboldt Humboldt County General Hos pital	Gen	County	33	3	No data supplied		
Related Institutions							
Battle Mountain 1 129—Lander Battle Mountain General Hosp	Gen	County	12	4	12	5	51
Eureka 952—Eureka Eureka County Hospital	Gen	County	9		No data supplied		
Pioche 515—Lincoln Pioche Hospital	Indus	Indiv	8		No data supplied		

SOUTH DAKOTA—Continued REGISTERED HOSPITALS

MARCH 30 1935
JOUR A M A

Hospitals and Sanatoriums

Name	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Pierre 360—Hughes	Gen	Church	80	18	133	36	1 400
St Mary's Hospital	Gen	IA	58	8	110	45	1 376
Pine Ridge 618—Shannon	Gen	Church	56	6	114	27	1 108
Pine Ridge Hospital	Gen	Church	50	12	114	23	1 108
Rapid City 10404—Pennington	Gen	City	15	5	No data supplied		
Black Hills Methodist Hosp	Gen	IA	30				
St John's Methodist Hosp	Gen	IA					
Baldwin Community Hosp	Gen	IA					
Rosebud 120—Todd	Gen	IA					
Rosebud Agency Indian Hosp	Gen	IA					
Sanator 10—Custer	Gen	IA					
South Dakota State Sanatorium for Tuberculosis	TB	State	102				

SOUTH DAKOTA—Continued

Related Institutions

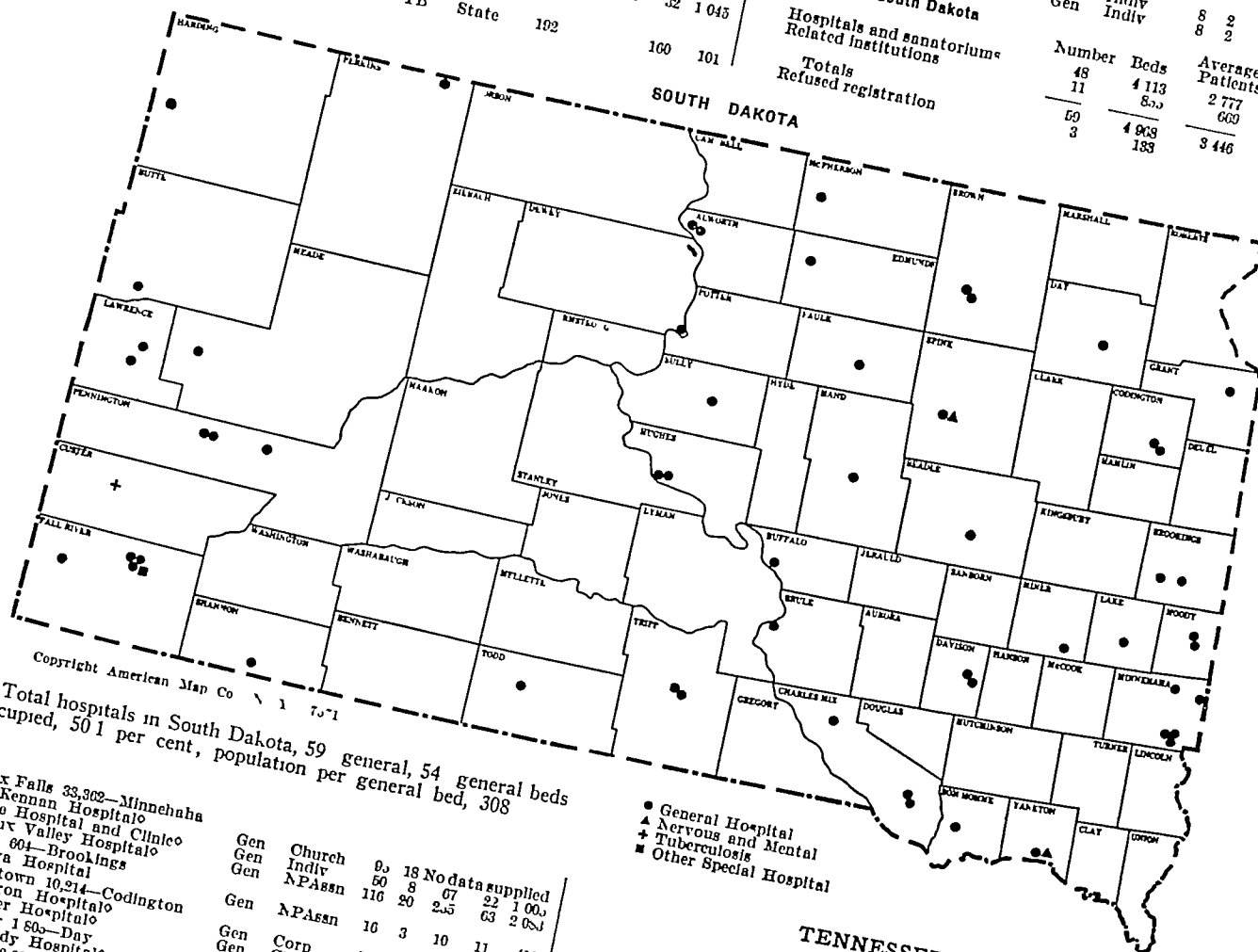
Name	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Redfield 2664—Splink	Gen	McDe	700				
State School and Home for Feeble-minded	Gen	State					
Wagner 1420—Charles Mix	Gen	Indiv					
Duggan Hospital	Gen	Indiv					
Pinard Hospital	Gen	Indiv					

Summary for South Dakota

Hospitals and sanatoriums Related Institutions

Totals Refused registration

Number	Beds	Average Patients	Patients Admitted
48	4 113	2 777	3,691
11	500	660	1 62
50	4 968	3 446	37 603
3	183		



Total hospitals in South Dakota, 59 general, 54 general beds occupied, 501 per cent, population per general bed, 308

Name	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Sioux Falls 33,362—Minnehaha	Gen	Church	00	18	No data supplied		
McKenna Hospital	Gen	Indiv	50	8	07	22	1 000
Moo Hospital and Clinic	Gen	NPAssn	116	20	205	63	2 081
Sioux Valley Hospital	Gen	NPAssn	10	3	10	11	410
Volga 604—Brookings	Gen	Corp	59	6	08	49	1 402
Volga Hospital	Gen	Church	00	10	44	30	080
Watertown 10,214—Codyington	Gen	Indiv	50	9	87	32	782
Bartron Hospital	Gen	Indiv	10	2	28	4	101
Luther Hospital	Gen	Indiv	12	5	30	7	250
Webster 1860—Day	Gen	Church	180	20	148	00	1 810
Peabody Hospital	Gen	State	1723		No data supplied		
Winner 2220—Tripp	Gen	Indiv	5	4	8	2	150
Wilson Hospital	Gen	IA	30				
Winner General Hospital	Gen	Indiv	10	2	4	2	74
Yankton 602—Yankton	Gen	Indiv	30				
Sacred Heart Hospital	Gen	Indiv	10	2	13	1	64
Yankton State Hospital	Gen	IA	12	4	32		
Avon 670—Bon Homme	Gen	Indiv	7	2	4	250	
Hollingsworth Hospital	Gen	Indiv					
Camp Crook 161—Harding	Gen	Indiv					
Camp Crook Hospital	Gen	Indiv					
Flandreau 1934—Moody	Gen	Indiv					
Flandreau Indian School Hosp	Gen	Indiv					
Garretson 635—Minnehaha	Gen	Indiv					
De Vall Hospital	Gen	Indiv					
Hot Springs 2,908—Fall River	Gen	Indiv					
State Soldiers Home	Gen	Indiv					
Onida 363—Sully	Gen	Indiv					
Onida Hospital	Gen	Indiv					
Pierre 360—Hughes	Gen	Indiv					
Pierre Indian School Hospital	Gen	Indiv					
Platte 1,30—Charles Mix	Gen	Indiv					
Platte Hospital	Gen	Indiv					

Key to symbols and abbreviations is on page 1091

TENNESSEE

Hospitals and Sanatoriums

Name	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Athens 538—McMinn	Gen	NPAssn	20	4	27	0	364
Foreo Hospital	Gen	CyOo	220	20	025	172	6,373
Bolivar 1,217—Hardeman	Gen	Match	73	11	183	50	1 902
Western State Hospital	Gen	Part	65	2	29	23	229
Brownsville 3204—Haywood	Gen	NPAssn	25				
Haywood Hospital	Gen	NPAssn	25				
Chattanooga 110788—Hamilton	Gen	NPAssn	25				
Baroness Erlanger Hosp	Gen	NPAssn	25				
Children's Hospital	Gen	NPAssn	25				
Newell and Newell Sanit	Gen	NPAssn	25				
Pine Breze Sanatorium	Gen	NPAssn	25				
Clarksville 9242—Montgomery	Gen	NPAssn	25				
Clarksville Home Infirmary	Gen	NPAssn	25				
Clarksville Hospital	Gen	NPAssn	25				
Cleveland 9136—Bradley	Gen	NPAssn	25				
Speck Hospital	Gen	NPAssn	25				
Columbia 7882—Maury	Gen	NPAssn	25				
Kings Daughters Hospital	Gen	NPAssn	25				
Dayton 2006—Rhea	Gen	NPAssn	25				
Broyles Private Hospital	Gen	NPAssn	25				
Dyersburg 8733—Dyer	Gen	NPAssn	25				
Baird Brewer General Hosp	Gen	NPAssn	25				
St Elizabeth General Hosp	Gen	NPAssn	25				
Greenville 5544—Greene	Gen	NPAssn	25				
Greenville Sanat and Hosp	Gen	NPAssn	25				
Takoma Hospital and Sanit	Gen	NPAssn	25				

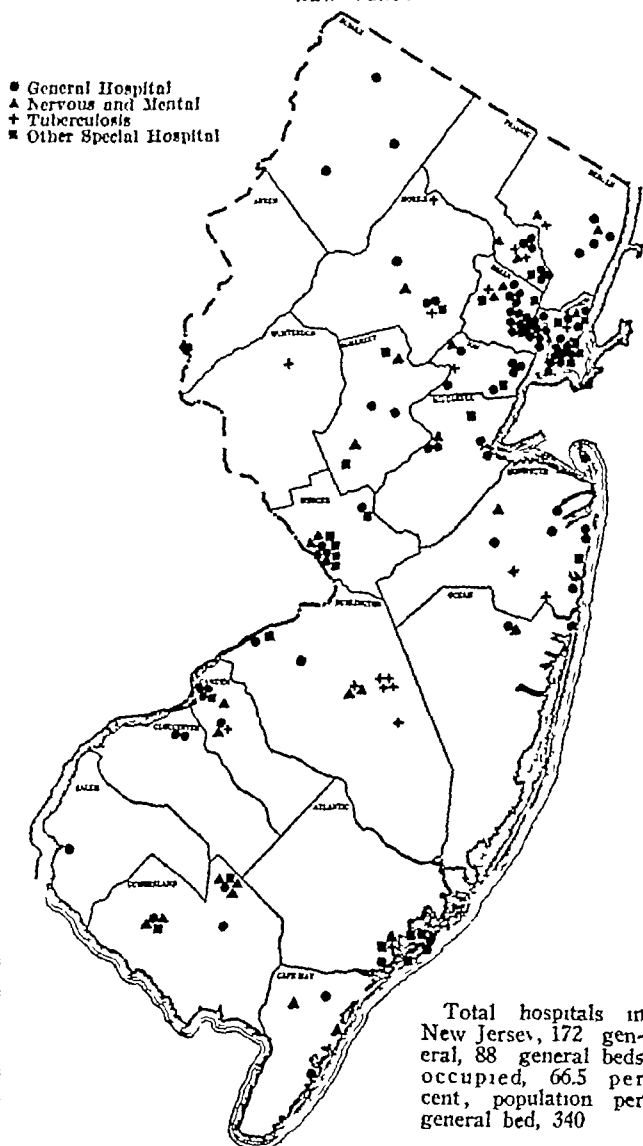
NEW JERSEY—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Cooper Hospital*	Gen	NPAasn	200	68	1,308	210	4,062
West Jersey Homeopathic Hospital*	Gen	NPAasn	207	30	691	120	4,403
Cedar Grove 3,000—Essex	Gen	NPAasn	207	30	691	120	4,403
Essex County Hospital*	Ment	County	247		2,408		442
Dover 10,631—Morris	Gen	Corp	72	15	270	62	1,008
Dumont 2,681—Bergen	Gen	Corp	72	15	270	62	1,008
Dumont Private Hospital	Gen	Indiv	12	5	21	3	141
East Orange 68,070—Essex	Gen	Indiv	12	5	21	3	141
Homeopathic Hospital of Essex County*	Gen	NPAasn	0	2	520	67	2,408
Elizabeth 114,659—Union	Gen	NPAasn	0	2	520	67	2,408
Alexian Brothers Hospital*	Gen	Church	165		131	1,912	
Elizabeth General Hospital and Dispensary*	Gen	NPAasn	106	30	740	163	5,30
St. Elizabeth Hospital*	Gen	Church	211	44	617	18	3,618
Englewood 17,400—Bergen	Gen	NPAasn	194	39	684	137	4,201
Englewood Hospital*	Gen	NPAasn	194	39	684	137	4,201
Ft. Hancock—Monmouth	Gen	Army	50			14	54
Station Hospital	Gen	Army	50			14	54
Franklin 4,176—Sussex	Gen	Corp	19	0	30	8	400
Freehold 6,694—Monmouth	Gen	Indiv	2	0	28	5	142
Freehold Hospital	Gen	Indiv	2	0	28	5	142
Glen Gardner 64—Hunterdon	Gen	Indiv	2	0	28	5	142
New Jersey Sanatorium for Tuberculosis Diseases*	TB	State	420			440	572
Grenloch 200—Camden	Gen	County	330			100	402
Camden County General Hosp	Gen	County	330			100	402
Camden County Hospital for Mental Diseases	Ment	County	700			637	141
Lakeland Sanatorium	TB	County	200			224	360
Greystone Park—Morris	Gen	State	450			4,316	1,432
New Jersey State Hospital*	Gen	NPAasn	220	47	868	108	6,223
Hackensack 24,668—Bergen	Gen	NPAasn	220	47	868	108	6,223
Hackensack Hospital*	Gen	NPAasn	220	47	868	108	6,223
Hoboken 60,201—Hudson	Gen	Church	430	20	270	226	4,78
St. Mary Hospital*	Gen	Church	430	20	270	226	4,78
Irrington 56,733—Essex	Gen	City	79	17	250	48	1,74
Irrington General Hospital	Gen	City	79	17	250	48	1,74
Jersey City 316,715—Hudson	Gen	City	79	17	250	48	1,74
Christ Hospital*	Gen	Church	180	21	347	124	7,400
Falmouth Surgical Sanat	Gen	Corp	60	12	10	30	1,184
Greenville Hospital	Gen	NPAasn	60	12	10	30	1,184
Hilltop Sanitarium	Gen	Part	22	10	18	10	203
Jersey City Hospital*	Gen	City	700			800	17,88
Margaret Hague Maternity Hos	Mat	County	272	284	4,973	177	5,622
St. Francis Hospital*	Gen	Church	220	14	126	140	8,447
Kearny (Arlington P.O.) 40,716—Hudson	Gen	NPAasn	52	15	114	30	1,616
West Hudson Hospital	Gen	NPAasn	52	15	114	30	1,616
Lakewood 8,000—Ocean	Gen	NPAasn	60	10	138	31	1,123
Paul Kimball Hospital	Gen	NPAasn	60	10	138	31	1,123
Long Branch 18,350—Monmouth	Gen	NPAasn	90	30	242	60	2,301
Dr. E. C. Hazard Hospital	Gen	NPAasn	174	30	516	120	3,663
Monmouth Memorial Hosp.*	Gen	NPAasn	174	30	516	120	3,663
Lyons—Somerset	Ment	Net	800			800	224
Veterans Admin Facility	Ment	Net	800			800	224
Marlboro 410—Monmouth	Ment	State	1,710			1,646	404
New Jersey State Hospital	Ment	State	1,710			1,646	404
Midland Park 3,638—Bergen	N.A.M.	NPAasn	120			No data supplied	
Christian Sanatorium	N.A.M.	NPAasn	120			No data supplied	
Millville 14,700—Cumberland	Gen	NPAasn	40	5		No data supplied	
Millville Hospital	Gen	NPAasn	40	5		No data supplied	
Montclair 42,017—Essex	Gen	NPAasn	50	20	152	27	8,2
Montclair Community Hosp	Gen	NPAasn	50	20	152	27	8,2
Mountainside Hospital*	Gen	NPAasn	208	57	603	178	5,478
St. Vincent's Hospital	Gen	Church	46	12	209	20	817
Morristown 15,197—Morris	Gen	Church	100	25	246	70	1,603
All Souls Hospital*	Gen	NPAasn	100	25	246	70	1,603
Morristown Memorial Hosp.*	Gen	NPAasn	100	25	246	70	1,603
Bonghum Mountain Sanat	TB	County	62			51	42
Mt. Holly 5,700—Burlington	Gen	NPAasn	116	10	371	60	2,389
Burlington County Hosp.*	Gen	NPAasn	116	10	371	60	2,389
Neptune 2,200—Monmouth	Gen	NPAasn	100	23	331	116	2,000
Fittin Memorial Hospital*	Gen	NPAasn	100	23	331	116	2,000
Newark 442,337—Essex	Chil	NPAasn	60			30	530
Babies Hospital Colt Memo	Chil	NPAasn	60			30	530
Hospital and Home for Orphaned Children	Orth	NPAasn	110			60	345
Hospital of St. Barnabas and for Women and Children*	Gen	Church	234	48	732	169	5,468
Kennedy Memorial Hosp. (col)	Indiv	Indiv	26	4	19	7	290
Lincoln Hospital	Gen	Corp	50	12	100	7	710
Newark Beth Israel Hosp.*	Gen	NPAasn	516	68	1,701	294	9,253
Newark City Hospital*	Gen	City	600	100	2,024	692	15,623
Newark Eye and Ear Infirmary*	ENT	NPAasn	68			35	2,302
Newark Memorial Hospital*	Gen	NPAasn	127	30	428	71	2,000
Presbyterian Hospital*	Gen	Church	214	53	690	108	3,981
St. James Hospital*	Gen	Church	107	18	328	90	2,220
St. Michael's Hospital*	Gen	Church	317	18		156	5,151
Dr. Wright's Sanitarium and Maternity Home (col)	Gen	Indiv	18	5		No data supplied	
New Brunswick 84,655—Middlesex	N.A.M.	Indiv	15			New	1,705
Middlesex General Hospital*	Gen	NPAasn	90	18	217	60	1,705
St. Peter's General Hospital*	Gen	Church	164	33	438	126	3,111
New Lebanon 181—Burlington	TB	County	121			108	134
Fairview Sanatorium	TB	County	121			108	134
Newton 5,400—Sussex	Gen	NPAasn	48	7	51	10	625
Newton Memorial Hospital	Gen	NPAasn	48	7	51	10	625
Northfield 2,604—Atlantic	Ment	County	400			298	120
Atlantic County Hospital for Mental Diseases	Ment	County	400			298	120

NEW JERSEY—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Atlantic County Hospital for Tuberculous Diseases	TB	County	50			48	73
Oceanport 1,812—Monmouth	Gen	Army	66	2	14	10	588
Station Hospital	Gen	Army	66	2	14	10	588
Orange 30,300—Essex	Orth	NPAasn	36			27	318
New Jersey Orthopaedic Hos	Gen	NPAasn	303	75	1,071	187	6,195
pital and Dispensary*	Gen	NPAasn	303	75	1,071	187	6,195
Orange Memorial Hospital*	Gen	NPAasn	303	75	1,071	187	6,195
St. Mary's Hospital*	Gen	Church	120	2	403	80	1,813

NEW JERSEY



Total hospitals in New Jersey, 172 general, 88 general beds occupied, 66.5 per cent, population per general bed, 340

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Passaic 62,039—Passaic	Gen	NPAasn	80	10	180	27	1,024
Beth Israel Hospital	Gen	NPAasn	200	25	600	122	4,003
Passaic General Hospital*	Gen	NPAasn	200	25	600	122	4,003
St. Mary's Hospital*	Gen	Church	104	30	503	116	3,057
Paterson 138,513—Passaic	Gen	NPAasn	101	16	300	87	2,460
Nathan and Miriam Barnert Memorial Hospital*	Gen	NPAasn	212	54	737	184	5,546
Paterson General Hospital*	N.A.M.	Corp	50			14	48
Riverbush Sanatorium	Gen	Church	411	47	740	220	6,400
St. Joseph's Hospital*	TB	County	230			221	284
Valley View Sanatorium	TB	County	230			221	284
Perth Amboy 43,616—Middlesex	Gen	NPAasn	130	18	300	105	3,183
Perth Amboy General Hosp.	Gen	NPAasn	130	18	300	105	3,183
Phillipsburg 19,200—Warren	Gen	NPAasn	75	10	151	32	1,082
Warren Hospital	Gen	NPAasn	75	10	151	32	1,082
Plainfield 34,422—Union	Gen	NPAasn	240	35	738	151	4,573
Muhlenberg Hospital*	Gen	NPAasn	240	35	738	151	4,573
Point Pleasant 2,000—Ocean	Gen	County	30	4	75	11	367
Point Pleasant Hospital	Gen	County	30	4	75	11	367
Princeton 6,992—Mercer	Gen	NPAasn	66	18	115	30	1,220
Princeton Hospital	Gen	NPAasn	66	18	115	30	1,220

TENNESSEE—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Tennessee Industrial School	Inst	State	50				916
Tennessee State Prison Hosp	Inst	State	128			10	663
Raleigh 287—Shelby							
Cheerfield Farm Preventorium	TB	CyCo	50			50	32
Summary for Tennessee							
Hospitals and sanatoriums			79	11 728		8,833	103 160
Related institutions			20	2,311		2,020	4 773
Totals			99	14,039		10,853	107 942
Refused registration			0	204			

TEXAS

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Ablene 23 175—Taylor	Epld	State	1 082		1 041	209	
Ablene State Hospital	Gen	Church	5	8	1 16	4	2 403
West Texas Baptist Sanit °							
Allee 4 239—Jim Wells							
Allee Hospital	Gen	Part	14	3	21	0	220
Amarillo 43 132—Potter							
Northwest Texas Hospital°	Gen	County	70	5	120	36	1 040
St Anthony's Hospital°	Gen	Church	100	12	162	16	1 573
Archer City 1 512—Archer							
Archer Hospital	Gen	Indiv	10	4	51	6	300
Austin 53 120—Travis							
Austin State Hospital	Ment	State	2,167		2 183	230	
Brackenridge Hospital°	Gen	City	115	10	532	76	2,533
St David's Hospital°	Gen	Church	60	8	81	21	1 331
Seton Infirmary°	Gen	Church	100	10	177	52	2 160
Ballinger 4 187—Runnels							
Halley and Love Sanitarium	Gen	Part	25	0	No data supplied		
Bastrop 1,390—Bastrop							
F A Orgain Memorial Hosp	Gen	NPAasn	14	2	17	5	204
Bay City 4 070—Matagorda							
Dr Loos Hospital	Gen	Indiv	10	0	22	3	100
Beaumont 57 732—Jefferson							
Hotel Dieu Hospital°	Gen	Church	105	12	300	72	2 410
Jefferson County Tuberculosis Hospital	TB	County	82			77	81
Jefferson County Tuberculosis Hospital (col)	TB	County	20			19	42
St Theresa Hospital	Gen	Church	120	12	130	30	1 270
Belton 3 770—Bell							
Belton General Hospital	Gen	Part	14	4	No data supplied		
Big Spring 13 735—Howard							
Big Spring Hospital	Gen	Corp	30	10	63	10	020
Bivings Hospital	Gen	Indiv	10	0	13	3	210
Bonham, 5 650—Fannin							
S B Allen Memorial Hosp °	Gen	NPAasn	28	4	30	10	490
Borger 6 532—Hutchinson							
North Plains Hospital	Gen	County	20	4	134	6	409
Bowie 3,131—Montague							
Bowie Clinic Hospital	Gen	Corp	10	5	5	4	179
Brackettville 1 822—Kinney							
Station Hospital	Gen	Army	50	1	21	10	020
Brady 3 983—McCulloch							
Brady Hospital°	Gen	Part	45	5	62	14	070
Breckenridge 7 569—Stephens							
West Side Hospital	Gen	Corp	20	3	10		
Brenham 6 974—Washington							
St Francis Hospital	Gen	Church	30	3	28	8	413
Sarah B Milroy Memorial Hos pital	Gen	Corp	20	2	17	7	402
Brownsville 22 621—Cameron							
Mercy Hospital	Gen	Church	50		82	10	670
Station Hospital	Gen	Army	50	2	18	10	382
Brownwood 12 789—Brown							
Central Texas Hospital	Gen	Corp	30	8	39	18	1 140
Medical Arts Hospital	Gen	Corp	30	4	40	12	742
Stump General Hospital	Gen	Indiv	16	4	40	10	400
Bryan 7,814—Brazos							
Wilkerson Memorial Clinic	Gen	Indiv	10	2	50	7	500
Cameron 4 505—Milam							
Cameron Hospital°	Gen	Part	50	4	62	22	714
Canadian 2,068—Hemphill							
Canadian Hospital	Gen	Indiv	10	3	16	4	140
Center 2 510—Shelby							
Center Sanitarium	Gen	Indiv	13	1	10	2	150
Warren Hospital	Gen	Part	12	1	4	2	110
Childress 7 163—Childress							
Jeter Townsend Hospital	Gen	Part	30	2	13	5	138
Cisco 6 027—Eastland							
Graham Sanitarium	Gen	Indiv	20	4	60	7	2,506
Cleburne, 11,539—Johnson							
Cleburne Sanitarium	Gen	Indiv	20	5	20		108
Coleman 6 078—Coleman							
Overall Memorial Hospital	Gen	CyCo	40	2	31	6	850
Colorado 4,671—Mitchell							
O L Root Hospital	Gen	Indiv	20	3	27	6	316
Conroe 2,457—Montgomery							
Mary Swain Sanitarium	Gen	Part	18	4	30	2	210
Corpus Christi 27 741—Nueces							
Fred Roberts Memorial Hosp °	Gen	NPAasn	60	10	74	20	1 514
Medical Professional Hospital	Gen	Corp	24	4		15	1 050
Spohn Hospital	Gen	Church	56	12	122	30	1 822

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Corseana, 15 202—Navarro							
Corseana Hosp and Clinic	Gen	Corp	20	2	5	2	141
Navarro Clinic Hospital	Gen	Part	20	5	25	6	567
Physicians and Surgeons Hosp	Gen	County	50	7	50	9	900
Cuero 4 672—De Witt							
Burns Hospital	Gen	Church	35	2	20	15	331
Lutheran Hospital	Gen	Church	35	2	9	3	223
Dallas 260 470—Dallas							
Baylor University Hosp **°	Gen	Church	300	44	1 030	260	11 101
Bradford Memorial Hospital for Babies°	Chil	NPAasn	60	5		29	801
Carrell Driver Girard Clinic and Dallas Orthopedic Hospital	Orth	Corp	20			10	259
Dallas Medical and Surgical Clinic Hospital	Gen	Part	27			17	600
Dallas Methodist Hospital°	Gen	Church	82	18	484	47	2,208
Medical Arts Hospital+	Gen	Indiv	54			27	2,050
Parkland Hospital°	Gen	CyCo	200	35	1 410	238	7 771
Pinkston Clinic (col)	Gen	Indiv	18	2	7	5	247
Rushing Clinic and Sanitarium	Gen	Indiv	25	2	10	15	490
St Paul's Hospital°	Gen	Church	271	20	506	147	5 413
Texas Scottish Rite Hospital for Crippled Children+	Orth	Frat	42			37	486
Timberlawn Sanitarium	Ment	Corp	40			16	151
Woodlawn Sanitarium	TB	CyCo	110			104	220
Deakson 13,830—Grayson							
Deakson City Hospital	Gen	NPAasn	25	2	60	9	441
M K T Railroad Employees Hospital	Indus	NPAasn	65			35	620
Denton 9 687—Denton							
Denton Hospital and Clinic	Gen	Part	32	4	47	10	889
Edinburg 4,821—Hidalgo							
Ponton Brown Clinic Hospital	Gen	Indiv	56	12	17	7	219
Electra 6 712—Wichita							
Parmer Order Hospital	Gen	Part	24	5	30	3	197
El Paso 102,421—El Paso							
El Paso City County Hosp *	Gen	CyCo	150	8	312	110	2 838
El Paso Masonic Hospital°	Gen	Frat	50	16	No data supplied		
Hendricks Laws Sanitarium	TB	Part	80			82	92
Homan Sanitarium+	TB	Corp	110			80	125
Hotel Dieu Sisters Hospital°	Gen	Church	100	23	276	54	2,020
Long Sanitarium	TB	Indiv	40			23	190
Price Sanitarium	TB	Indiv	20			20	33
Providence Hospital	Gen	Indiv	40	5	26	12	800
St Joseph's Sanatorium+	TB	Church	75			54	129
Southern Baptist Sanatorium	TB	Church	60			50	94
William Beaumont General Hospital*	Gen	Army	512	7	83	172	3 000
Floresville 1 581—Wilson							
Oxford Archer Hospital	Gen	Part	10	1	5	2	101
Ft Worth 163 477—Tarrant							
All Saints Episcopal Hospital	Gen	Church	80	15	140	16	749
Arlington Heights Sanitarium	N&M	Corp	40			20	95
Baptist Hospital	Gen	Church	60	12	No data supplied		
City and County Hospital°	Gen	CyCo	100	15	647	90	1 040
W I Cook Memorial Hospital	Gen	NPAasn	53	8	53	20	723
Ft Worth Children's Hosp °	Chil	NPAasn	37			31	362
Harris Clinic Hospital°	Gen	Indiv	00	10	33	26	1 066
Methodist Hospital°	Gen	Church	100	22	517	50	1 941
St Joseph's Hospital°	Gen	Church	185	17	219	77	2 517
Freeport 3 107—Brazoria							
Freeport Hospital	Gen	Corp	14	5	96	6	1,523
Galveston 52 938—Galveston							
Galveston State Psychopathic Hospital	Ment	State	55			51	395
John Seely Hospital**°	Gen	City	300	24	530	231	5 744
St Mary's Infirmary**°	Gen	Church	150	15	251	110	2 004
Station Hospital	Gen	Army	20			10	330
U S Marine Hospital	Gen	USPHS	162			140	3,201
Georgetown 3 583—Williamson							
Martin Hospital	Gen	Part	20	4	96	5	328
Gilmer 1,993—Upshur							
Elmwood Sanitarium	Gen	Indiv	16	3	38	4	130
Oaklawn Sanitarium	Gen	Indiv	15			10	200
Gonzales 3,839—Gonzales							
Holmes Hospital	Gen	Corp	20	4	18	10	300
Gorman 1 164—Eastland							
Blackwell Sanitarium	Gen	Part	26	13	85	10	1 000
Graham 4 981—Young							
Graham Hospital	Gen	NPAasn	10	2	51	12	360
Greenville 12 407—Hunt							
Dr E P Beeton's Hospital	Surg	Indiv	16			6	800
Groesbeck 2 039—Limestone							
Dr Cox's Hospital	Gen	Indiv	12	3	10	3	164
Gulf 720—Matagorda							
Texas Gulf Sulphur Company Hospital	Gen	Corp	14	2	15	3	70
Hallettsville 1 406—Lavaca							
Renger Hospital	Gen	Indiv	15	3	7	4	123
Hamilton 2 081—Hamilton							
Hamilton Sanitarium	Gen	Corp	38	4	20	12	430
Harlingen, 12 124—Cameron							
Valley Baptist Hospital	Gen	Church	35	4	63	12	632
Henderson 2,832—Rock							
Henderson Hospital	Gen	Corp	30	4	42	12	706
Hereford 2,458—Deaf Smith							
Deaf Smith County Hospital	Gen	County	13	4	31	4	177
Hillsboro 7 823—Hill							
Boyd Sanitarium	Gen	Indiv	25	2	15	5	315
Houston 292,352—Harris							
Dr Greenwood's Sanitarium	N&M	Corp	55			25	76
Heights Clinic Hospital	Gen	Corp	30	5	190	13	826
Hermann Hospital**°	Gen	NPAasn	187	12	390	127	2,632
Houston Eye Ear Nose and Throat Hospital	ENT	Corp	22			8	1 034

NEW MEXICO—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated	Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Mescalero 175—Otero								
Mescalero Indian Hospital	Gen	I A	31	4	23	21	591	
Raton 6,000—Colfax								
New Mexico Mines Hospital	Gen	State	31	5	39	11	371	
Rehoboth 170—McKinley								
Rehoboth Mission Hospital	Gen	Church	30	6	72	80	520	
Roswell 11 173—Chaves								
St Mary's Hospital	Gen	Church	60	8	154	23	9.0	
Santa Fe 11 176—Santa Fe								
St Vincent's Sanatorium and Hospital		G A T B Church	85	9	100	32	9.2	

Map of New Mexico showing hospital locations and types. The map is divided into counties, each labeled with its name. Symbols are used to indicate the location and type of hospital: a solid circle for General Hospital, a solid triangle for Nervous and Mental, a plus sign for Tuberculosis, and a solid square for Other Special Hospital. The legend at the bottom right explains these symbols. The map is titled "Total hospitals in New Mexico, 50, general, 33, general beds occupied, 494 per cent population per general bed 285" at the bottom. The copyright notice "Copyright American Map Co. N.Y. 1971" is also present.

Total hospitals in New Mexico, 50, general, 33, general beds occupied, 49.4 per cent, population per general bed 285

Gardner 1000—Colfax							Sunmount Sanatorium	TB	Corp	50		19	44
Gardner Hospital	Indus Corp	40		17	144		U S Indian Hospital	Gen	I A	70	4	14	870
Las Vegas 4 TB—San Miguel							Santa Rita 1,600—Grant						
Las Vegas Hospital (Carpenter Memorial)	Gen NPAsen	2	4	34	10	336	Nevada Consolidated Company Hospital	Copper	Gen	NPAsen	50	6	No data supplied
New Mexico State Hospital	Ment State	700			709	167	Shiprock 101—San Juan						
St Anthony's Sanitarium and Hospital	G & TB Church	40	4	13	9	153	Northern Navajo Hospital	Gen	I A	44	2	34	43 1034
Lordsburg 2 000—Hidalgo							Silver City, 3 810—Grant						
Lordsburg Hospital	Gen Corp	20	4	No data supplied			Grant County Hospital	Gen	NPAsen	24	5	55	7 463

Key to symbols and abbreviations is on page 109f

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Orange 7913—Orange	Gen	Indiv	50	10	28	11	365
Frances Ann Luther Hospital	Gen	Indiv	50	10	28	11	365
Paducah 2,502—Cottle	Gen	City	30	10	40	12	450
W. Q. Richards Memorial Hosp	Gen	City	30	10	40	12	450
Palestine, 11 440—Anderson	Gen	NPAsen	70	2	0	34	830
Missouri Pacific Lines Hosp	Gen	NPAsen	70	2	0	34	830
Palestine Sanitarium	Gen	Corp	24	3	27	6	262
Speegle DuPuy Hospital and Clinic	Gen	Corp	12	2	26	5	235
Pampa 10 470—Gray	Gen	Indiv	34	8	130	17	1 117
Worley Memorial Hospital	Gen	Indiv	34	8	130	17	1 117
Paris 15 640—Lamar	Gen	County	50	7	56	10	514
Lamar County Hospital	Gen	County	50	7	56	10	514
St. Joseph's Infirmary	Gen	Church	60	0	43	15	66
Sanitarium of Paris	Gen	Corp	62	4	33	39	1 203
Pecos 3 304—Reeves	Gen	Part	20	4	40	5	278
Camp and Camp Hospital	Gen	Part	20	4	40	5	278
Plainview 8 834—Hale	Gen	Indiv	45	6	42	21	1 131
Plainview Sanit. and Clinic	Gen	Indiv	45	6	42	21	1 131
Port Arthur 50 902—Jefferson	Gen	Church	150	18	166	46	1 701
St. Mary's Hospital Gates Memorial	Gen	Church	150	18	166	46	1 701
Prairie View—Waller	Gen	State	52	2	8	10	1 464
Prairie View Hosp (col)	Gen	State	52	2	8	10	1 464
Quannah 4 464—Hardeman	Gen	Part	34	6	34	10	691
Quannah Hospital	Gen	Part	34	6	34	10	691
Ranger 6 208—Eastland	Gen	CyCo	40	3	50	10	500
City County Hospital	Gen	CyCo	40	3	50	10	500
West Texas Clinic Hospital	Gen	Corp	18	2	27	10	270
Rio Grande 2,283—Starr	Gen	Army	30		17	8	233
Station Hospital	Gen	Army	30		17	8	233
Rosenberg 1 041—Ft Bend	Gen	Indiv	14	1	18	2	598
Rosenberg Hospital	Gen	Indiv	14	1	18	2	598
Rusk 3,859—Cherokee	Gen	State	198		1,930		412
Rusk State Hospital	Gen	State	198		1,930		412
San Angelo 20 308—Tom Green	Gen	Corp	22	6	150	1	802
Rush Schuyler Wall and	Gen	Corp	22	6	150	1	802
Windham Clinic Hospital	Gen	Corp	22	6	150	1	802
St. John's Hospital	Gen	Church	25	0	42	13	410
Shannon West Texas Memorial Hospital	Gen	NPAsen	84	8	155	45	2 402
San Antonio 231 542—Bexar	Gen	Corp	125	15	105	25	1 031
Baylor Hospital	Gen	Corp	125	15	105	25	1 031
Grace Lutheran Sanatorium for Tuberculosis	TB	Church	50		30	81	
Dr. Kenney's Sanatorium	Gen	Indiv	75	12	33	0	369
Medical and Surgical Hosp *	Gen	NPAsen	100	1	193	41	2 433
Dr. Moody's Sanitarium	N&M	Corp	50		2	130	
Nix Hospital	Gen	Corp	160	24	205	62	2 019
Robert B. Green Mem Hosp *	Gen	County	125	10	114	81	2 900
San Antonio State Hospital *	Ment	State	2,321		2 403	558	
Santa Rosa Hospital *	Gen	Church	342	44	316	99	3 836
Station Hospital *	Gen	Army	656	14	303	440	5 608
Woodmen of the World War Memorial Hospital	TB	Frat	180			101	118
Sanatorium 463—Tom Green	TB	State	718			682	1 044
State Tuberculosis Sanatorium	TB	State	718			682	1 044
San Marco * 5 134—Hays	Gen	CyCo	20	2	16	6	2 40
Soldiers and Sailors Memorial Hospital	Gen	CyCo	20	2	16	6	2 40
Santa Anna 1,883—Coleman	Gen	Indiv	30	4	46	21	1 078
Sealy Hospital	Gen	Indiv	30	4	46	21	1 078
Sealy 1 640—Austin	Gen	Indiv	9	2	10	2	172
Sealy Hospital	Gen	Indiv	9	2	10	2	172
Seguin, 5 220—Guadalupe	Gen	Corp	20	2	31	3	236
Seguin Hospital	Gen	Corp	20	2	31	3	236
Seymour 2,026—Baylor	Gen	County	15	4	23	5	204
Baylor County Hospital	Gen	County	15	4	23	5	204
Shamrock, 3 780—Wheeler	Gen	Indiv	18	7	70	5	300
Dr. Beach Sanitarium	Gen	Indiv	18	7	70	5	300
Shamrock General Hospital	Gen	Indiv	25	4	50	10	301
Sherman 15 713—Grayson	Gen	Church	75	6	46	21	887
St. Vincent's Sanitarium	Gen	NPAsen	60	6	46	22	1 023
Wilson A. Jones Hospital	Gen	NPAsen	60	6	46	22	1 023
Shiner, 1 372—Lavaca	Gen	Indiv	18	2	8	7	223
Dr. Wagner's Hospital	Gen	Indiv	18	2	8	7	223
Slaton 3,870—Lubbock	Gen	Church	50	6	20	6	200
Mersey Hospital	Gen	Church	50	6	20	6	200
Spur 1 890—Dickens	Gen	Indiv	20	4	7	5	316
Nichols Sanitarium	Gen	Indiv	20	4	7	5	316
Stamford 4 000—Jones	Gen	Corp	40	5	67	21	1 040
Stamford Sanitarium	Gen	Corp	40	5	67	21	1 040
Stephenville 8,044—Erath	Gen	Corp	20	1	10	9	382
Stephenville Hospital	Gen	Corp	20	1	10	9	382
Sugar Land 2 010—Ft Bend	Gen	NPAsen	30	4	50	10	463
Laura Eldridge Hospital	Gen	NPAsen	30	4	50	10	463
Sweetwater 10,845—Nolan	Gen	Indiv	18	6	20	6	4 0
Sweetwater Sanitarium	Gen	Indiv	18	6	20	6	4 0
Taylor 7 463—Williamson	Gen	Corp	10	2	36	0	7 4
Taylor Sanitarium	Gen	Corp	10	2	36	0	7 4
Teague, 3 000—Freestone	Gen	Indiv	20	4	26	8	432
Davidson Sanitarium	Gen	Indiv	20	4	26	8	432
Temple 15 340—Bell	Indus	NPAsen	150			45	1 040
Gulf Colorado and Santa Fe Hospital *	Indus	NPAsen	150			45	1 040
Kings Daughters Clinic and Hospital *	Gen	NPAsen	110	8	37	33	2 127
Scott and White Hospital *	Gen	Corp	169	8	79	87	2 364
Woodson Eye Ear Nose and Throat Hospital	ENT	Part	14				No data supplied
Terrell 6 785—Kaufman	Gen	Part	20	3	25	10	548
Alexander Holton Hospital	Gen	Part	20	3	25	10	548
Terrell State Hospital	Ment	State	2 299			2 139	517
Tevarkana 10,002—Bowie	Gen	Corp	40	5	42	15	693
Tevarkana Hospital	Gen	Corp	40	5	42	15	693
Tyler 17 113—Smith	Gen	Indiv	10	3		New	
Bryant Clinic and Sanitarium	Gen	Indiv	10	3		New	

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Vernon 9 137—Willbarger							
King Hospital and Maternity	Gen	Indiv	20	6	60	14	670
Home	Gen	Part	10	5		7	
Moore Brothers Hospital	Gen	Indiv	10	5			
Vernon Sanitarium	Gen	Corp	10	6	38	7	368
Victoria 7 421—Victoria	Gen	Corp	10	6	38	7	368
Victoria Hospital	Gen	Corp	10	6	38	7	368
Von Ormy 213—Bexar	TB	Corp	40			28	40
Von Ormy Cottage Sanatorium	TB	Corp	40			28	40
Waco 52,848—McLennan	Gen	Church	75	10	111	30	1,563
Central Texas Baptist Sanit	Gen	Church	75	10	111	30	1,563
Colgin Hospital and Clinic	Gen	Corp	12	2	No data supplied		
Providence Sanitarium	Gen	Church	141	0	270	65	3,792
Veterans Admin Facility	Ment	Vet	334			322	159
Wavahachie 5 042—Ellis	Gen	Corp	30	4	14	15	55
Wavahachie Sanitarium	Gen	Corp	30	4	14	15	55
Wellington, 5 570—Collingsworth	Gen	Indiv	15	2	34	3	200
Wellington Hospital	Gen	Indiv	15	2	34	3	200
Whittenburg—Hutchinson	Gen	Corp	12	3	50	2	125
Pankey Hospital of the Phil	Gen	Corp	12	3	50	2	125
lips Petroleum Company	Gen	Corp	12	3	50	2	125
Wichita Falls 4 000—Wichita	Gen	Corp	20	6	99	29	1,155
Hargrave Walker Hospital and	Gen	Corp	20	6	99	29	1,155
Clinic	Gen	Part	72	8	99	29	1,155
Wichita Falls Clinic Hospital	Gen	Part	72	8	99	29	1,155
Wichita Falls State Hospital*	Ment	State	2 040			2,022	559
Wichita General Hospital*	Gen	CyCo	120	12	282	58	2,391
Yonkum 5 600—Lavaca	Gen	Church	20	10	20	4	260
Buth Memorial Hospital	Gen	Church	20	10	20	4	260
Yorktown 1,882—De Witt	Gen	Indiv	11	2	No data supplied		
Allen Hospital	Gen	Indiv	11	2	No data supplied		
Related Institutions							
Arlington 3 661—Tarrant	Inst	Frat	20			10	160
Knights Templar Hospital	Inst	Frat	20			10	160
Austin 53 120—Travis	McDe	State	1 140				
Austin State School	N CM	Corp	20			8	30
Oaks Sanitarium	Inst	State	110			48	203
Texas Confederate Home Hosp	Inst	State	110			48	203
Beville 4 806—Bee	Gen	Indiv	20	3	No data supplied		
Beville Hospital	Gen	Indiv	20	3	No data supplied		
Thomas Memorial Hospital	Gen	Part	20	4	40	10	652
Belleville 1 533—Austin	Gen	Part	20	4	40	10	652
Belleville Hospital	Gen	Part	20	4	40	10	652
College Station 40—Brazos	Inst	NPAsen	80			6	977
Agricultural and Mechanical	Inst	NPAsen	80			6	977
College Hospital	Inst	NPAsen	80			6	977
Comfort 719—Kendall	Gen	Indiv	4				80
Hillcrest Sanitarium and Pri	Gen	Indiv	4				80
ate Hospital	Gen	Indiv	4				80
Crowell 1 040—Foard	Gen	NPAsen	8	1	6	1	60
Foard County Hospital	Gen	NPAsen	8	1	6	1	60
Crystal City 6 600—Lavaca	Gen	Corp	12	2	7	2	68
Crystal Hospital	Gen	Corp	12	2	7	2	68
Dallas 200 475—Dallas	Gen	Corp	12	2	7	2	68
Jones Eye Ear Nose and	FNT	Part	11			1	497
Throat Hospital and Clinic	FNT	Part	11			1	497
The Cedars Maternity Sanit	Mat	Indiv	30	3	57	4	57
Union Hospital	Iso	CyCo	30	3	57	4	57
Virginia K Johnson Home and	Mat	Church	22	10	22	10	61
School	Mat	Church	22	10	22	10	61
Ennis 7,009—Ellis	Gen	City	20	2			
Municipal Hospital	Gen	City	20	2			
Floydada 2 637—Floyd	Gen	Part	10	7			
Dr. Smith and Smith Sanit	Gen	Part	10	7			
Forney 1,216—Kaufman	Gen	NPAsen	20	5	7	1	50
Forney Sanitarium	Gen	NPAsen	20	5	7	1	50
Ft Worth 163 477—Tarrant	TB	CyCo	50			48	41
Elmwood Sanatorium	Conv	Part	16			20	
Howard Sanitarium	Conv	Part	16			20	
Gatesville, 2 001—Coryell	Inst	State	82			10	3 685
State Juvenile Training School	Inst	State	82			10	3 685
Gilmer 1 963—Upshur	Gen	Part	6	2	31	3	2 40
Ragland Clinic Hospital	Gen	Part	6	2	31	3	2 40
Greenville 12 407—Hunt	Surg	Indiv	17		1	1	65
Dr. Joe Becton's Hospital	Surg	Indiv	17		1	1	65
Hallettsville, 1 400—Lavaca	Gen	Indiv	8	1	6	2	50
Hallettsville Hospital	Gen	Indiv	8	1	6	2	50
Huntsville 5 028—Walker	Inst	State	43			38	1 678
Texas State Prison Hospital	Inst	State	43			38	1 678
Hutchins 368—Dallas	Inst	CyCo	342			322	109
Dallas County Farm	Inst	CyCo	342			322	109
Iraan—Pecos	Gen	Indiv	10	2	21	3	120
Iraan Hospital	Gen	Indiv	10	2	21	3	120
Luling 5 900—Caldwell	Gen	Part	16	4	13	5	206
Luling Hospital	Gen	Part	16	4	13	5	206
McKinney, 7 307—Collin	ENT	Indiv	12			2	368
Burton Eye Ear Nose and	ENT	Indiv	12			2	368
Throat Sanitarium	ENT	Indiv	12			2	368
Midland 6 484—Midland	Gen	Indiv	8	2	32	8	163
Mid West Hospital Clinic	Gen	Indiv	8	2	32	8	163
Mt Vernon 1,222—Franklin	Gen	NPAsen	10	2	3	2	70
Crutcher Hospital	Gen	NPAsen	10	2	3	2	70
Nixon 1 037—Gonzales	Gen	Indiv	8			8	2 110
Orest View Hospital	Gen	Indiv	8			8	2 110
Penrals 2 530—Frio	Gen	Indiv	10	2	13	3	119
J. E. Bealls Day Hospital	Gen	Indiv	10	2	13	3	119
Pecos 3 804—Beeves	Gen	Indiv	8	3	42	2	200
Pecos Sanitarium	Gen	Indiv	8	3	42	2	200
Potter 1 231—Atascosa	Gen	Indiv	7	1	6	1	50
Community Hospital	Gen	Indiv	7	1	6	1	50
San Antonio 231 542—Bexar	TB	Indiv	30			10	60
Dr. Farmer's Sanatorium	TB	Indiv	30			10	60
Medical Arts Hospital	Gen	Corp	33	4	45	15	1,300
Physicians and Surgeons Hos	Gen	Corp	65	12	127	27	1,300
pital*	Gen	Corp	65	12	127	27	1,300

NEW YORK—Continued

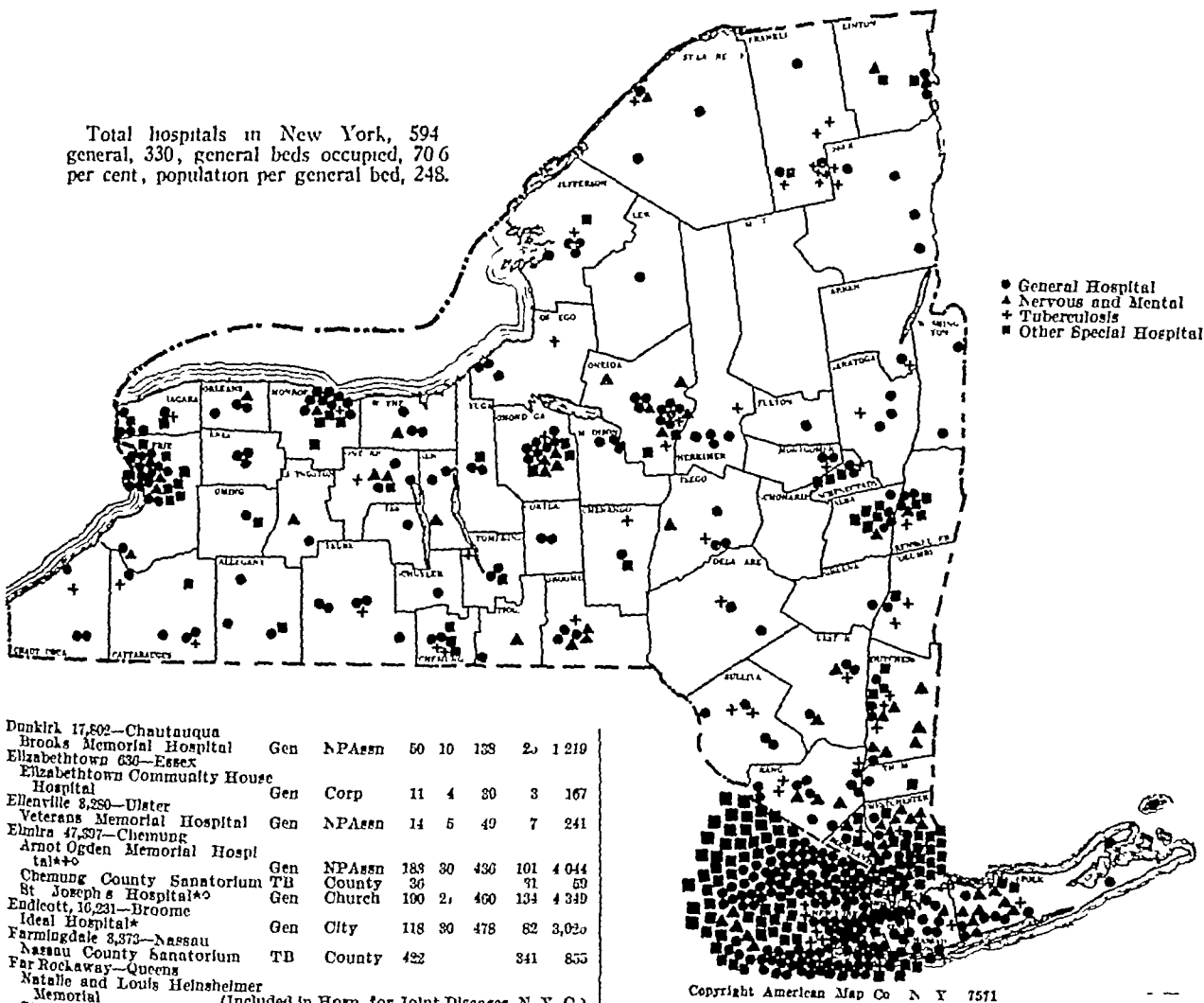
Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Cornwall 1077—Stauben Cornwall Hospital	Gen	NPAasn	80	20	188	39	1,623
Cornwall 1010—Orange Cornwall Hospital	Gen	NPAasn	60	10	172	50	1,010
Cortland 15047—Cortland Cortland County Hospital	Gen	NPAasn	114	21	322	78	2,712
Cuba 1422—Allegany Cuba Memorial Hospital	Gen	NPAasn	11	6	30	5	323
Danemora 3,748—Clinton Danemora State Hospital	Ment	State	900		837	133	
Danville 1423—Livingston Danville General Hospital	Gen	City	22	4	68	18	420
Delhi 1840—Delaware Delaware County Tuberculosis Sanatorium	TB	County	32			28	37
Dobbs Ferry, 5,741—Westchester Dobbs Ferry Hospital	Gen	NPAasn	41	10	91	10	890

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Gabriels 200—Franklin Sanatorium Gabriels	TB	Church	132			89	74
Geneva 1603—Ontario Geneva General Hospital	Gen	NPAasn	73	20	188	43	1,693
Glen Cove, 11,470—Nassau North Country Community Hospital	Gen	NPAasn	100	20	350	66	2,148
Parkside Hospital	Gen	Part	13	5	54	7	311
Glen Falls, 18,531—Warren Glen Falls Hospital	Gen	NPAasn	80	15	220	60	1,027
Westmount Sanatorium	TB	County	48			57	41
Gloversville 21,000—Fulton Nathan Littauer Hospital	Gen	NPAasn	102	18	233	64	2,294
Goshen 2,801—Orange Goshen Hospital	Gen	NPAasn	39	8	123	21	500
Interplains Sanatorium	N&M	Indiv	75			45	111

NEW YORK

Total hospitals in New York, 594
general, 330, general beds occupied, 70.6
per cent, population per general bed, 248.



Dunkirk 17,802—Chautauque Brooks Memorial Hospital	Gen	NPAasn	50	10	133	20	1,219
Ellenburgh 630—Essex Elizabethtown Community House Hospital	Gen	Corp	11	4	30	3	167
Ellenville 8,280—Ulster Veterans Memorial Hospital	Gen	NPAasn	14	5	49	7	241
Elmira 47,397—Chemung Arnot Ogden Memorial Hospital	Gen	NPAasn	183	30	436	101	4,044
Chemung County Sanatorium	TB	County	36			91	59
St. Joseph's Hospital	Gen	Church	100	21	460	134	4,349
Endicott, 16,231—Broome Ideal Hospital	Gen	City	118	30	478	82	3,020
Farmingdale 3,373—Nassau Nassau County Sanatorium	TB	County	422			341	855
Far Rockaway—Queens Natalie and Louis Heinsheimer Memorial	(Included in Hosp for Joint Diseases N Y C)						
St. Joseph Hospital	Gen	Church	90	22	337	62	2,234
Fillmore 488—Allegany Genesee County Memorial Hos pital	Gen	NPAasn	10	4	49	7	264
Fishers Island 374—Suffolk Station Hospital	Gen	Army	69			46	728
Flushing—Queens Flushing Hospital and Dispen sary	Gen	NPAasn	180	78	1,440	160	6,524
Parsons Sanatorium	Gen	Corp	40	18	180	20	920
Station Hospital	Gen	Army	107	6	46	57	1,360
Ft. Niagara (Youngstown P O)—Niagara Station Hospital	Gen	Army	40	2	8	11	400
Ft. Slocum—Westchester Station Hospital	Gen	Army	155		4	42	1,840
Ft. Wadsworth (Staten Island P O)—Richmond Station Hospital	Gen	Army	20			7	879
Fulton 12,402—Oswego Albert Lindley Lee Memorial Hospital	Gen	City	37	11	146	24	757

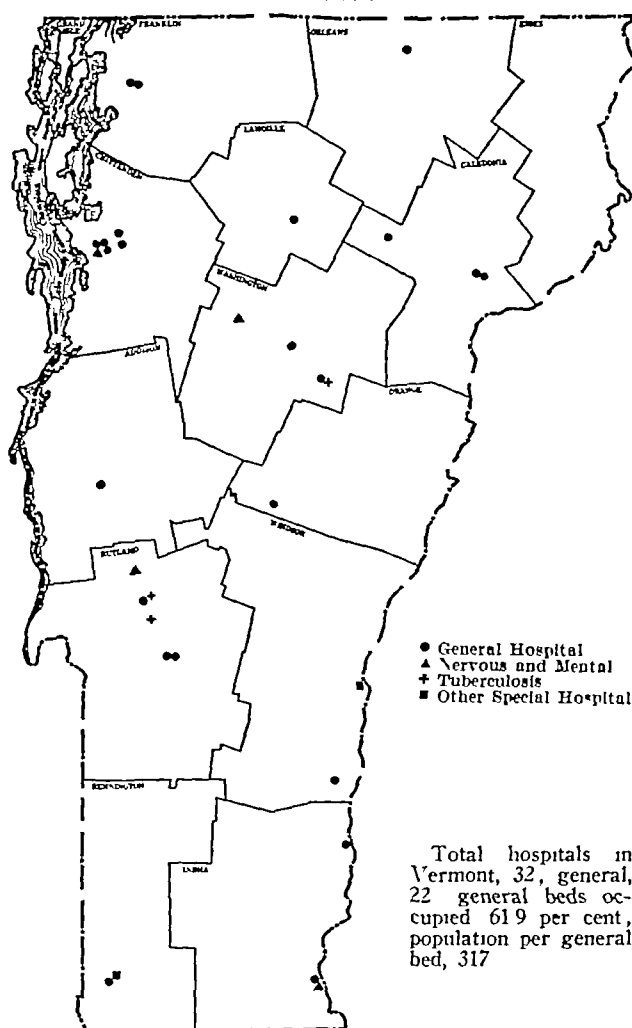
Gouverneur, 4,016—St. Lawrence Stephen B. Van Duzee Hosp	Gen	NPAasn	10	6	53	10	240
Governors Island—New York Station Hospital	Gen	Army	161	9	76	137	1,842
Gowanda 3,042—Cattaraugus Townsend Hospital	Gen	Part	20	6	100	9	504
Granville 3,453—Washington Emma Laing Stevens Hospital	Gen	NPAasn	10	6	50	6	180
Greenport 3,062—Suffolk Eastern Long Island Hospital	Gen	NPAasn	25	6	108	15	600
Harmon-on Hudson, 110—Westchester Orlinton House	N&M	Indiv	20			11	5
Harrison 1,480—Westchester St. Vincent's Retreat	N&M	Church	200			171	91
Hastings upon Hudson, 7,067—Westchester Hastings Hillside Hospital	N&M	NPAasn	40			28	121
Helmuth—Erie Gowanda State Homeopathic Hospital	Ment	State	1,303			1,247	365

Key to symbols and abbreviations is on page 1091

VERMONT—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Rutland 17,351—Rutland	Gen	Indiv	12	7	67	3	101
Brightview Private Hospital	Gen	Corp	110	16	189	59	2,212
Rutland Hospital							
St Albans 8,020—Franklin	Gen	NPAssn	45	5	80	34	1,192
St Albans Hospital	Gen	Indiv	10		20	6	100
Sherwood Sanitarium							
St Johnsbury 7,920—Caledonia	Gen	Corp	51	10	87	30	825
Brightlook Hospital	Gen	Church	30			7	165
St Johnsbury Hospital							
Springfield 4,948—Windsor	Gen	NPAssn	30	6	86	12	421
Springfield Hospital							

VERMONT



Waterbury 1,770—Washington	Ment	State	1,010		940	308
Vermont State Hospital for the Insane						
Winooski 5,302—Chittenden	Gen	Church	75	11	112	63
Fanny Allen Hospital						1,074

Related Institutions

Bennington 7,390—Bennington	Inst	State	25		5	67
Vermont Soldiers Home Hosp						
Brandon 2,891—Rutland	MeDe	State	300		277	29
Brandon State School						
Goshen—Rutland						
Bryant Health Camp	(Included in Caverly Preventorium Pittsford)					
Pittsford 637—Rutland	TB	NPAssn	44		44	83
Caverly Preventorium						
Windsor 3,659—Windsor	Inst	State	8		4	68
Vermont State Prison Hospital						

Summary for Vermont

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	25	3,029	2,429	23,422
Related institutions	4	320	330	247
Totals	29	3,409	2,759	23,669
Refused registration	0			

VIRGINIA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Arlington 2,877—Washington	Gen	NPAssn	57	5	31	29	994
George Ben Johnston Memorial Hospital							
Alexandria, 24,140—Arlington	Gen	NPAssn	60	12	308	60	2,172
Alexandria Hospital							
Appalachia, 3,500—Wise	Gen	Frat	12	2	12	5	170
Appalachia Masonic Hospital							
Bristol 8,840—Washington	Gen	NPAssn	50	7	110	17	764
King's Mountain Memorial Hospital							
Brook Hill 18—Henrico	TB	City	214			150	130
Pine Camp Hospital							
Burkeville 755—Nottoway	TB	State	150			132	194
Piedmont Sanatorium (col.)							
Catawba Sanatorium, 55—Roanoke	TB	State	340			290	401
Catawba Sanatorium							
Charlottesville 15,345—Albemarle	TB	State	270			240	357
Blue Ridge Sanatorium							
Martha Jefferson Hospital and Sanitarium	Gen	NPAssn	50	10	131	20	990
Christiansburg, 1,970—Montgomery	Gen	Corp	25	4	57	9	602
New Altamont Hospital							
Clifton Forge 6,830—Allegheny	Gen	NPAssn	90	5	60	64	2,390
Chesapeake and Ohio Railway Hospital							
Clintwood 729—Dickenson	Gen	Indiv	20	0	0	0	0
Dickenson County Hospital							
Coeburn 784—Wise	Gen	Part	15		5	15	241
Coeburn Hospital							
Dante 811—Russell	Gen	NPAssn	25	4	0	0	0
Clinchfield Hospital							
Danville 22,247—Pittsylvania	TB	NPAssn	60			50	73
Hilltop Sanatorium	Gen	NPAssn	100	10	243	47	2,500
Memorial Hospital							
Farmville 3,133—Prince Edward	Gen	NPAssn	50	10	52	19	803
Southside Community Hospital							
Floyd 400—Floyd	Gen	Indiv	10	2	5	5	100
Do Hart Clinic and Hospital							
Ft Humphreys—Fairfax	Gen	Army	30	1		12	499
Station Hospital							
Ft Monroe 1,265—Elizabeth City	Gen	Army	90	6	112	44	1,620
Station Hospital							
Ft Myer, 1,050—Arlington	Gen	Army	50		40	20	800
Station Hospital							
Franklin 2,930—Southampton	Gen	Indiv	22	2	16	10	320
Railford Hospital							
Fredericksburg, 6,510—Spotsylvania	Gen	NPAssn	75	10	130	46	1,701
Mary Washington Hospital							
Galax 2,544—Grayson	Gen	Corp	22	3	18	9	504
Galax Hospital and Clinic							
Hampton 6,382—Elizabeth City	Gen	NPAssn	60	10	51	18	773
Divle Hospital							
Harrisonburg 7,232—Rockingham	Gen	NPAssn	110	8	162	91	3,931
Rockingham Memorial Hosp							
Hopewell 11,327—Prince George	Gen	NPAssn	30	3	21	4	202
Community Hospital							
Hot Springs 1,010—Bath	Gen	NPAssn	13	4	16	4	179
Community House							
Langley Field—Elizabeth City	Gen	Army	50		9	31	602
Station Hospital							
Leesburg 1,640—Loudoun	Gen	County	28	0	56	15	496
Loudoun County Hospital							
Lexington 3,782—Rockbridge	Gen	NPAssn	42	8	31	20	999
Stonewall Jackson Memorial Hospital							
Luray 1,450—Page	Gen	NPAssn	12	3	13	3	102
Peace Memorial Hospital							
Lynchburg 40,601—Campbell	Gen	City	102	10	152	74	1,600
Lynchburg General Hospital							
Marshall Lodge Memorial Hosp	Gen	Frat	130	8	109	53	1,539
Virginia Baptist Hospital	Gen	Church	75	16	147	30	914
Marion 4,156—Smyth	Ment	State	1,300			1,110	373
Southwestern State Hospital							
Martinsville 7,705—Henry	Gen	Indiv	50	4	33	20	841
Shackelford Hospital							
Nassawadox 475—Northampton	Gen	County	40	5	34	20	503
Northampton Accommod Memorial Hospital							
Newport News 34,417—Warwick	Gen	Indiv	100	10	62	33	1,822
Elizabeth Buxton Hospital	Gen	NPAssn	60	12	220	40	1,736
Riverside Hospital							
Whittaker Memorial Hospital	Gen	NPAssn	50	4	13	8	422
Norfolk 129,710—Norfolk	TB	City	94			82	123
Charles R Grandy Sanatorium							
Henry A Wise Hospital for Contagious Diseases	Iso	City	30			8	51
Hospital of St Vincent de Paul	Gen	Church	228	22	204	104	3,150
Norfolk Memorial Hospital	Gen	NPAssn	50	8	183	27	1,302
Norfolk Protestant Hospital	Gen	Church	170	25	438	96	4,504
Sarah Leigh Hospital	Gen	NPAssn	70	10	90	35	1,002
U S Marine Hospital	Gen	USPHS	300			218	2,082
Norton 3,077—Wise	Gen	Indiv	30	2	6	10	402
Norton Hospital							
Pearisburg 698—Giles	Gen	Corp	20	1	0	0	0
St Elizabeth's General Hosp							
Pennington Gap 1,553—Lee	Gen	Corp	30	2	16	18	909
Lee General Hospital							
Petersburg 23,564—Dinwiddie	Ment	State	3,031			2,970	656
Central State Hospital (col.)							
Medical Center Hospital	Gen	NPAssn	70	7	56	31	1,200
Petersburg Hospital							
Portsmouth 45,704—Norfolk	Gen	NPAssn	92	8	177	58	1,728
Kings Daughters Hospital	Gen	Navy	613			263	2,727
Norfolk Naval Hospital							
Parrish Memorial Hospital	Gen	Corp	40	10	119	20	904

NEW YORK—Continued

REGISTERED HOSPITALS

1141

NEW YORK—Continued

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
St Francis Hospital	Gen	Church	20				
St Josephs Hospital for Children (closed 12/31/34)	Chil	Church	532	8		256	680
St Vincent's Hospital	Gen	Church	57			339	7,092
Stonington Hospital	Gen	Church	456	30	608	61	1,802
Sherman Square Hospital	Gen	Church	487			400	8,621
Sionne Hospital for Women	Gen	Church	41	10	10	560	70
Sydenham Hospital	Gen	Church	178	144	2,090	150	3,310
Union Hospital	Gen	Church	176	24	47	118	3,010
U S Marine Hospital	Gen	Church	55	20	103	30	926
University Heights Hospital	Gen	Church	540	12		415	2,890
Veterans Admin Facility	Gen	Church	50	17	337	64	3,507
Westchester Square Hospital	Gen	Church	60	32	302	20	1,219
West Hill Sanitarium	Gen	Church	72			37	133
West Side Hospital and Dispensary	Gen	Church	27			14	673
Wickham Hospital	Gen	Church	424	15	5	287	4,448
Willard Parker Hospital	Gen	Church	48	20	210	23	812
William Booth Memorial Hosp	Gen	Church	219	84	1,304	144	3,448
Woman's Hospital	Gen	Church	144	10	304	62	2,272
Nagara Falls 7040—Nagara	Gen	Church	185	25	470	90	2,783
Nagara Falls Memorial Hosp	Gen	Church	144	10	304	62	2,272
Northport 2628—Suffolk	Gen	Church	185	25	470	90	2,783
Veterans Admin Facility	Gen	Church	144	10	304	62	2,272
North Tonnawanda 10 010—Nagara	Gen	Church	185	25	470	90	2,783
Do Graff Memorial Hospital	Gen	Church	144	10	304	62	2,272
Norwich 8,378—Chenango	Gen	Church	185	25	470	90	2,783
Chenango Memorial Hospital	Gen	Church	144	10	304	62	2,272
Chenango 5,330—Rockland	Gen	Church	185	25	470	90	2,783
Yack Hospital	Gen	Church	144	10	304	62	2,272
Ogdensburg 10,015—St Lawrence	Gen	Church	185	25	470	90	2,783
A Barton Hepburn Hospital	Gen	Church	144	10	304	62	2,272
St John's Hospital	Gen	Church	185	25	470	90	2,783
St Lawrence State Hospital	Gen	Church	144	10	304	62	2,272
Olean 21,700—Cattaraugus	Gen	Church	185	25	470	90	2,783
Mountain Clinic	Gen	Church	144	10	304	62	2,272
Olean General Hospital	Gen	Church	185	25	470	90	2,783
Rocky Crest Sanatorium	Gen	Church	144	10	304	62	2,272
Olean 10,638—Madison	Gen	Church	185	25	470	90	2,783
Broad Street Hospital	Gen	Church	144	10	304	62	2,272
Olean City Hospital	Gen	Church	185	25	470	90	2,783
Oneonta 12,530—Otsego	Gen	Church	144	10	304	62	2,272
Aurelia Osborn Fox Memorial Hospital	Gen	Church	185	25	470	90	2,783
Parehall Private Hospital	Gen	Church	144	10	304	62	2,272
Orangeburg 300—Rockland	Gen	Church	185	25	470	90	2,783
Rockland State Hospital	Gen	Church	144	10	304	62	2,272
Ossining 15,411—Westchester	Gen	Church	185	25	470	90	2,783
Ossining Hospital	Gen	Church	144	10	304	62	2,272
Stony Lodge	Gen	Church	185	25	470	90	2,783
Oswego 22,632—Oswego	Gen	Church	144	10	304	62	2,272
Oswego Hospital	Gen	Church	185	25	470	90	2,783
Station Hospital	Gen	Church	144	10	304	62	2,272
Otisville 600—Orange	Gen	Church	185	25	470	90	2,783
Municipal Sanatorium	Gen	Church	144	10	304	62	2,272
Owego 4,742—Tioga	Gen	Church	185	25	470	90	2,783
Glenmary Sanitarium	Gen	Church	144	10	304	62	2,272
Pawling 1,204—Dutchess	Gen	Church	185	25	470	90	2,783
White Oak Farm	Gen	Church	144	10	304	62	2,272
Peekskill 17,120—Westchester	Gen	Church	185	25	470	90	2,783
Peekskill Hospital	Gen	Church	144	10	304	62	2,272
Penn Yan 5,329—Yates	Gen	Church	185	25	470	90	2,783
Soldiers and Sailors Memorial Hospital	Gen	Church	144	10	304	62	2,272
Perryburg 317—Cattaraugus	Gen	Church	185	25	470	90	2,783
J N Adam Memorial Hospital	Gen	Church	144	10	304	62	2,272
Philmont 1,808—Columbia	Gen	Church	185	25	470	90	2,783
Columbia County Tuberculosis Sanatorium	Gen	Church	144	10	304	62	2,272
Plattsburg 13,340—Clinton	Gen	Church	185	25	470	90	2,783
Champlain Valley Hospital	Gen	Church	144	10	304	62	2,272
Physicians Hospital	Gen	Church	185	25	470	90	2,783
Station Hospital	Gen	Church	144	10	304	62	2,272
Pomona 155—Rockland	Gen	Church	185	25	470	90	2,783
Summit Park Sanatorium	Gen	Church	144	10	304	62	2,272
Pt Chester 22,602—Westchester	Gen	Church	185	25	470	90	2,783
St Luke's Convalescent Hosp	Gen	Church	144	10	304	62	2,272
United Hospital	Gen	Church	185	25	470	90	2,783
Pt Jefferson 2,200—Suffolk	Gen	Church	144	10	304	62	2,272
John T Mather Memorial Hospital	Gen	Church	185	25	470	90	2,783
St Charles Hospital for Crip	Gen	Church	144	10	304	62	2,272
Wharton Memorial Institute	Gen	Church	185	25	470	90	2,783
Pt Jervis 10,243—Orange	Gen	Church	144	10	304	62	2,272
St Francis Hospital	Gen	Church	185	25	470	90	2,783
Potsdam 4,130—St Lawrence	Gen	Church	144	10	304	62	2,272
Poughkeepsie 40,288—Dutchess	Gen	Church	185	25	470	90	2,783
Hudson River State Hosp	Gen	Church	144	10	304	62	2,272
St Francis Hospital	Gen	Church	185	25	470	90	2,783
Samuel and Nettle Bowne Hospital	Gen	Church	144	10	304	62	2,272
Samuel W Bowne Memorial Hospital	Gen	Church	185	25	470	90	2,783
Vassar Brothers Hospital	Gen	Church	144	10	304	62	2,272
Queens Village—Queens	Gen	Church	185	25	470	90	2,783
Creedmoor Division Brooklyn State Hospital	Gen	Church	144	10	304	62	2,272
Ray Brook 40—Essex	Gen	Church	185	25	470	90	2,783
New York State Hospital	Gen	Church	144	10	304	62	2,272

Hospitals and Sanatoriums

Hospital	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Rhinebeck 1,609—Dutchess	Gen	NPAssn	80	8	68	10	570
Northern Dutchess Health Ser	Gen	NPAssn	115			98	110
Richland 404—Oswego	Gen	NPAssn	140	33	703	90	3,507
Oswego County Sanatorium	Gen	NPAssn	16	12	101	4	198
Richmond Hill—Queens	Gen	NPAssn	183	32	494	118	4,105
Jamaica Hospital	Gen	NPAssn	149	28	617	118	3,201
Rochester 328 132—Monroe	Gen	NPAssn	400			300	647
Belvidere Private Hospital	Gen	NPAssn	366	16	232	413	3,438
Genesee Hospital	Gen	NPAssn	81	22	230	45	1,622
Highland Hospital	Gen	NPAssn	300	61	984	201	6,031
Iola Monroe County Tubercu	Gen	NPAssn	200	24	760	203	5,849
Monroe County Hospital	Gen	NPAssn	2,163			2,724	14
Parsons County Hospital	Gen	NPAssn	185	25	448	150	4,207
Park Avenue Hospital	Gen	NPAssn	204	36	925	124	4,941
Rochester General Hospital	Gen	NPAssn	115	10	200	87	2,538
Rochester Municipal Hosp	Gen	NPAssn	64	18	655	52	2,209
Rochester State Hospital	Gen	NPAssn	213	7	108	207	1,794
Strong Memorial Hospital	Gen	NPAssn	60	16	309	48	2,340
Rockaway Beach—Queens	Gen	NPAssn	60	12	10	6	180
Neponsit Beach Hospital for Children	Gen	NPAssn	50			23	512
Rockaway Beach Hospital and Dispensary	Gen	NPAssn	41	14	119	20	882
Rockville Center 13 718—Nassau	Gen	NPAssn	85	9	100	90	49
South Nassau Communities Hospital	Gen	NPAssn	14			13	31
Rome 32,338—Onondaga	Gen	NPAssn	246	39	637	189	5,823
Onondaga County Hospital	Gen	NPAssn	132			122	111
Rome Hospital and Murphy Memorial Hospital	Gen	NPAssn	28	7	73	14	386
Rome Infirmary	Gen	NPAssn	37			28	84
Sackett Harbor 742—Jefferson	Gen	NPAssn	35	7	47	12	252
Station Hospital	Gen	NPAssn	43			26	87
Salamanca 9 577—Cattaraugus	Gen	NPAssn	100	20	241	40	1,536
City Hospital	Gen	NPAssn	60	18	164	42	1,282
Salisbury Center 331—Herklimer	Gen	NPAssn	217	33	641	103	4,797
Pino Crest Sanatorium	Gen	NPAssn	232	54	1,010	1,706	2,069
Saranac Lake 8 020—Franklin	Gen	NPAssn	288			119	4,725
General Hospital	Gen	NPAssn	34	10	168	20	3,709
National Variety Artists Lodge	Gen	NPAssn	590			330	348
Northwoods Sanatorium	Gen	NPAssn	170	30	544	140	4,344
Reception Hospital	Gen	NPAssn	85	25	511	68	2,415
St Mary's of the Lake	Gen	NPAssn	52	25	107	104	4,600
Saratoga Springs 13 169—Saratoga	Gen	NPAssn	233			32	947
Saratoga Hospital	Gen	NPAssn	33	10	57	230	233
Schenectady 60 692—Schenectady	Gen	NPAssn	200	31	435	140	4,731
Eastern New York Orthopedic Hospital School	Gen	NPAssn	40	22	213	27	500
Fillis Hospital	Gen	NPAssn	210	40	1,032	172	5,043
Glenridge Sanatorium	Gen	NPAssn	60			48	584
Seneca Falls 0 443—Seneca	Gen	NPAssn	57	13	201	43	1,287
Seneca Falls Town Hospital	Gen	NPAssn	47	6	52	22	688
Sherburne 1 077—Chenango	Gen	NPAssn	75	15	116	53	1,694
Chenango County Tuberculo	Gen	NPAssn	60	28	397	43	237
Sodus 1 444—Wayne	Gen	NPAssn	185	16	267	12	445
Myers Hospital	Gen	NPAssn	230	12	183	96	2,964
Somers—Westchester	Gen	NPAssn	180			180	257
Pinewood Sanitarium	Gen	NPAssn	57			57	35
Sonyea—Livingston	Gen	NPAssn	47			47	35
Craig Colony	Gen	NPAssn	57			57	35
Southampton 3 737—Suffolk	Gen	NPAssn	57			57	35
Southampton Hospital	Gen	NPAssn	57			57	35
Staten Island 168 346—Richmond	Gen	NPAssn	57			57	35
Richmond Memorial Hospital	Gen	NPAssn	57			57	35
St Vincents Hospital	Gen	NPAssn	57			57	35
Sea View Hospital	Gen	NPAssn	57			57	35
Staten Island Hospital	Gen	NPAssn	57			57	35
U S Marine Hospital	Gen	NPAssn	57			57	35
Suffern 3 757—Rockland	Gen	NPAssn	57			57	35
Good Samaritan Hospital	Gen	NPAssn	57			57	35
Summumount—Franklin	Gen	NPAssn	57			57	35
Veterans Admin Facility	Gen	NPAssn	57			57	35
Syracuse 200,326—Onondaga	Gen	NPAssn	57			57	35
City Hospital	Gen	NPAssn	57			57	35
Crouse Irving Hospital	Gen	NPAssn	57			57	35
General Hospital	Gen	NPAssn	57			57	35
Hospital of the Good Shep	Gen	NPAssn	57			57	35
Onondaga General Hospital	Gen	NPAssn	57			57	35
Onondaga Sanatorium	Gen	NPAssn	57			57	35
Peoples Hospital	Gen	NPAssn	57			57	35
St Joseph Hospital	Gen	NPAssn	57			57	35
St Mary's Maternity Hospital	Gen	NPAssn	57			57	35
and Infants Asylum	Gen	NPAssn	57			57	35
Syracuse Memorial Hospital	Gen	NPAssn	57			57	35
Syracuse Psychopathic Hosp	Gen	NPAssn	57			57	35
Twin Elms	Gen	NPAssn	57			57	35
Tarrytown 0 641—Westchester	Gen	NPAssn	57			57	35
Tarrytown Hospital	Gen	NPAssn	57			57	35
Ticonderoga 3 680—Essex	Gen	NPAssn	57			57	35
Moses Ludington Hospital	Gen	NPAssn	57			57	35
Troy 72,703—Rensselaer	Gen	NPAssn	57			57	35
Leonard Hospital	Gen	NPAssn	57			57	35
Marshall Sanitarium	Gen	NPAssn	57			57	35
St Joseph's Maternity Hosp	Gen	NPAssn	57			57	35
Samaritan Hospital	Gen	NPAssn	57			57	35
Troy Hospital	Gen	NPAssn	57			57	35
Trudeau 230—Essex	Gen	NPAssn	57			57	35

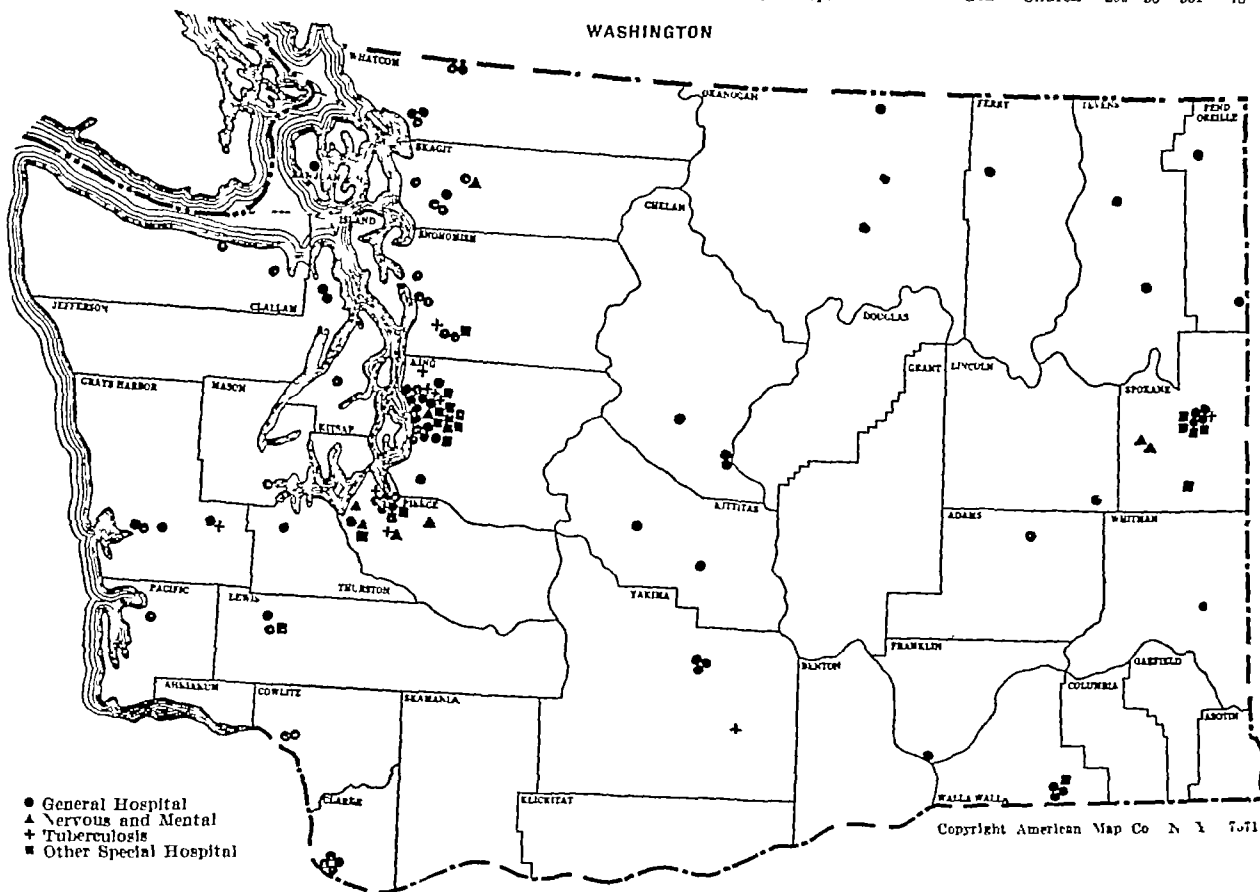
WASHINGTON—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Chehalis 4 907—Lewis	Gen	Church	35	0	70	8	440
St Helens Hospital	Gen	Church	19	4	44	8	206
Chewelah 1,315—Stevens	Gen	Church	63	9	No data supplied		
St Joseph's Hospital	Gen	Church	30	6	30	10	400
Colfax, 2 82—Whitman	Gen	Church	20	11	86	11	400
St Ignatius Hospital	Gen	Part	14	4	32	5	
Colville 1,503—Stevens	Gen	Part	65				
Mt Carmel Hospital	Gen	Corp	84	10	240	42	1,821
Ellensburg 4 621—Kittitas	Gen	Corp	101	10	203	30	1,147
Flensburg General Hospital	Gen	Corp	100	0	71	80	2,200
Elma, 1 345—Grays Harbor	Gen	Indiv	2,200				
Conway Hospital	TB	County					
Oakhurst Sanatorium	Gen	NPAsn					
Everett 80 507—Snohomish	Gen	Church					
Central Hospital	Gen	NPAsn					
Providence Hospital	Gen	Church					
Ft Lewis 6 650—Pierce	Gen	Army					
Station Hospital	Gen	State					
Ft Steilacoom—Pierce	Gen	State					
Western State Hospital	Gen	State					

WASHINGTON—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Oroville 800—Okanogan	Gen	Indiv	10	6	27		212
Oroville General Hospital	Gen	Indiv	10	6	27		212
Pasco 3 496—Franklin	Gen	Church	56	9	93	20	823
Our Lady of Lourdes Hospital	Gen	NPAsn	80	8	80	48	1,107
Port Angeles 10 183—Clallam	Gen	Church	85	9	116	30	477
Port Angeles General Hospital	Gen	Church	85	9	116	30	477
Port Townsend 3,000—Jefferson	Gen	Church	30			18	50
St John's Hospital	Gen	Indiv	28	6	64	4	200
Puyallup 7 094—Pierce	Gen	Indiv	28	6	64	4	200
Puget Sound Sanatorium	N&M	Corp	30				
Renton 4 002—King	Gen	Indiv	28	6	64	4	200
Renton Hospital	Gen	Indiv	28	6	64	4	200
Richmond Highlands 31—King	TbIs	City	200	30	301	78	2,227
Richland Sanatorium and Isolation Hospital	TbIs	City	200	30	301	78	2,227
Seattle 365 683—King	Gen	NPAsn	30	6	48	12	600
Ballard Accident and General Hospital	Gen	NPAsn	135			112	1,407
Children's Orthopedic Hospital	Gen	Church	200	30	301	78	2,227
Columbus Hospital	Gen	Church	200	30	301	78	2,227

WASHINGTON



Total hospitals in Washington, 121 general, 81 general beds occupied, 53.2 per cent population per general bed, 237

Ft Worden (Port Townsend P O), 14—Jefferson	Gen	Army	20		5	201	
Station Hospital	Gen	Army	20		5	201	
Hoquiam 12 766—Grays Harbor	Gen	Corp	70	10	157	50	1,143
Hoquiam General Hospital	Gen	Corp	70	10	157	50	1,143
Kirkland 1 714—King	Gen	Indiv	12	4	10	3	123
Kirkland Hospital	Gen	Indiv	12	4	10	3	123
Lakeview 332—Pierce	TB	County	100			140	118
Mountain View Sanatorium	TB	County	100			140	118
Leavenworth 1 415—Chelan	Gen	NPAsn	30	6	74	16	1,282
Cascade Sanatorium	Gen	NPAsn	30	6	74	16	1,282
Longview 10 632—Cowlitz	Gen	Indiv	20	10	100	10	400
Longview General Hospital	Gen	Indiv	20	10	100	10	400
Longview Memorial Hospital	Gen	Corp	80	16	111	28	1,607
Vason City—Okanogan	Gen	NPAsn	37	4	New		
Washington Hospital	Gen	NPAsn	37	4	New		
Medical Lake 1 671—Spokane	Ment	State	1 582			1 561	342
Eastern State Hospital	Ment	State	1 582			1 561	342
Monroe 1 570—Snohomish	Gen	Indiv	16	5	No data supplied		
Monroe General Hospital	Gen	Indiv	16	5	No data supplied		
Mt Vernon 3 600—Skagit	Gen	Indiv	30	0	34	13	474
Mt Vernon General Hospital	Gen	Indiv	30	0	34	13	474
Newport 1 060—Pend Oreille	Gen	NPAsn	20	4	48	8	220
Newport Hospital	Gen	NPAsn	20	4	48	8	220
Olympia 11 703—Thurston	Gen	Church	100	15	186	42	2,040
St Peter's Hospital	Gen	Church	100	15	186	42	2,040
Omak 2 547—Okanogan	Gen	Indiv	8	4	16	3	110
Mills Hospital	Gen	Indiv	8	4	16	3	110
King County Hospital Unit No 1 (Harborview)*	Gen	County	394	51	1 084	371	10 800
King County Tuberculosis Hospital	TB	County	175			152	164
Laurel Beach Sanatorium	TB	Part	60			42	141
Maynard Hospital	Gen	NPAsn	80	25	306	48	1,607
Meadows Sanatorium	N&M	Corp	33			17	108
Providence Hospital	Gen	Church	400	50	748	107	4,643
Riverton Sanatorium	TB	NPAsn	60			30	70
St Luke's Hospital	Gen	Corp	46	18	155	21	638
Seattle General Hospital	Gen	Church	100	20	211	40	2,183
Station Hospital	Gen	Army	20			6	224
Swedish Hospital	Gen	NPAsn	100	65	400	90	3,950
U S Marine Hospital	Gen	USPHS	300			202	2,350
Virginia Mason Hospital	Gen	NPAsn	100	30	317	71	2,633
Sedro Woolley 2 710—Skagit	Gen	NPAsn	35	7	10	0	3,276
Memorial Hospital	Ment	State	1 600			1,513	374
Northern State Hospital	Ment	State	1 600			1,513	374
Shelton 3 091—Mason	Gen	NPAsn	34	5	49	15	600
Shelton General Hospital	Gen	NPAsn	34	5	49	15	600
Snohomish 2 683—Snohomish	TB	County	40			38	20
Aldercrest Sanatorium	TB	County	40			38	20
Snohomish General Hospital	Gen	Indiv	14	3	35	5	210
South Bend 1 788—Pacific	Gen	Part	30	5	24	8	220
South Bend General Hospital	Gen	Part	30	5	24	8	220
Spokane 115 514—Spokane	Gen	Church	227	30	615	97	3,882
Denconess Hospital	Gen	Church	227	30	615	97	3,882

Key to symbols and abbreviations is on page 1091

NEW YORK—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
St Andrew's Convalescent Hospital	Conv	Church	30			10	315
St Rose's Free Home for Incurable Cancer	Ch	Church	80			75	312
Tonahill Hospital	N&T	NPA'ssn	35		No data supplied		
Dr. Wiley M. Wilson's Private Hospital (col.)	Gen	Indiv	8	2	10	4	138
Niagara Falls 7,460—Niagara							
Niagara Falls Municipal Hosp	Iso	City	20			12	130
Onondaga 360—Onondaga							
Onondaga County Hospital	Gen	Inst	County	154	13	170	137
Oriskany 114—Oriskany							
Eastern Star Home and Infirmary	Inst	Frat		41		73	13
Ossining 15,241—Westchester	N&M	Indiv		10		10	4
Greenmont-on Hudson	Inst	State		100		60	1,740
Sing Sing Prison Hospital							
Ottisville 821—Orange							
Sunnyside Health Farm	TB	Indiv		10		4	10
Oxford 160—Chenango							
New York State Woman's Relief Corps' Home	Inst	State		50		47	130
Patchogue 6,550—Suffolk							
Community Hospital	Gen	Indiv		20	7	No data supplied	
Pelham Manor 4,008—Westchester	Conv	NPA'ssn		30		20	64
Pelham Home for Children							
Plattsburg 13,749—Clinton	Inst	NPA'ssn		12		1	6
Children's Home of Northern New York							
Pleasantville 4,540—Westchester							
Hebrew Sheltering Guardian Orphan Asylum	Inst	NPA'ssn		71		1	461
Port Jervis 10,943—Orange							
Deerpark Hospital	Gen	Corp		14	3	24	7
Poughkeepsie 40,238—Dutchess							
Poughkeepsie City Home and Infirmary	Inst	City		18		1	24
Sadlier Hospital	Surg	Indiv		9		8	130
Swift Infirmary Nassau College	Inst	NPA'ssn		30		8	576
Queens Village—Queens							
Queens Village Sanatorium	Gen	Indiv		12	12	50	6
Remsen 437—Onondaga							
Whiteboro Sanatorium and Adirondack Annex	Nerv	Indiv		15		1	13
Rhinebeck 1,569—Dutchess							
Holiday Farm Home for Convalescent Children	Conv	Indiv		50		24	202
Rochester 228,132—Monroe							
Convalescent Hospital for Children	Conv	NPA'ssn		43		30	238
Field Sanitarium	Conv	Indiv		15		6	44
Knorr Sanitarium Convalescent Home	Conv	Indiv		35		20	
Rockaway Park—Queens							
Convalescent Home for Hebrew Children	Conv	NPA'ssn		112		121	704
Rome 32,338—Onondaga							
Rome State School	MeDe	State		2,707	24	3,300	313
Rye 8,712—Westchester							
Halcyon Rest	N&M	Indiv		33		20	
Schenectady 9,692—Schenectady							
General Electric Company Industrial Hospital	Indus	NPA'ssn		12		2	150
Schenectady City Hospital	Iso	City		35		23	374
Schenectady County Home and Hospital	Inst	County		30		10	400
Sea Cliff 3,456—Nassau							
Country Home for Convalescent Babies	Conv	NPA'ssn		70		51	457
Staten Island 158,340—Richmond							
New York City Farm Colony	Inst	City		1,366		1,300	505
Ballora Snug Harbor Hospital	Gen	NPA'ssn		200		160	538
Seaside Hospital	Chil	NPA'ssn		100		160	545
Syracuse 909,330—Onondaga							
Syracuse State School	MeDe	State		1,030		1,030	132
Thiells 320—Rockland							
Letchworth Village	MeDe	State		2,800		2,914	455
Troy 72,763—Rensselaer							
Rensselaer County Hospital	Chr	County		63		67	184
Troy Orphan Asylum	Inst	NPA'ssn		27		1	380
Tupper Lake 5,271—Franklin							
American Legion Mountain Camp	Conv	NPA'ssn		54		45	140
Valhalla 620—Westchester							
Blythedale Hospital and Home for Crippled Children	Orth	NPA'ssn		78		62	91
Valley Cottage 212—Rockland							
Reed Farm and Nichols Cottage	Conv	Indiv		18		18	67
Wassale 260—Dutchess							
Wassale State School	MeDe	State		3,400		2,815	632
Watertown 32,200—Jefferson							
Jefferson County Home	Gen	County		30		25	50
Wellsville 5,674—Allegany							
Wellsville Sanitarium	Conv	Indiv		30		No data supplied	
White Plains 3,830—Westchester							
Convalescent Hospital for Children	Conv	NPA'ssn		80		77	714
Marine Farm Children's Cardiac Convalescent Home	Conv	Indiv		25		20	92
Williamsville 3,110—Erie							
Josephine Goodyear Convalescent Home	Conv	Indiv		60		58	237

NEW YORK—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Yonkers 134,640—Westchester							
Hebrew National Orphan Home	Inst	NPA'ssn		0		No data supplied	
Leake and Watts Home School	Inst	NPA'ssn		38		1	155
Sunny Rest Sanitarium	Conv	Indiv		14		8	12
Yonkers City Hospital for Communicable Diseases	Iso	City		87		21	804
Yorktown Heights 1,900—Westchester							
Sound View School	MeDe	Part		23		10	5
Summary for New York			Number	Beds	Average Patients	Patients Admitted	
Hospitals and sanatoriums			465	137,116	116,443	1,037,801	
Related institutions			129	23,764	21,414	40,313	
Total			594	160,880	137,857	1,078,114	
Refused registration			31	1,174			

NORTH CAROLINA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Albemarle 3,493—Stanly	Gen	Corp		34	4	48	13
Asheboro 5,021—Randolph	Gen	NPA'ssn		30	6	34	18
Asheville 50,193—Buncombe							
Amber Heights Sanitarium	TB	Corp		26			
Appalachian Hall	N&M	Corp		175		40	316
Asheville Mission Hospital	Gen	NPA'ssn		109	16	215	60
Asheville Psychiatric Institute							
Wesnoea	Nerv	Conv		Indiv	35		12
Aston Park Hospital	Gen	NPA'ssn		45	6	102	32
Fairview Cottage Sanitarium	TB	Indiv		130			2
Norburn Hospital	Surg	Corp		35	2	19	18
St. Joseph's Sanatorium	FB	Church		96			61
Zephyr Hill Sanatorium	TB	Indiv		30			21
Badlin 3,040—Stanly							
Badlin Hospital	Gen	NPA'ssn		22	4	12	6
Bannock Flk 340—Avery							
Grace Hospital	Gen	Church		52	8	61	38
Beaufort 2,957—Carteret							
Potter Emergency Hospital	Gen	Corp		12	2	22	10
Biltmore 172—Buncombe							
Biltmore Hospital	Gen	NPA'ssn		52	10	74	15
Black Mountain 737—Buncombe							
Beaumont Park Sanatorium	N&M	Corp		20		No data supplied	
Cragmont Sanatorium	TB	Corp		30		15	23
Fellowship Sanatorium of the Royal League	TB	Frat		25		15	6
Brevard 2,339—Transylvania							
Lyday Memorial Hospital	Gen	NPA'ssn		15		5	3
Burlington 9,737—Alamance							
Rainey Hospital	Gen	Corp		40	2	34	17
Charlotte 82,600—Mecklenburg							
Charlotte Eye Ear and Throat Hospital	ENT	Part		20		12	1,719
Good Samaritan Hosp (col.)	Gen	Church		50	3	22	30
Mercy Hospital	Gen	Church		110	20	296	65
New Charlotte Sanatorium	Gen	Corp		70	10	42	45
Presbyterian Hospital	Gen	Church		100	20	289	83
St. Peter's Hospital	Gen	Church		53	10	176	41
Cherokee 35—Swain							
Eastern Cherokee Indian Hosp	Gen	I A		22	4	No data supplied	
Concord 11,820—Cabarrus							
Concord Hospital	Gen	NPA'ssn		15	4	13	7
Crossnore 181—Avery							
Garrett Memorial Hospital	Gen	NPA'ssn		21	2	33	7
Durham 52,037—Durham							
Duke Hospital	Gen	NPA'ssn		406	50	232	201
Lincoln Hospital (col.)	Gen	NPA'ssn		69	9	124	73
McPherson Hospital	ENT	Indiv		22		5	674
Watts Hospital	Gen	NPA'ssn		200	25	401	100
Elizabeth City 10,037—Pasquotank							
Albemarle Hospital	Gen	NPA'ssn		30	5		
Elkin 2,357—Surry							
Hugh Chatham Memorial Hosp	Gen	Church		40	4	20	18
Erwin 4,000—Harnett							
Good Hope Hospital	Gen	Corp		34	8	84	8
Fayetteville 13,049—Cumberland							
Higham Hospital	Gen	NPA'ssn		120	6	81	65
Pittman Hospital	Gen	NPA'ssn		92	11	103	50
Fletcher 60—Henderson							
Mountain Sanitarium and Hosp	Gen	Church		30	3	29	20
Ft. Bragg—Cumberland							
Station Hospital	Gen	Army		83	5	80	70
Franklin 1,094—Macon							
Angel Hospital	Gen	NPA'ssn		50	2	22	35
Gastonia 17,003—Gaston							
City Hospital	Gen	Corp		60	6	44	22
Gaston Sanatorium	Gen	Corp		40	0	50	11
North Carolina Orthopedic Hospital	Orth	State		150			143
Goldboro 14,985—Wayne							
Goldboro Hospital	Gen	NPA'ssn		86	8	50	53
State Hospital (col.)	Ment	State		1,019			1,853
Greensboro 63,589—Guilford							
Clinic Hospital	Gen	NPA'ssn		45	5	67	27
Glenwood Park Sanitarium	N&M	Indiv		30		14	242
L. Richardson Memorial Hospital (col.)	Gen	NPA'ssn		60	4	51	25

WEST VIRGINIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
McKendree 117—Fayette	Gen	State	65	6	24	39	2 484
McKendree Emergency Hosp	o						
Montgomery 2 906—Fayette	Gen	Corp	65	5	No data supplied		
Coal Valley Hospital	o						
Morgantown 16 186—Monongalia City Hospital	Gen	Indiv	27	4	30	21	
Eastmont Tuberculosis Sanat	TB	NPAasn	30				
Monongalia County Hospital	Gen	County	63	10	63	34	1 087
Mullens 2,356—Wyoming	Gen	Indiv	30	2	21	9	
Mullens Hospital	o						
New Martinsville 2 814—Wetzel	Gen	Corp	20	4	15	8	2 920
Wetzel County Hospital	o						
Oak Hill 2 070—Fayette	Gen	Part	50	5	13	10	1 200
Oak Hill Hospital	o						
Parkersburg 29 623—Wood	Gen	City	60	12	167	42	1 378
Camden Clark Memorial Hos	Gen	Church	160	10	139	56	1,833
St Joseph's Hospital	o						
Princeton 6 925—Mercer	Gen	NPAasn	48	4	No data supplied		
Mercer Memorial Hospital	Gen	Corp	40	2	16	10	537
Princeton Hospital	o						
Richwood 5 720—Nicholas	Gen	Corp	50	4	23	8	275
McClung Hospital	Gen	Church	34	0	28	8	510
Sacred Heart Hospital	o						
Ronceverte 2 264—Greenbrier	Gen	Corp	60	4	16	31	627
Greenbrier Valley Hospital	o						
Siatsville 3 072—Tyler	Gen	Corp	16	3	70	6	2 000
Siatsville General Hospital	o						
South Charleston 5 904—Kanawha	Gen	Indiv	20	5	5	4	120
Dunn Hospital	o						
Welch 5,376—McDowell	Gen	Corp	70	0	52	44	1 665
Grace Hospital	Gen	Corp	108	4	52	49	2 612
Sterens Clinic Hospital	Gen	State	115	2	23	37	2 516
Welch Emergency Hospital	o						
Weston 8 646—Lewis	Gen	Indiv	20	3	20	20	512
General Hospital	Gen	Part	20	0	31	18	521
Weston City Hospital	o						
Wheeling 61 650—Ohio	Gen	NPAasn	240	30	310	122	4 160
Ohio Valley General Hosp	o	Gen	Church	300	20	267	90 2 405
Wheeling Hospital	o						
Williamson 9 410—Mingo	Gen	Corp	54	4	32	31	1 131
Williamson Memorial Hosp	o						

Related Institutions

Charleston 69 408—Kanawha	TB	NPAasn	42			40	16
Hill Crest Sanatorium	o						
Huntington 75 572—Cabell	Ment	State	940			203	
Huntington State Hospital	o						
Milton 1 300—Cabell	Conv	NPAasn	32			22	
Morris Memorial Hospital for Crippled Children	o						
Moundsville 14 411—Marshall	TB	County	32			24	4
Grandview Sanatorium	o						
West Virginia Penitentiary	Inst	State	29			16	578
St Mary's 2 182—Pleasants	MeDe	State	84			84	
West Virginia Training School	o						
Spencer 2 433—Roane	Gen	Indiv	11	2	9	4	206
De Pue Hospital	Ment	State	920			887	289
Spencer State Hospital	o						
Weston 8 646—Lewis	Ment	State	1 597			1 620	412
Weston State Hospital	o						
Wheeling 61,650—Ohio	Mat	NPAasn	27	27	20		20
Florence Crittenton Home	o						
Ohio County Tuberculosis Sanatorium	TB	County	17			17	22

Summary for West Virginia

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	65	5 560	3 040	83,220
Related institutions	11	3 737	3 502	1,908
Total*	76	9,302	6,548	87 128
Refused registration	2	42		

WISCONSIN

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Algoma 2,202—Kewaunee	Gen	NPAasn	10	4	15	3	138
Algoma Hospital	o						
Amery 1,304—Polk	Gen	NPAasn	15	5	24	4	164
Polk County Hospital	o						
Antigo 8 610—Langlade	Gen	Church	44	7	79	23	1 026
Langlade County Memorial Hospital	o						
Appleton 20,267—Outagamie	Gen	Church	150	60	430	69	3 019
St Elizabeth Hospital	o						
Ashland 10 622—Ashland	Gen	NPAasn	67	8	97	83	814
Ashland General Hospital	o						
St Joseph's Hospital	Gen	Church	135	15	182	72	1 847
Baraboo 5,545—Sauk	Gen	Church	25	8	112	18	643
St Mary's Ringling Hospital	o						
Beaver Dam 9,867—Dodge	Gen	Church	30	8	112	15	749
Lutheran Deaconess Hospital	o						
Beloit 23,511—Rock	Gen	City	70	12	250	30	1 526
Beloit Municipal Hospital	o						
Berlin 4 100—Green Lake	Gen	NPAasn	14	4			100
Yates Memorial Hospital	o						
Boscobel 1 702—Grant	Gen	Part	18	4	16	0	200
Brookside-Parker Hospital	o						
Burlington 4,114—Racine	Gen	NPAasn	20	10	186	14	577
Memorial Hospital	o						
Chippewa Falls 9 539—Chippewa	Gen	Church	163	17	187	74	2 046
St Joseph's Hospital	o						
Columbus 2,514—Columbia	Gen	Church	40	5	70	21	600
St Mary's Hospital	o						

WISCONSIN—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Cumberland 1 532—Barron	Gen	Part	20	6	27	15	307
Cumberland Hospital	o						
Delavan 3,301—Walworth	N&M	Indiv	20			15	82
Delavan Sanatorium	o						
Dodgeville 1 937—Iowa	Gen	NPAasn	24	5	89	12	825
Dodgeville General Hospital	o						
St Joseph's Hospital	Gen	Church	60	15	72	23	1 060
Eau Claire 26,257—Eau Claire	Gen	NPAasn	135	20	291	60	2,012
Luther Hospital	o						
Mt Washington Sanatorium	TB	County	08			63	46
Sacred Heart Hospital	Gen	Church	178	16	404	92	3,089
Edgerton 2,906—Rock	Gen	NPAasn	10	6	53	6	899
Edgerton Memorial Hospital	o						
Elkhorn 2,340—Walworth	Gen	County	37	11	212	83	819
Walworth County Hospital	o						
Fond du Lac 26 449—Fond du Lac	Gen	Church	220	20	412	130	3,304
St Agnes Hospital	o						
Ft Atkinson 5 793—Jefferson	Gen	Indiv	15	4	43	5	24
Ft Atkinson General Hospital	o						
Frederic 680—Polk	Gen	Indiv	13	5	39	7	300
Frederic Hospital	o						
Grantsburg 777—Burnett	Gen	Corp	17	4	35	8	418
Community Hospital	o						
Green Bay 37 415—Brown	Gen	Church	76	10	111	41	1 014
Bellin Memorial Hospital	o						
St Mary's Hospital	Gen	Church	125	21	270	75	2,029
St Vincent's Hospital	Gen	Church	200	23	307	172	6 687
Hartford 3 754—Washington	Gen	Church	50	8	70	12	610
St Joseph's Hospital	o						
Hawthorne 551—Douglas	TB	County	130			128	71
Middle River Sanatorium	o						
Hayward 1,207—Sawyer	Gen	IA	40	5	76	47	934
Hayward Indian Hospital	o						
Hillsboro 972—Vernon	Gen	Indiv	20	5	33	10	316
Hansberry Hospital	o						
Janesville 21 028—Rock	Gen	Church	120	30	107	50	1,318
Mercy Hospital	TB	County	63			57	46
Pinehurst Sanatorium	o						
Jefferson, 2 030—Jefferson	TB	County	54			62	39
Forest Lawn Sanatorium	o						
Kaukauna 6,581—Outagamie	TB	County	60			62	30
Riverview Sanatorium	o						
Kenosha 50 262—Kenosha	Gen	NPAasn	150	30	213	33	1,246
Kenosha Hospital	o						
St Catharine's Hospital and Sanitarium	Gen	Church	45	15	210	10	693
Willowbrook Sanatorium	TB	County	38			30	25
Keshena 270—Shawano	Gen	Church	60	6	89	28	902
Keshena Indian Hospital	o						
La Crosse 39 614—La Crosse	Gen	NPAasn	106	10	73	43	1 189
Grandview Hospital	Gen	NPAasn	40	12	94	23	1,229
La Crosse Hospital	Gen	Church	115	9	115	58	2,231
La Crosse Lutheran Hospital	o						
St Francis Hospital	Gen	Church	275	40	324	123	3,640
Ladysmith 3 493—Rusk	Gen	Church	25	8	62	12	576
St Mary's Hospital	o						
Lancaster 2 432—Grant	Gen	Indiv	12	0		4	
Godfrey Hospital	o						
Laona 1 709—Forest	Gen	Indiv	15	4	23	11	800
Ovitz Hospital	o						
Madison 57 899—Dane	TB	County	140			100	65
Lake View Sanatorium	Gen	NPAasn	130	20	321	81	3 661
Madison General Hospital	o						
Methodist Hospital	Gen	Church	110	10	100	55	2,222
Morningside Sanatorium	TB	NPAasn	45			39	23
Normandale	N&M	Corp	30			16	118
St Mary's Hospital	Gen	Church	175	30	097	90	3,414
State of Wisconsin General Hospital	Gen	State	630	22	150	632	11 168
Wisconsin Orthopedic Hospital for Children	(Included in State of Wisconsin Gen Hosp)						
Wisconsin Psychiatric Inst	(Included in State of Wisconsin Gen Hosp)						
Manitowoc 22,963—Manitowoc	Gen	Church	120	20	165	42	1 780
Holy Family Hospital	o						
Marinette 13 734—Marinette	Gen	Corp	50	12	181	27	1 072
Marinette and Menominee Hosp	o						
Marshfield 8,778—Wood	Gen	Church	150	15	232	60	2 032
St Joseph's Hospital	o						
Mauston 2 107—Juneau	Gen	Corp	45	6	46	13	430
Mauston Hospital	o						
Medford 1 918—Taylor	Gen	Corp	34	8	27	15	546
Medford Clinic	o						
Mendota, 112—Dane	Ment	State	300			56	77
Wisconsin Memorial Hospital	o						
Wisconsin State Hospital for Insane	Ment	State	867	3	5	571	972
Menomonie 5,595—Dunn	Gen	City	20	7	44	16	538
Menomonie City Hospital	o						
Merrill 8 408—Lincoln	Gen	Church	50	11	67	17	643
Holy Cross Hospital	o						
Lincoln County Hospital	Gen	Church	30	4	32	23	380
Millwaukee 578 249—Milwaukee	Gen	NPAasn	100	45	251	55	2,200
Columbia Hospital	Gen	Church	143	27	433	57	2,262
Evangelical Deaconess Hosp	o						
Johnston Emergency Hospital	Emerg	City	25	4		33	3,664
Milwaukee Children's Hosp	o	NPAasn	155			102	2,930
Milwaukee County Gen Hosp	(Included in Milwaukee County General Hospital Wauwatosa)						
Dispensary Emerg Unit	Gen	NPAasn	110	20	430	51	1 973
Milwaukee General Hospital	o						
Milwaukee Hospital "The Passavant"	Gen	Church	214	30	569	141	4 552
Misericordia Hospital	Gen	Church	109	45	547	47	1 827
Mt Sinai Hospital	Gen	NPAasn	142	28	555	93	3,010
Roger Williams Hospital	Gen	Church	30	5	51	19	621
Sacred Heart Sanitarium	Gen	Church	275			160	1 918
St Anthony's Hospital	Gen	Church	44	12	224	21	970
St Joseph's Hospital	o						

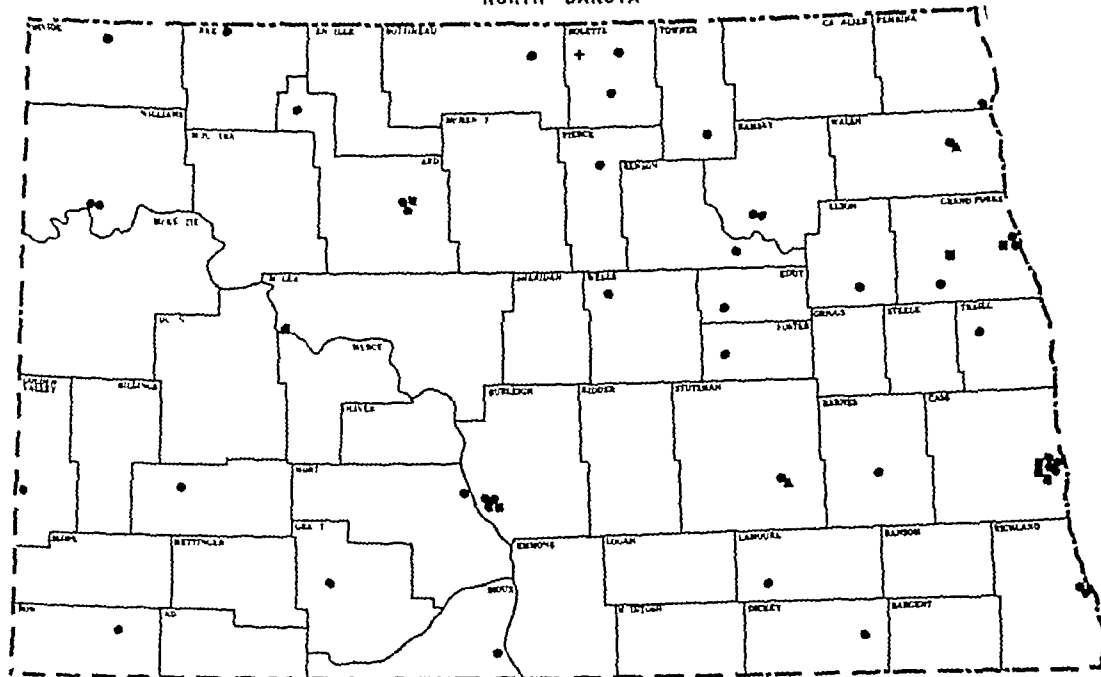
NORTH CAROLINA—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Biltmore 172—Buncombe Hillcroft Sanatorium	TB	Part	68			17	27
Candler 50—Buncombe Plegah Sanit and Hospital	Gen	Church	20	1	3	8	114
Charlotte 6260—Mecklenburg Florence Crittenton Industrial Home	Mat	NPAssn	2	7	5	2	6
Thompson Orphanage and Training Institution	Inst	Church	14			3	149
Davidson 1445—Mecklenburg Davidson College Infirmary	Inst	NPAssn	12			3	16
Durham 6003—Durham Salvation Army Home and Hospital	Mat	Church	60	3	88	2	80

NORTH DAKOTA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Belcourt, 205—Rolette Turtle Mountain Hospital	Gen	I A	52	0	112	41	813
Bismarck 11 000—Burlough Bismarck Hospital	Gen	Church	128	12	133	78	2,167
St Alexius Hospital	Gen	Church	144	8	175	97	2,324
Station Hospital	Gen	Army	20			12	340
Bottineau 1,222—Bottineau St Andrew's Hospital	Gen	Church	60	7	110	30	1 100
Carrington, 1,717—Foster Carrington Hospital	Gen	NPAssn	22	0	30	12	345
Devils Lake 5 451—Ramsey General Hospital	Gen	NPAssn	45	0	38	23	1,627
Mercy Hospital	Gen	Church	60	12	128	89	1,874

NORTH DAKOTA



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- General Hospital
- ▲ Nervous and Mental
- + Tuberculosis
- Other Special Hospital

Total hospitals in North Dakota, 55, general, 45, general beds occupied, 57 1 per cent, population per general bed, 314

Fayetteville 13 649—Cumberland Fayetteville Eye Ear Nose and Throat Hospital	ENT	Part	10			2	403
Gastonia 37 602—Gaston Gaston County Colored Hosp	Gen	County	11	1	2	3	103
Greensboro 63,560—Gallford Reeves Eye Ear, Nose and Throat Infirmary	ENT	Indiv	10			No data supplied	
Halifax, 321—Halifax Halifax County Tuberculosis Sanitarium	TB	County	24			No data supplied	
Henderson 6,34—Yancey Scott Parker Sanatorium	TB	County	14			12	7
Kinston 11,822—Lenoir Osawell Training School	MeDe	State	645			640	
Monroe 6 180—Union Quality Hill Sanit (col)	Gen	Indiv	10	3	4	4	134
North Wilkesboro 3,603—Wilkes Wilkes County Tuberculosis Hut	TB	County	14			0	8
Raleigh 37,378—Wake North Carolina State School for the Blind and Deaf	Inst	State	28			3	211
Wake County Home Hospital	Inst	County	115			127	84
Saluda 558—Polk Infants and Children's Sanit	Chil	Indiv	5			2	215
Spartanburg Baby Hospital	Chil	NPAssn	36			25	183
Tarboro 6,370—Edgecombe Bess Memorial Hospital	Gen	Indiv	8	5	4	4	180
Thomasville 10 090—Davidson Mills Home Infirmary	Inst	Church	30			1	314
Wilson 12 613—Wilson Mercy Hospital (col)	Gen	CyCo	25			20	

Summary for North Carolina

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	123	14 480	10 800	112,939
Related institutions	24	1 891	326	5,331
Totals	147	15 781	11 192	118,320
Refused registration..	6	181		

Dickinson 5,025—Stark St Joseph's Hospital	Gen	Church	78	10	132	34	1,082
Drayton, 502—Femblina Drayton Hospital	Gen	NPAssn	14	2	16	8	338
Edgeley 821—La Moure Edgeley Hospital	Gen	Indiv	12		5	0	243
Fargo 28 610—Cass St John's Hospital	Gen	Church	135	30	261	79	2,482
St Luke's Hospital	Gen	Church	108	17	129	58	1 063
Veterans Admin Facility	Gen	Vet	100			72	511
Ft Totten 61—Benson Ft Totten Hospital	Gen	I A	31	4	23	20	830
Ft Yates 400—Sioux Standing Rock Indian Hosp	Gen	I A	30	11	50	15	678
Grafton, 5 130—Walsh Grafton Deaconess Hospital	Gen	Church	45	0	100	25	893
Grand Forks 17,112—Grand Forks Grand Forks Deaconess Hospital	Gen	NPAssn	85	25	203	41	2 189
St Michael's Hospital	Gen	Church	55	15	103	26	1,370
Harvey 2,167—Wells Good Samaritan Hospital and Sanitarium	Gen	NPAssn	40	0	52	35	468
Jamestown, 8 187—Stutsman North Dakota State Hospital for Insane	Ment	State	2 000			1,708	372
Trinity Hospital	Gen	Church	80	12	153	45	1,226
Kenmare 1 404—Ward Kenmare Deaconess Hospital	Gen	Church	45	5	50	10	458
Mandan 6 037—Morton Mandan Deaconess Hospital	Gen	Church	40	6	113	40	1 182
McVille 513—Nelson Community Hospital	Gen	Corp	12	2	38	9	812
Minot 16 099—Ward McConnell's Private Hospital	ENT	Indiv	10	1		5	650
St Joseph's Hospital	Gen	Church	86	14	160	52	1 748
Trinity Hospital	Gen	Church	180	20	242	107	2,902
New Rockford 2,193—Eddy Donahue Hospital	Gen	Indiv	10	3	30	4	180

Key to symbols and abbreviations is on page 1091

WISCONSIN—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Shawano 4182—Shawano	Gen	CyCo	35	8	52	28	673
Shawano Municipal Hospital							
Sheboygan 39,251—Sheboygan	Gen	Church	120	27	267	59	1 910
St. Nicholas Hospital	Gen	NPAasn	91	25	152	39	1 107
Sheboygan Memorial Hospital	Gen	Indiv	15	2	14	3	122
Shullsburg, 1 041—Lafayette	Gen	Indiv	13	5	45	4	130
Dr. Ennis Hospital	Gen	Church	50	11	120	40	927
South Milwaukee 10 706—Milwaukee	Gen	Indiv	13	5	45	4	130
South Milwaukee Hospital	Gen	Church	50	11	120	40	927
Sparta 4 949—Monroe	Gen	Church	50	11	120	40	927
St. Mary's Hospital	Gen	NPAasn	16	4	38	8	318
Stanley 1 988—Chippewa	Gen	NPAasn	16	4	38	8	318
Victory Hospital	Gen	NPAasn	16	4	38	8	318
Statesan 60—Waukesha	TB	State	240			217	147
Wisconsin State Sanatorium+	TB	State	240			217	147
Stevens Point 13 623—Portage	TB	NPAasn	52			44	58
River Plains Sanatorium	Gen	Church	80	15	98	49	1 705
St. Michael's Hospital	Gen	Church	80	15	98	49	1 705
Stoughton 4,497—Dane	Gen	Corp	20	8	95	11	563
Stoughton Community Hosp	Gen	Corp	20	8	95	11	563
Sturgeon Bay 4,083—Door	Gen	Indiv	20	5	34	10	609
Fegland Hospital	Gen	Indiv	15	4	No data supplied		
Leasum Hospital	Gen	Indiv	15	4	No data supplied		
Superior 36 113—Douglas	Gen	Church	12	8	61	6	173
Good Samaritan Hospital	Gen	Church	50	10	60	24	467
St. Francis Hospital	Gen	Church	110	15	210	62	1 062
St. Mary's Hospital	Gen	Church	110	15	210	62	1 062
Tomah 3 341—Monroe	Gen	I A	42	5	17	15	316
Tomah Indian Hospital	Gen	Church	42	5	17	12	352
Tomahawk 2 919—Lincoln	Gen	Church	42	5	17	12	352
Sacred Heart Hospital	Gen	Church	42	5	17	12	352
Two Rivers 10 083—Manitowoc	Gen	City	37	10	76	20	796
Two Rivers Municipal Hospital	Gen	City	37	10	76	20	796
Viroqua 2 782—Vernon	Gen	Indiv	10	6	23	4	264
Viroqua Hospital	Gen	Indiv	10	6	23	4	264
Washburn 2 238—Bayfield	Gen	NPAasn	14	5	13	4	109
Washburn Hospital	Gen	NPAasn	14	5	13	4	109
Watertown, 10 613—Jefferson	Gen	Church	50	9	173	33	1 276
St. Mary's Hospital	Gen	Church	50	9	173	33	1 276
Waukesha 17 716—Waukesha	IntMed	Corp	75			22	439
The Spa	Gen	City	72	18	24	33	1 070
Waukesha Municipal Hospital	Gen	City	72	18	24	33	1 070
Waukesha Springs Sanit	N & M	Corp	40				
Waupun 5 768—Fond du Lac	Ment	State	204			368	75
Central State Hosp for Insane	Ment	State	204			368	75
Wausau 2 758—Marathon	TB	County	66			61	75
Mount View Sanatorium	Gen	Church	130	18	226	62	2 717
St. Mary's Hospital	Gen	NPAasn	95	15	159	40	1 621
Wausau Memorial Hospital	Gen	NPAasn	95	15	159	40	1 621
Wauwatosa 21 194—Milwaukee	Ment	County	1 420			1 482	1 625
Milwaukee Asylum for Chronic Insane	Ment	County	1 420			1 482	1 625
Milwaukee County General Hos	Gen	County	1 050	75	1,860	683	15,267
Milwaukee Hospital for Mental Diseases+	Ment	County	980			918	470
Milwaukee Sanitarium+	N & M	Corp	130			114	219
Milwaukee Sanatorium	TB	County	458			436	617
West Bend 4 760—Washington	Gen	Church	25	7	23	11	398
St. Joseph's Hospital	Gen	Church	25	7	23	11	398
West De Pere 4 300—Brown	TB	County	90			82	153
Hickory Grove Sanatorium	TB	County	90			82	153
Whitehall 915—Trempealeau	Gen	NPAasn	40	4	43	14	508
Whitehall Community Hosp	Gen	NPAasn	40	4	43	14	508
Whitelaw 269—Manitowoc	TB	County	50			43	33
Maple Crest Sanatorium	TB	County	50			43	33
Winnebago 1 120—Winnebago	Ment	State	838			822	711
Northern Hosp for the Insane	TB	County	93			85	125
Sunny View Sanatorium	TB	County	93			85	125
Wisconsin Rapids 8 725—Wood	Gen	NPAasn	30	10	87	23	968
Riverview Hospital	Gen	NPAasn	30	10	87	23	968

Related Institutions

Appleton 25 267—Outagamie	Ment	County	190			183	30
Outagamie County Asylum for Chronic Insane	Ment	County	190			183	30
Barron 1,869—Barron	Gen	Indiv	16	8	15	5	160
Barron City Hospital	Gen	Indiv	16	8	15	5	160
Chippewa Falls 9 589—Chippewa	Ment	County	271			269	46
Chippewa County Chronic In	Ment	County	271			269	46
ane Asylum	Ment	County	271			269	46
Northern Wisconsin Colony and Training School	MeDe	State	1 499			1 444	197
Dodgeville 1 037—Iowa	Ment	County	145			143	8
Iowa County Insane Asylum	Ment	County	145			143	8
Douman 256—Waukesha	Inst	Frat	20			18	18
Wisconsin Masonic Home and O. E. S. Hospital	Inst	Frat	20			18	18
Eau Claire 28 287—Eau Claire	Ment	County	280			198	22
Eau Claire County Insane Asylum	Ment	County	280			198	22
Elkhorn 2,340—Walworth	Ment	County	160			151	15
Walworth County Hospital	Ment	County	160			151	15
Ellsworth, 1 124—Pierce	Gen	Indiv	8	4	No data supplied		
Ellsworth Hospital	Gen	Indiv	8	4	No data supplied		
Fond du Lac 28 449—Fond du Lac	Ment	County	263			265	28
Fond du Lac County Insane Asylum	Ment	County	263			265	28
Green Bay 37 415—Brown	Ment	County	179			No data supplied	
Brown County Insane Asylum	Ment	County	179			No data supplied	
Wisconsin State Reformatory Hospital	Inst	State	21			8	244
Itasca 815—Douglas	Ment	County	240			239	81
Douglas County Asylum Home and Sanatorium	Ment	County	240			239	81

WISCONSIN—Continued

Related Institutions	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Janesville 21 625—Rock	Gen	City	7				3
Detention Hospital	Gen	City	7				3
Rock County Hospital	Gen	County	120	6	4	110	20
Jefferson 2,639—Jefferson	Ment	County	190			137	25
Jefferson County Asylum for Chronic Insane	Ment	County	190			137	25
Juneau 1 154—Dodge	Ment	County	280			265	73
Dodge County Insane Asylum and Poor House	Ment	County	280			265	73
Kewaunee 2,409—Kewaunee	Gen	Part	10	2	6	1	69
Dana and Dockery Hospital	Gen	Part	10	2	6	1	69
Lnke Geneva 3 073—Walworth	Conv	Corp	10			6	65
Crane Farms Sanatorium	Conv	Corp	10			6	65
Lake Tomahawk 60—Oneida	TB	State	42			40	49
Lake Tomahawk State Camp	TB	State	42			40	49
Lancaster 2 432—Grant	Ment	County	275			265	965
Grant County Asylum	Ment	County	275			265	965
Madison 57 859—Dane	Gen	City	54	4		11	108
Fast Washington Hospital	Gen	City	54	4		11	108
Manitowoc 22,063—Manitowoc	Ment	County	200				
Manitowoc County Insane Asylum	Ment	County	200				
Marshfield, 8 718—Wood	Ment	County	215			224	8
Wood County Asylum for Chronic Insane	Ment	County	215			224	8
Menomonie, 5 695—Punn	Ment	County	152				
Dunn County Asylum	Ment	County	152				
Millwaukee, 5 8 249—Milwaukee	Inc	Church	32			72	8
Layton Home	Inc	Church	32			72	8
Marquette University Eye Ear Nose and Throat Hospital	ENT	Corp	45			10	567
Mondovi 1 623—Buffalo	Gen	Indiv	6	2	No data supplied		
Mondovi Hospital	Gen	Indiv	6	2	No data supplied		
Monroe 5 015—Green	Ment	County	200			181	10
Green County Asylum	Ment	County	200			181	10
New Richmond 2 112—St. Croix	Ment	County	160				18
St. Croix County Asylum for Chronic Insane	Ment	County	160				18
Nagans 2 633—Marinette	Gen	NPAasn	10	4	No data supplied		
Nagans Hospital	Gen	NPAasn	10	4	No data supplied		
Oscola, 607—Polk	Gen	Indiv	8	2	10	4	103
Ladd Memorial Hospital	Gen	Indiv	8	2	10	4	103
Oshkosh 40 108—Winnebago	N & M	Church	70			50	74
Alexian Brothers Hospital	N & M	Church	70			50	74
Owen, 1,102—Clark	Ment	County	312			306	18
Clark County Asylum	Ment	County	312			306	18
Peshigo 1 018—Marinette	Ment	County	215			210	16
Marinette County Insane Asylum	Ment	County	215			210	16
Racine 67 542—Racine	Gen	City	48	3		33	338
Lincoln Memorial Hospital for Communicable Diseases	Gen	City	48	3		33	338
Racine County Asylum	Ment	County	280			253	77
Reedsburg 2,967—Sauk	Ment	County	191			184	10
Sauk County Asylum	Ment	County	191			184	10
Richland Center 2 632—Richland	Ment	County	140			134	17
Richland County Asylum for Chronic Insane	Ment	County	140			134	17
Shawano 4183—Shawano	Ment	County	188			182	12
Shawano County Insane Asylum	Ment	County	188			182	12
Sheboygan 39,251—Sheboygan	Ment	County	206			204	31
Sheboygan County Asylum for Chronic Insane	Ment	County	206			204	31
Sparta 4 949—Monroe	Ment	County	141			117	52
Monroe County Insane Asylum	Ment	County	141			117	52
Taycheedah 1 405—Fond du Lac	Inst	State	5	17	11	3	84
Wisconsin Industrial Home for Women	Inst	State	5	17	11	3	84
Union Grove 755—Racine	MeDe	State	740			727	83
Southern Wisconsin Colony and Training School	MeDe	State	740			727	83
Verona 45—Dane	Ment	County	234			274	22
Dane County Asylum for Chronic Insane	Ment	County	234			274	22
Viroqua 2 782—Vernon	Ment	County	123			124	7
Vernon County Asylum	Ment	County	123			124	7
Watertown 10 613—Jefferson	MeDe	Church	305			360	45
Bethesda Lutheran Home for Feeble-minded and Epileptics	MeDe	Church	305			360	45
Waukesha 17 178—Waukesha	Ment	County	215			218	61
Waukesha County Asylum for Chronic Insane	Ment	County	215			218	61
Wisconsin Industrial School for Boys	Inst	State	18			3	200
Waupaca 3,131—Waupaca	Gen	Part	12			New	
Waupaca Hospital and Clinic	Gen	Part	12			New	
Waupun 5 768—Fond du Lac	Gen	Part	8	4	20	4	133
Drs. Clark and Swartz Hosp	Gen	Part	8	4	20	4	133
Wisconsin State Prison Hosp	Inst	State	20			15	261
Wausau 23 758—Marathon	Ment	County	177			200	23
Marathon County Asylum for Chronic Insane	Ment	County	177			200	23
Marathon County Home and Hospital	Inst	County	50			45	151
Wauwatosa 21,194—Milwaukee	(Included in Mairdale Sanatorium)						
Blue Mound Preventorium	Inst	County	60			52	1 184
Milwaukee County Home for Children	Inc	Church	65			37	92
St. Camillus Hospital	Inc	Church	65			37	92
Salvation Army Martha Wash	Mat	Church	9	35	103		129
ington Women's Home and Hospital	Mat	Church	9	35	103		129
West Bend 4 760—Washington	Ment	County	150			148	8
Washington County Asylum for Chronic Insane	Ment	County	150			148	8

REGISTERED HOSPITALS

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NUMBER 13

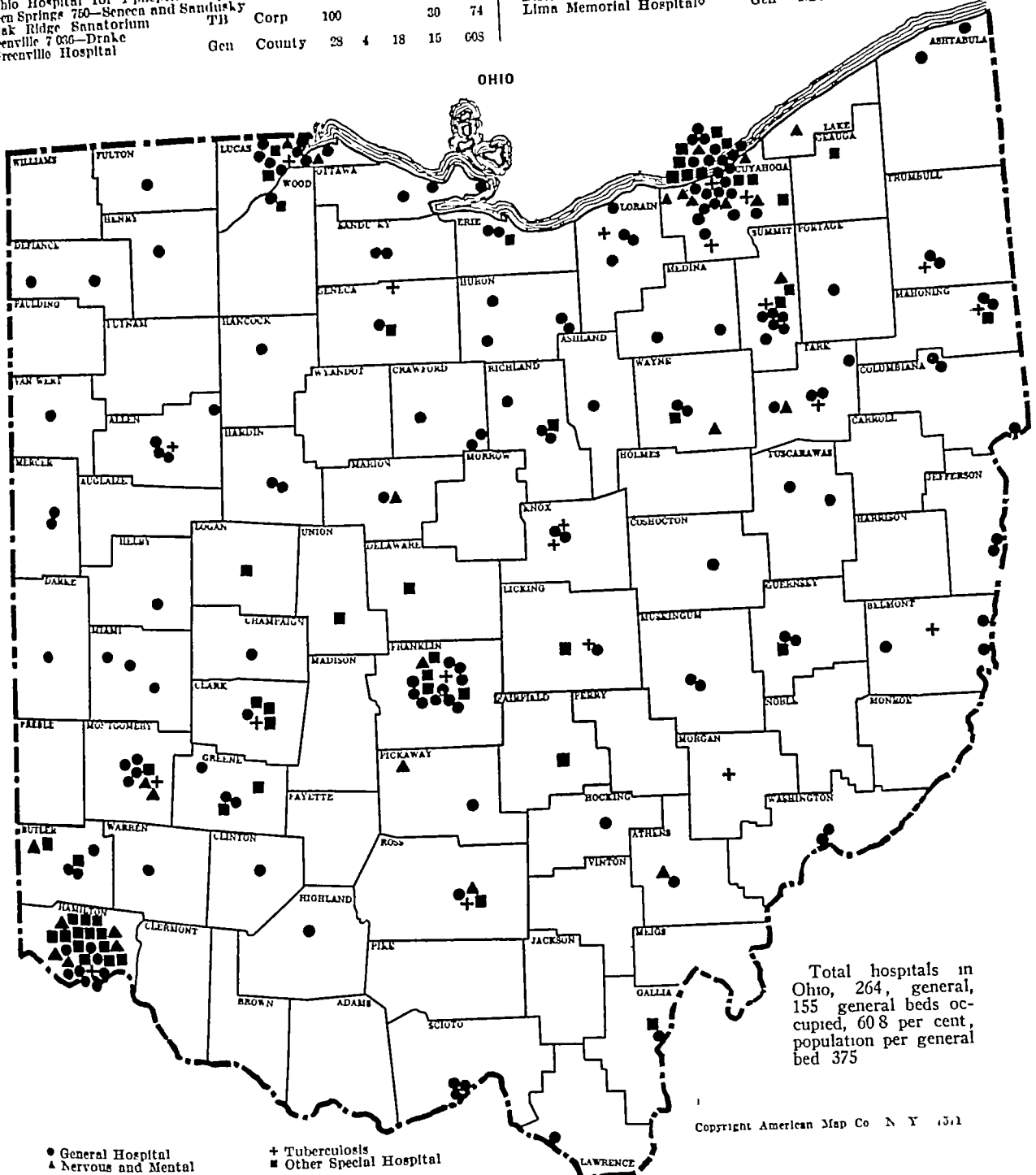
OHIO—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Gallipolis 7 100—Gallia	Gen	Part	51	4	33	30	1 174
Holzer Hospital	Epil	State	1 017			2 009	202
Ohio Hospital for Epileptics	Epil						
Green Springs 760—Seneca and Sandusky	Gen	Corp	100			30	74
Oak Ridge Sanatorium	TB						
Greenville 7 036—Drake	Gen	County	28	4	18	15	603
Greenville Hospital							

OHIO—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Lakewood 70 509—Cuyahoga	Gen	City	50	10	234	51	3,355
Lakewood City Hospital							
Lima 42 487—Allen	TB	County	120			107	103
District Tuberculosis Hospital							
Lima Memorial Hospital	Gen	NPA's'n	122	15	323	65	2,531

OHIO



Total hospitals in Ohio, 264, general, 155 general beds occupied, 60.8 per cent, population per general bed 375

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● General Hospital
▲ Nervous and Mental
+ Tuberculosis
■ Other Special Hospital

Hamilton 50 170—Butler
Fort Hamilton Hospital
Mercy Hospital*
Hillsboro 4 040—Highland
Hillsboro Hospital
Ironton 16 621—Lawrence
Charles S. Gray Deaconess Hospital
Kenton 7 060—Hardin
McKittick Hospital
San Antonio Hospital

Gen	NPA's'n	85	24	200	47	1 581
Gen	Church	190	25	438	81	2 025
Gen	NPA's'n	13	4	23	5	260
Gen	Church	32	5	57	10	610
Gen	NPA's'n	21	5	29	14	335
Gen	Church	21	4	39	17	308

Lima State Hospital
St. Rita's Hospital
Lodi 1,273—Medina
Lodi Hospital
Logan 6 080—Hocking
Cherrington Hospital
Lorain 44 512—Lorain
St. Joseph's Hospital
Mansfield, 33,525—Richland
Mansfield General Hospital
Thomas Hospital

Ment	State	1 133			10 S	129
Gen	Church	100	16	184	55	1,840
Gen	Corp	17	4	97	10	357
Gen	Part	30	4	17	12	306
Gen	Church	100	20	238	41	1 766
Gen	NPA's'n	92	10	262	67	2 166
Gen	Indiv	15	4	34	6	236

Key to symbols and abbreviations is on page 1091

ALASKA—Continued

Hospitals Sanatoriums and Related Institutions	Type of Service	Control	Beds Rated	Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Haines 344								
Station Hospital	Gen	Army	12	2	11	4	100	
Juneau 4,043								
St. Ann's Hospital	Gen	Church	7	8	50	17	624	
U. S. Hospital for Natives	G&TB	I A	50	0	70	44	537	
Kanakanak 177								
Kanakanak Native Hospital	Gen	I A	18	2	21	10	108	
Kennecott 217								
Kennecott Copper Corporation Hospital	Indus	Corp	12	4				
Ketchikan, 3,796								
Ketchikan General Hospital	Gen	Church	4	8	2	8	654	
Kotzebue 291								
Government Hosp for Natives	Gen	I A	16	3	16	11	169	
Mountain Village 88								
U. S. Hospital for Natives	Gen	I A	18	2	1	11	128	
Noine 1213								
Maynard Columbus Hospital	Gen	Church	20	5	10	5	170	
Petersburg 1252								
Petersburg General Hospital	Gen	City	10	2	10	3	122	
Point Barrow 82								
Presbyterian Hospital of Point Barrow	Gen	Church	12	4				
Seward 835								
Seward General Hospital	Gen	Church	22	7	1	13	315	
Sitka 1056								
Pioneers Home Hospital	Inst	Ter	2			20	89	
Tanana 145								
Tanana Hospital	Gen	I A	20	1	16	22	161	
Wrangell 948								
Bishop Rowe General Hospital	Gen	Church	1	3	10	5	116	

CANAL ZONE

Ancon 1140								
Gorgas Hospital*	Gen	Fed	8.6	24	443	370	0.95	
Balboa 2902								
Palo Seco Leper Colony	Lepro	Fed	110			100	6	
Station Hospital	(Gen)	Army	5			1	7.00	
Corozal 1790								
Corozal Hospital	Ment	Fed	22.5			171	110	
Station Hospital	(Gen)	Army	34			30	1.01	
Cristobal 599								
Colon Hospital	Gen	Fed	120	1	368	70	4.00	
Ft. Randolph (Coco Solo P. O.) 724								
Station Hospital	Gen	Army	12			8	901	
Ft. Sherman 786								
Station Hospital	Gen	Army	4			28	874	
France Field 764								
Station Hospital	Gen	Army	14			1	560	
Gatun 2314								
Station Hospital	Gen	Army	60					

GUAM

Agaña								
Susana Hospital for Natives of Guam	(Included in U. S. Naval Hospital)							
U. S. Naval Hospital	Gen	Navy	90		139	99	2.27	

HAWAII

Aiea 3021—Honolulu								
Honolulu Plantation Hospital	Gen	NPAsn	30	4	16	10	509	
Eleele 312—Kauai								
McBryde Sugar Company Hospital	Gen	Corp	35	3	54	27	1,028	
Hakala 625—Hawaii								
Hakala Hospital	Gen	Corp	2	2	9	7	360	
Hilo 19468—Hawaii								
Hilo Memorial Hospital	Gen	County	12.5	18	11.5	9	1,007	
Puamale Home for Tuberculous								
Josias	TB	Ter	100					
Honokaa 1069—Hawaii								
Honokaa Sugar Company and Pacific Sugar Mill Plantation Hospital	Indus	NPAsn	2					
Honolulu 187582—Honolulu								
Japanese Hospital	Gen	NPAsn	120					
Kalihi Receiving Station	Lepro	Ter	200					
Kapiolani Maternity and Gynecological Hospital	GynMat	NPAsn	50	30	687	3	1,363	
Kaulaolani Children's Hosp	Chil	NPAsn	60			34	1,665	
Leahi Home	TB	NPAsn	440			404	313	
Queen's Hospital	Gen	Corp	264	16	532	134	5,874	
St. Francis Hospital	Gen	Church	63	6	80	2	1,130	
Shriners Hospital for Crippled Children	Orth	Frat	23			27	79	
Tripler General Hospital	Gen	Army	300	12	92	140	2,882	
Hooehua—Maul								
Robert W. Shingle Jr. Memorial Hospital	Gen	Church	12	4	33	5	100	
Kahuku 1503—Honolulu								
Kahuku Plantation Company's Hospital	Gen	NPAsn	2	5	77	15	567	
Kalaupapa—Kalaupapa								
Kalaupapa Hospital	Lepro	Ter	50	6	13	36	168	
Kaneohe (Healea P. O.) 112—Honolulu								
Territorial Hospital	Ment	Ter	748			730	263	
Kealahou 356—Hawaii								
Kona County Hospital	Gen	County	2	3				
Kealia 100—Kauai								
Kealia Hospital	Gen	Corp	26	3	33	13	364	
Samuel Mahelona Memorial Hospital	TB	County	100			81	41	
Kilauea 1732—Kauai								
Kilauea Sugar Plantation Hosp	Gen	Corp	20	3				

HAWAII—Continued

Hospitals Sanatoriums and Related Institutions	Type of Service	Control	Beds Rated	Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Kohala 720—Hawaii								
Kohala Hospital	Gen	County	37	3	82	18	905	
Koloa 1,844—Kauai								
Koloa Sugar Company's Hosp	Gen	Corp	20	3	20	11	385	
Kula (Waiakoa P. O.) 22—Maul								
Maul County Farm and Sanit	G&TB	County	243	3	2	215	706	
Lahaina 2730—Maul								
Pioneer Mill Company's Hosp	Gen	Corp	57	0	100	4	1,768	
Lanai City—Maul								
Lanai Hospital	Gen	Corp	20	4	48	11	490	
Lihue 2,309—Kauai								
Lihue Hospital	Gen	NPAsn	4	6				
Malakani 974—Kauai								
Hawailan Sugar Co. Hospital	Gen	NPAsn	40	6	23	23	618	
Olaa 597—Hawaii								
Olaa Hospital	Gen	Corp	30	4	9	23	365	
Ookala 576—Hawaii								
Hospital of Kalawiki Sugar Co	Indus	Corp	8			7	84	
Panauhau 536—Hawaii								
Panauhau Plantation Co. Hosp	Gen	Corp	15	2	10	0	28	
Panauhau 1233—Hawaii								
Panauhau Hospital	Gen	Corp	13	2	0	8	302	
Pahala 200—Hawaii								
Hawaiian Agricultural Company Hospital	Gen	Corp	10	6	79	7	712	
Pala 4171—Maul								
Maul Agricultural Company's Hospital	Gen	NPAsn	103	10				
Pearl City 1071—Honolulu								
Waimano Home for Feeble minded Persons	McDe	Ter	221			221	3	
Pearl Harbor 200—Honolulu								
U. S. Naval Hospital	Gen	Navy	178			129	1,806	
Pepeekeo 520—Hawaii								
Pepeekeo Central Hospital	Gen	Corp	3	0	107	13	815	
Pukoo 50—Maul								
Calapoo Hospital	Gen	County	20	2				
Puunene 4080—Maul								
Puunene Hospital	Gen	Corp	100	12	300	69	3,637	
Schofield Barracks (Honolulu P. O.) 4250—Honolulu								
Station Hospital	Gen	Army	3.0	12	78	200	5,778	
Wailua 4511—Honolulu								
Wailua Agricultural Co. Hosp	Gen	NPAsn	33	4	47	14	803	
Wailuku 6938—Maul								
Malunani Hospital	Gen	County	90	11	118	64	913	
Waimanalo 1008—Honolulu								
Waimanalo Hospital	Gen	NPAsn	16					
Waiolihi 100—Hawaii								
Kauhane Memorial Hospital	Gen	County	20	2				
Waipahu 5,874—Honolulu								
Oahu Sugar Co. Hosp	Gen	NPAsn	50	8	173	42	1,180	

PHILIPPINE ISLANDS

Bacolod 19,350—Occidental Negros								
Occidental Negros Prov. Hosp	Gen	Gov't	77	4		50	1,567	
Provincial Maternity and Children's Hospital	MatCh	Gov't	60	18				
Baguio 5464—Benguet								
Baguio Hospital	Gen	Gov't	67					
Station Hospital	Gen	Army	50	2	66	3	132	
Barili 33,481—Cebu								
Hospicio de San Jose	Inc	Gov't	2					
Batangas 41182—Batangas								
Batangas Provincial Hospital	Gen	Gov't	30	5				
Bayombong 5685—Nueva Vizcaya								
Bayombong Hospital	Gen	Gov't	20					
Binalbagan 8982—Occidental Negros								
Binalbagan Estate Hospital	Gen	Corp	15		10	3	96	
Bontoc 609—Mountain								
Bontoc Hospital	Gen	Gov't	3	5				
Butuan 9790—Agusan								
Butuan Public Hospital	Gen	Gov't	24		11	24	917	
Cabanatuan, 15,282—Nueva Ecija								
Nueva Ecija Provincial Hosp	Gen	Gov't	50	6	31	40	1,325	
Cagayan 28164—Misamis Oriental								
Cagayan Mission Hospital	Gen	Church	40	6	15	8	402	
Misamis Oriental Prov. Hosp	Gen	Gov't	23	2	28	21	760	
Calamba 18,062—Laguna								
Calamba Sugar Estate Hosp	Gen	Corp	24	1	89	20	633	
Capiz 13985—Capiz								
Capiz Provincial Hospital	Gen	Gov't	30	5	11	24	813	
Capiz, 21,990—Capiz								
Emmanuel Hospital	Gen	Church	70	4	31	41	1,433	
Cavite 22,163—Cavite								
Station Hospital	Gen	Army	150	8	107	60	1,991	
U. S. Naval Hospital	Gen	Navy	183			180	1,429	
Cebu 65,500—Cebu								
Cebu Maternity House	Mat	NPAsn	30	27	666	14	732	
Chong Hoa Chinese Hospital	Gen	NPAsn	20			3	144	
Southern Islands Hospital	Gen	Gov't	110	6	105	94	3,901	
Cotabato 410—Cotabato								
Cotabato Public Hospital	Gen	Gov't	52					
Cullion—Palawan								
Cullion Leper Colony Hosp	Gen	Lepro	539	16	158	620	3,071	
Cuyo 14,766—Palawan								
Cuyo Hospital	Gen	Gov't	20		3	7	674	
Dagupan 22,612—Pangasinan								
Pangasinan Provincial Hosp	Gen	Gov't	50					
Dansalan 5,883—Lanao								
Lanao Public Hospital	Gen	Gov't	50					
Dapitan 12,865—Zamboanga								
Rizal Memorial Hospital	Gen	Gov't	50					
Davao 13,046—Davao								
Davao Mission Hospital	Gen	Church	40	1	32	10	1,159	
Davao Public Hospital	Gen	Gov't	60	5	34	33	1,308	

OHIO—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Marysville 7,659—Union Ohio Reformatory for Women	Inst	State	73	5	No data supplied		
Mt Vernon 9,370—Knox Union Sanatorium	TB	Indiv	19		17	33	
Munroe Falls 30—Summit Summit County Hospital	Inst	County	100		60	180	
Napoleon 451—Henry S M Heller Memorial Hosp	Gen	City	16	2	No data supplied		
New London 1,527—Huron New London Hospital	Gen	NP Assn	0	3	2	3	00
Orient 28—Pickaway Institution for Feeble-minded	McDe	State	2,600		14	101	
Oxford 2,888—Butler Miami University Student Hosp	Inst	State	24		0	034	
Springfield 6,747—Clark Ohio Rebeah Hospital	Inst	Frat	70		48	316	
Rickly Memorial Hospital	Inst	Frat	241		233	343	
Springfield Eye Ear Nose and Throat Hospital	Inst	Indiv	6	2		70	
State Soldiers Home—Frie Ohio Soldiers and Sailors Home Hospital	Inst	State	100		117	571	
Tiffin 16,428—Seneca Kentucky Memorial Hospital	Inst	Frat	40		23	80	
Toledo 20,718—Lucas Lucas County Hospital Annex	Chr	County	110		110	140	
Municipal Hospital for Contagious Diseases	Iso	City	40	3	11	243	
Warrenville 1,300—Cuyahoga Cleveland City Infirmary	Ment	City	160		160	47	
West Dover 300—Cuyahoga Cedarcrest Sanatorium	N&M	Corp	5		60	51	
Wilberforce 224—Greene Tawawa Hospital of Wilberforce University (col)	Inst	State	11		1	80	
Wobster 10,42—Wayne Hygeia Hall	Inst	NP Assn	2		3	264	
Xenia 10,507—Greene Expy Hospital	Gen	Indiv	8	2			
Ohio Soldiers and Sailors Orphan Home Hospital	Inst	State	63		37	1,400	
Youngstown 1,000—Mahoning Youngstown Municipal Hosp	Iso	City	60		5	180	
Summary for Ohio							
Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted			
Related institutions	14	47,644	34,432	208,630			
	7	8,640	7,130	18,990			
Totals	264	61,011	41,631	317,620			
Refused registration	27	610					

OKLAHOMA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Ada, 11,501—Pontotoc Ada Hospital	Gen	Indiv	20	5	57	10	701
Dreco's Memorial Hospital	Gen	NP Assn	20	2	42	8	402
Altus 8,430—Jackson City Hospital	Gen	City	20	1	0	6	320
Alva 5,121—Woods Alva General Hospital	Gen	City	20	4	60	12	602
Anadarko 5,636—Caddo Anadarko Hospital	Gen	Indiv	20	3	34	10	482
Ardmore 16,741—Carter Hardy Sanitarium	Gen	Indiv	41	4	43	14	503
Von Keller Hospital and Clinic	Gen	NP Assn	30	2	No data supplied		
Bartlesville 14,703—Washington Washington County Memorial Hospital	Gen	County	50	10	130	18	878
Beaver 1,023—Beaver Beaver Hospital	Gen	Part	20	3	03	7	243
Blackwell 9,521—Kay Blackwell Hospital	Gen	Corp	20	4	No data supplied		
Leslie Sanatorium	Gen	Indiv	22	3	68	9	460
Butler 473—Custer Sunnyside Hospital	Gen	Indiv	12	2	7	4	108
Cherokee 2,236—Alfalfa Masonic Hospital	Gen	Frat	50	4	10	8	308
Chickasha 14,099—Grady Chickasha Hospital	Gen	Part	04	6	34	20	038
Cottage Hospital	Gen	Indiv	20	5	20	10	420
General Hospital	Gen	NP Assn	20	2	20	3	412
Claremore 3,720—Rogers Claremore Indian Hospital	Gen	I A	38	8	106	38	540
Clinton 7,512—Custer Clinton Hospital	Gen	Indiv	60	0	20	20	1,400
Clinton Indian Hospital	Gen	I A	20	2	12	7	230
Western Oklahoma Tubercu- Joslin Sanatorium	TB	State	228			222	404
Concho 290—Canadian Cheyenne and Arapaho Hosp	Gen	I A	42	12	30	20	688
Cordell 2,636—Washita Florence Hospital	Gen	Indiv	30	2	10	4	216
Cushing 9,801—Payne Masonic Hospital	Gen	Frat	20	4	20	18	487
Duncan 8,363—Stephens Weeden Hospital	Gen	Indiv	35	4	24	26	808
Durant 7,403—Bryan Coker Hospital	Gen	Indiv	7	1	0	3	113
Durant Hospital	Gen	Corp	20	2	12		609

OKLAHOMA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Elk City 5,666—Beckham Standifer Hospital	Gen	Indiv	20	2	15	10	440
El Reno 9,334—Canadian Catto Hospital	Gen	Indiv	50	8	33	14	646
El Reno 21,000—Garfield El Reno Sanitarium	Gen	Corp	27	4	12	7	244
Enid 21,000—Garfield Baptist Hospital	Gen	Church	50	12	07	17	871
Enid General Hospital	Gen	NP Assn	70	10	98	47	1,341
Enid Springs Sanit and Hosp	Gen	Indiv	40	4	57	12	714
Frick 2,711—Beckham Frick Hospital	Gen	NP Assn	20	4	20	4	100
Fort Hall 3,470—Comanche Station Hospital	Gen	Army	233			150	4,333
Frederick 4,668—Fillman Frederick Clinic Hospital	Gen	Part	12	2	52	5	1,820
Spurlocke, Arlington and Allen Hospital and Clinic	Gen	Corp	10	2	26	3	172
Grandfield 1,416—Fillman Grandfield Hospital	Gen	Indiv	10	3	30	5	300
Guthrie 9,582—Logan Cimarron Valley Wesley Hosp	Gen	NP Assn	37	7	60	14	005
Duke Sanitarium	N&M	Corp	30		8	04	
Henryetta 7,604—Okmulgee Henryetta Hospital	Gen	Indiv	15	2	18	8	286
Keystone Hospital	Gen	Indiv	14	2	11	3	166
Hobart 4,082—Nowa General Hospital	Gen	Part	22	4	70	10	405
Holdenville 7,908—Hughes Holdenville General Hospital	Gen	Indiv	20	8	10	6	300
Holls 2,014—Harmon Holls Hospital	Gen	Indiv	15	4	20	9	527
Honday 3,400—Osage Honday City Hospital	Gen	Part	16		30	4	223
Jawton 12,121—Comanche Nowa Indian Hospital	Gen	I A	101	12	140	86	2,411
Southwestern Hospital	Gen	Part	30	4	16	7	633
Mangum 4,600—Greer Border McGregor Hospital and Clinic	Gen	Part	50	4	21	15	540
Marlow 3,684—Stephens Weeden Hospital	Gen	Indiv	20	4	4		114
Maud 4,320—Bemhole Maud Hospital	Gen	Indiv	18	3	10	4	165
McAlester 11,804—Pittsburg Albert Pike Hospital	Gen	Frat	50	0	53	14	734
St Mary's Infirmary	Gen	Church	20	3	23	10	464
Miami 8,064—Ottawa Miami Baptist Hospital	Gen	Church	40	10	29	9	603
Muskogee 32,020—Muskogee Muskogee Provident Hosp (col)	Gen	City	24	2	24	7	140
Oklahoma Baptist Hospital	Gen	Church	80	11	218	30	1,373
Veterans Admin Facility	Gen	Vet	447		289	3,204	
Norman 9,003—Cleveland Central Oklahoma State Hosp	Ment	State	2,000				1,311
Oklahoma City 180,330—Oklahoma Farm Sanatorium	TB	Indiv	60		14		82
Great Western Hosp (col)	Gen	Corp	21	2	4	12	161
Oklahoma City General Hospital	Gen	Corp	100	12	201	81	3,220
Polychrome Hospital	Gen	Indiv	73	4	101	40	1,342
Reconstruction Hospital and McBride Clinic	Orth	Part	25		9		266
St Anthony Hospital**	Gen	Church	200	40	802	177	4,880
Samuritan Hospital	Gen	Corp	60	7	80	23	867
State University Hospital and Crippled Children's Hosp**	Gen	State	600	22	466	420	6,936
Wesley Hospital*	Gen	Part	150	25	430	83	3,063
Okmulgee 17,007—Okmulgee Okmulgee City Colored Hosp	Gen	City	20	1	0	6	182
Okmulgee City Hospital	Gen	City	75	0	210	23	970
Pauls Valley 4,235—Garvin Lindsey Johnson Hospital	Gen	Part	12	1	23	1	110
Pawhuska 5,931—Osage Pawhuska Municipal Hospital	Gen	City	35	4	31	9	402
Pawnee 2,662—Pawnee Pawnee-Ponca Hospital	Gen	I A	47	12	00	35	1,000
Picher 7,773—Ottawa American Hospital	Gen	Indiv	40	3	8	7	130
Picher Hospital	Gen	Part	20	2	No data supplied		
Ponca City 10,130—Kay Grand Avenue General Hosp	Gen	Indiv	18	4	No data supplied		
Ponca City Hospital	Gen	Church	50	12	178	34	1,800
Prague 1,299—I Lincoln Rollins Hospital	Gen	Indiv	10		11	4	204
Seminole 11,460—Seminole Harbor Hospital	Gen	Corp	22	2	121	10	1,082
Shattuck 1,490—Ellis Shattuck Hospital	Gen	Indiv	50	6	250	15	600
Shawnee 23,283—Pottawatomie A C H Hospital	Gen	Part	20	5	100	10	030
Shawnee Indian Sanatorium	TB	I A	150			123	207
Shawnee Municipal Hospital	Gen	City	60	8	87	20	011
Sulphur 4,242—Murray Soldiers Tubercular Sanatorium	TB	State	109			94	000
Sulphur Sanitarium	Gen	Part	22		2	No data supplied	
Supply 230—Woodward Western Oklahoma Hospital	Ment	State	1,275			1,000	380
Tallhina 1,032—Le Flore Choctaw Chickasaw Sanat	TB	I A	75			64	58
Eastern Oklahoma State Tu-berculosis Sanatorium	TB	State	206			200	363
Thomas 1,200—Custer Thomas Hospital	Gen	Indiv	20	4			
Tonkawa 3,811—Kay Tonkawa Hospital	Gen	Indiv	20	4	18	10	120

Key to symbols and abbreviations is on page 1091

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MARCH 30, 1935

HOSPITAL DISTRIBUTION AND HOSPITAL SERVICE

In this issue of THE JOURNAL appear the usual list of hospitals registered by the American Medical Association and the data relative to bed capacity, the average number of patients and the patients admitted. At the same time there is made available a survey of the occupancy of various types of hospitals during the last year. The reports are based on a study of 6,334 hospitals with an average daily census of 830,098 patients. The figures indicate that one person in seventeen made use of a hospital during the year. The average length of stay per patient in general hospitals was fourteen days. The other data that are available indicate that hospitals have also improved in the provision of laboratory, x-ray and physical therapy services.

The number of hospitals now in the United States has decreased by 103 over the number reported one year ago. This loss is explained by the development of certain mergers, and the closing of hospital departments of certain custodial institutions. Especially significant in the statistics now made available are the data relative to the length of stay of patients in hospitals. The length of stay of patients in governmental and nonproprietary institutions is considerably beyond that in independent, proprietary and corporation hospitals.

While the figures show that the number of idle beds in 1934 reached a record total of some 218,000, the patient days in all hospitals were almost 303,000,000, a gain of more than 7,000,000 over the previous year.

Almost coincidental with the publication of these data by the hospital department of the American Medical Association there has appeared a consideration of the need for more hospitals in rural areas published under the auspices of the *Modern Hospital*.¹ The statement indicates that this study, made by Alden B. and Patsy Mills, involved spotting local and community hospitals in various parts of the country on maps and then analyzing the maps in relationship to statistics of

population and measurements of distance. The results of the study indicate the fallacies that invariably arise in this type of survey. The authors conclude that 1,300 of the 3,075 counties of the United States containing 18,000,000 persons have no hospitals within their borders. They come to the conclusion that there are a considerable number of rural areas now without hospitals which ought to have them. The authors recognize that certain counties are often too small a unit to contain a satisfactory hospital and that frequently some counties do not have hospitals because good ones exist in cities just over the border in a neighboring county. Nevertheless an analysis made by the hospital department of the American Medical Association indicates the generally fallacious character of their observations. As shown in the accompanying table, 2,003 rural hospitals in the United States during 1934 had 50.2 per cent of their beds occupied. Moreover, 2,031 urban hospitals had 62.4 per cent of their beds occupied. While an occasional area might at this time actually require a hospital and be able to support one, the percentage of unoccupancy would indicate the hazard as either a commercial, scientific or philanthropic venture of attempting to establish new hospitals in a period of economic stringency such as now exists.

General Hospitals in Rural Areas Compared with Those in Urban Districts*

	Rural Places under 10,000 population				Urban 10,000 and over		
	No. of Hospitals	Beds	Basis	Average Patients	Patients Admitted	Per Cent of Occupancy	Length of Stay
Rural	2,003	68,500	10,710	34,529	1,073,603	50.2	12 da
Urban	2,031	282,023	37,921	170,060	5,022,426	62.4	13 da

* Including all registered general hospitals except army, navy, marine and veterans.

Using the method developed by Mr. Mills and his associates for studying hospital distribution as applied to the state of Alabama, one finds a need in that state for 1,905 more hospital beds. In developing their data they included three Florida counties and two Mississippi counties in Alabama and assigned two Alabama counties to Mississippi. A restudy of the situation reveals, however, that those areas to which they allocate the 1,905 additional beds already have sixty general hospitals whose combined capacity is 3,842 beds, of which only 1,778 were occupied. This means an average of 2,064 idle beds in a territory assumed to require 1,905 additional beds. The detailed statistical data concerning this situation are available for those who are interested.

Above all, these comparative studies indicate the danger inherent in attempting to analyze local situations in states far removed on the basis of data found in card indexes in an office in Chicago. In another issue of the *Modern Hospital* appears a series of comments² by Michael M. Davis, Kendall Emerson, Samuel A.

1 Mills, A. B. and Mills, Patsy. The Need for More Hospitals in Rural Areas. *Modern Hospital* 44: 50 (March) 1935.

2 Davis, M. M. Proper Use of Government Funds for Hospital Care—A Symposium, *Modern Hospital* 43: 80 (July) 1934.

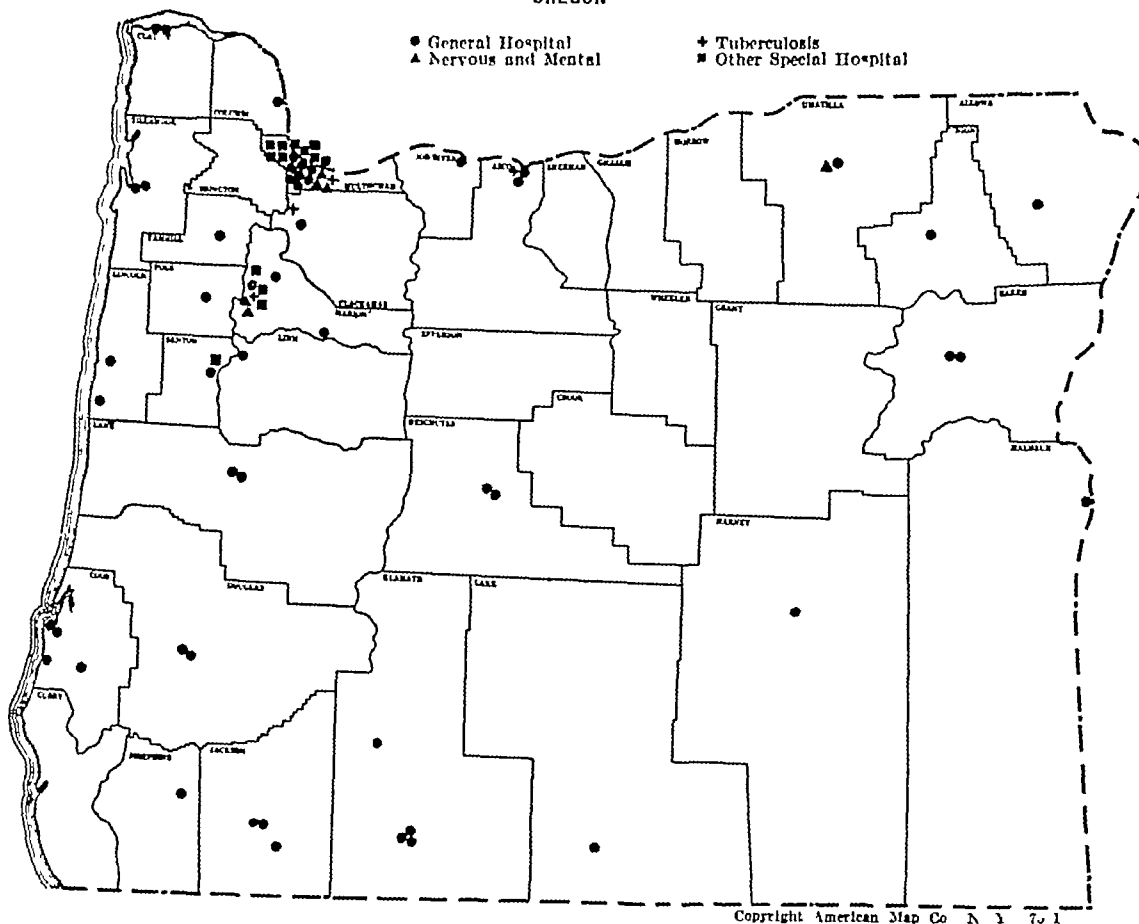
OREGON—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Enterprise 1,370—Willowa	Gen	Corp	15	3	7	5	121
Enterprise Hospital							
Eugene 18,001—Lane	Gen	Corp	58	8	51	36	1,233
Eugene Hospital and Clinic	Gen	NPAasn	78	18	No data supplied		
Pacific Hospital							
Grants Pass, 4,666—Josephine	Gen	County	30	0	75	15	160
Josephine General Hospital							
Hood River 2,757—Hood River	Gen	NPAasn	70	5	47	14	505
Hood River Hospital							
Klamath Agency, 163—Klamath	Gen	IA	23	2	7	8	24
Klamath Indian Hospital							
Klamath Falls 16,093—Klamath	Gen	Corp	50	12	80	21	148
Hillside Hospital	Gen	Indiv	40	14	120	21	1,010
Klamath Valley Hospital							
McMinnville 2,917—Yamhill	Gen	NPAasn	20	6	No data supplied		
McMinnville Hospital							
Medford 11,007—Jackson	Gen	NPAasn	28	6	00	18	860
Community Hospital	Gen	Church	68	8	80	30	1,060
Sacred Heart Hospital							

OREGON—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Portland Convalescent Hosp	Conv	Indiv	25			10	113
Portland Eye Ear Nose and Throat Hospital	ENT	Indiv	37			5	1,784
Portland Medical Hospital	Gen	Corp	64			19	522
Portland Sault and Hosp	Gen	Church	112	24	427	73	3,662
Dr Robert C Coffey Clinic and Hospital	Gen	Corp	110	5	18	83	1,010
St Vincent's Hospital	Gen	Church	300	36	515	291	8,515
Shriners Hospital for Crippled Children	Orth	Frat	50			52	209
Veterans Admin Facility	Gen	Vet	385			806	1,564
Waverleigh Sanatorium	N&M	Part	13			8	58
Roseburg 4,362—Douglas	Gen	Church	30	6	130	27	531
Mercy Hospital	Gen	Vet	101			83	1,074
Veterans Admin Facility							
St Helena 3,994—Columbia	Gen	Indiv	10	6	11	7	337
St Helena General Hospital							
Salem 20,205—Marion	Ment	State	2,300			2,162	715
Oregon State Hospital							

OREGON



Total hospitals in Oregon, 75, general, 51, general beds occupied, 591 per cent, population per general bed, 266

Milwaukie 1,767—Clackamas	TB	NPAasn	65			31	104
Portland Open Air Sanatorium							
Myrtle Point 1,362—Coos	Gen	Indiv	18	6	10	7	302
Mast and Wilson Hospital							
North Bend 4,012—Coos	Gen	NPAasn	67	10	110	29	1,040
Leizer Brothers Hospital	Gen	Church	50	4	55	22	423
Mercy Hospital							
Ontario, 1,941—Malheur	Gen	Church	25	6	50	18	634
Holy Rosary Hospital							
Oregon City 5,761—Clackamas	Gen	Corp	52	8	114	35	593
Oregon City Hospital							
Pendleton 6,621—Umatilla	Gen	Corp	52	8	114	35	593
Eastern Oregon State Hospital	Ment	State	1,350			1,240	320
St Anthony's Hospital	Gen	Church	80	12	102	4	994
Portland, 801,515—Multnomah							
Doernbecher Memorial Hospital for Children	Chil	State	70			47	2,332
Emanuel Hospital	Gen	Church	225	55	793	147	4,715
Good Samaritan Hospital	Gen	Church	330	20	360	148	4,439
Juvenile Hospital for Girls	Ven	NPAasn	60	10	38	52	120
Morningside Hospital	Ment	Corp	300			290	52
Mountain View Sanitarium	N&M	Indiv	20		No data supplied		
Multnomah Hospital	Gen	County	300	20	823	311	4,641

Oregon State Tuberculosis Hospital	TB	State	2,0			262	190
Salem General Hospital	Gen	NPAasn	65	9	155	23	1,102
Silverton 2,462—Marion	Gen	NPAasn	18	0	73	5	235
Silverton Hospital							
The Dalles, 5,883—Wasco							
Eastern Oregon State Tuberculosis Hospital	TB	State	179			136	103
Mid Columbia Hospital	Gen	Indiv	21	6	39	12	532
The Dalles Hospital	Gen	Corp	75	10	103	30	1,781
Tillamook 2,540—Tillamook	Gen	Indiv	30	5	39	10	322
Charlton Hospital							
Toledo 2,137—Lincoln	Gen	Corp	21	3	28	10	300
Lincoln Hospital							
Troutdale 227—Multnomah	TB	County	39				60
Multnomah County Tuberculosis Pavilion							
Related Institutions							
Bandon, 1,516—Coos	Gen	Indiv	10	2	6	2	60
Leop Memorial Hospital							
Bend 8,848—Deschutes	Indus	NPAasn	30			4	180
Lumbermen's Hospital							

Key to symbols and abbreviations is on page 1091

NAL, while information regarding the chemistry of the hormones is far more elaborate today than a few years ago, "only a beginning has really been made in our knowledge of this exceedingly complex and fascinating field." In view of the current intensive work on the constitution of the hormones, it is safe to predict that the story of the chemistry of many more of these powerful regulators of physiologic processes will soon be revealed.

THE STRUCTURE OF THE CELL

The usefulness of microscopic sections in investigative and clinical work has long clouded the fact that such pictures of cell structures are obtained only after subjecting the tissue to various physical and chemical procedures in order to make them visible. The technical methods of fixation and staining yield beautiful colors and a variety of lines and shades which are interpreted widely as evidence of what exists in the living cell, healthy or diseased, but this confidence in the reality of observations made by the usual technical methods has been gradually disappearing. The change in attitude has been aided by the results that have been achieved through direct studies of living tissue made possible by dark field illumination, tissue culture, microdissection, micrometabolism, vital staining and other methods.

The defects of the ordinary stained microscopic section have become apparent also with the realization that morphology cannot be divorced from function and that function depends to a great extent on the chemical changes that constantly go on within and between cells. Many recent studies, for example, have shown that the cancer cell has characteristic properties referable not so much to its shape or form as to its chemical behavior, particularly in relation to the chemical behavior of normal cells. Attempts have been made for decades to study the actual chemical structure of cells, but the problem has been beset with many difficulties. In making cellular details visible, profound alterations in their physical and chemical state occur. Within the last few years, however, the Altmann freezing-drying method has been elaborated at the Hull Laboratory of Anatomy of the University of Chicago and has been found to yield preparations of undenatured material on which a number of cytologic problems have been investigated. These observations have been recently published in a series of papers by Bensely and Gersh¹ and by Bensely and Hoerr.²

First the Chicago investigators attacked the problem of the chemical nature of mitochondria, those struc-

tures in the cytoplasm to which important functions have been attributed. The mitochondria contain 43.6 per cent of fatty substances but no lecithin or cephalin. They contain two different proteins. The so-called Nissl substance of the nerve cell is not uniformly distributed through the cytoplasm. Their variations as seen in disease may be due in part at least to artefacts produced by the fixation methods. Still other experiments have led to new conceptions of the structure of the cell nucleus, indicating among other things the possibility of a synthesis of nucleoprotein in the nuclear juice. Such fundamental considerations as the actual chemical basis of the organization of the cell form the topic of additional observations. They lead to the elucidation of the great biochemical riddle of the difference between protoplasm and solutions of protein.

These results have profound significance. In inflammation and repair, in bacterial and metabolic disease and in cancer the mystery of cellular activity holds the ultimate key to our understanding of disease. Life itself in the last analysis depends on cell structure and behavior. Many tools have been used to pry open the secret of the cell, but tools are only the eye-pieces of the scientific worker. Industrious and intelligent as he is, the practical inferences from his work depend on how closely his vision reaches to reality. Technical methods are nowhere more important than in the domain of the microscopic world. The boundaries of vision extended by the microscope now await only such methods as will not distort the living cell but actually bring to light its chemical behavior. The investigations that are being carried on by Bensely and his co-workers are precisely in this direction.

Current Comment

GENERAL SCIENTIFIC MEETINGS AT ATLANTIC CITY

The General Scientific Meetings arranged for the Cleveland session were so successful that they have been developed still further for the meeting to take place in Atlantic City from June 10 to 14. The complete program of the General Scientific Meetings appears under Association News in this issue of *THE JOURNAL* (page 1177). It will be noted that these meetings occupy three half-day periods on the first and second days of the annual session. They cover a wide variety of topics of current interest, including particularly changes in the blood, questions of diagnosis, and advances in endocrinology and therapeutics. These three special meetings, in which physicians from all over the United States and Canada will participate, constitute a concentrated postgraduate course for the general practitioner who wishes in a brief period to bring himself abreast of current knowledge in many fields.

¹ Bensely, R. R. and Gersh, I. *Studies on Cell Structure by the Freezing Drying Method*. I. Introduction. *Anat. Rec.* 57: 205 (Oct.) 1933. II. Nature of Mitochondria. *ibid.* 57: 217 (Oct.) 1933. III. The Distribution in Cells of the Basophilic Substances. *ibid.* 57: 369 (Nov.) 1933. Bensely, R. R. IV. The Structure of the Interkinetic and Resting Nuclei. *ibid.* 58: 1 (Dec.) 1933.

² Bensely, R. R. and Hoerr, N. L. V. The Chemical Basis of the Organization of the Cell. *Anat. Rec.* 60: 251 (Oct.) 1934. VI. The Preparation and Properties of Mitochondria. *ibid.* 60: 449 (Nov.) 1934.

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Johnstown 66 063—Cambria Conemaugh Valley Memorial Hospital*	Gen	NPAasn	260	30	472	183	1,120
Lee Homeopathic Hospital	Gen	NPAasn	60	10	12	145	10
Mendenhall Maternity Hospital	Mat	Indiv	80	14	200	62	1,628
Mercy Hospital	Gen	Church					
Kane 623—McKean							
Kane Summit Hospital	Gen	NPAasn	20	6	No data supplied		
Kingston 21 000—Luzerne							
Nesbitt Memorial Hospital	Gen	NPAasn	118	12	241	70	2,308
Kittanning 7 88—Armstrong							
Kittanning General Hospital	Gen	NPAasn	30	5	34	10	731
Lancaster 69,940—Lancaster							
Lancaster General Hospital*	Gen	NPAasn	247	70	672	100	4,916
Rossmore Sanatorium	TB	CyCo	57			53	100
St Joseph's Hospital	Gen	Church	180	20	240	82	2,120
Lafayette 10,644—Westmoreland							
Lafayette Hospital	Gen	NPAasn	60	10	232	34	1,540
Lebanon 2,561—Lebanon							
Good Samaritan Hospital	Gen	NPAasn	100	17	234	48	1,900
Lebanon Sanatorium	Gen	Corp	20	6	No data supplied		
Lewistown 3,728—Union							
U S Public Health Service Hospital	Gen	USPHS	100			4	1,089
West Branch Community Hosp	Gen	Church	20	2	30	0	320

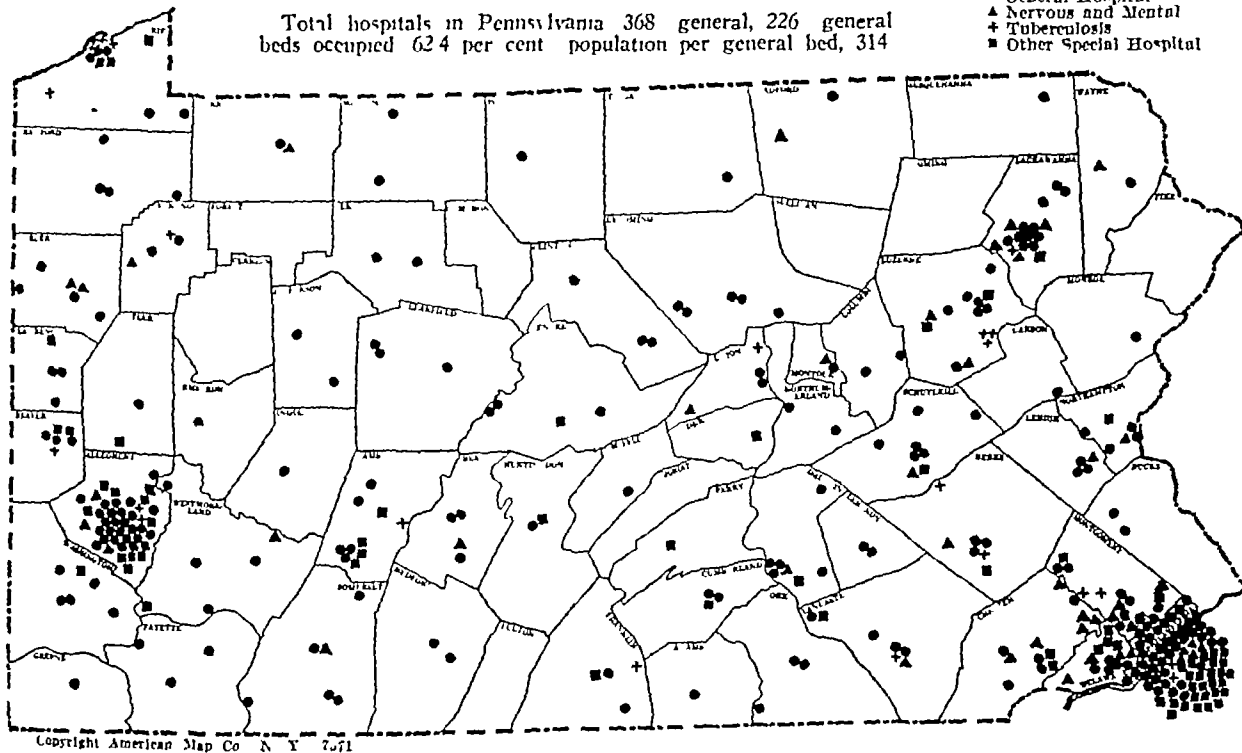
PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Moneysen 20 208—Westmoreland Gemmell Hospital	ENT	Indiv	12			2	2,13
Monongahela 8 070—Washington Memorial Hospital	Gen	NPAasn	60	6	62	20	604
Mt Pleasant 5,800—Westmoreland Henry Clay Friel Memorial Hospital	Gen	NPAasn	60	10	127	33	1,178
Muncy 2 413—Lycoming Muncy Valley Private Hospital	Gen	Corp	19	7	31	7	38
Nanticoke 20 043—Luzerne Nanticoke State Hospital	Gen	State	120	10	236	91	2,317
New Brighton 0 000—Beaver Beaver Valley General Hosp	Gen	NPAasn	70	10	102	32	1,053
New Castle 48 074—Lawrence Jameson Memorial Hospital*	Gen	NPAasn	132	22	302	68	2,402
New Castle Hospital	Gen	Church	100	20	248	62	1,682
New Kensington 10 702—Westmoreland Citizens General Hospital	Gen	NPAasn	83	12	150	67	1,920
Norristown 35,800—Montgomery Montgomery Hospital*	Gen	NPAasn	90	20	344	72	2,520
Norristown State Hospital*	Gen	State	3,420			3,400	700
Riverview Hospital	Gen	NPAasn	40	10	151	17	603
Northampton 9,830—Northampton Haft Hospital	Gen	Indiv	25	5	10	10	377

PENNSYLVANIA

Total hospitals in Pennsylvania 368 general, 226 general
beds occupied 624 per cent population per general bed, 314

- General Hospital
- ▲ Nervous and Mental
- + Tuberculosis
- Other Special Hospital



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Lewistown 13 357—Mifflin Lewistown Hospital	Gen	NPAasn	84	7	75	60	1,850
Lock Haven 9 063—Clinton Lock Haven Hospital	Gen	NPAasn	70	10	176	37	1,080
Teah Private Hospital	Gen	Indiv	20	3	22	0	187
Lock No 4 018—Washington Charlottesville Memorial Hospital	Gen	Corp	60	18	95	40	1,084
Mayview 47—Allegheny Pittsburgh City Home and Hospital	Gen	N&M City	890	11	20	1,788	2,723
McKeesport 54 632—Allegheny McKeesport Hospital	Gen	NPAasn	223	40	603	148	3,406
McKees Rocks 18 110—Allegheny Ohio Valley General Hospital	Gen	NPAasn	53	17	231	32	1,233
Meadville 16 608—Crawford Meadville City Hospital	Gen	NPAasn	75	16	162	44	1,617
Spencer Hospital	Gen	NPAasn	115	10	215	40	1,800
Media 5,372—Delaware Brookwood Farm Media Hospital	N&M Gen	Indiv	20 20	4 4	20 20	8 0	203
Mercer 7 125—Mercer Mercer Cottage Hospital	Gen	Corp	40	4	30	25	1,090
Mercer Sanatorium	Gen	N&M Corp	40			30	100
Meyersdale 8,000—Somerset Hazel McIlhenny Hospital	Gen	Indiv	10	4	20	4	243
Meyersdale Wenzel Hospital	Gen	Indiv	10	2	6	3	101
Monaca 4841—Beaver Beaver County Sanatorium	TB	County	63			63	122

Oil City 28 075—Venango Grand View Sanatorium	TB	NPAasn	53			13	29
Oil City General Hospital	Gen	NPAasn	120	22	232	47	1,442
Palmerton 7 078—Carbon Palmerton Hospital	Gen	NPAasn	50	7	100	37	1,403
Peckville 3,615—Lackawanna Mid Valley Hospital	Gen	NPAasn	62	8	172	51	1,758
Philadelphia 1,950,061—Philadelphia American Hospital for Diseases of the Stomach	Gen	NPAasn	38	3	33	17	694
American Oncologic Hospital	Gen	NPAasn	40			21	820
Anderson Hospital	Gen	Corp	72	18	211	17	1,163
Babies Hospital	Chil	NPAasn	15			9	203
Broad Street Hospital	Gen	NPAasn	80	30	311	32	1,184
Chestnut Hill Hospital*	Gen	NPAasn	89	20	334	53	1,802
Children's Heart Hospital	Card	NPAasn	50			30	100
Children's Hospital*	Chil	NPAasn	130			96	2,312
Children's Hospital of the Mary J Drexel Home	Chil	Church	53			23	692
Falmount Farm	N&M	Corp	42			20	207
Frankford Hospital*	Gen	NPAasn	119	23	362	97	3,079
Frederick Douglass Memorial Hospital (col)	Gen	NPAasn	61	0	43	28	608
Friends Hospital*	N&M	NPAasn	190			180	60
Germantown Dispensary and Hospital*	Gen	NPAasn	310	50	1,360	223	6,170
Graduate Hospital of the Uni versity of Pennsylvania*	Gen	NPAasn	475		14	225	7,104

Key to symbols and abbreviations is on page 1091

Samuel D. Ingham.—San Francisco reported an infant mortality rate of 33 per thousand in 1932, the lowest rate on record, an increase was noted in the birth rate, 104 per thousand—Dr. Frederick C. Warnshuis, San Francisco, addressed the San Francisco County Medical Society, March 12, on "The Medical Profession's Declaration of National Principles as Related to Medical Economics."

COLORADO

Narcotic Drug Law Enacted.—Two bills, which were approved by Governor Johnson March 16 and which were to become effective immediately, are of considerable interest to physicians. One of them (H 557) prohibits the retail sale except on the written prescription of a licensed physician, dentist or veterinarian, of barbital, sulphonethylmethane (trional), sulphonmethane (sulphonal), diethylsulphon diethylmethane (tetronal), paraldehyde, and chloral or chloral hydrate or any derivatives compounds or mixtures of any of these drugs possessing hypnotic properties or effects. The other (H 138) is the uniform narcotic drug act, drafted by the Conference of Commissioners on Uniform State Laws with the aid of the Bureau of Legal Medicine and Legislation of the American Medical Association, and approved by both the American Medical Association and the American Bar Association. The term "narcotic drug," as used in this law, includes coca leaves, opium, cannabis and every substance neither chemically nor physically distinguishable from them. A physician or a dentist, acting in good faith and in the course of his professional practice only, may prescribe, administer and dispense narcotic drugs or he may cause them to be administered by a nurse or intern under his direction and supervision. Physicians and dentists are to keep a record of such narcotic drugs received by them and a record of all such drugs administered, dispensed or professionally used by them otherwise than by prescription. Uniform narcotic drug acts have been enacted in about fifteen other states. Both laws will be published in full in a coming issue of *Colorado Medicine*.

GEORGIA

Bill Passed.—H 230 has passed the house, proposing to amend those provisions of the medical practice act which require an applicant for a license to be a graduate of a legally incorporated medical college in good standing with the board by permitting graduates of one of the two colleges of medicine now existing in the state of Georgia also to qualify.

Bills Introduced.—H 918 proposes a new insurance code. Among other things, it proposes to permit any hospital or group of hospitals, not maintained by public funds, approved by the Georgia Hospital Association, the Georgia Medical Association, the American College of Surgeons or the American Medical Association, to form a nonprofit organization to provide hospitalization to the public, in consideration of weekly, monthly or annual dues. H 874, to supplement the chiropody practice act, proposes (1) that the joint secretary of the examining boards of Georgia act as joint secretary of the state board of chiropody examiners, (2) to provide that a member of the board may not be directly or indirectly associated or connected with any institution teaching chiropody, (3) to require all institutions in the state teaching chiropody to register the name of each student with the joint secretary not later than thirty days after the enrollment of that student and (4) to authorize the board to inspect and classify all institutions teaching chiropody.

ILLINOIS

Society News.—At a meeting of the Vermilion County Medical Society, March 6, Dr. Arthur H. Parmelee, Oak Park, spoke on "Respiratory Diseases in Children."—Dr. Chauncey C. Maher, Chicago, addressed the Whiteside County Medical Society February 28, in Sterling on hypertension.—Dr. Harold O. Jones, Chicago, discussed "Diagnosis and Treatment of Carcinoma of the Cervix and Uterine Endometrium" before the Peoria City Medical Society, March 5.

Bills Introduced.—H 672 proposes to prohibit the retail sale or distribution of veronal, barbital or any of their salts, derivatives or compounds except on the prescription of a licensed physician, dentist or veterinarian. H 559 to amend the optometry practice act, proposes among other things, (1) to require applicants for licenses to be citizens of the United States or to have received their first naturalization papers, (2) to prohibit corporations from practicing optometry and (3) to prohibit advertising that in any way will tend to deceive or defraud the public the free examination of eyes or of fixed prices for optometric services. H 634 proposes to require employers to install exhaust systems for removing dust and dirt from grinding, polishing and buffing operations.

CHICAGO

Anniversary of Maimonides.—The eight hundredth anniversary of Maimonides was observed at a celebration at the Standard Club, March 24. The occasion was also an observance of the tenth anniversary of the opening of the Hebrew University in Jerusalem. Dr. Morris Fishbein, editor of *THE JOURNAL*, was chairman. Rabbi Solomon Goldman gave an address on Maimonides, and Drs. Nathan O. Ratnofsky, Marcus Rothschild and Israel Strauss, New York, spoke on the medical department of the Hebrew University.

Vitamin D Milk Standards Adopted.—The Chicago Board of Health has recently adopted rules and regulations for the production and control of vitamin D milk. Three processes for this purpose have been accepted, including ultraviolet irradiation, the addition of an approved vitamin D concentrate in a satisfactory manner, and the feeding of concentrated vitamin D substances to dairy cows under suitable conditions. A series of regulation application forms and other data have been developed to guide those who wish to apply to the board for permits to distribute such milk in the Chicago area.

Banquet in Honor of Dr. Tice.—About 1,400 persons attended a banquet in Chicago at the Palmer House, March 23, to honor the long services of Dr. Frederick Tice, clinical professor of medicine, Rush Medical College, to the Cook County Hospital and the Municipal Tuberculosis Sanatorium. Dr. Frank Jurka, state health commissioner, Springfield, was toastmaster. Addresses were made by many public officials and also Drs. William A. Pusey, Samuel R. Slaymaker, Allan J. Hruby and Morris Fishbein. Dr. Tice is also emeritus professor of medicine at the University of Illinois College of Medicine.

IOWA

Bill Passed.—S 20 has passed the house, proposing that before any applicant for a license to practice medicine, osteopathy, osteopathy and surgery or chiropractic may be examined by his professional board he must first pass an examination before an impartial basic science board in anatomy, physiology, chemistry, pathology, bacteriology and hygiene.

Bills Introduced.—S 220, to amend the chiropractic practice act, proposes (1) to define chiropractors as persons who treat human ailments by the adjustment by hand of the articulation [sic] of the spine or by other incidental adjustments calculated to remove any cause and/or effect of any nerve interference, who may use in connection therewith, physical, mechanical, hygienic and sanitary measures, and (2) to provide that a license to practice chiropractic shall not authorize the holder thereof to practice operative surgery, osteopathy, nor to administer or prescribe any drug or medicine included in materia medica. S 250 and H 383 propose to authorize the board of supervisors of any county to make contracts with licensed practitioners of the healing art for the care of the indigent sick of the county. S 256 and H 378 propose to prohibit public nurses from favoring any particular branch of the healing art or from discriminating against any practitioner. H 329 proposes to amend the law according hospitals treating persons injured through the fault of others liens on all claims, judgments, settlements or compromises accruing to the injured persons by reason of their injuries, by according the lien also to physicians who have treated such persons. H 396 proposes to require insurance companies to recognize any required report or statement or notice relative to an insured person when furnished by any licensed practitioner of the healing art.

Society News.—Speakers before a meeting of the Tri-County Medical Society (Henry, Washington, Jefferson) in Mount Pleasant, February 28, were Drs. Walter D. Abbott, Des Moines, "Peripheral Nerve Injuries", Arthur W. Erskine, Cedar Rapids, "Common Fractures of Wrist Joint," and Oliver J. Fay, Des Moines, "What of Your Economic and Professional Future?"—Dr. Frederick H. Falls, Chicago, discussed "The Early Diagnosis and Treatment of Carcinoma of the Uterus" before the Black Hawk County Medical Society, February 19.—Dr. Lee W. Dean, St. Louis, will speak before the Linn County Medical Society, April 11, in Cedar Rapids. His subject will be "The Diagnosis and Treatment of Nasal Sinus Disease in Infants and Young Children."—At a meeting of the Cass and Audubon county medical societies in Atlantic, February 27, speakers included Dr. Matthew E. O'Keefe, Council Bluffs, on "Intestinal Obstruction Secondary to Acute Infections."—Dr. Joseph L. Stech, Council Bluffs, among others, addressed the Clarke County Medical Society in Osceola, February 5, on "Management of Head Injuries."—Speakers before the Fremont County Medical Society in Hamburg, February 13, included Dr. Donald J. Wilson, Omaha, on "Common Lesions About the Mouth and Mucous Membranes."—The Hardin

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Williamsport, 45,720—Lycoming, Rothman Clinic and Hospital	Gen	Indiv	23	6	21	4	249
Williamsport Hospital	Gen	NPA's'n	231	41	598	100	3,289
Windber 9,200—Somerset Hospital	Gen	NPA's'n	107	10	223	82	2,458
Woodville 516—Allegheny Allegheny County Home and Hospital for the Insane	Ment	County	2,535		2,367		1,147
York, 24,24—York West Side Sanitarium	Gen	Indiv	50	8	36	23	769
York Hospital	Gen	NPA's'n	102	23	553	120	3,670
Related Institutions							
Ardmore 10,075—Montgomery Wood Lea Sanitarium	N&M	Indiv	14		7		0
Bellvue 10,22—Allegheny Salvation Army Woman's Home and Hospital	Mnt	Church	10	10	103	10	119
Broomall 12—Delaware Convalescent Hospital	Conv	Frnt	30		20		311
Bryn Mawr 3,645—Montgomery Bryn Mawr College Infirmary	Inst	NPA's'n	16		1		218
Cambridge Springs, 1,660—Crawford Logan's Hospital	Gen	Indiv	10	2	8	2	82
Carlisle 19,596—Cumberland Cumberland County Home	Inst	County	30		31	10	
Chambersburg 13,785—Franklin Wilson College for Women in Army	Inst	NPA's'n	10		2		463
Cititon Heights, 5,637—Delaware Erie Sanitarium	N&M	Indiv	12				nodata supplied
Darby 9,890—Delaware St Francis Country House for Convalescents and St Francis Hall for Incurables	Conv	Indiv	52		44		751
Deron 364—Chester FAVORIA Farm	N&M	Indiv	17		6		0
Deron 364—Chester Perfect Rest	N&M	Indiv	10		1		None
Ebensburg 3,063—Cambria Cambria County Hospital	Inst	County	112		2	61	170
Elwyn 162—Delaware Elwyn Training School	MeDe	NPA's'n	1010		980		43
Embserville 147—Chester Chester County Hospital for Insane	Ment	County	300		300		0
Erie 11,967—Erie Lakewick Hospital	Iso	City	80				
Erie Memorial Private Hospital and Clinic	Gen	Indiv	10	4	15	2	50
Gibsonia 123—Allegheny St Barnabas Free Home	Inc	Church	100		100		160
Girard 1,544—Erie Erie County Home Tuberculosis Annex	TB	County	30				
Harmarville 769—Allegheny Harmarville Convalescent Home	Conv	NPA's'n	45	30	57		327
Hershey 2,075—Dauphin Hershey Hospital	Gen	Corp	10	0	83	1	288
Huntingdon 7,448—Huntingdon Pennsylvania Industrial School	Inst	State	30		15		337
Johnstown, 66,993—Cambria Municipal Hospital	Iso	City	60		8		70
Lebanon 1,544—Lancaster Lehigh Private Hospital	Alcoh	Indiv	13		2		20
Lancaster 29,940—Lancaster Lancaster County Hospital and Hospital for Insane	Ment	County	379		370		152
Lansdowne, 9,642—Delaware Sanatorium School	Orth	Indiv	26		19		23
Laurelton, 327—Union Laurelton State Village	MeDe	State	600		664		18
Lancaster (Upper Darby P O) 21—Delaware Country Branch of Babies Hospital of Philadelphia	Orth	NPA's'n	50		47		124
Lorville 400—Ferry Annie L. Lowry Memorial Hospital	Inst	Church	40		1		48
Mercer 2,120—Mercer Mercer County Home and Hospital	Ment	County	340		896		79
Middletown, 6,080—Dauphin Odd Fellows Home	Inst	Frnt	35		30		40
Mont Clare 900—Montgomery River Crest Preventorium	TB	NPA's'n	100				
Morgantown—Washington Pennsylvania Training School	Inst	State	17		7		322
Nazareth 5,500—Northampton Northampton County Almshouse	Inst	County	100				nodata supplied
New Brighton, 9,050—Beaver Beaver County Children's Home	Inst	NPA's'n	10				18
New Wilmington 907—Lawrence Overlook Sanitarium	Conv	Part	30		14		207
North East 3,670—Erie St Barnabas House by the Lake	Inst	Church	30		30		42
Oakbourne (West Chester P O) 32—Chester James O. Smith Memorial Home	Conv	Church	23		16		354
Pennsylvania Epileptic Hospital and Colony Farm	Epil	NPA's'n	119		116		14
Olyphant, 10,743—Lackawanna Blakely Home	Ment	County	144		130		7
Pennhurst—Chester Pennhurst State School	MeDe	State	1,663		1,660		115

PENNSYLVANIA—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Philadelphia 1,000 961—Philadelphia Belmont Hospital	Mat	Church	10	10	129	5	177
Chester Avenue Private Hosp	Gen	Indiv	0	0	04	3	203
Eastern State Penitentiary Hospital	Inst	State	81			50	015
Elmore Orittenton Home	Mat	NPA's'n	15	15	31	8	82
Home of the Merciful Saviour for Crippled Children	Orth	NPA's'n	62			62	14
Homewood School	Inst	NPA's'n	126	12		136	189
House of the Good Shepherd (col)	Inst	Church	70			42	50
Kenwood Sanitarium	Conv	Indiv	30			13	27
Logan Private Hospital	Conv	Indiv	14			10	25
Pennsylvania School for the Deaf	Inst	NPA's'n	20			5	201
Philadelphia County Prison Hospital (Hohensburg)	Inst	CoCo	60			24	205
Philadelphia County Prison Hosp (Reed St Prison)	Inst	County	40			15	582
Philadelphia Home for Incurables	Inc	NPA's'n	204			107	29
Rosemorth Farms Sanitarium	Conv	Corp	22			16	79
Sharon Hall	Conv	Corp	45				
Whitener Memorial Industrial Training School for Crippled Children	Orth	NPA's'n	100			85	11
Pittsburgh 609,817—Allegheny Industrial Home for Crippled Children	Orth	NPA's'n	25			20	241
Jewish Home for the Aged	Inst	NPA's'n	50			49	
Western Penitentiary Hospital	Inst	State	20			14	342
Polk 3,337—Venango Polk State School	MeDe	State	3,000			2,687	107
Pottstown, 10,430—Montgomery Hill School Infirmary	Inst	NPA's'n	20			6	312
Retreat 31—Luzerne Retreat Home and Hospital for Chronic Diseases	Inst	County	130				
Rochester 7,726—Beaver Passavant Memorial Homes for the Care of Epileptics	Epil	Church	130			112	18
Schuylkill Haven 6,514—Schuylkill Schuylkill County Almshouse Hospital	Inst	County	165	12			
Scranton 143,433—Lackawanna Municipal Hospital for Contagious Diseases	Iso	City	40			11	156
Sellersville 2,197—Sayder Sellersville State Colony for Epileptics	Epil	State	40			305	97
Shillington 4,401—Berks Berks County Almshouse Hosp	Inst	County	112				nodata supplied
Somerset 4,890—Somerset Somerset County Home and Hospital	Ment	County	518			460	30
State College 4,450—Centre Pennsylvania State College Health Service Hospital	Inst	State	24			3	344
Troy 1,100—Bradford Martha Lloyd School	MeDe	Indiv	65				
Union City, 3,788—Erie Union City Hospital	Gen	NPA's'n	14	6			nodata supplied
Valencia 308—Butler Lillian Convalescent Rest	Conv	NPA's'n	52			42	348
White Haven 1,637—Luzerne Sunnyside Sanatorium	TB	Indiv	40			3	5
Wilkes Barre 80,620—Luzerne Contagious Disease Hospital	Iso	City	12			3	63
Williamstown 2,938—Dauphin Williams Valley Hospital	Gen	Corp	24	2		2	50
Willow Grove 2,065—Montgomery Willow Crest for Convalescents	Conv	NPA's'n	80			75	917
Summary for Pennsylvania							
Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted			
Related institutions	201	63,568	54,618	554,637			
Totals	77	11,725	10,277	12,278			
Refused registration	303	80,815	64,895	500,835			
	25	578					

RHODE ISLAND

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Central Falls, 25,808—Providence Notre Dame Hospital	Gen	NPA's'n	50	7	50	10	718
East Providence 29,000—Providence Emma Pendleton Bradley Home	Nerv	NPA's'n	50			45	57
Hillsgrove 1,820—Kent St Joseph's Sanatorium	TB	Church	60			47	32
Howard 2,200—Providence State Hospital for Mental Diseases	Ment	State	2,301			2,261	510
Newport 27,612—Newport Newport Hospital	Gen	State	1,004	40	60	975	847
Newport Hospital	Gen	NPA's'n	150	21	330	94	2,140
U S Naval Hospital	Gen	Army	30			22	703
Pawtucket, 77,140—Providence Memorial Hospital	Gen	NPA's'n	160	80	441	108	2,303

New York City

Personal—Dr Leona Baumgartner has been awarded the prize of the New England Pediatric Society for the best paper presented last year by fourth year medical students in New England on a subject of scientific interest in connection with the health of children. Dr Baumgartner's subject was "Age and Antibody Production." She graduated in June 1934 from Yale University School of Medicine, New Haven.

Society News—A symposium on angina pectoris with special reference to coronary artery disease was presented at the stated meeting of the New York Academy of Medicine, March 7, by Drs Harold M. Marvin, New Haven, Conn., Emanuel Libman and Harlow Brooks.—Dr Alfred W. Adson, Rochester, Minn., among others, addressed a joint meeting of the New York Neurological Society and the section of neurology and psychiatry of the New York Academy of Medicine, March 5, on "Malignant Hypertension: Results Obtained by Sympathectomies and Rhizotomies."—The Medical Society of the County of New York held an open forum, March 28, for the discussion of "The Future of Medicine." Speakers were Drs Morris Rosenthal, Frederic E. Sondern, Haven Emerson and Samuel J. Kopetzky.—Dr Frederic E. Sondern addressed the Bronx County Medical Society, February 20, on national health insurance in England.—Dr Ralph Colp addressed the New York Surgical Society, February 27, on "The Relation of Cholecystitis to Pathologic Changes in the Liver."—Speakers at a meeting of the Kings County Medical Society, February 19 were Drs John A. Kolmer, Philadelphia, on "Immunity and Vaccination Against Acute Anterior Poliomyelitis," and LeGrand Kerr, Pediatrics in the Gay Nineties.—Dr John C. MacEvitt, on behalf of alumni of St. Mary's Hospital presented to the society a portrait of Dr John Byrne, who became a member of the society in 1858. Dr Byrne was president of the New York Obstetrical Society in 1874 of the Brooklyn Gynecological Society, 1890, and of the American Gynecological Society, 1892. He was one of the founders of the Long Island College Hospital.

NORTH CAROLINA

Bill Enacted—H 148 has become a law granting to physicians and hospitals treating persons injured through the negligence of others liens on all sums recovered as damages by the injured persons by reason of their injuries.

Bill Passed—H 539 has passed the house, proposing to repeal the law requiring a male applicant for a marriage license either to sign an affidavit that he is free from venereal disease and active tuberculosis or to present a certificate from a licensed physician to that effect.

OHIO

Officers of State Board—Dr James G. Blower, Akron, was elected president of the Ohio State Medical Board at a recent meeting. Other officers elected are Drs John R. Shoemaker, Cuyahoga Falls, vice president, Louis T. Franklin, Chillicothe, treasurer, and Herbert M. Platter, Columbus, secretary.

Appointments at University of Cincinnati—Dr David A. Tucker Jr., associate clinical professor of contagious diseases at the University of Cincinnati College of Medicine, was appointed professor of the history of medicine at the February meeting of the board of directors. Dr George M. Guest was promoted to associate professor of pediatrics, among other changes. Dr Robert D. Maddox was appointed lecturer in military medicine and is giving a new course in that subject this semester.

Bills Introduced—H 307, to amend the sales tax law, proposes that a sales tax shall not be levied on the sale of medicine on a prescription issued by a licensed physician, when filled by a registered pharmacist.—H 497 proposes to establish, in the state department of health a bureau of social hygiene to reduce illegitimacy and to improve health and family conditions by the control of venereal diseases. The bureau is to be authorized to establish local clinics for the administration of free treatments for venereal diseases.

Fifty Years in Practice—Dr Florus F. Lawrence, Columbus was the guest of honor at a dinner given by his colleagues, March 7, in celebration of his completion of fifty years of medical practice.—Dr Wilson H. Button, Hubbard, recently celebrated the fiftieth anniversary of his graduation from Western Reserve University School of Medicine, Cleveland. Dr Button has practiced in Hubbard since 1896.—Dr James B. Hannah Addyston, marked the completion of fifty years of medical practice, March 5. Dr Hannah was graduated from the Medical College of Ohio, Cincinnati, in 1885.

OKLAHOMA

Bills Introduced—H 80, to amend the workmen's compensation act, proposes, among other things, to permit an injured employee to select at the employer's expense his own physician to treat his industrial injuries. H 207 proposes to exempt from the provisions of the insurance laws of the state all hospital associations engaged in the business of "indemnifying policy or certificate holders in said associations against the cost of medical surgical and hospital services and accommodations." H 425 proposes to prohibit the sale or other distribution, except by a licentiate of the state board of pharmacy, of appliances, drugs or medicinal preparations intended or having special utility for the prevention of conception and/or of venereal diseases.

Society News—Drs Edward H. Skinner, Kansas City, Mo., and Wendell M. Long, Oklahoma City, discussed cancer and conducted clinics at a meeting of the Garfield County Medical Society, Enid, February 19.—Among speakers at a meeting of the Southern Oklahoma Medical Association, Ada, March 5, were Drs George L. Carlisle and Arthur J. Schwenkenberg, Dallas, Texas, on cardiac neurosis, James B. Eskridge Jr., Oklahoma City, female sex hormones, and Henry H. Turner, Oklahoma City, endocrine glands.—Physicians of Cherokee, Haskell, McIntosh, Muskogee, Okfuskee, Okmulgee, Tulsa and Wagoner counties participated in a joint meeting of the Muskogee, Tulsa and Okmulgee county medical societies in Muskogee, March 28. Speakers were Drs Isaac W. Bollinger, Henryetta, on silicosis, Walter S. Larrabee, Tulsa, disorders of the back, and Ira B. Oldham Jr., Muskogee, skeletal fixation in fractures.—At a meeting of the Carter County Medical Society, Ardmore, February 25, speakers were three Dallas physicians: Drs Ben R. Buford, on pellagra, Walter G. Reddick, differential diagnosis of conditions causing edema, and Dayton C. McBride, obesity.—Drs Jefferson R. Lemmon, Amarillo, Texas and Herbert L. Wright, Supply, among others addressed the Woodward County Medical Society, February 12, on "Pneumonia in Children" and "Purposes of the Allied Sciences," respectively.

OREGON

Endowment for Children's Hospital—The First Hebrew Benevolent Association of Portland recently gave to the Doernbecher Memorial Hospital for Children at the University of Oregon Medical School a fund of \$5,000 for maintenance of a bed in memory of the late Marx Cohen. The fund was left by Mr. Cohen to the association as a trust fund to be utilized for medical and surgical treatment of children under 16 who through poor financial circumstances would be unable to obtain such treatment.

PENNSYLVANIA

Hospital News—The secretary of the staff of the Center County Hospital, Bellefonte, has notified THE JOURNAL that Dr Enoch H. Adams, Berwick, has not been made surgeon in chief to the Center County Hospital, as was reported February 16.

Bills Introduced—H 1521 proposes that all hospitals receiving state appropriations have in attendance at all times at least one licensed physician or resident intern who shall have graduated from an approved medical college. H 1604, to supplement the workmen's compensation act, proposes to make the following occupational diseases compensable: chrome ulceration, epitheliomatous cancer, ulceration of the skin or the corneal surface of the eye, chronic miners' asthma, silicosis, anthrax, infection or inflammation of the skin due to contact with oils, cutting compounds or lubricants, dusts, liquids, fumes, gases or vapors, and poisoning from lead, mercury, phosphorus, arsenic, methanol, carbon bisulphide, naphtha or volatile halogenate hydrocarbons, manganese dioxide, brass, zinc, benzol, nitro and amido derivatives of benzol, and radium.

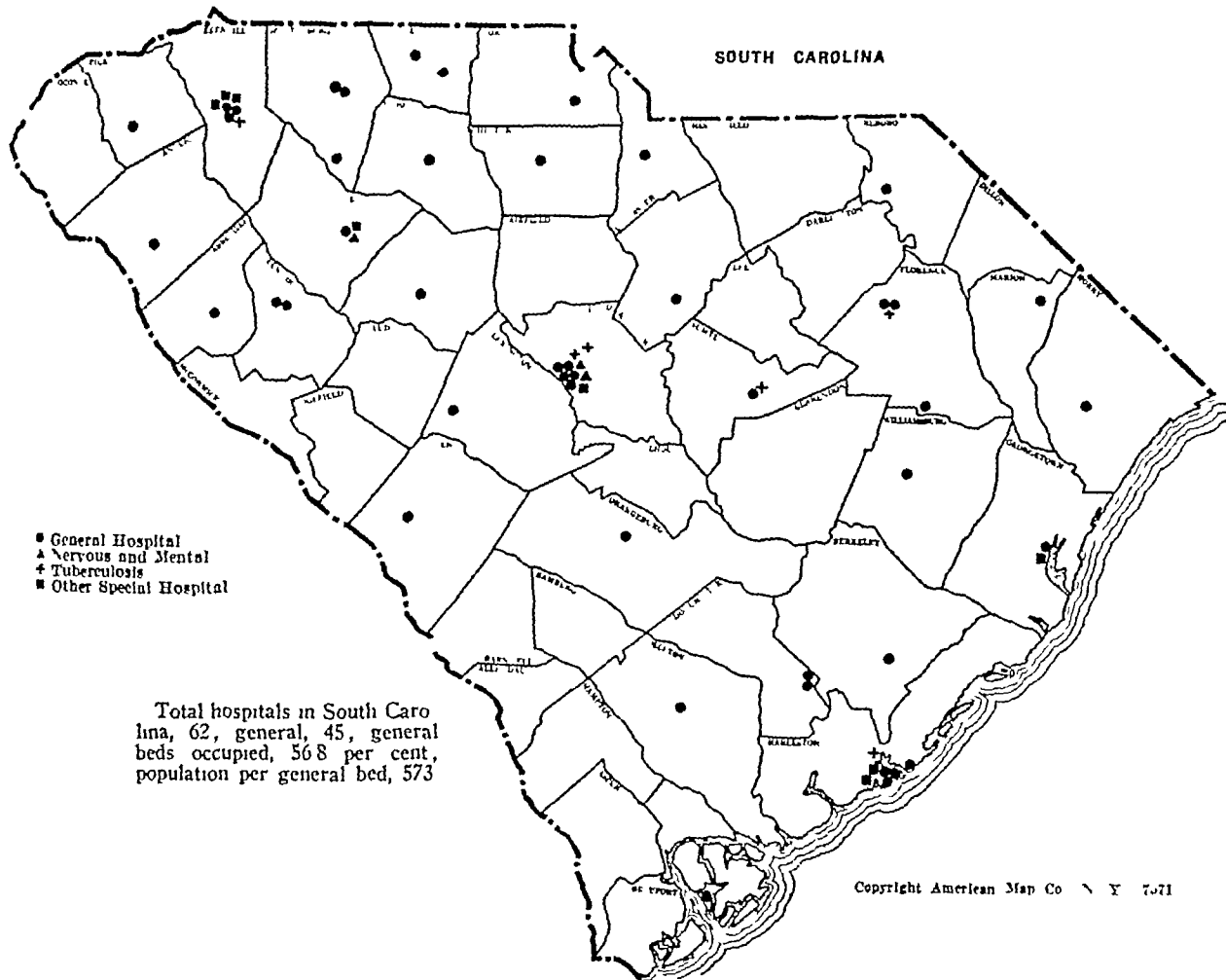
Philadelphia

New Professorships—Three new clinical professorships have been established at the University of Pennsylvania School of Medicine and have been filled by the advancement of Drs Thomas Grier Miller, Richard A. Kern and Charles C. Wolferth from the rank of assistant professor. Dr Truman G. Schnabel, assistant professor of medicine, has been advanced to an associate professorship.

Personal—A portrait of Dr Martha Tracy, dean of the Woman's Medical College of Pennsylvania, was presented to the college on its eighty-fifth anniversary, March 9. This is Dr Tracy's twenty-fifth year at the college. Dr Ellen C. Potter, Trenton, N. J., made the presentation. Dr Helen Ingleby, professor of pathology, on behalf of trustees faculty,

SOUTH DAKOTA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Dell Rapids 1 657—Minnehaha	Gen	Corp	30	0	25	9	261
Dell Rapids Hospital							
Edgemont 1 103—Fall River	Gen	Indiv	10	2	38	4	245
Edgemont Hospital							
Fureka 1,208—McPherson	Gen	Assoc	22	5	20	9	397
Fureka Community Hospital							
Faulkton 730—Faulk	Gen	County	17	6	40	6	377
Faulk County Hospital							
Handreau 1 024—Moody	Gen	Indiv	10	1	6	3	119
Moody County Hospital							
Ft Meade—Meade	Gen	Army	68		17	40	1,361
Station Hospital							
Ft Thompson Co—Buffalo	Gen	I A	14	5	24	17	414
Varcoe Indian Hospital							



Total hospitals in South Carolina, 62, general, 45, general beds occupied, 56.8 per cent, population per general bed, 573.

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Hot Springs, 2 908—Fall River

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Lutheran Saint and Hospital Our Lady of Lourdes Hospital and Sanitarium	Gen	Church	25	0	38	6	204
Veterans Admin Facility Huron 10 945—Beadle Sprague Hospital	Gen	Church	50	6	40	35	799
Lead & Zinc—Lawrence Homestead Hospital	Gen	Yvet	636			353	894
Lemmon, 1,508—Perkins Lemmon Hospital	Gen	Corp	54	8	94	22	778
Madison 4 280—Lake Madison Community Hospital	Gen	NPAasn	25	5	41	12	425
Milbank 2 389—Grant St Bernard Providence Hosp	Gen	Indiv	14	4	15	7	214
Miller 1 447—Hand Miller Hospital and Clinic	Gen	NPAasn	60	10	76	18	737
Mitchell 10 942—Davison Methodist State Hospital	Gen	Church	25	7	51	6	204
Methodist State Hospital St Joseph Hospital	Gen	Indiv	16	5	22	7	293
Mobridge 3,464—Waltham Lowe Hospital	Gen	Church	100	10	120	45	1,625
Mobridge Hospital New Underwood 311—Pennington	Gen	Church	80	15	133	45	1,323
New Underwood Community Hospital	Gen	Indiv	20	6	54	8	324
	Gen	NPAasn	20	12	26	10	611
	Gen	NPAasn	13	6	24	3	147

Key to symbols and abbreviations is on page 1091

Foreign Letters

LONDON

(From Our Regular Correspondent)

March 9, 1935

Whither National Health Insurance?

In previous letters it has been shown that the further socialization of medicine is a primary object of the labor party and that the future of health insurance depends on whether that party again attains power, a danger that is generally admitted. In 1930, when this party was in power, the British Medical Association brought forward a scheme for a state medical service for the whole population. This great plunge into further medical socialism was not proposed because of any desire for it on the part of the profession or of the association but to forestall a possible scheme of the labor government. Soon afterward the prodigal finance of that government brought the country to the brink of ruin. There was a first class financial crisis and the pound crashed. The crushing defeat of the labor party followed and removed the danger—for a time—and no more has been heard of the association's scheme. At the recent annual conference of the labor party the national executive committee of the party submitted a report stating that there are grave defects in the panel system as regard both the type and the standard of medical care. The committee proposes that medical benefit should be taken away from health insurance altogether and that the insured should receive only cash benefit. It would enlarge the insurance scheme by including nonmanual workers with incomes up to \$2,500. But the insured would look to the local authorities for medical care, both at home and in the hospital. This would be provided at public expense. The committee visualizes a system of clinics, which would be 'well equipped surgeries where the patient would receive the best examination, diagnosis and treatment, without the interminable periods of waiting of the average hospital outpatient department'. Around these clinics would revolve domiciliary attendance and other facilities of the public health service. The medical profession would thus become officials employed by and paid by the state.

It is interesting to compare this program with that of the Medical Practitioners' Union. As stated in *THE JOURNAL*, January 19, page 228, this body is a medical trade union, which recently affiliated with the Trade Union Congress. The medical secretary of the British Medical Association declared in a press interview that the object was "to anticipate the political movement in the country," by which he must have meant the return to power of the labor party. The Medical Practitioners' Union can therefore now be described as a constituent of the labor party. In its organ the *Medical World* it has published a lengthy memorandum advocating extension of the general practitioner service of the insurance system to the whole population. The union 'expects that private practice will continue to exist although it will be considerably restricted'. In a universal service of this kind there will be no place for any contributory system for purely medical purposes' which exists at present. But the union does not want to abolish contribution for sickness benefit (that is, the payments made to sick members), which could be regarded as one form of unemployment benefit and part of a wider problem than the problems with which the medical profession is concerned. As much of the present contribution as is applied to the provision of medical benefit should cease. Whence the money for the payment of medical benefit is to come, the union does not condescend to say. It can only be from the taxpayer, who in the view of this socialist body is a beast of burden that does not even deserve to be mentioned for the service to be put on him.

It is thus evident that the future of the insurance system is bound up in the much greater question of the future of the political situation. If the labor party should again return to power, the system will certainly become more socialistic. Probably, as suggested, medical benefit will become noncontributory and therefore free and also will be extended to the whole population. The medical profession will for the most part be state paid, if indeed its members do not become mere state officials. The British Medical Association will resist this last proposal, as its policy has always been to protect private practice against the encroachments of official practice and if on no other point the Medical Practitioners' Union will be in agreement, for it is in favor of "free choice of doctor." But what the socialist politicians may decide is another matter. There of course would still be the luxury of private practice for persons who could afford to pay for it. But they would be a disappearing class. They are already disappearing under oppressive differential taxation. An official table, just issued, shows that the number of persons with incomes exceeding \$10,000 in 1932-1933 was 84,175, the lowest for six years, the highest was in 1929-1930, when the figure was 108,532. The main cause of the excessive taxation is socialistic expenditure.

PARIS

(From Our Regular Correspondent)

Feb 22, 1935

Foreigners Must Be Naturalized Ten Years Before Beginning to Practice Medicine

In the *Concours medical* of February 17 appears the draft of a bill introduced in the French house of representatives by Mr. Dommange, which will place a serious obstacle in the path of any physician of foreign birth who seeks to practice in France. In July 1934 a bill was passed and became a law to the effect that naturalized citizens could not be admitted to the bar or occupy any official position until ten years had elapsed since their becoming French citizens. The Dommange bill proposes to extend this ten year period to the medical profession in order that a physician shall during such interval become thoroughly familiar with the language and customs of the country in which he intends to practice. This proposed law is in line with the recent agitation on the part of the medical students against the constantly increasing number of foreigners in the schools and hospitals of France.

Foreign Medical Students and Physicians in France

The editor-in-chief of the *Presse médicale*, Dr. Desfosses, discussed foreign medical students and physicians in France in the February 16 issue. France has always been liberal in admitting foreign students to its medical schools. An honorary diploma, or "diplôme universitaire," which did not entitle the holder to practice medicine in France has been popular with foreigners who intended to practice in their home countries. Since the war, and particularly since the limitation of students in eastern Europe, the "non-Aryan" agitation in Germany and the raising of standards for admission in the United States and other countries, a large number of foreign medical students have matriculated in the French medical schools. A treaty with Rumania, dating back to 1860, enabled students to matriculate without even being required to present a bachelor of arts degree, such as is indispensable for French students. Some of the foreign students who matriculated only with the idea of receiving an honorary degree have been able to convert it into a state license which permits them to remain in France. The number of licenses to practice in Paris granted to foreigners is gradually increasing in proportion to those given to French citizens. The French medical schools are overcrowded, so that native students find it difficult to attend lectures and to work in the laboratories and dissecting rooms.

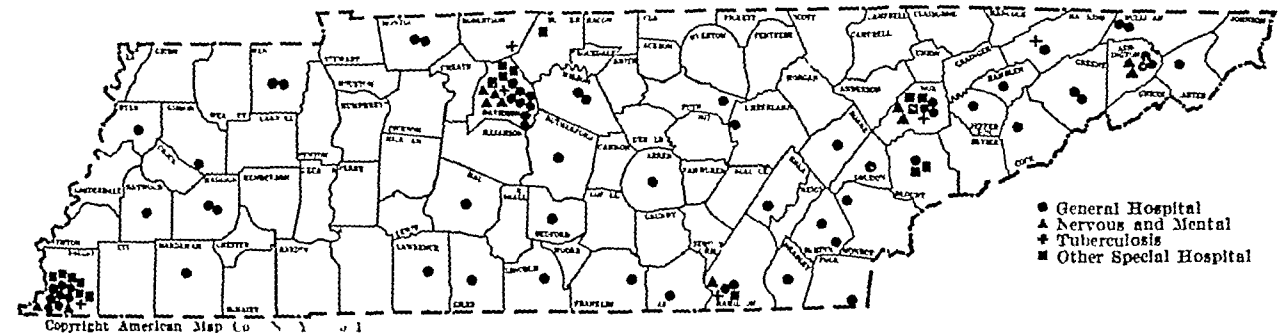
TENNESSEE—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Humboldt 4 617—Gibson	Gen	Indiv	10	4	60	4	702
Ourler Clinic							
Jackson 22 1—Madison	Gen	NPA's'n	70	5	44	10	2
Memorial Hospital	Gen	Corp	31	0	38	10	47
Webb-Williamson Hosp Clinic							
Jefferson City 1 88—Jefferson	Gen	Indiv	2	3	20	5	500
Jefferson Hospital							
Johnson City 2 080—Washington	Gen	Corp	50	6	10	21	922
Appalachian Hospital							
Campbell's Eye Ear Nose and Throat Hospital	FNT	Indiv	10			3	10
Jones Eye Ear Nose and Throat Hospital	FNT	Indiv	1			6	10
Parker Budd Clinic and Hosp	Gen	Part	0	2			
Veterans Admin Facility	Gen	Yct	0			400	2 170
Kingsport 11 014—Sullivan	Gen	Part	16	3	32	5	462
Kingsport General Hospital	Gen	Indiv	20	3	17	7	31
Marsh Clinic and Hospital							
Knoxville 10 862—Knox	TB	CyCo	163			141	1 6
Beverly Hills Sanatorium							
Dr H F Christenberry 134							
Ear Nose and Throat In	FNT	Indiv	12	2	No data supplied		
Eastern State Hospital	Ment	State	1 44			1 208	380
Et Sanders Hospital	Gen	NPA's'n	12	1	201	57	2 331
Knoxville General Hosp**	Gen	City	5 0	70	748	140	5 701
St Mary's Memorial Hosp	Gen	Church	6 1	12	117	29	1 600
Lawrenceburg 3 102—Lawrence							
Lawrenceburg Sanitarium and Hospital	Gen	NPA's'n	20	2	20	7	325
Lebanon 4 66—Wilson	Gen	Indiv	27		20	7	34
Martha Gaston Hospital	Gen	Indiv	12	1	10	7	2
McFarland Hospital							

TENNESSEE—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
St Thomas Hospital*	Gen	Church	200	25	339	104	3 749
Vanderbilt University Hosp**	Gen	NPA's'n	19	15	304	1 60	4 487
Newport 2 089—Cooke							
Dr F F Northcutt Infirmary	Gen	Indiv	12	2	3	6	493
Oakville 163—Shelby							
Oakville Memorial Sanatorium	TB	CyCo	340			205	240
Paris 8 164—Henry							
McSwain Clinic	Gen	Indiv	10	4	24	8	395
Wiggins Clinic	Gen	Part	12	2	13	3	170
Pleasant Hill 165—Cumberland							
Uplands Cumberland Moun							
tain Sanatorium	G&TB	NPA's'n	20	4	11	9	104
Pressmen's Home 169—Hawkins							
International Printing Pressmen							
and Assistants Union Sana							
torium	TB	NPA's'n	44			20	10
Pulaski 3 367—Giles							
Pulaski Hospital	Gen	Indiv	25	2	24	9	40
Richard City 62—Marion							
Dixie Hospital	Gen	Indiv	10	2	11	2	94
Ridgetop 106—Robertson							
Watauga Sanitarium	TB	Corp	40			14	30
Rockwood 3 888—Roane							
Chamberlain Memorial Hosp	Gen	NPA's'n	40	5	2	10	630
Rogersville 1 890—Hawkins							
Lyon's Private Hospital	Gen	Indiv	10		1	5	75
Sewanee 5 0—Franklin							
Emerald Hodgson Memorial							
Hospital	Gen	Church	2	10	68	9	513
Shelbyville 5 010—Bedford							
Bedford County Hospital	Gen	NPA's'n	25	2	24	7	300

TENNESSEE



Total hospitals in Tennessee, 99 general, 63, general beds occupied, 585 per cent, population per general bed, 508

London 2 578—London							
J J Harrison Jr Sanitarium	Gen	Indiv	2		No data supplied		
Madison 89—Davidson							
Madison Rural Sanitarium and Hospital	Gen	NPA's'n	100	6	20	51	1 121
Maryville 4 938—Blount							
Carson's Hospital	Gen	Indiv	20		12	5	183
Memphis 2 3 14—Shelby							
Baptist Memorial Hospital*	Gen	Church	380	20	430	348	11 770
Collins Chapel Connectional Hospital (col)*	Gen	NPA's'n	0	4	4	12	430
Crippled Children's Hospital							
School	Orth	NPA's'n	30			33	121
Gartley Ramisay Hospital	Gen	Corp	4	8	73	18	740
Hospital for Crippled Adults	Orth	NPA's'n	60			20	321
Lynchburg Sanitarium	N&M	Indiv	20			9	30
Memphis Eye Ear Nose and Throat Hospital	FNT	NPA's'n	60			20	2 000
Memphis General Hospital**	Gen	City	3 3	47	1 6	430	14 520
Methodist Hospital*	Gen	Church	100	30	29	101	4 451
St Joseph's Hospital*	Gen	Church	2 0	36	477	94	6 734
U S Marine Hospital	Gen	USPHS	104			63	844
Veterans Admin Facility	Gen	Yct	4 0			246	2 08
Wallace Sanitarium	N&M	Part	50			2	3 4
Wills C Campbell Clinic	Orth	Part	50			30	70
Morristown 7 200—Hamblen							
Morristown General Hospital	Gen	NPA's'n	2	2	15	11	370
Murfreesboro 7 003—Rutherford							
Rutherford Hospital	Gen	NPA's'n	42	8	96	14	8 4
Nashville 153 866—Davidson							
Barr Infirmary	Gen	Indiv	2				
Central State Hospital	Ment	State	1 00			1 600	388
City View Sanitarium	N&M	Indiv	6			22	243
Davidson County Tuberculosis Hospital	TB	County	300			230	269
Geo W Hubbard Hospital of Mebary Medical College (col)*	Gen	NPA's'n	147	19	274	68	2 00
Hospital for the Criminal In sane							
Millie E Hale Hosp (col)	Gen	(Unit of the Central State Hospital)	40	10	10	16	244
Nashville General Hospital**	Gen	City	270	30	827	170	6 145
Protestant Hospital	Gen	NPA's'n	100	12	170	65	2 232

Sweetwater 2 271—Monroe							
Sweetwater Hospital	Gen	Part	12	4	5	5	216
Related Institutions							
Chattanooga 119 798—Hamilton							
William L Bork Memorial Hos pital	Ment	County	208			102	126
Copperhill 1 0 0—Polk							
Tennessee Copper Company's Hospital	Indus	Corp	10		2	1	12
Donelson 110—Davidson							
Tennessee Home and Training School for Feeble-minded Per sons	MeDe	State	500			608	71
Etowah 4 209—McMinn							
Etowah Hospital	Gen	Indiv	14			No data supplied	
Fayetteville 3 822—Lincoln							
Lincoln County Hospital	Gen	County	25	2	12	6	275
Fountain Head 180—Sumner							
Fountain Head Sanitarium and Hospital	Conv	NPA's'n	20	2	1	11	84
Knoxville 10 802—Knox							
Reaves Leach Infirmary	FNT	Part	6				237
Tennessee School for Deaf	Inst	State	20			4	302
University of Tennessee Hosp	Inst	State	2			4	3 59
Maryville 4 938—Blount							
Burchfield's Eye Ear and Throat Hospital	ENT	Indiv	4			2	201
Ralph Max Lamar Memorial Hospital	Inst	NPA's'n	13				57
McMinnville 3 014—Warren							
McMinnville Infirmary	Gen	Indiv	10	3	14	2	12
Memphis 233 143—Shelby							
Ella Oliver Home	Mat	NPA's'n	30	12	11	4	13
Shelby County Hospital	Inst	County	50			537	608
Monterey 1 731—Putnam							
Officer Sanatorium	G&TB	Indiv	12			6	26
Nashville 153 866—Davidson							
Davidson County Hospital	Ment	County	600			500	4 17
Davidson County Isolation Hospital	Iso	County	50			7	43
Junior League Home for Crip pled Children	Orth	NPA's'n	36			30	50

Key to symbols and abbreviations is on page 1091

A few years ago, Professor Unterberger in Königsberg published the observation that boy babies could be secured through alkalization of the vaginal secretion, an announcement that caused a sensation in the columns of the daily papers. Extensive clinical observations and experiments on man or animals, concerning which Dr. Schumacher recently addressed the Giesse Medical Society, have shown that Unterberger's contention is not confirmed. Schumacher studied clinically more than 1,500 pregnant women. He proved that the observation of the Cologne gynecologist Professor Füh, made in a small number of cases and constantly cited in support of Unterberger's contention, cannot be substantiated. It had been maintained that in the presence of a strongly acid reaction of the vaginal secretion girl babies and in the event of an alkaline reaction boy babies predominate. The fact is that male births predominate over female births with all degrees of vaginal secretion. Since the clinical tests lent no support to the Unterberger theory, Schumacher and Günther conducted experiments on 200 female mice and 100 female rats without confirming this theory. In experiments on rabbits, in ninety litters with 514 young, alkalization of the vaginal secretion before copulation could not be shown to exert any influence on the sex. In a few rabbits, to be sure, the theory appears to find support, but in an equal number of other female animals the opposite was true. If one combines the results of the various progenies, one gets a final figure that appears to support the Unterberger theory. The predominance of males, after alkalization of the vaginal secretion of the mothers, is, however, too slight and the results of the experiments are too contradictory to justify one in drawing any definitive conclusions. Also the other figures, taking into account the laws of variations, must be regarded as due to accidental circumstances.

A practical application of this method in man is fraught with danger, since it is possible, through a chemical alteration of the vaginal secretion, to cause damage to the offspring.

The attempts to influence the sex of the fetus by treating the mother animals with sex hormones have only theoretical interest as yet and require clarification by systematic experiments on animals.

RIO DE JANEIRO

(From Our Regular Correspondent)

Jan 15, 1935

Staphylococcus Toxin

Dr. J. Travassos, in a recent lecture, said that staphylococcus toxin has a marked antigenic power. The blood serum of animals that have been repeatedly inoculated with small doses of toxin by the subcutaneous and intradermal routes is manifestly antitoxic. Immunization by the intravenous route is difficult because the animals, as a rule, do not withstand the inoculation of increasing doses of the toxin. The antitoxin experimentally obtained by the speaker neutralizes both *in vitro* and *in vivo* all the toxic properties of the toxin. Animals actively immunized in the speaker's experiments resisted lethal doses of toxin by intravenous inoculation and proved to be immune to intradermal inoculation of certain doses of toxin that would produce extensive necrotic lesions in nonimmunized rabbits. The speaker's results prove the preventive power of antitoxin in relation to the lethal and necrotic action of filtrates. Antitoxin protects rabbits and guinea-pigs against the effect of the toxin. The protection lasts for a certain time, which varies according to the dose of antitoxin and the route of its inoculation. Staphylococcus antitoxin has a marked preventive power against the effect of the toxin but a limited curative power. The transocular and cisternal inoculation of 100, 200 or 300 units of antitoxin failed to restore the equilibrium in nine out of ten guinea-pigs inoculated five minutes after the onset of the syndrome. The action of staphylococcus antitoxin probably is

similar to that of tetanus antitoxin. The limitation of their curative action in both cases, regardless of their neutralizing effect on free toxins in the brain, is due to the fact that nerve cells more or less injured are unable to regain their integrity. Antitoxin might have a curative action in subacute intoxications of low evolution by neutralizing a small amount of toxin, as it is formed in nonextensive foci.

Gastrectomy for Duodenal Ulcer

Dr. Piragive Nogueira of the Faculty of Medicine of São Paulo emphasized in a lecture the satisfactory results of gastrectomy in the treatment of duodenal ulcers, either complicated by the presence of adhesions to the head of the pancreas or perforated at this site. Injury of the common bile duct during gastrectomy is rare (four cases in 1,000 operations). The injuries were successfully corrected by the creation of anastomosis between the common bile duct and the duodenum in three cases, and by an end to end anastomosis of the common bile duct in one case. In two cases the retroduodenal part of the common bile duct formed an angle, the vertex of which was at the base of the ulcer. In a case of duodenal ulcer at a lower site, where it perforated into the head of the pancreas, the canal of Wirsung was injured, resulting in acute necrosis of the pancreas, verified at necropsy.

Test of the Hypophysis in Hyperthyroidism

Drs. Mario Yahn, E. de Aguiar Whitaker and Celso Pereira da Silva recently discussed the value of the test of the hypophysis (injection of 1 cc. of extract of the posterior lobe of the hypophysis) described by Claude, Baudoin and Porak, in the diagnosis of hyperthyroidism. A group of seventeen persons, including eleven patients suffering with hyperthyroidism and six persons without it, were subjected to the test. The results were interpreted by the determination of the basal metabolism. The authors give the technical details to be followed in the test, as well as the criterion for the interpretation of results (either positive or negative). Positive results were obtained in five out of the group of eleven patients suffering with hyperthyroidism and in three of the persons without it. Claude, Baudoin and Porak reported positive results from the test in the whole group of patients with hyperthyroidism and negative results in the whole group of persons without it (thirteen and four cases, respectively). Yahn and his collaborators believe that these results may be due merely to chance and conclude that the test has no value for the diagnosis of hyperthyroidism.

Marriages

HARRY GOFF THOMPSON, Mount Vernon, Ill., to Miss Margaret Matthews of New Haven, Conn., Dec. 1, 1934.

JOHN J. FLANAGAN, Newark, N. J., to Miss Helen Patricia Froehlich of Glen Ridge, February 21.

SAUL H. KAPLAN, Canandaigua, N. Y., to Miss Ada Schneider of New York, March 3.

JAMES A. HARPER JR., to Dr. Edna K. Sexsmith, both of Greenfield, Iowa, Dec. 12, 1934.

JAMES JOSEPH ROWLAND, Highlands, N. J., to Miss Dorothy M. Alton of Detroit, March 2.

LACY JOHN SALAN, Washington, D. C., to Miss Marie Cecilia Rowan, Nov. 17, 1934.

MARTIN T. MEYERS to Miss Marjorie Marvin Wyley, both of Atlanta, Ga., February 27.

HAROLD W. KESCHNER to Miss Evelyn Clarice Silver, both of New York, March 14.

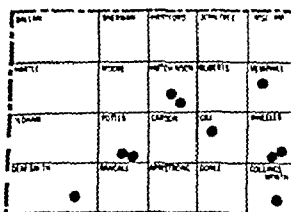
SAMUEL G. SEINFELD to Miss Charlotte Lois Strumpf, both of Chicago, February 10.

PAUL G. THODE, Chicago, to Miss Margaret Danielson of Evanston, Ill., March 5.

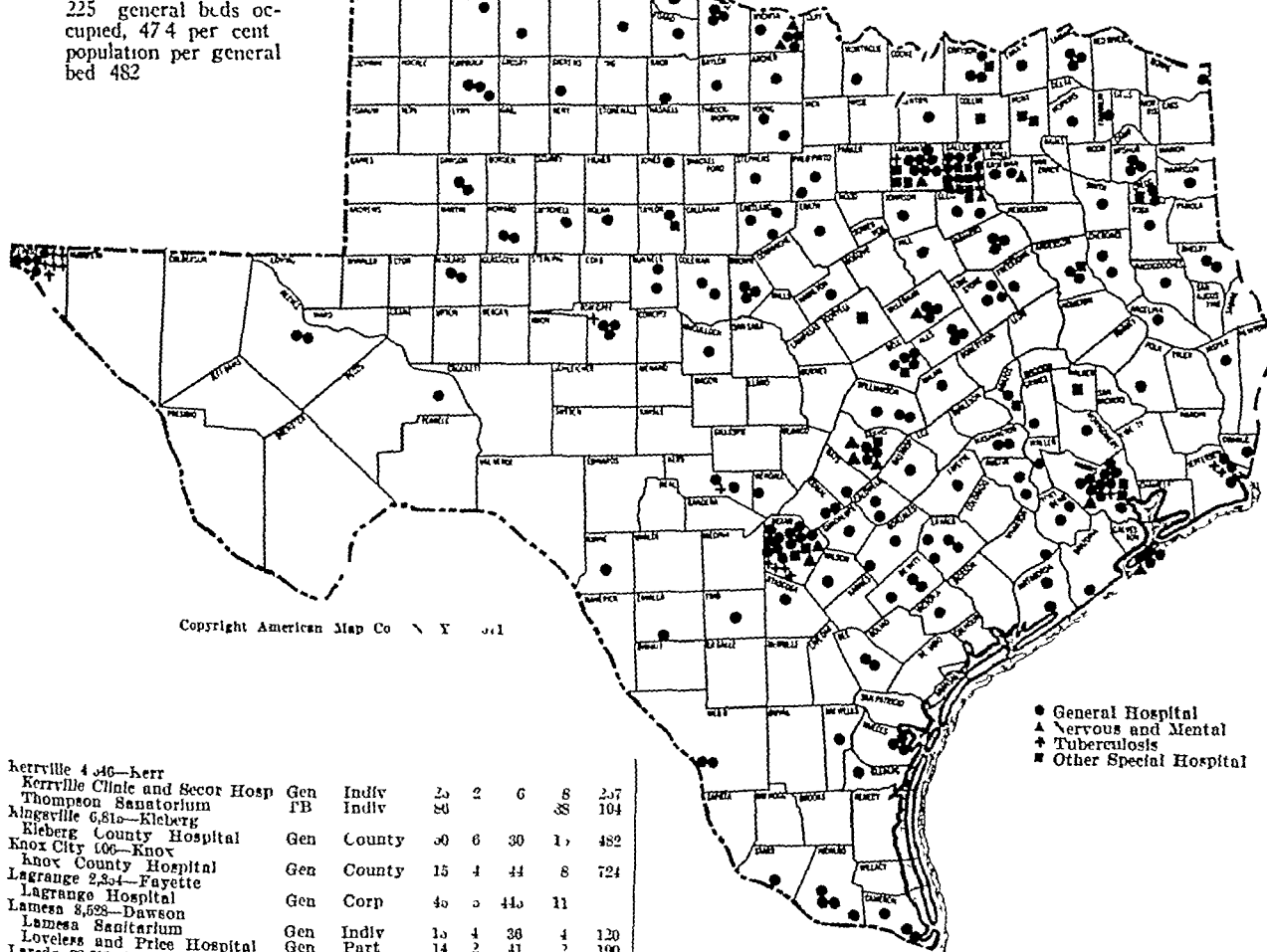
TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Houston Negro Hospital	Gen	NP Assn	50	4	14	0	319
Houston Tuberculosis Hosp	TB	CyCo	1,2			103	9,8
Jefferson Davis Hospital	Gen	CyCo	185	10	1,200	174	1,971
Memorial Hospital	Gen	Church	170	21	1,044	124	4,411
Methodist Hospital	Gen	Church	87	10	255	72	308
Park View Hospital	Gen	Corp	21	4	60	11	482
St Joseph's Infirmary	Gen	Church	20	18	0	190	4,88
Southern Pacific Hospital	Indus	NP Assn	144			100	1,600
Turner Urological Institute	Urol	Part	10				No data supplied
Jacksonville, 6748—Cherokee	Gen	NP Assn	75		47	18	1,008
San Travis Memorial Hospital	Gen	Part	15				No data supplied
Jasper 3,329—Jasper	Gen	Army	0			17	440
Hardy Hancock Hospital	Gen	Army	0				
Kelly Field—Bexar	Gen	Army	0				
Station Hospital	Gen	Army	0				

TEXAS



Total hospitals in Texas, 289 general, 225 general beds occupied, 474 per cent population per general bed 482



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Kerrville 4,46—Kerr	Gen	Indiv	20	2	6	8	257
Kerrville Clinic and Secor Hosp	Gen	Indiv	20			38	104
Thompson Sanatorium	Gen	Indiv	20			38	104
Kingsville 6,810—Kleberg	Gen	County	30	6	30	1	482
Kleberg County Hospital	Gen	County	15	4	44	8	724
Knox City 106—Knox	Gen	County	15	4	44	8	724
Knox County Hospital	Gen	County	15	4	44	8	724
Lagrange 2,334—Fayette	Gen	Corp	40	0	440	11	
Lagrange Hospital	Gen	Corp	40	0	440	11	
Lamesa 8,628—Dawson	Gen	Indiv	10	4	36	4	120
Lamesa Sanatorium	Gen	Part	14	2	41	2	190
Loveless and Price Hospital	Gen	Church	80	6	57	20	830
Laredo 32,018—Webb	Gen	Army	20			9	305
Mercy Hospital	Gen	Army	20			9	305
Station Hospital	Gen	Army	20			9	305
Legion 819—Kerr	Gen	Army	20			9	305
Veterans Admin. Facility	Gen	Army	20			9	305
Livingston 1,100—Polk	Gen	Army	20			9	305
Bergman Hospital	Gen	Army	20			9	305
Lockhart 4,367—Caldwell	Gen	Indiv	10	2	15	6	204
Lockhart Sanatorium	Gen	Indiv	10	2	15	6	204
Longview, 5,636—Gregg	Gen	NP Assn	20	1			No data supplied
Adams Farrar Hospital	Gen	Part	12	4	45	4	230

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Hurst Eye Ear Nose and Throat Hospital	ENT	Indiv	12			3	650
Markham Sanatorium	Gen	Indiv	10	3	62	10	550
Lubbock 20,520—Lubbock	Gen	Part	90	10	70	63	3,433
Lubbock Sanatorium	Gen	Corp	60	6	12	20	1,462
West Texas Hospital	Gen	Corp	60	6	12	20	1,462
Lufkin, 7,311—Angelina	Gen	County	30	5	70	20	600
Angelina County Hospital	Gen	County	30	5	70	20	600
Marlin 5,338—Falls	Gen	Indiv	21	2	12	14	608
Bule-Allen Hospital	Gen	Indiv	10	2	24	3	122
Shaw Clinic and Hospital	Gen	Indiv	37	4	18	15	812
Torbett Sanatorium and Diagnostic Clinic	Gen	Indiv	10	2	24	3	122
Marshall 16,203—Harrison	Gen	NP Assn	20	7			
Kahn Memorial Hospital	Gen	NP Assn	20	7			
McAllen 9,074—Hidalgo	Gen	City	60	6	60	12	670
McAllen Municipal Hospital	Gen	City	60	6	60	12	670
McKinney 7,307—Collin	Gen	City	40	4	40	17	344
McKinney City Hospital	Gen	City	40	4	40	17	344
Memphis 4,207—Hall	Gen	Indiv	15	2	5	5	216
Memphis Hospital	Gen	Indiv	15	2	5	5	216
Mercedes 6,608—Hidalgo	Gen	NP Assn	20	5	28	5	226
Mercedes General Hospital	Gen	NP Assn	20	5	28	5	226
Mexia 6,510—Limestone	Gen	Indiv	20				No data supplied
Brown Hospital	Gen	Indiv	20				No data supplied
Midland 5,484—Midland	Gen	Indiv	20	1	20	3	170
Midland Clinic Hospital	Gen	Indiv	20	1	20	3	170
Mineral Wells 3,086—Palo Pinto	Gen	Church	22	4	12	8	223
Nazareth Hospital	Gen	Church	22	4	12	8	223
Nacogdoches 5,657—Nacogdoches	Gen	City	27	2	18	9	560
City Memorial Hospital	Gen	City	27	2	18	9	560

• General Hospital
▲ Nervous and Mental
+ Tuberculosis
■ Other Special Hospital

Navasota 5,128—Grimes	Gen	Corp	18	4	20	7	534
Brazos Valley Sanatorium	Gen	Corp	18	4	20	7	534
New Braunfels 6,242—Comal	Gen	Indiv	20				308
Comal Sanatorium	Gen	Indiv	20				308
New Braunfels Hospital	Gen	City	14	3	14	6	290
Newgulf—Wharton	Gen	City	14	3	14	6	290
Texas Gulf Sulphur Company Hospital	Gen	Corp	24	3	64	8	230
Olney 4,138—Young	Gen	Corp	24	3	64	8	230
Hamilton Hospital	Gen	City	20	8	20	10	306

Key to symbols and abbreviations is on page 1091

Correspondence

STANDARDIZATION IN TREATMENT OF BACILLURIA

To the Editor—Dr Crance in his article entitled "The Necessity for Standardization of the Treatment of Bacilluria" (THE JOURNAL, January 26, p 285) makes a definite advance by his recognition of the necessity of differentiating colon group bacilli into their two genera. This step is of such importance, especially in the evaluation of therapeutics, that it is greatly to be regretted that Dr Crance has not given information in regard to the bacteriologic details necessary for this differentiation. This cannot be done on the basis used by Dr Crance, i. e., the fermentation of sucrose. This test is employed for the differentiation of species of the genus *Escherichia*, of which our old friend *B. coli-communior* most familiarly represents the sucrose fermenting group and *B. coli-communis* the sucrose negative group (Zinsser, Hans, and Bayne-Jones, Stanhope A Textbook of Bacteriology, 1934, p 561). Only by use of the Voges-Proskauer and methyl red tests can the generic identification be finally made. The methods for these tests are to be found in any textbook of bacteriology. Dorner and Heltinger (*J. Bact.* 29:16 [Jan.] 1935) give a comparison of methods recently developed for the Voges-Proskauer test. It has been my experience that a presumptive generic identification can be reached within twelve hours by the use of the citrate agar medium of Simmons (*J. Infect. Dis.* 39:309 [Sept.] 1926), which I have found to be invaluable, as species of *Escherichia* do not grow on this medium while species of *Aerobacter* grow rapidly and heavily. It is necessary to confirm this presumptive identification with the Voges-Proskauer and methyl red tests because of the rare citrate intermediate forms. The differentiation may be most clearly summarized as follows:

Genus	Voges Proskauer Test i. e. Production of Acetyl Methyl Carbinol	Methyl Red Test	Growth on Citrate Agar
<i>Escherichia</i>	0	+	0
<i>Aerobacter</i>	+	0	+

It has been found in this clinic that 44 per cent of colon group urinary infections are due to species of *Aerobacter* (*J. Bact.* 17:205 [March] 1929). In colon group blood stream invasions, the incidence of *Aerobacter* jumps to about 70 per cent. Moreover, the resistance of *Aerobacter* to drugs is much higher than that of *Escherichia*. For example, mercuric chloride in broth inhibits the growth of *Escherichia* in a dilution of 1:500,000, but 1:30,000 is required to inhibit the growth of *Aerobacter*. Therefore, while we no longer consider the specific identification of colon group bacilli of clinical value, we are glad to find recognition of the importance of generic identification.

JUSTINA H. HILL, M.S., Baltimore.

Bacteriologist, the James Buchanan Brady
Urological Institute, Johns Hopkins University and Hospital

AMERICAN STANDARD INSURANCE CORPORATION

To the Editor—The American Standard Insurance Corporation of Indianapolis is circularizing New York physicians with a letter beginning "Will you accept our Physicians' Non-cancellable Full Lifetime Income Policy for TWO FULL WEEKS—at our risk and expense?"

It should interest all physicians receiving this circular material to know that the New York *Medical Week* for Nov. 10, 1934, published a report on this company's financial status as of Dec. 31, 1933, obtained from the Indiana State Insurance

Department by Dr. A. M. Rabner of Brooklyn. Prospective clients looking forward to full lifetime non-cancellable income policy will judge for themselves as to the resources backing up these promises.

Capital	None
Income	\$19,197.27
Disbursements	20,053.36
Assets	6,562.51
Liabilities	1,039.36
Balance	5,523.15

RAMSAY SPILLMAN, M.D., New York.

COMMENT—A large number of requests have been received for information concerning the American Standard Insurance Corporation of Indianapolis. When one compares the financial standing of the American Standard Insurance Corporation, with no capital, admitted assets of something over \$6,000 and liabilities of \$1,000, with other well established companies the comparison is most unfavorable to this company.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted, on request.

ACCURACY OF TESTS FOR SYPHILIS

To the Editor—I should like to know the opinion as to the relative value of accuracy of a Kahn, Wassermann and Hinton serologic test for syphilis. Please omit name.

M.D. Texas

ANSWER—The relative accuracy of different tests for syphilis in this country will soon be evaluated under the auspices of the U. S. Public Health Service, jointly with the American Association of Clinical Pathologists (The Evaluation of Serologic Procedures for the Diagnosis of Syphilis, editorial, THE JOURNAL, Oct. 29, 1934, p 1237. Cumming, H. S., Hazen, H. H., Sanford, A. H., Senechal, F. E., Simpson, W. M., and Vonderlehr, R. A. The Evaluation of Serodiagnostic Tests for Syphilis in the United States, *ibid.*, Dec. 1, 1934, p 1705). Approximately 1,000 comparable specimens of blood and spinal fluid will be submitted to authors of different methods or modifications from about December 1934 to March 1935 for serologic examination. Each worker will utilize only one designated method. The final results, to be submitted to the U. S. Public Health Service, should indicate which method is the most satisfactory. Meanwhile the important criteria available for judging Kahn and Wassermann tests are summarized in two reports by the League of Nations (League of Nations, Health Organization, Conference on Serodiagnosis of Syphilis held at Copenhagen, Geneva, 1928, Conference on Serodiagnosis of Syphilis held at Montevideo, Geneva, 1930). The report of the Montevideo conference refers to the Kahn reaction as being "absolutely specific and extremely sensitive" and superior to the Wassermann tests used at both conferences. Since the completion of those conferences, Wassermann procedures have generally been improved on and new precipitation methods have been presented. Reports on the Hinton test are comparatively limited in number. Burdon and Duggan (*Am. J. Syph.* 17:110 [Jan.] 1933) obtained comparable results with the Hinton and Kahn tests. A highly reliable Wassermann technique should compare favorably with either one of these two precipitation methods.

TOXICITY OF HEMATOPORPHYRIN

To the Editor—The question has been asked me whether the mode of murder in a recent murder story was possible and I must ask you. The victim was given hematoxylin and death occurred when he went out into the sunshine. Would it be possible for one to get sufficient hematoxylin for that to occur? I doubted it but could not be sure. Please omit name.

M.D. Louisiana

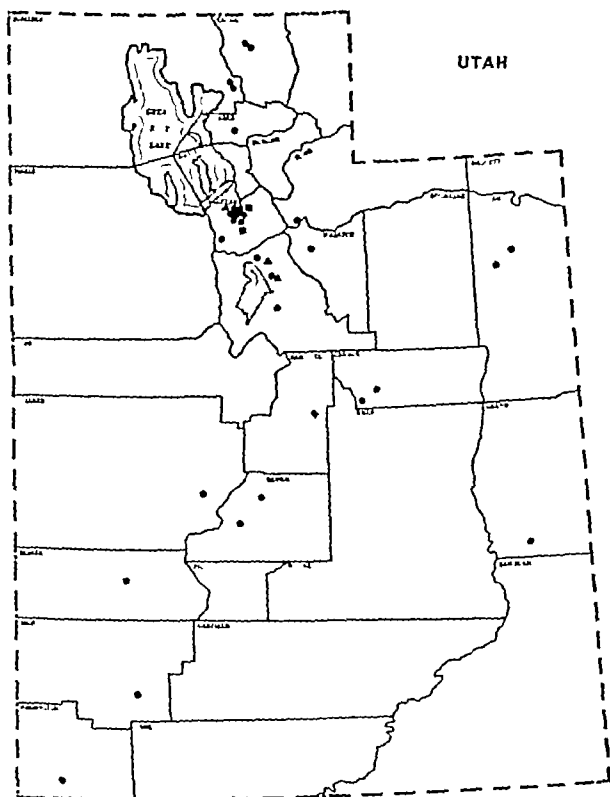
ANSWER—Observations on animals as well as on human beings indicate that hematoxylin may cause serious symptoms and even death under certain conditions. When mice are given hematoxylin by subcutaneous injection and then exposed to light, the skin will become livid or red and death will occur sooner or later from failure of respiration and fall in the blood pressure (Hausmann, W. Die sensibilisierende Wirkung des Hämatoporphyrins, *Biochem. Ztschr.* 30:276 1911). A boy, aged 3 years, was injected intramuscularly with 0.12 Gm. of hematoxylin in 80 cc. of weak solution of sodium hydroxide. Two and one-half hours later he was

TEXAS—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Salvation Army Women's Home and Hospital	Mat	Church	10	15	41	2	77
Station Hospital	Gen	Army	14				
South Houston 612—Harris							
South Houston Infirmary	Gen	Fed	210	0		New	
Southton 89—Bexar							
Bexar County Home for the Aged and Bexar County Tuberculous Colony	Inst(TB)County		72			70	63
Strawn 1,429—Palo Pinto							
Strawn Hospital	Gen	Part	12	2	12	1	61
Sulphur Springs 3,417—Hopkins							
Long's Hospital	Gen	Indiv	12				
Taylor 7,463—Williamson							
Dr. Floeckinger's Sanitarium	Gen	Indiv	5	2	24		88
Tulia 2,902—Brewster							
Swisher County Hospital	Gen	County	14	4	10	3	137
Wichita Falls 47,600—Wichita							
Dr. White's Sanitarium	N & M Corp		20			7	0
Winters 2,423—Hunters							
Winters Sanitarium	Gen	Part	10		6	1	85

Summary for Texas

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	241	57,040	19,501	227,428
Related institutions	48	2,712	1,517	14,504
Totals	289	59,752	21,018	241,932
Refused registration	20	638		



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● General Hospital
▲ Nervous and Mental
+ Tuberculosis
■ Other Special Hospital

Total hospitals in Utah, 34 general, 26, general beds occupied, 55.5 per cent, population per general bed, 319

UTAH

Hospitals and Sanatoriums							
Bingham Canyon 3,248—Salt Lake	Gen	Indiv	40	6	11	11	280
Bingham Canyon Hospital							
Brigham 5,003—Box Elder							
Cooley Hospital	Gen	Indiv	10	5	40	5	194
Cedar City, 8,615—Iron							
Iron County Hospital	Gen	County	20	10	106	13	689
Ft. Douglas—Salt Lake							
Station Hospital	Gen	Army	30			20	520
St. Duchesne 100—Uintah							
Uintah and Ouray Agency Indian Hospital	Gen	I A	18	2	30	13	213
Heber 4,477—Wasatch							
Heber Hospital	Gen	Part	12	4	12	4	92

UTAH—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Jehl 2,826—Utah							
Lehi Hospital	Gen	Indiv	10	6	65	5	451
Logan 9,970—Cache							
Cache Valley General Hospital	Gen	NPAasn	28	8	136	20	649
William Budge Memorial Hospital	Gen	NPAasn	60	12	107	30	1,619
Monb 8,33—Grand							
Grand County Public Hospital	Gen	County	10	4	52	4	350
Ogden 40,202—Weber							
Thomas D. Dee Memorial Hospital	Gen	Church	155	30	947	111	3,991
Park City, 4,281—Summit							
Park City Miners Hospital	Gen	NPAasn	50	10	50	13	440
Price 4,084—Carbon							
Price City Hospital	Gen	City	20		3	17	370
Provo 11,766—Utah							
Ald Hospital	Gen	Part	20		2	5	243
Utah State Hospital	Ment	State	1,027			963	203
St. George 2,434—Washington							
Washington County Hospital	Gen	NPAasn	20	4	68	8	282
Salina 1,383—Sevier							
Salina Hospital	Gen	Indiv	20	4	41	4	369
Salt Lake City 140,267—Salt Lake							
Dr. W. H. Groves Latter Day							
Salata Hospital*+o	Gen	Church	406	60	1,036	187	4,906
Holy Cross Hospital*o	Gen	Church	220	45	576	88	2,009
Primary Children's Hospital	Chil	Church	35			26	98
St. Mark's Hospital*o	Gen	Church	123	12	122	60	1,610
Salt Lake General Hospital*o	Gen	County	220	23	700	176	3,663
Sprinkers Hospital for Crippled Children	Orth	Frat	20			20	45
Veterans Admin Facility	Gen	Vet	103			64	714
Vernal 1,744—Utah							
Vernal Hospital	Gen	Indiv	11		26	4	120

Related Institutions

American Fork 3,047—Utah						223	50
Utah State Training School	MeDe	State	232				
Brigham 5,003—Box Elder							
Pearse Private Hospital	Gen	Indiv	8	2			
Fillmore 1,374—Millard							
Fillmore Hospital	Gen	Indiv	6			1	20
Hinawatha 930—Carbon							
U. S. Fuel Company Hospital	Gen	Corp	10	1	10	8	90
Millford 1,517—Beaver							
Millford Hospital	Gen	Indiv	10	4	22	2	60
Murray 5,172—Salt Lake							
Cottonwood Stake Maternity Hospital	Mat	Church	20	15	243	7	240
Richfield 3,067—Sevier							
Richfield General Hospital	Gen	Indiv	8			2	38
Salt Lake City 140,267—Salt Lake							
Mountain View Sanitarium	N & M	Indiv	5			3	50
Spanish Fork 3,727—Utah							
Hughes Memorial Hospital	Gen	Indiv	8	3	15	5	150

Summary for Utah

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	20	2,719	1,930	25,464
Related institutions	9	309	204	712
Totals	34	3,028	2,139	26,166
Refused registration	0			

VERMONT

Hospitals and Sanatoriums

Barre 11,307—Washington	Gen	NPAasn	50	12	172	28	1,112
Barre City Hospital	TB	State	47			41	63
Washington County Sanat							
Bellows Falls 3,930—Windham							
Rockingham General Hospital	Gen	NPAasn	36	7	79	25	720
Bennington, 7,300—Bennington							
Henry W. Putnam Memorial Hospital	Gen	NPAasn	86	20	173	30	802
Brattleboro 8,703—Windham							
Brattleboro Memorial Hosp	Gen	NPAasn	75	5	23	20	967
Brattleboro Retreat	Ment	NPAasn	700			600	237
Burlington 24,789—Chittenden							
Bishop De Goesbriand Hosp*o	Gen	Church	112	10	100	70	2,622
Green Mountain Sanatorium	Gen	Indiv	12			7	160
Lakeview Sanatorium	N & M	Corp	20			10	29
Mary Fletcher Hospital*o	Gen	NPAasn	120	15	330	110	4,710
Ft. Ethan Allen 100—Chittenden							
Station Hospital	Gen	Army	62		3	51	1,409
Hardwick 1,607—Caledonia							
Hardwick Hospital	Gen	NPAasn	12		32	5	169
Middlebury 2,003—Addison							
Porter Memorial Hospital	Gen	NPAasn	45	10	48	10	582
Montpelier 7,837—Washington							
Heaton Hospital	Gen	NPAasn	70	8	146	47	1,403
Morrisville 1,822—Lamolle							
Copley Hospital	Gen	NPAasn	21	5	50	14	414
Newport 5,094—Orleans							
Orleans County Memorial Hospital	Gen	NPAasn	28	6	41	13	424
Pittsford 637—Rutland							
Vermont Sanatorium	TB	State	80			72	74
Proctor 2,615—Rutland							
Proctor Hospital	Gen	NPAasn	33	7	33	6	203
Randolph 1,907—Orange							
Gifford Memorial Hospital	Gen	NPAasn	50	10	56	24	600

Key to symbols and abbreviations is on page 1091

TREATMENT OF TABETIC PAINS

To the Editor—In case of tabes dorsalis in a woman aged 50 of a number of years duration having had antisyphilitic treatment years ago and at present a negative blood and spinal fluid Wassermann reaction, what is the best analgesic for the relief of severe lightning pains of the extremities (morphine nauseates coal tar products take too long)? What may be used in place of intravenous trypanamide when the veins are too small (she is receiving iodobismutol and iodides)? Please omit name.

M D New York

ANSWER.—From the question it is judged that the pains are so severe as to make life unbearable. Consideration may then be given to the use of such measures as the epidural (not intradural) injection of physiologic solution of sodium chloride, with or without the addition of small amounts of procaine hydrochloride. Sometimes these will result in prolonged remissions. When the pain is so severe as to cause exhaustion it may be necessary to resort to division of the pain tracts in the cord, either by chordotomy or by division of the posterior commissure. These are dangerous procedures and must be carried out by an experienced neurosurgeon. There are no substitutes for trypanamide that can be administered orally. Consideration might be given to the use of pyretotherapy the results of which are variably reported.

INSOMNIA IN AGED

To the Editor—A woman aged 86 is suffering with chronic insomnia. Once she gets a good night's sleep she is up and about the next day feeling fine. Without a good night's sleep she is miserable the whole day. She has a chronic myocarditis and a chronic gastritis of some sort and gets along well on a milk and egg diet though there is no definite evidence of ulcer of the stomach. The blood pressure is 160 systolic 90 diastolic. There are no other significant physical manifestations. She requires large doses of hypnotics 80 grains (5 Gm) of sodium bromide does not avail. It takes 9 grains (0.6 Gm) of sodium amylal or orol to put her to sleep for several hours and she has to have it every night. Kindly suggest the best thing to do in this case. Please omit name.

M D New York

ANSWER.—Treatment for insomnia in the aged is always a difficult and individual problem. It may be necessary to continue the use of the hypnotics that are found to be efficacious. Sometimes small doses of alcohol will produce the desired effect. This treatment may be combined with advantage in some cases with paraldehyde. It is assumed that attention has been given to general hygienic measures and predormital occupation.

UNION OF SKULL SUTURES IN INFANT

To the Editor—In Queries and Minor Notes in THE JOURNAL, December 29 1934 page 2046 you answered an M D from California on the question of premature osseous union of skull sutures in a 10 weeks old infant. You stated that this was probably secondary to failure of brain growth and led to the group called microcephalic. I am sure you are correct in this statement but I do not feel that the question was fully answered.

It is known that oxycephaly and acrocephaly which are due to premature synostosis of the sutures can lead to feeble-mindedness (Bronfenbrenner A N Oxycephaly as a Pathogenic Entity *Am J Dis Child* 42: 837 [Oct. 1931] also that the condition if found early enough may be amenable to surgical intervention (Gilman in Cabot Case Reports *New England J Med* 204: 274 [Feb 5] 1931).

Although I know of no reports in infancy it is conceivable although very improbable that this mechanism may be at play in the questioned case. The M D should be able to rule out this remote possibility by:

- 1 Feeling of the sutures which at this age are open giving a flexibility to the skull plates.
- 2 A fundus examination.
- 3 A lumbar puncture.

B BARRETT GILMAN M D Boston

Epidemiologist Commonwealth of Massachusetts
Department of Public Health

POSSIBLE HYPERINSULINISM

To the Editor—In answer to a query of a Texan physician entitled Vomiting in Childhood which appeared in THE JOURNAL, January 26 the differential diagnosis included recurrent or cyclic vomiting allergic reaction or overfeeding and appendicitis. The syndrome as given was of a well boy aged 6 years who while playing suddenly goes to his mother complains of nausea vomits then becomes completely relaxed and pale and has a bowel movement. This is followed by a short sleep of two or three hours following which the child is apparently well. If these symptoms follow close on one another in approximately the same sequence each time the child has an attack and the whole picture covers a comparatively short period of time every month or so I think it is well to consider also in this case a type of petit mal or possibly a so-called epileptic equivalent. Because of the voracious appetite it would be well to exclude a possibility of hyperinsulinism. The child may have enough dextrose to keep all symptoms in abeyance until he overexerts himself such as in playing and running about when he may develop a temporary hypoglycemic state.

MICHAEL A. BRESCIA, M D Queens N Y

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *Written (Group B candidates)* The examination will be held in various cities throughout the country April 29 *Oral (Group A and Group B candidates)* New York June 10 Sec Dr C Guy Lane, 416 Marlborough St Boston

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Final oral and clinical examination (Group A and Group B candidates)* Atlantic City N J June 10 11 Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh

AMERICAN BOARD OF OPHTHALMOLOGY Philadelphia June 8 and New York June 10 *Applications must be filed before April 10* Sec Dr William H Wilder 122 S Michigan Blvd, Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY New York June 8 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha

AMERICAN BOARD OF PEDIATRICS Atlantic City N J June 10 and St Louis Nov 19 Sec Dr C A Aldrich 723 Elm St Winnetka Ill

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY Philadelphia June 7 8 Sec Dr Walter Freeman 1726 Eye St N W Washington D C

AMERICAN BOARD OF RADIOLOGY San Francisco May 10-12 and Atlantic City N J June 8 10 Sec Dr Byrl R Kirklin Mayo Clinic Rochester Minn

ARIZONA Phoenix April 23 Sec Dr J H Patterson 826 Security Bldg Phoenix

ARKANSAS *Basic Science* Little Rock May 6 Sec Mr Louis E Gebauer 701 Main St, Little Rock *Regular* Little Rock May 14 Sec Dr A S Buchanan Prescott *Eclectic* Little Rock May 14 Sec Dr L L Marshall 820 W 14th St Little Rock

CALIFORNIA *Reciprocity* San Francisco May 15 Sec Dr Charles B Pinkham 420 State Office Bldg Sacramento

COLORADO Denver April 3 Sec Dr Wm Whitridge Williams 422 State Office Bldg Denver

IDAHO Boise April 2 Commissioner of Law Enforcement, Hon Emmitt Pfost 203 State House Boise

ILLINOIS Chicago April 9 11 Superintendent of Registration Department of Registration and Education Mr Eugene R Schwartz Springfield

MINNESOTA *Basic Science* Minneapolis April 23 Sec Dr J Charney McKinley, 126 Millard Hall University of Minnesota Minneapolis *Medical* Minneapolis April 16 18 Sec Dr E J Engberg 350 St Peter St St Paul

MONTANA Helena, April 2 Sec Dr S A Cooney 7 W 6th Ave. Helena

NATIONAL BOARD OF MEDICAL EXAMINERS The examination will be held in all centers where there are Class A medical schools and five or more candidates desiring to take the examination June 24-26 Ex. Sec. Mr Everett S Elwood 225 S 15th St Philadelphia

NEBRASKA *Basic Science* Omaha May 7-8 Dir Bureau of Examining Boards Mrs Clark Perkins State House Lincoln

NEVADA Carson City May 6 Sec Dr Edward E. Hamer, Carson City

NEW MEXICO Santa Fe April 8-9 Sec Dr P G Cornish Jr 221 W Central Ave Albuquerque

OREGON *Basic Science* Portland May 18 Sec Mr Charles D Byrne University of Oregon Eugene

RHODE ISLAND Providence April 4 5 Dir Department of Public Health Dr Edward A McLaughlin 319 State Office Building Providence.

Florida November Examination

Dr William M Rowlett, secretary, Florida State Board of Medical Examiners, reports the examination held in Tampa Nov 12-13, 1934. Sixty candidates were examined, 39 of whom passed and 21 failed. The following schools were represented

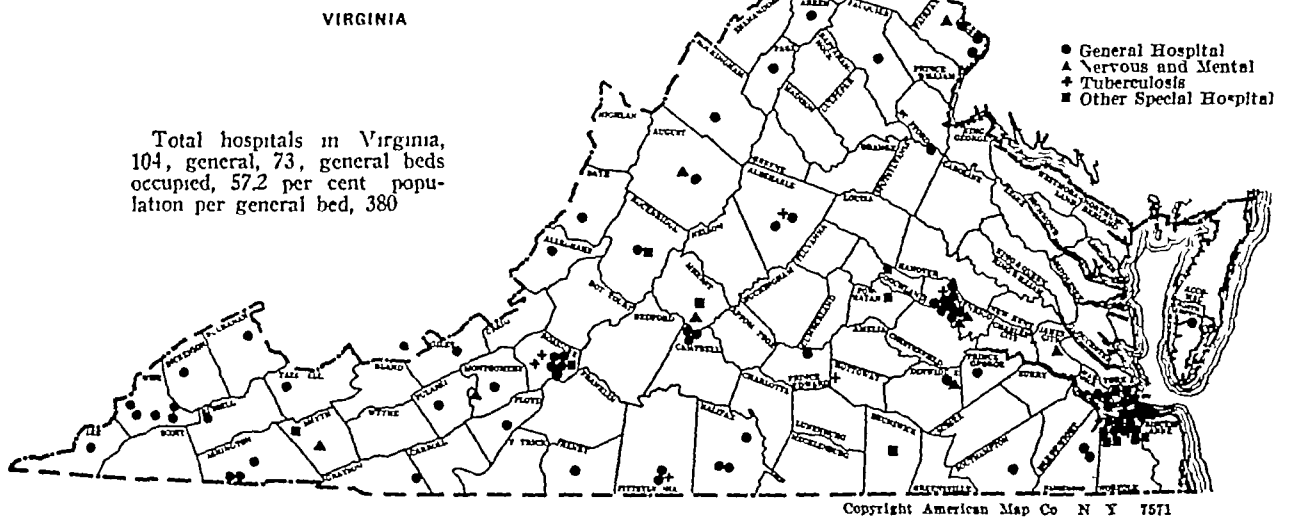
School	PASSED	Year Grad	Per Cent
College of Medical Evangelists	(1931)	79.4	
Yale University School of Medicine	(1931)	82	
Georgetown University School of Medicine	(1931)	75	
Emory University School of Medicine	(1929) 86.2	(1934) 78.1	80.9
University of Georgia School of Medicine	(1932) 75.9	(1934) 75	79.9
Rush Medical College	(1921)	(1934) 81.3	84.7*
Indiana University School of Medicine	(1921)	(1934) 77.7	
Univ of Louisville School of Medicine	(1933) 83.3	(1934)	91.3
Tulane University of Louisiana School of Medicine	(1932) 83.6	(1934)	76
Johns Hopkins Univ School of Medicine	(1932) 83.6	(1930)	88.5
University of Michigan Medical School	(1924)	(1934)	75.2
Univ of Minnesota College of Medicine and Surgery	(1905)	(1934)	78.7
University of Minnesota Medical School	(1920)	(1934)	77.4
Albany Medical College	(1908)	(1934)	80.6
New York Homeopathic Med College and Flower Hosp	(1922)	(1934)	78.9
New York University University and Bellevue Hospital Medical College	(1928)	(1934)	81.6
University of Buffalo School of Medicine	(1932)	(1934)	81.5
University of Rochester School of Medicine	(1933)	(1934)	76.4
Univ of Cincinnati College of Medicine	(1928) 79.2	(1934)	78.2*
Hahnemann Med College and Hospital of Philadelphia	(1933)	(1934)	80.3
Jefferson Medical College of Philadelphia	(1932)	(1934)	88.3
University of Pennsylvania School of Medicine	(1920)	(1934)	79.6
Medical College of the State of South Carolina	(1930)	(1934)	76
Meharry Medical College	(1933)	(1934)	80.1
University of Tennessee College of Medicine	(1932)	(1934)	75
Vanderbilt University School of Medicine	(1930) 82.4	(1934)	81.2
Medical College of Virginia	(1933) 79.1	(1934)	76.1
Univ of Virginia Department of Medicine	(1932) 85.4	(1934)	83.9
School	FAILED	Year Grad	Per Cent
University of Arkansas School of Medicine	(1933)	(1934)	69.1
Howard University College of Medicine	(1934)	(1934)	62.6
Atlanta College of Physicians and Surgeons Georgia	(1913)	(1934)	68.8
Chicago College of Medicine and Surgery	(1916)	(1934)	70.5

VIRGINIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Pulaski, 7 16S—Pulaski	Gen	Corp	50	6	53	17	510
Pulaski Hospital							
Rafford 4,224—Montgomery	N&M	Indlv	30			22	170
St Albans Sanatorium							
Richland 1,200—Tazewell	Gen	Indlv	30				No data supplied
Mattie Williams Hospital							
Richmond 18,020—Henrico	(Included in Med Coll of Va Hosp Div)						
Crippled Children's Hosp	(Included in Med Coll of Va Hosp Div)						
Dorsey Hospital	Gen	Corp	80	10	124	88	2,208
Grace Hospital	Gen	Corp	111	15	303	60	2,670
Johnston Willis Hospital							
Medical College of Virginia	Gen	NPAasn	424	32	004	320	0 118
Hospital Division	(Included in Med Coll of Va Hosp Div)						
Memorial Hospital	Gen	NPAasn	90	10	187	37	1,484
Retreat for the black	Gen	Corp	50			31	1,126
St Elizabeth's Hospital	Gen	Part	76	10		40	1,600
St Luke's Hospital	(Included in Med Coll of Va Hosp Div)						
St Philip's Hospital (col)	Gen	NPAasn	40	5	128	71	1,130
Sheltering Arms Hospital	Gen	Corp	90	14	163	48	2 60
Stuart Circle Hospital	Nerv	Corp	2			15	11
Tucker Sanatorium	N&M	Corp	100			70	200
Westbrook Sanatorium							
Roanoke 6,000—Roanoke	Gen	NPAasn	40	4	21	20	682
Burrell Memorial Hospital							
(col)							
Gill Memorial Eye Ear and	ENT	NPAasn	20			2	018
Throat Hospital							
Jefferson Hospital	Gen	Corp	100	0	144	60	2 100
Lewis-Gale Hospital	Gen	NPAasn	70	7	43	47	1,000

VIRGINIA—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Danville, 22 247—Pittsylvania	Gen	NPAasn	60	1			No data supplied
Providence Hospital (col)							
Falls Church 2,010—Fairfax	MeDe	Indlv	80			65	10
Gundry Home and Training School for Feeble-minded							
Lawrenceville 1,020—Brunswick	Inst	Church	18			4	83
Louise Taylor Letcher Memorial Hospital (col)							
Lexington 3,752—Rockbridge	Inst	State	20				8
Virginia Military Institute Hospital							
Norfolk 120,710—Norfolk	Chil	NPAasn	26			12	806
Children's Clinic of the Kings Daughters	Mat	NPAasn	80	30			No data supplied
Florence Crittenton Home							
Richmond, 182,920—Henrico	G&Inst City		520	14	108	400	1,343
City Home	(Included in City Home)						
City Tuberculosis Sanatorium	Conv	Indlv	42	2	1	23	95
Convalescent Home Hospital							
Lee Camp Soldiers Home Hospital	Inst	State	50			25	51
Penitentiary Hospital	Inst	State	60			20	420
State Farm 83—Goochland	Inst	State	100			42	420
State Farm Hospital							
Staunton 11,000—Augusta	Ment	State	2,500			2 000	1 061
Western State Hospital							
Stonegap 201—Wise	Indus	NPAasn	18			5	71
Stonegap Hospital							



Roanoke Hospital	Gen	NPAasn	98	12	151	47	1 600
Shenandoah Hospital	Gen	Corp	60	10	100	10	1 019
Salem 4,833—Roanoke							
Mount Regis Sanatorium	TB	Corp	25			14	33
Saltville 2,901—Smyth							
Matheson Hospital	Gen	NPAasn	12	2	10	3	203
South Boston 4,841—Halifax							
Hakeyon Hospital	Gen	Corp	30	6	14	6	246
South Boston Hospital	Gen	Indlv	30	4	18	14	720
Staunton 11,000—Augusta							
Kings Daughters Hospital	Gen	NPAasn	70	10	81	30	1 008
Suffolk 10,271—Norfolk							
Lakeview Hospital	Gen	Corp	50	4	42	20	702
Virginia General Hospital	Gen	NPAasn	25	5			No data supplied
University 1 125—Albemarle							
University of Virginia Hospital	Gen	State	300	30	433	188	0 421
Veterans Administration Home	3,876—Elizabeth City						
Veterans Admin Facility	Gen	Vet	810			744	855
Warrenton 1,450—Fauquier							
Fauquier County Hospital	Gen	NPAasn	30	4	90	13	510
Williamsburg 8,778—James City							
Eastern State Hospital	Ment	State	1 544			1 400	387
Winchester, 10,855—Frederick							
Winchester Memorial Hospital	Gen	NPAasn	68	12	123	40	1 524
Related Institutions							
Beaumont—Powhatan							
Virginia Industrial School for Boys	Inst	State	24			10	425
Bristol 8,840—Washington							
St Ann's Hospital	Gen	Indlv	14	3			No data supplied
Clover 251—Halifax							
Little Retreat Hospital	Gen	Indlv	6	3	23	2	46
Colony, 50—Amherst							
State Colony for Epileptics and Feeble-minded	MeDe	State	1 000			906	178

Sweet Briar 114—Amherst							
Sweet Briar College Infirmary	Inst	NPAasn	18			3	200
Toms Creek 781—Wise							
Toms Creek Hospital	Indus	NPAasn	12		2	4	82
Summary for Virginia							
Hospitals and sanatoriums		Number	Beds	Average Patients		Patients Admitted	
Related Institutions		87	13,837	10,340		101 698	
		20	4 606	3,701		5 958	
Totals		107	18,443	14 041		107 686	
Refused registration		3	57				
WASHINGTON							
Hospitals and Sanatoriums							
Aberdeen 21 723—Grays Harbor							
Aberdeen General Hospital	Gen	Corp	50			44	1 178
St Joseph's Hospital	Gen	Church	53	10	221	51	1,200
American Lake—Pierce							
Veterans Admin Facility	Ment	Vet	670			663	187
Anacortes 6 564—Skagit							
Anacortes Hospital	Gen	Corp	20	5	51	8	340
Auburn 3,906—King							
Suburban Hospital	Gen	Indlv	40	6	30	5	249
Bellingham, 30,823—Whatcom							
St Frances Hospital	Gen	Indlv	17	4	44	5	100
St Joseph's Hospital	Gen	Church	100	10	178	40	1 121
St Luke's General Hospital	Gen	NPAasn	75	10	211	35	1 409
Bremerton 10 170—Kitsap							
U S Naval Hospital	Gen	Navy	311			181	2 151
Burlington 1,407—Skagit							
Burlington General Hospital	Gen	Indlv	30	7			No data supplied
Centralia 8 003—Lewis							
St Luke's Hospital and Sweet Clinic	Gen	Corp	44	6	61	10	366

Our Heritage and Other Addresses By Colonel Hon Herbert A Bruce R.A.M.C. M.D. L.R.C.P. Lieutenant Governor of Ontario Cloth Price \$2.50 Pp 392 Toronto The Macmillan Company of Canada Ltd 1934

In chronological order Dr Bruce presents addresses delivered by him as lieutenant governor of Ontario from Dec. 31, 1932, through November 1934. The addresses cover almost every phase of human interest. Of particular medical interest are those on the romance of surgery, sterilization of the feeble-minded, cheaper convalescence, medicine acknowledges no national barriers, quacks versus science, cost of convalescence, the literary practices of some medical practitioners, and numerous addresses on such subjects as housing and education which are in the field of social medicine. The point of view of Dr Bruce is unusually sound and yet fairly advanced. He writes directly and simply. Unfortunately some of the addresses are pointed for the occasion on which they were given and will have but little interest for those who read them in this collection.

Medicolegal

Malpractice Baldness Attributed to Roentgen Treatment—The patient had a small sore on the crown of her head which the appellant physician diagnosed as favus. He administered three roentgen treatments to her head. As a result of the negligent administration of the treatments, it was alleged, the patient suffered a severe burn resulting in permanent baldness of most of her head. The father, as next friend of the patient, his minor daughter, sued the physician and obtained judgment in the trial court. The physician appealed to the court of civil appeals of Texas, Austin.

The physician contended that the baldness was due to the disease. He testified that the first treatment was for five minutes on the sore spot, the second for five minutes each on five different areas in the region of the sore spot, and the third for eight minutes on the sore spot. He and other experts testified that this was the proper method of roentgen treatment. The girl's parents who accompanied her at the time of each treatment, testified that the first treatment was from fifteen to thirty minutes, the second for one hour and a half, and the third for a longer period of time than eight minutes. After the second exposure, or treatment, according to the testimony, the girl's head began to turn red and blisters appeared. Later the head became as 'a piece of raw meat' and continued so for several months causing her great pain, and in the end sloughed off to the bone, leaving her bald. The testimony of the experts as to whether favus would cause complete baldness conflicted. Some testified that in extreme cases it would, while another testified that only the immediate hair involved would die. After examining the girl's head before the jury, one of the experts testified that her baldness was caused by a burn and that she would be permanently bald. The doctrine of *res ipsa loquitur*, said the court, is not involved in this case and under the evidence it was clearly a question for the jury to determine whether the injuries were caused by the physician's negligence.

The physician further contended that the court erred in permitting a picture from a medical textbook to be exhibited to the jury to test the weight to be given to the testimony of an expert witness called by him. This witness testified that a favus infection might produce complete or spotted baldness, depending on the extent and severity of the infection, and that the straight lines of demarcation of the bald and hairy portions of the girl's head were a mere coincidence, in that the infection of hair follicles happened to stop at the straight lines. On cross-examination, this witness testified that a certain textbook on roentgen rays was a standard authority. He was shown a picture in the textbook as typical of baldness caused by favus infection, which he said showed a moderate infection, because the patient had hair scattered over his head. Over objection, the picture was exhibited to and inspected by the jury. The rule is settled, said the court, that the knowledge and qualification of an expert witness may be tested as against accepted authorities on the subject testified about. The same rule should apply to a picture as to the written text.

There was sufficient evidence, the court said, that the girl would suffer physical discomfort in the future because of her baldness, and the trial court did not err in submitting such discomfort as an element of damages suffered by her. The judgment of the trial court was affirmed.—*Hess v Millsap (Texas)* 72 S W (2d) 923

Society Proceedings

COMING MEETINGS

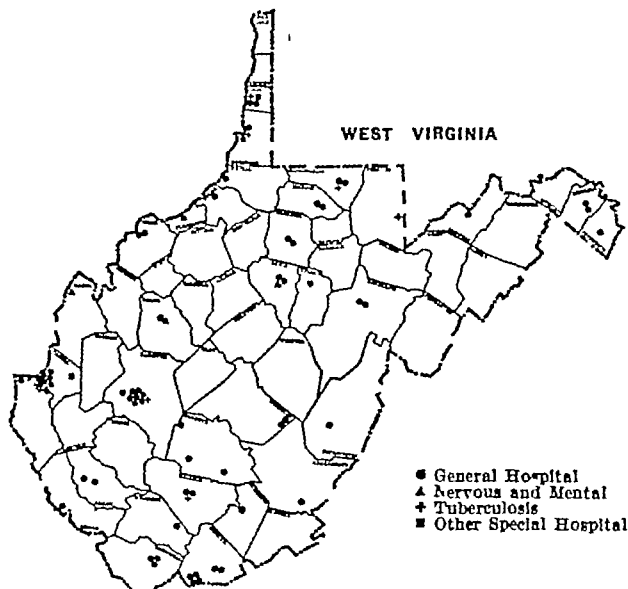
Alabama, Medical Association of the State of Mobile April 16-18
Dr D L Cannon 519 Dexter Avenue Montgomery Secretary
American Association of Anatomists St Louis April 18-20 Dr George W Corner, University of Rochester School of Medicine, Rochester N Y Secretary
American Association of Pathologists and Bacteriologists New York April 18-19 Dr Howard T Karsner, 2085 Adelbert Road, Cleveland Secretary
American Association of the History of Medicine Atlantic City May 6 Dr Edward J G Beardsley 1919 Spruce Street, Philadelphia Secretary
American Association on Mental Deficiency Chicago, April 25-27 Dr Groves B Smith Beverly Farms Godfrey III Secretary
American College of Physicians Philadelphia April 29 May 3 Mr E R Loveland 133 South 36th Street Philadelphia Executive Secretary
American Dermatological Association White Sulphur Springs W Va, May 24 Dr William H Guy 500 Penn Avenue Pittsburgh Secretary
American Pediatric Society Cleveland May 2-4 Dr Hugh McCulloch 325 North Euclid Avenue St Louis Secretary
American Physiological Society Detroit April 10-13 Dr Frank C Mann Mayo Clinic Rochester Minn Secretary
American Psychiatric Association Washington, D C May 13-17 Dr William C Sandy, State Education Building Harrisburg Pa Secretary
American Society for Clinical Investigation Atlantic City May 8 Dr H L Blumgart 330 Brookline Avenue, Boston Secretary
American Society for Experimental Pathology Detroit April 10-13 Dr Shields Warren 195 Pilgrim Road Boston Secretary
American Society for Pharmacology and Experimental Therapeutics Detroit April 10-13 Dr E M K. Geisling 710 N Washington Street Baltimore Secretary
American Society of Biological Chemistry, Detroit April 10-13 Dr H A Mattill State University of Iowa Iowa City Secretary
Arizona State Medical Association Phoenix April 25-27 Dr D F Harbridge 15 East Monroe Street Phoenix Secretary
Arkansas Medical Society Fort Smith, April 15-17 Dr W R Brookshier 602 Garrison Avenue Fort Smith Secretary
Association of American Physicians, Atlantic City May 7-8 Dr James H Means Massachusetts General Hospital Boston Secretary
California Medical Association Yosemite May 13-16 Dr F C Warnshuis 450 Sutter Street San Francisco Secretary
Connecticut State Medical Society, New Haven May 22-23 Dr C W Comfort Jr 27 Elm Street New Haven Secretary
District of Columbia Medical Society of the Washington May 1 Dr C B Conklin 1718 M Street N.W. Washington Secretary
Federation of American Societies for Experimental Biology Detroit April 10-13 Dr H A Mattill State University of Iowa Iowa City, Secretary
Florida Medical Association Ocala May 13-15 Dr Shaler Richardson 111 West Adams Street Jacksonville Secretary
Georgia, Medical Association of Atlanta May 7-10 Dr Allen H Bunce 139 Forrest Avenue N.E. Atlanta Secretary
Illinois State Medical Society Rockford May 21-23 Dr Harold M Camp Lahl Building Monmouth, Secretary
Iowa State Medical Society Davenport May 8-10 Dr Robert L Parker 3510 Sixth Avenue Des Moines Secretary
Kansas Medical Society Salina May 8-10 Mr Clarence Munns Stormont Building Topeka Executive Secretary
Louisiana State Medical Society New Orleans April 29 May 1 Dr P T Talbot 1430 Tulane Avenue, New Orleans Secretary
Maryland Medical and Chirurgial Faculty of Baltimore April 23-24 Dr Walter Dent Wise 1211 Cathedral Street Baltimore, Secretary
Mississippi State Medical Association, Biloxi May 14-16 Dr T M Dye McWilliams Building Clarkdale Secretary
Missouri State Medical Association Excelsior Springs, May 6-9 Dr E J Goodwin 634 North Grand Boulevard, St. Louis Secretary
Nebraska State Medical Association Omaha May 14-16 Dr R. B Adams Center McKinley Building Lincoln Secretary
New Hampshire Medical Society Manchester, May 7-8 Dr Carleton R Metcalf 5 South State Street, Concord Secretary
New Jersey Medical Society of Atlantic City April 30 May 2 Dr J B Morrison 66 Milford Avenue, Newark, Secretary
New York Medical Society of the State of Albany May 13-15 Dr Daniel S Dougherty 2 East 103d Street New York, Secretary
North Carolina Medical Society of the State of Pinehurst May 6-8 Dr L B McBrayer Southern Pines Secretary
Oklahoma State Medical Association, Oklahoma City May 13-15 Dr L S Willour 203 Ainsworth Building McAlester Secretary
South Carolina Medical Association Florence April 23-25 Dr E. A. Hines Seneca Secretary
South Dakota State Medical Association Pierre May 13-15 Dr John F D Cook Langford Secretary
Tennessee State Medical Association Nashville April 9-11 Dr H H Shoulders 706 Church Street, Nashville Secretary
Texas State Medical Association of Dallas, May 13-16 Dr Holman Taylor 208 Medical Arts Building, Fort Worth, Secretary
West Virginia State Medical Association, Wheeling May 6-8 Mr Joe W Savage, Public Library Building Charleston Executive Secretary

WASHINGTON—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Edgewood Sanatorium	TB	County	140		111	97	
Sacred Heart Hospital	Gen	Church	87	40	601	112	147
St. Luke's Hospital	Gen	NPA'ssn	151	21	108	88	50
Shriners Hospital for Crippled Children	Orth	Frnt	20		0	111	
Station Hospital	Gen	Army	0		61	2,411	
Tacoma 106,517—Pierce							
Northern Pacific Beneficial Association Hospital	Gen	NPA'ssn	111	5	18	53	187
Pierce County Hospital	Gen	County	178	22	620	203	723
St. Joseph's Hospital	Gen	Church	300	50	42	15	2,600
Tacoma General Hospital	Gen	NPA'ssn	220	17	510	84	3,204
Tacoma Hospital	(CTB) A		208			249	751
Tonasket 513—Okanogan							
Tonasket Hospital	Gen	Indiv	0	4	7	4	162
Tuppenish 2,774—Yakima							
Yakima Sanitarium	TB	IA	40			41	20
Vancouver 1,766—Clark							
Clark County Hospital	Gen	County	29	8	112	23	71
Clark General Hospital	Gen	NPA'ssn	50	12	112	21	68
St. Joseph's Hospital	Gen	Church	109	12	3	42	110
Station Hospital	Gen	Army	60			40	148
Walla Walla 15,046—Walla Walla							
St. Mary's Hospital	Gen	Church	140	10	20	50	1,811
Veterans Admin Facility	GATB	Vet	400			200	40
Walla Walla Sanitarium and Hospital	Gen	Church	50	0	38	10	331
Wenatchee 11,627—Chelan							
Central Washington Deaconess Hospital	Gen	Church	47	10	221	79	1,312
St. Anthony's Hospital	Gen	Church	60	17	79	42	180
Yakima 22,101—Yakima							
St. Elizabeth's Hospital	Gen	Church	130	30	221	100	2,007
Yakima County Hospital	Gen	County	42	7	102	36	
Related Institutions							
Chehalis 4,907—Lewis							
State Training School for Boys	Inst	State	20			1	380
Cle Elum 2,008—Kittitas							
Roslyn Cle Elum Beneficial Company Hospital	Indus	NPA'ssn	20	1		1	401
Friday Harbor 601—San Juan							
Friday Harbor Hospital	Gen	Indiv	5	3	5		12
Ione 694—Pend Oreille							
Ione Hospital	Gen	Indiv	11	3	No data supplied		
Lakeview, 3,32—Pierce							
Sunnyside Sanatorium	NPA'ssn	Indiv	10			4	12
Medical Lake 1,671—Spokane							
State Custodial School	McDe	State	140			140	202
Monroe 1,570—Snohomish							
Snohomish County Hospital and Farm	Inst	County	32	6		30	129
Mt Vernon 3,600—Skagit							
Rowley General Hospital	Gen	Indiv	21	6	No data supplied		
Republic 710—Ferry							
Republic Hospital	Gen	Indiv	8	2	No data supplied		
Ritzville 1,777—Adams							
Ritzville General Hospital	Gen	Indiv	12	4	32	8	220
Seattle 30,583—King							
Florence Crittenton Home	Mat	NPA'ssn	30	15	30	17	44
Freedlander's Sanitarium	Conv	Indiv	12			7	170
King County Hospital Unit No. 2	Inst	County	20			2,2	612
Mason Sanitarium	Inc	Corp	20			15	
Mt Baker Sanitarium	Conv	Indiv	18			15	90
Rest Haven Sanitarium	Conv	Indiv	11			5	30
Seattle Emergency Hospital	Emerg	City	10				
University of Washington Health Service Infirmary	Inst	State	43			11	911
Sequim 534—Clallam							
Sequim Prairie Hospital	Gen	Indiv	12	5	No data supplied		
Spangle 218—Spokane							
Spokane County Hospital	Inst	County	100			90	300
Spokane 115,514—Spokane							
Florence Crittenton Home	Mat	NPA'ssn	26	18	42	18	50
Rivercrest Hospital	Iso	City	100			4	56
Salvation Army Women's Hospital and Home	Mat	Church	49	28	114	28	178
Sprague 630—Lincoln							
Sprague Hospital	Gen	Indiv	10	5	10	2	42
Stellacoom 722—Pierce							
U S Penitentiary Hospital	Inst	Fed	72			70	700
Sumas 647—Whatcom							
Merrilyn Cottage Hospital	Gen	Indiv	7	3	No data supplied		
Sumas General Hospital	Gen	Indiv	12	2	4	1	33
Tacoma 106,517—Pierce							
Bellerue Sanatorium	TB	Indiv	16			10	16
City Contagious Hospital	Iso	City	30			7	99
White Shield Home	Mat	NPA'ssn	20	10	35	9	52
Tulalip 620—Snohomish							
Tulalip Indian School Hosp	Gen	IA	14	4	36	11	801
Walla Walla 15,078—Walla Walla							
Washington State Penitentiary Hospital	Inst	State	35			No data supplied	
Yakima 22,101—Yakima							
Yakima Nursing Home and Hospital	Gen	Indiv	12	12			
Summary for Washington							
Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted			
Related institutions	89	14,271	10,665	100,627			
	32	2,648	2,103	5,870			
Totals	121	16,919	12,818	111,497			
Refused registration	20	451					

WEST VIRGINIA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Beckley 9,357—Raleigh							
Beckley Hospital	Gen	Part	155	10	50	68	5,062
Pinecrest Sanitarium	TB	State	143			129	143
Raleigh General Hospital	Gen	Corp	50	4	32	33	1,197
Bluefield 19,339—Mercer							
Bluefield Sanitarium	Gen	Corp	100	6	61	45	2,450
Brown's Hospital (col)	Gen	Indiv	40	3	25	15	5,600
Providence Hospital (col)	Gen	Indiv	20	3	3	3	103
St. Luke's Hospital	Gen	Corp	75	8	50	30	1,198
Buckhannon 4,374—Upshur							
St. Joseph's Hospital	Gen	Church	36	6	20	18	605
Charleston 60,408—Kanawha							
Charleston General Hosp	Gen	Corp	100	15	00	93	3,166
Kanawha Valley Hospital	Gen	Corp	50	12	120	60	2,014
McMillan Hospital	Gen	Indiv	90	10	78	23	2,421
Mountain State Hospital	Gen	Corp	110	15	52	20	1,34
St. Francis Hospital	Gen	Church	70	12	132	26	1,002
Salvation Army Hospital	Gen	Church	30	4	77	17	671
Staats Hospital	Gen	Corp	45	3	02	26	1,364
Charles Town 2,434—Jefferson							
Charles Town General Hosp	Gen	NPA'ssn	20	3	21	6	220
Clarksburg 28,866—Harrison							
St. Mary's Hospital	Gen	Church	120	13	120	51	1,712
Union Protestant Hospital	Gen	Church	52	10			843
Filkins 7,340—Randolph							
Davis Memorial Hospital	Gen	NPA'ssn	80	6	22		
Filkins City Hospital	Gen	Indiv	60	5	30	21	1,087
Fairmont 23,109—Marion							
Cook Hospital	Gen	Corp	100	10	87	57	1,878
Fairmont Emergency Hosp	Gen	State	60	5	22	60	1,104



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Total hospitals in West Virginia, 76, general, 59 general beds occupied, 49.3 per cent, population per general bed, 413

Glen Dale 1,493—Marshall							
Reynolds Memorial Hospital	Gen	Church	80	10	35	22	679
Hinton 6,654—Summers							
Hinton Hospital	Gen	Corp	75	4	9	30	716
Holden 2,048—Logan							
Holden Hospital	Gen	NPA'ssn	40	1	3	12	741
Hopemont 60—Preston							
Conley Hospital	(Included in Hopemont Sanitarium)						
Hopemont Sanitarium	TB	State	420			401	408
Huntington 75,572—Cabell							
Cheapeake and Ohio Railway Hospital	Gen	NPA'ssn	110	20	27	70	2,254
Huntington City Hospital	Gen	City	35	12	189	24	803
Huntington Memorial Hosp	Gen	Corp	160	0	48	70	2,438
Huntington Orthopedic Hosp	Orth	NPA'ssn	60			25	721
Moore Beckner Eye Ear and Throat Hospital	ENT	Indiv	10			3	305
St. Mary's Hospital	Gen	Church	100	20	194	55	2,267
Veterans Admin Facility	Gen	Vet	210			168	1,369
Kenova 3,650—Wayne							
Rife Ferguson Hospital	Gen	Part	10	2	16	5	150
Keyser 6,248—Mineral							
Potomac Valley Hospital	Gen	Corp	45	5	37	31	1,173
Lakin—Mason							
Lakin State Hospital (col)	Ment	State	500			317	85
Logan 4,200—Logan							
Logan General Hospital	Gen	Corp	100	8		47	1,624
Marlinton 1,688—Pocahontas							
Pocahontas Memorial Hospital	Gen	County	25	4	12	15	400
Marlinton 14,857—Berkeley							
City Hospital	Gen	NPA'ssn	42	8	30	26	900
Kings Daughters Hospital	Gen	NPA'ssn	05	0	49	23	760

Key to symbols and abbreviations is on page 1091

Journal of Experimental Medicine, New York

61 149 298 (Feb. 1) 1915

- Studies on Anaphylaxis with Pollen C Bernstein Jr Chicago—p 149
- Salt and Water Losses in Diuretic Diuresis and Their Relation to Serum Nonprotein Nitrogen and Electrolyte Concentrations E Kerpel Fronius and A M Butler Boston—p 157
- Experimental Production in Dogs of Acute Stomatitis Associated with Leukopenia and Maturation Defect of Myeloid Elements of Bone Marrow D K Miller and C P Rhoads New York—p 173
- Further Studies on Kala Azar Leishmania in Nasal and Oral Secretions of Patients and Bearing of This Finding on Transmission of Disease C E Forkner and Lily S Zia Peiping China—p 183
- Diagnosis of Psittacosis in Man by Means of Injections of Sputum into White Mice T M Rivers and G P Berry New York—p 205
- *Study of Repeated Attacks of Experimental Pneumococcus Lobar Pneumonia in Dogs L T Coggeshall and O H Robertson Chicago—p 213
- *Tests for Pneumococcus Hypersensitiveness in Dogs After Recovery from Experimental Pneumococcus Lobar Pneumonia L T Coggeshall Chicago—p 235
- Development of Pure Cultures of Fibroblasts from Single Mononuclear Cells J K Moen New York—p 247
- Blood Plasma Protein Regeneration Controlled by Diet Systematic Standardization of Food Proteins for Potency in Protein Regeneration Fasting and Iron Feeding W T Pommerenke H B Slavin D H Kariher and G H Whipple Rochester N Y—p 261
- Dog Plasma Protein Given by Vein Utilized in Body Metabolism of Dog Horse Plasma and Dog Hemoglobin Not Similarly Utilized W T Pommerenke H B Slavin D H Kariher and G H Whipple Rochester N Y—p 283

Repeated Attacks of Experimental Pneumococcal Pneumonia—Coggeshall and Robertson studied the effects of repeated attacks of lobar pneumonia produced by the intrabronchial injection of pneumococcus type I in twenty-five dogs undergoing seventy-eight infections induced at intervals of from three days to nineteen months. The number of attacks to which animals were subjected ranged from two to eleven. The dogs were killed during the final infection and the pulmonary pathologic changes were studied. That recovery from the experimental disease conferred on the animal increased resistance against subsequent infections was shown by the fact that such animals regularly survived doses of culture which in the dog infected for the first time produced a fatal outcome. The recurrent attacks of pneumonia were uniformly mild in character; the febrile course was brief, the pulmonary lesion was usually confined to a single lobe and bacteremia seldom occurred. The time intervals between attacks bore no relationship to the severity of the experimental disease. Tests for acquired antipneumococcal immune substances in the blood after recovery showed their presence in some animals and not in others; yet dogs without demonstrable humoral immunity appeared to be just as resistant to reinfection as those possessing it. Secondary lesions produced in the lobe previously affected tended to evolve much more rapidly than did the primary ones. They were characterized by the early appearance of a generalized macrophage reaction and a marked diminution in the numbers of pneumococci in the tissues or their complete absence. These changes occurred more slowly in secondary lesions initiated in heretofore uninvolved lobes. The macrophage reaction which consists of a swelling of the fixed tissue cells (histiocytes) and a subsequent liberation of macrophages into the alveolar exudate, is regarded as a significant evidence of increased antipneumococcal resistance, since it has been observed to occur regularly at the time of recovery from the first infection and is accompanied by the local disappearance of the invading micro-organisms.

Tests for Hypersensitiveness After Recovery from Experimental Pneumonia—Coggeshall bases his conclusion that dogs do not develop hypersensitivity to the pneumococcus as the result of experimental lobar pneumonia on the following: 1 Fifteen dogs were given type I and II pneumococcus lobar pneumonia and following recovery, were tested for hypersensitiveness by means of intrabronchial and intracutaneous injections of the autolysate made from the homologous pneumococcus. 2 Seven dogs showed a pulmonary lesion discernible with the x-rays at the site of the autolysate inoculation; three of these dogs were normal controls. 3 No evidence of a positive skin reaction was found in any of the fifteen dogs; many of which received repeated infections and intradermal autolysate injections. 4 Subsequent infections in the same animals were

definitely milder than the initial infection. 5 The infections following the administration of intrapulmonary and cutaneous autolysate were of about the same intensity as the initial infection. 6 Temperature, pulse rates, white blood counts and differential blood pictures showed no significant variations following intrapulmonary injection of autolysate. 7 Tests for the acquisition of humoral immune bodies following autolysate injection and recovery from the experimental disease showed the presence of these substances in some of the dogs and their absence in others. 8 Study of the pathology of the pulmonary lesions produced by the autolysate failed to reveal histologic changes characteristic of an allergic reaction. However, the presence of perivascular accumulations of large mononuclear cells observed in the lesions of the recovered dogs does suggest a locally accelerated reactivity of the fixed tissue cells to the products of the pneumococcus.

Journal of Industrial Hygiene, Baltimore

17 136 (Jan.) 1935

- Lead Intoxication in Etiology of Hypertonia N A Vigdortchik Leningrad U S S R—p 1
- Effect of Salts on Determination of Traces of Lead by Chromate Method A W Middleton London England—p 7
- Effect of Repeated Lead on Blood Picture in Guinea Pigs J Krafka Jr Augusta Ga—p 13
- Factors Influencing Lethal Action of Illuminating Gas Erma Smith E McMillan and Lillian Mack Ames Iowa—p 18
- Control of Occupational Diseases by Laboratory Methods C O Sappington Chicago—p 21
- Detection of Mineral Particles in Sputum in Silicosis H E Burke Ray Brook N Y—p 27
- *Method for Analysis of Dust Samples Employing X-Ray Diffraction Preliminary Report W F Bale and W W Fray Rochester N Y—p 30

Method for Analysis of Dust Samples—Bale and Fray believe that their method of employing x-ray powder spectroscopy promises to aid materially in the qualitative analysis of dust samples. The results of the test are available at the end of from twenty-four to forty-eight hours. The dust is very finely pulverized and inserted in a capillary glass tube. The properly filtered Ka radiation of a molybdenum target x-ray tube is used to produce a nearly monochromatic beam, which is passed through the contents of the capillary tube, producing diffractive effects identified on the film as bands of different density and intensity separated by areas of comparatively clear film. The blackening of the film occurs in bands, because these areas represent directions in which reinforcement of the roentgen energy occurs from diffractive interference while the clear areas show little blackening, owing to the fact that these areas relate to the aphasical character of the roentgen energy diffracted in these directions. The quantitative amounts of sand or mica in a mixed dust sample of unknown character may be determined at least approximately by comparing the relative film densities of selected strong bands of the substance in the mixed sample with that of a known mixed control of the same substances.

New Jersey Medical Society Journal, Trenton

32 158 (Jan.) 1935

- Osteogenic Tumors J D Tidback Summit and A Galasso Morris town—p 7
- The Medical Society of New Jersey Experiments in Furnishing Community Health Services L A Wilkes Trenton—p 11
- Allergy in Clinical Medicine R A Cooke, New York—p 15
- Pneumonia in Adults L F Barker Baltimore—p 24
- Röntgenologic Diagnosis of Lesions of Esophagus C F Baker and W J Marquis Newark—p 29

New York State Journal of Medicine, New York

35:41 100 (Jan. 15) 1935

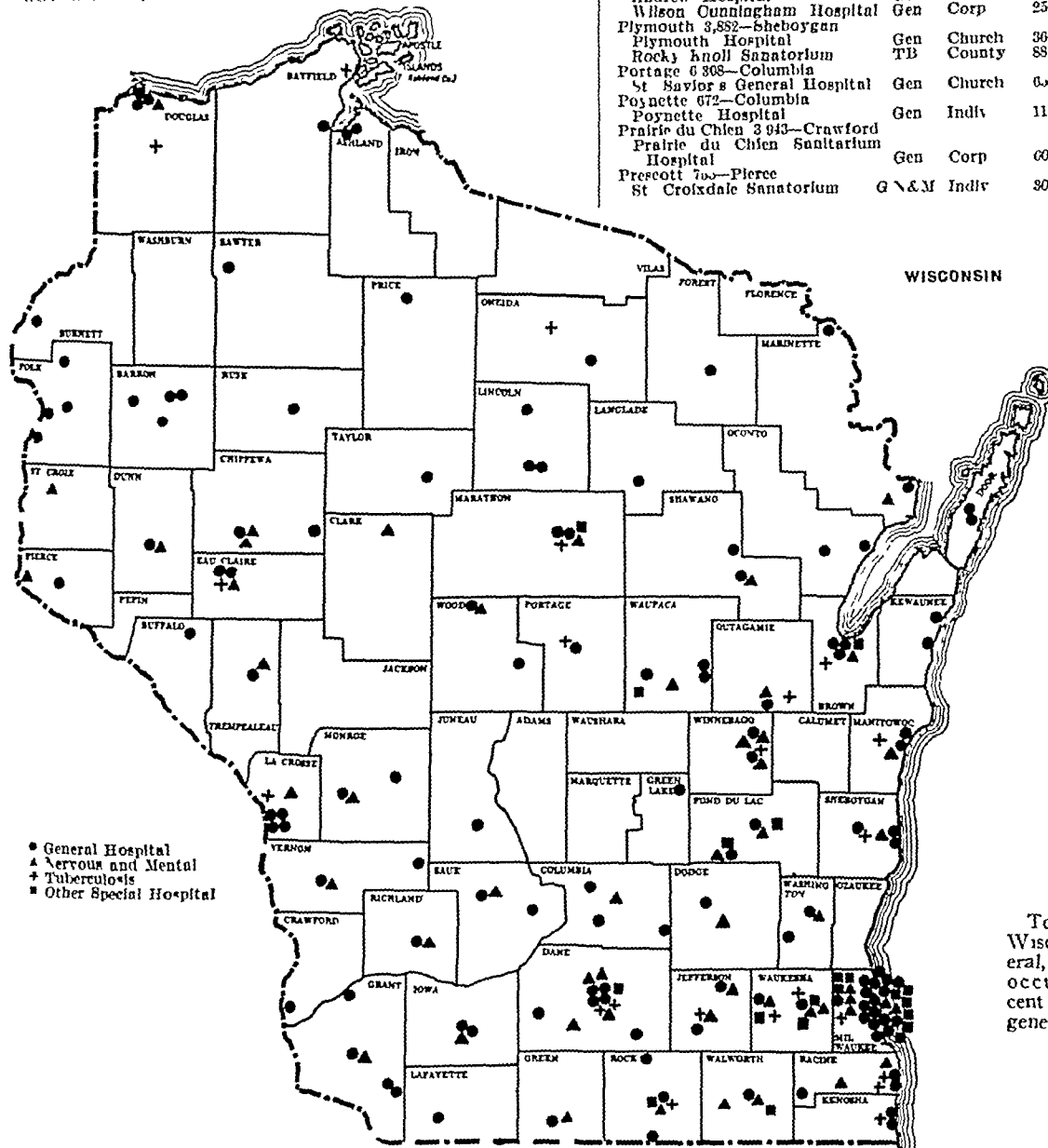
- Psychogenic Factors in Asthma C P Oberndorf New York—p 41
- Nondrainage Treatment of Peritonitis G W Cottis and H W Ingham Jamestown—p 49
- Observations on Some Disturbances of Vestibular Function P Northington New York—p 56
- Chemistry in Medicolegal Autopsy A O Gettler New York—p 66
- Cutaneous Reactions to Hemolytic Streptococcus Nucleoprotein in Rheumatic and in Nonrheumatic Children A D Kaiser and J D Keith Rochester—p 69
- Arteriography J C Knapp Woodhaven N Y—p 76
- The Physician and Pharmacist of the Future F D Lascoff New York—p 79

WISCONSIN—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
St Luke's Hospital	Gen	Church	100	17	204	35	1,411
St Mary's Hill Sanitarium	N & M	Church	110			65	325
St Mary's Hospital	Gen	Church	218	37	463	118	3,643
Shorewood Hospital Sanit	N & M	Corp	50			10	100
South Side Hospital	Gen	N & M	10	10	15	4	17
South View Hospital	Gen	City	20			60	870
Veterans Admin Facility	G & TB	Net	1,304			668	4,488
West Side Hospital	Gen	N & M	5	5	11	5	251

WISCONSIN—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Oshkosh 40 108—Winnebago Mercy and St Mary's Hospital	Gen	Church	130	20	336	85	2,774
Park Falls 3 036—Price Park Falls Hospital	Gen	Indiv	20	4	21	8	421
Pewaukee 1 067—Waukesha Oak Sanatorium	TB	County	38			30	30
Platteville 4 047—Grant Andrew Hospital	Gen	Indiv	15	4	7	4	178
Wilson Cunningham Hospital	Gen	Corp	25	5	16	7	179
Plymouth 3,882—Sheboygan Plymouth Hospital	Gen	Church	36	8	54	11	310
Rocky Knoll Sanatorium	TB	County	88			88	87
Portage 6 808—Columbia St Saviour's General Hospital	Gen	Church	60	10	81	21	748
Poynette 672—Columbia Poynette Hospital	Gen	Indiv	11	2	14	2	74
Prairie du Chien 3 943—Crawford Hospital	Gen	Corp	60	6	76	22	913
Prairie du Chien Sanitarium	Gen	Corp	60	6	76	22	913
Prescott 700—Pierce St Croixdale Sanatorium	G & N & M	Indiv	80	4	15	20	110



Copyright American Map Co N Y 75:1

Total hospitals in Wisconsin, 223, general, 127, general beds occupied, 533 per cent population per general bed, 266

Monroe 3,010—Green Evangelical Deaconess Hosp	Gen	Church	30	12	139	18	659
Mt Horeb 1 420—Dane Buckner Hospital	Gen	Indiv	14	0	62	6	367
Neenah, 9 151—Winnebago Theda Clark Memorial Hosp	Gen	N & M	50	17	231	40	1,302
New London 4 661—Waupaca Community Hospital	Gen	Church	50	8	44	13	413
Memorial Hospital	Gen	Indiv	15	6	19	4	143
Oconomowoc 4 190—Waukesha Oconomowoc Health Resort	N & M	Corp	75			40	70
Summit Hospital	Gen	Corp	30	6	34	22	303
Oconto 5 630—Oconto Oconto County and City Hosp	Gen	N & M	20	6	No data supplied		
Oconto Falls 1,921—Oconto Oconto Falls Hospital	Gen	N & M	11	5	30	7	336
Onalaska 1 408—La Crosse Oak Forest Sanatorium	TB	County	60			69	73

Pureair (Bayfield P O)—Bayfield Pureair Sanatorium	TB	County	70			68	56
Racine 67 542—Racine St Luke's Hospital	Gen	Church	120	40	446	38	2,791
St Mary's Hospital	Gen	Church	130	33	396	43	2,363
Sunny Rest Sanatorium	TB	County	30			50	36
Reedsburg 2 967—Sauk Reedsburg Municipal Hospital	Gen	City	31	8	37	14	490
Rhinelanders, 8 010—Oneda St Mary's Hospital	Gen	Church	60	12	121	29	1,002
Rice Lake 5 177—Barron Lakeside Methodist Hospital	Gen	Church	34	5	91	18	603
St Joseph's Hospital	Gen	Church	40	0	34	10	880
Richland Center 3 632—Richland Richland Hospital	Gen	N & M	40	7	40	20	1,180
St Croix Falls 952—Polk St Croix Falls Hospital	Gen	Indiv	25	6	41	11	367

Key to symbols and abbreviations is on page 1091

bandage is left in position as long as it will adhere—usually, in the early stages when discharge is plentiful, from twelve to forty-eight hours. It is then replaced by similar pieces of adhesive plaster and repeated until healing is complete. On removal of the bandage no attempt should be made to clean the surface of the sore. It suffices to wipe away the discharge from the surrounding skin with absorbent cotton or a soft cloth before applying a new piece of bandage.

Journal of Pathology and Bacteriology, Edinburgh

40 1200 (Jan.) 1935

- Structure of Teratomas R A Willis—p 1
 Reconstruction Models Showing Moderately Early Simple Silicotic Process and How It Affects Definite Parts of Primary Unit of Lung F W Simson—p 37
 Leukemia Coincident with and Transmissible by Spindle-Cell Sarcoma in Mouse L Dorothy Parsons—p 45
 *Infection with Neurotropic Yellow Fever Virus Following Instillation into Nares and Conjunctival Sac G M Findlay and L P Clarke—p 55
 Immunization of Mice Against Rift Valley Fever R D Mackenzie—p 65
 Adsorption and Elution of Agglutinins A H Rosenheim—p 75
 Natural Occurrence of Pleuropneumonia-like Organisms in Apparent Symbiosis with Streptobacillus Moniliformis and Other Bacteria Emmy Klieneberger—p 93
 Experiments with BCG Cultures M F Shaffer—p 107
 Size of Virus of Poliomyelitis as Determined by Ultrafiltration Analysis W J Elford I A Galloway and J R Perdrau—p 135
 Size of St. Louis Encephalitis Virus as Determined by Ultrafiltration Analysis W J Elford and J R Perdrau—p 143
 Cultivation of Virus of Infectious Ectromelia with Observations on Formation of Inclusion Bodies in Vitro A W Downie and C A McGaughey—p 147
 *The Ectopic Testicle H W C Vines—p 161
 Complexity of Antigens in Relation to Zones in Precipitation Reaction E Goldsworthy and G V Rudd—p 169

Infection with Yellow Fever Virus Following Instillation into Nares—Findlay and Clarke state that the nasal instillation of neurotropic yellow fever virus in monkeys and mice is followed by the development of encephalitis; the virus also reaches the peripheral blood stream. The virus is present in the olfactory lobes of a monkey and in the cerebral hemispheres of mice two days after nasal instillation. Later there is a general spread throughout the brain. Instillation of the virus in the conjunctival sacs of mice is followed in certain cases by encephalitis. Monkeys that have immune bodies to yellow fever present in the blood do not develop encephalitis after nasal instillation of the virus. The possible routes by which the virus reaches the brain from the nasal cavities are discussed.

The Ectopic Testicle—Vines examined histologically forty-four cases of ectopic testicles of which thirty-eight showed unilateral and six bilateral misplacement. Unilateral and bilateral ectopic testicles are histologically distinct at and after puberty; before puberty no constant differences have been observed in equally immature testicles. After puberty the unilateral ectopic testicle undergoes progressive atrophy involving first and chiefly the spermatic epithelium and later the interstitial cells. In bilateral ectopia complete testicular atrophy does not occur; there is either normal spermatogenesis or else the spermatic tissue atrophies while the interstitial cells undergo marked hyperplasia. The atrophy of the spermatic tissue which may occur in both types of ectopia, is a result of puberty. It is probably due to the incapacity of the immature testicle to respond successfully to the stimulus of puberty. The interstitial hyperplasia in bilateral ectopia is also an effect of puberty and does not occur in the prepubertal period. The author suggests that bilateral ectopia and its associated malformations of the genitalia are not governed by the gonad but are parts of an endocrine syndrome that causes masculinization of the female in early fetal life.

Journal of State Medicine, London

43 162 (Jan.) 1935

- Inspection of Dairy Cattle Under the Milk and Dairies (Consolidation) Act 1915 B Wood White—p 1
 The Milk Problem T Ruddock West—p 17
 Weakness of Pasteurization as Means of Safeguarding the Milk Supply D Hall—p 24
 Midwifery Service in Rural District H H Thomson—p 28
 Antenatal Work in Cumberland K Fraser—p 32
 The Crippled Child H A Brittain—p 36
 Citizenship and Tuberculosis J H H Williams—p 43

Journal of Tropical Medicine and Hygiene, London

38 1728 (Jan 15) 1935

- Ocular Filariasis Adult Wuchereria Bancrofti in Anterior Chamber of Human Eye S E Fernando—p 17
 Some Pathologic Changes Met with in Filarial Orchitis and Their Significance T B Menon and D R Annamalai—p 18

Presse Medicale, Paris

43 137160 (Jan 26) 1935

- Heterotopic Osteogenesis Obtained with Help of Grafts in Muscles of Strip of Vaginal Mucosa or of Grafts of Aponeurosis in Bladder R Leriche and E Lucinisco—p 137
 Observations on Heterotopic Osteogenesis in Spleen A Jung and S Cemil—p 140
 Pulmonary Steatosis R Debre G See and E Normand—p 142
 *Besnier-Boeck's Disease (Multiple Benign Sarcoma) I M Pautrier—p 146
 Roentgenologic Diagnosis of Suppurated Hydatid Cysts of Lung H Constantini and E Curtillet—p 150
 Influence of Some Metals on Fixation of Mineral Components in Osteoblast Cultures Biologic Study of Osteosynthesis G Menegaux and D Odiette—p 152
 *Hernias of Mediastinum and Their Pathogenesis F Trihoulet and J Lecœur—p 156

Besnier-Boeck's Disease—Pautrier discusses in detail the clinical and pathologic manifestations of multiple benign sarcoma in various tissues. The cutaneous lesions, which have been the longest known, appear as nodosities of varying sizes. They develop slowly during years and may leave a central scar. The histologic picture is characteristic. They are formed of a dermal infiltration predominantly epithelioid and separated by narrow bands of collagen. Histiocytes and lymphocytes are frequently present. The infiltrating nodules border the hypoderm without producing the least reaction. The lesions in the ganglions, tracheobronchial glands, lungs, osseous tissue, viscera and nasal and conjunctival mucosa are histologically identical. The condition is therefore revealed as a generalized systemic disease primarily reticulo-endothelial. No agreement as to etiology has been reached. The consensus allies it with tuberculosis in an attenuated form. The author employs a treatment consisting of tuberculin and neoarsphenamine and has obtained many good results with it.

Hernias of Mediastinum—Trihoulet and Lecœur discuss the anatomic and functional factors concerned in mediastinal herniation. Two cases are reported. As a result of their studies they conclude that the pathogenic mechanism is not simple. It is usually due to pressing back of the pleural cul-de-sac through a weakened zone of the mediastinum owing to the simple influence of disequilibrium of pressures created by pneumothorax and manifesting itself through a maximum of expiratory distention. More rarely a different mechanism is involved in which the hernias are of maximum inspiration resulting from the aspirating action exerted by the opposite lung and are a simple manifestation of the retractable tendency of lesions at this site.

Revue Française de Pédiatrie, Paris

10: 709-864 (No 6) 1934

- Tetany in Infants Under Three Months E Gorter and Johanna J de Dier—p 709
 Histophysiologic Study of Infantile Rickets A Policard M Péhu and J Boucomont—p 723
 Prognosis of Intrathoracic Tuberculosis of Child J Lundquist—p 769
 Peculiarities of Blood Biochemistry and Metabolism in Infantile Nephropathies M S Maslov—p 783
 *Prophylaxis of Measles with Adult Serum A S Levine—p 825

Prophylaxis of Measles—Measles and its complications account for a high percentage of the infectious disease mortality. The struggle against measles according to Levine lies in the domain of general prophylaxis: hygiene and specific immunobiology. The immunizing action of adult serum may perhaps be explained in two ways: the presence of proteins and the presence of specific antibodies. He observed several groups of infants with various degrees of exposure and immunization to measles. He concludes that adult serum is a valuable prophylactic agent against measles. Convalescent serum has given brilliant results. Late introduction of serum has no results; early administration, even of small quantities, often is advantageous. The introduction of serum lengthens the period of incubation. Large doses of serum (60 cc.) given in the first

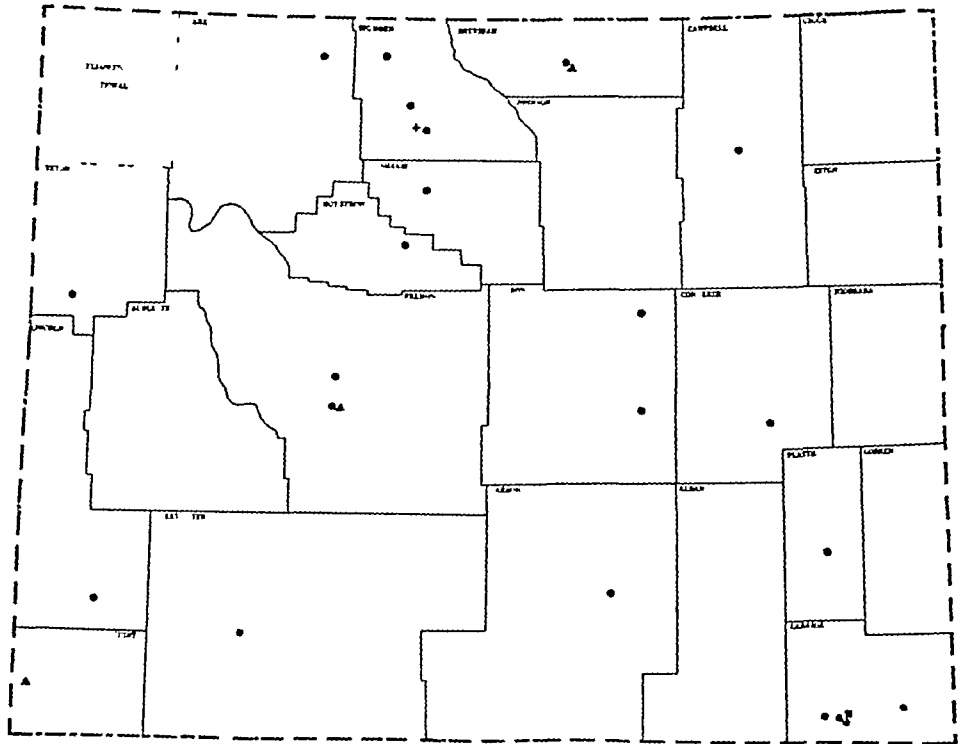
WISCONSIN—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
West Salem 1011—J n (Crosse La Crosse County Asylum for Insane	Ment	County	200		10	10	
Weyauwega, 1007—Waupaca Waupaca County Inane Asylum	Ment	County	181		171	20	
Whitehall 91—Trempealeau Trempealeau County Asylum for Chronic Insane	Ment	County	110		114	8	
Winnebago 1120—Winnebago Winnebago County Asylum	Ment	County	10		240	16	
Wisconsin Veterans Home 117—Waupaca Grand Army Home for Veterans	In t	State	40		140	4	
Wyocena 400—Columbia Columbia County Asylum	Ment	County	200		140	1	
Summary for Wisconsin			Number	Beds	Average Patients	Patients Admitted	
Hospitals and sanatoriums			18	1807	17708	181010	
Related institutions			1	10801	9884	672	
Totals			19	2886	27592	181671	
Refused registration							

WYOMING—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Midwest 2122—Natrona Midwest Hospital	Gen	NPAasn	18	3	40	6	303
Powell 1156—Park Whitlock Hospital	Gen	Corp	20	4	26	8	238
Rock Springs 8440—Sweetwater Wyoming General Hospital	Gen	State	108	8	200	50	2,266
Sheridan 5536—Sheridan Sheridan County Memorial Hospital	Gen	County	65	12	269	50	1,432
Veterans Admin Facility	Ment	Vet	466			43	123
Wheatland 109—Platte Wheatland General Hospital	Gen	NPAasn	40	7	60	21	1,000
Worland 1461—Washakie Dr Cray's Hospital	Gen	Indiv	11	2			
Related Institutions							
Basin 903—Big Horn Basin Hospital	Gen	Corp	10	2	0	2	68
Cheyenne 17361—Laramie Laramie County Isolation Hospital	Gen	County	15			1	8
Gillette 1040—Campbell Rooney Hospital	Gen	Indiv	20	8	20	5	106

WYOMING



Total hospitals in Wyoming, 27, general, 20, general beds occupied, 50.3 per cent population per general bed, 269

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WYOMING

Hospitals and Sanatoriums	Type of Service	Control	Beds	Basinsets	Number of Births	Average Patients	Patients Admitted
Basin 903—Big Horn Wyoming Tuberculosis Sanat	TB	State	23		28	31	
Burns 216—Laramie Burns Hospital	Gen	Indiv	15	5	28	3	102
Casper 16,010—Natrona Memorial Hospital of Natrona County	Gen	County	69	10	120	42	1,391
Cheyenne 17,361—Laramie Memorial Hospital of Laramie County	Gen	County	117	15	147	40	1,127
Veterans Admin Facility	Gen	Vet	108			New	
Douglas 1,917—Converse Douglas Hospital	Gen	Indiv	16	4	20	8	311
Evanston 3,070—Ulata Wyoming State Hospital	Ment	State	110			406	117
Ft Warren 22—Laramie Station Hospital	Gen	Army	114	6	143	80	1,840
Ft Washakie 63—Fremont Shoshone Indian Hospital	Gen	IA	30	6	44	12	273
Gebo 294—Hot Springs Gebo Hospital	Gen	NPAasn	18	4	10	0	200
Jackson 533—Teton St John's Hospital	Gen	Church	20	4	10	0	410
Kemmerer 1,884—Lincoln Lincoln County Miners Hosp	Gen	NPAasn	30	0	42	12	432
Lander 1,850—Fremont Bishop Randall Hospital	Gen	Church	20	6	30	8	260

Greybull 1,800—Big Horn St Luke's Hospital	Gen	Indiv	6	1	6	2	107
Hanna 1483—Carbon Hanna Hospital	Gen	NPAasn	10	0	8	2	84
Lander 1,826—Fremont Wyoming State Training School	MeDe	State	207			273	33
Lovell 1,837—Big Horn Lovell Hospital	Gen	Indiv	6	4	24	3	169

Summary for Wyoming

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	20	1,849	1,388	12,487
Related institutions	7	371	288	680
Totals	27	2,220	1,676	13,167
Refused registration	3	100		

ALASKA

Hospitals Sanatoriums and Related Institutions	Type of Service	Control	Beds	Basinsets	Number of Births	Average Patients	Patients Admitted
Anchorage 2,277 Anchorage Base Hospital	Gen	Fed	35	6	40	13	1,063
Cordova 680 Cordova General Hospital	Gen	Indiv	20	4	16	7	314
Fairbanks 2,101 St Joseph's Hospital	Gen	Church	30	4	27		449
Ft Yukon 304 Hudson Stuck Memorial Hosp	Gen	Church	40	2			

Key to symbols and abbreviations is on page 1091

as well as by old patients and in administration into the muscle, the vein or the peritoneum he thinks that there is no reason to discontinue its use. He says that the considerable relief effected by salyrgan often induces the patients to request an injection.

Salyrgan as Diuretic in Severe Cardiac Weakness—According to Tziwanopoulos, most authorities agree that in severe cardiac insufficiency with a low maximum blood pressure and with myocardial changes a sudden artificial increase in the diuresis, which might cause a disturbance in the labile equilibrium of the circulation is to be avoided. He points out that the danger involved in the use of salyrgan in severe heart disease has been stressed repeatedly and that it has been recommended that the administration of salyrgan be preceded by a thorough digitalization.

Wiener klinische Wochenschrift, Vienna

48: 97 128 (Jan 25) 1935 Partial Index

- *Significance of Habit in Clinical Pathology F. Hamburger—p. 97
- *Clinical Aspects of Carcinoma of Head of Pancreas L. Hess and J. Faltitschek—p. 103
- *Histamine Action and Its Modifiability in Children G. Papp—p. 107
- *Irritating Diet F. Kauders—p. 109
- Influenza N. von Jagie—p. 113
- Treatment of Renovesical Tuberculosis T. Hryntschak—p. 114

Clinical Aspects of Carcinoma of Head of Pancreas—Hess and Faltitschek call attention to the fact that the neoplasms developing in the head of the pancreas because of their spatial relation to the large bile duct, the pancreatic duct and the duodenum, are characterized by a number of symptoms, the concurrence of which makes a diagnosis possible. They describe one case of carcinoma showing the triad of typical symptoms: mechanical icterus with continuous complete acholia, continuous melena and Courvoisier's sign. Then they describe another case, in which the same syndrome was caused not by carcinoma but by cirrhosis of the pancreas. From this observation they conclude that the classic triad of symptoms does not permit a definite diagnosis of cancerous stenosis of the bile duct as long as ascites is absent. But, although the triad of symptoms lacks complete conclusiveness as regards a malignant process in the region of the bile passages, the intermittence of the biliary occlusion does not, as was formerly believed, indicate always a lithogenic closure but may occur also in the occlusion that results from malignant processes. The authors report a case history to illustrate this. They point out that, because of the nearness of the head of the pancreas to the duodenum, passage disturbances in this portion of the intestine may develop as the result of pancreatic carcinoma. In this connection they relate the clinical history of a man in whom during the beginning period of the cancer, incomplete duodenal stenosis without icterus was the main symptom. On the basis of this symptom an ulcerating process of the duodenum had been assumed at first. The authors stress that in patients of advanced age in whom roentgenoscopy reveals changes in the duodenum, the possibility of an incipient malignant growth of the pancreas should not be overlooked.

Histamine Action and How It Is Modified in Children

—Papp studied the pharmacologic action of histamine in children. He observed the general condition, the cutaneous symptoms, the blood pressure, the pulse, the formation of gastric juice, the pupillary reaction and the urine. He administered subcutaneously from 0.25 to 1 mg. of histamine. He observed various degrees of erythema, particularly in the face and at the site of injection. Increase in the temperature, headaches and tremors developed in many children. The formation of gastric juice was always greatly increased. However, histamine influenced neither the pulse nor the blood pressure. The author tried to inhibit or modify the action of histamine by various substances. He found that the administration of hypophyseal extract influences the erythema continuously and that epinephrine and dextrose influence the erythema slightly. The acid solutions of sodium phosphate and of sodium carbonate exert a hardly perceptible influence, and the solution of calcium exerts only a weak influence. The stimulating action exerted by histamine on the formation of gastric juice remains uninfluenced by any of the substances. Solution of sodium hydrocarbonate seems to increase further the action of histamine on the gastric juice.

Hospitalstidende, Copenhagen

78 128 (Jan 1) 1935

- *Plasma Phosphatase in Normal and Rachitic Children O. Andersen—p. 5
- *Acute Barbitol Intoxication with Especial Regard to Organic Degenerations J. Ravn—p. 19

Plasma Phosphatase in Normal and Rachitic Children—Andersen's investigations in thirteen children aged up to 3 years, and twelve aged from 3 to 13, all without signs of rickets, showed average plasma phosphatase values of 0.25 in the first group, with boundary values from 0.14 to 0.34, and of 0.15 in the second group, with boundary values from 0.06 to 0.26. In twenty-five children, aged from 3 to 27 months, with typical signs of rickets, the average value was 0.86, with boundary values from 0.42 to 1.41. The lowest limit for beginning pathologic values is set at 0.30. Antirachitic treatment in rachitic children results in a reduction of the plasma phosphatase the decrease being slow in comparison to the increase in calcium and phosphorus values and apparently following more closely the clinical improvement. No relation is apparent between the absolute phosphatase and calcium values, but a certain relation is seen between the phosphorus count and plasma phosphatase count, high phosphatase values usually appearing with low phosphorus values and vice versa. The absolute phosphatase value seems to be independent of the degree of the rickets. The establishment of increased phosphatase without simultaneous clinically demonstrable rickets may indicate latent D-avitaminosis. Determination of the plasma phosphatase may perhaps be applied in confirming the optimal dose of vitamin D in the treatment of rickets.

Barbitol Intoxication and Organic Degenerations—In the fatal case reported by Ravn, both liver and kidney degeneration were confirmed in the first twenty-four hours. The pancreas is thought possibly also to have been affected. He says that since liver insufficiency may occur in barbitol intoxication, the use of dextrose in treatment is rational.

78 29 56 (Jan 8) 1935

- *Eosinophilia After Intravenous Oil Injection J. Engelbreth Holm—p. 29
- *Solitary Cecal Diverticula H. Thomsen—p. 45

Eosinophilia After Intravenous Oil Injection—Engelbreth-Holm's experiments in animals show that chaulmoogra oil does not have a positive eosinotoxic effect. Like any other oil it can, on intravenous injection, cause infarct formation in the lungs. Intravenous injection of oil irrespective of the kind of oil, will cause eosinophilia in the blood of rabbits. Since lung infarcts are the only pathologic process established in the animals with eosinophilia and since they are confirmed in all the animals with eosinophilia, the two changes are apparently related. In man a relation is seen between the blood eosinophilia observed after intravenous injection of chaulmoogra oil and the pulmonary changes analogous to those noted in animal experimentation. These changes or infarcts are not a specific chaulmoogra oil effect but are due to the fact that the substance is an oil.

Solitary Cecal Diverticula—Thomsen says that these diverticula are extremely rare and cites the eight cases found by him in the literature and presents three additional cases. The ages of the patients varied from 20 to 60. Solitary cecal diverticula (i. e., the cecal diverticula seen in patients not previously appendectomized) appear singly or at the most as two or three small pouches from the size of a pea to that of a walnut on the anterior wall of the cecum. The symptoms are identical with those of acute appendicitis, and the diagnosis in all the reported cases has been acute appendicitis. The danger of perforation seems to be greater in cecal diverticula than in appendicitis. Treatment has consisted in resection of the diverticulum itself or of the cecum. All the patients have recovered without any especial complications. Only one had perforation and peritonitis (Moschowitz).

CORRECTION

Use of Iron in Treatment of Pernicious Anemia—In the abstract of Mogensen's article in THE JOURNAL, February 16, page 604 in the third line from the bottom, the words 'blood platelet production' should be replaced by 'red blood cell production'.

PHILIPPINE ISLANDS—Continued

Hospitals Sanatoriums and Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Del Carmen—Pampanga	Gen	Corp	37	1			
Del Carmen Hospital							
Dipolog 1562—Zamboanga	Gen	Gov t	12				
Dipolog Emergency Hospital							
Dumaguete 16,227—Oriental Negros	Gen	Church	60	6	31	27	968
Dumaguete Mission Hospital							
Fabrice 3,164—Occidental Negros	Gen	Corp	40		21	25	927
Ilo Hospital							
Et Stotsenburg—Pampanga	Gen	Army	90	4	75	35	2,152
Station Hospital							
Et William McKinley—Rizal	Gen	Army	67			36	9,014
Station Hospital							
Guluanagan 400—Tayabas	Indus	Corp	10				
Philippine Lumber Co Hosp							
Hollo 43,114—Hollo	Gen	Church	4	12	67	51	1,756
Hollo Mission Hospital							
St Paul's Mission Hospital	Gen	Church	100				
Isabela 2,281—Zamboanga	Indus	Corp	21				
Basilan Lumber Hospital							
Jolo 2,006—Sulu	Gen	Gov t	40				
Sulu Public Hospital							
Kabasalan—Zamboanga	Gen	NPAren	21		10	4	251
Pathfinder Estate Hospital							
Klangan 576—Hugao	Gen	Gov t	15				
Klangan Hospital							
Kolambungan 1,000—Lanao	Gen	NPAren	24	2			
Kolambungan Hospital							
Laos 38,469—Ilocos Norte	Gen	Church	40	2			
Salte Long Read Mem Hosp							
Legaspi 2,756—Albay	Gen	Gov t	35	7			
Albay Provincial Hospital							
Milwaukee Hospital	Gen	Church	20	6			
Los Baños 6,335—Laguna	Gen	NPAren	20				
University of the Philippines							
Los Baños Infirmary							
Lubuanag 235—Kalinga	Gen	Gov t	8		4	7	20
Lubuanag Public Hospital							
Luzena 11,859—Tayabas	Gen	Gov t	60	3	60	64	2,761
Tayabas Provincial Hospital							
Makati 12,410—Rizal	Ment	City	231				
City Sanatorium							
Malabalar 2,645—Bukidnon	Gen	Gov t	14		5	12	474
Bukidnon Public Hospital							
Malolos 26,444—Bulacan	Gen	Gov t	30	6	36	20	1,170
Bulacan Provincial Hospital							
Mandaue 21,461—Cebu	Lepro	Gov t	750		1		294
Everley Childs Treatment Sta							
Manila 28,306—Rizal	Inst	Gov t	300				
Billbid Hospital							
Chinese Hospital	Gen	NPAren	150	18	94	65	1,006
Hospital de San Juan de Dios	Gen	Church	236	20			
Mary Chiles Hospital	Gen	Indiv	70	15	45	31	1,055
Mary J Johnston Memorial Hospital	Gen	Church	96	24			
Maternity and Children's Hosp	MatCh	Gov t	84	40			
Philippine General Hosp	Gen	Gov t	516	52	3,148	469	15,421
St Joseph's Hospital	Gen	Indiv	75	8	92	30	1,126
St Luke's Hospital	Gen	Church	125	10	97	53	1,919
St Paul's Hospital	Gen	Church	120	12	102	45	1,509
St Therese's Hospital	Gen	Indiv	65	10			
San Lazaro Hospital	This	Gov t	709			764	4,610
Sternberg General Hospital	Gen	Army	300	8	56	156	2,534
Margosatubig—Zamboanga	Gen	Gov t	18				
Margosatubig Emergency Hosp							
Mati 6,440—Davao	Gen	Gov t	6				
Mati Emergency Hospital							
Naga 9,806—Camarines Sur	Gen	Gov t	22				
Naga Hospital							
Olongapo—Zambales	Gen	NPAren	17	8			
Camille Simpson Hospital							
Passy 18,622—Rizal	Gen	Indiv	25				
Harrison Hospital							
Mercy Hospital	Gen	Indiv	20	5	62	5	360
Puerto Princesa 5,827—Palawan	Gen	Gov t	16				
Puerto Princesa Hospital							
Sagada 167—Mountain	Gen	Church	58	6			
St Mary the Virgin Dispensary and Hospital							
San Fernando 19,835—La Union	Gen	Church	34	4	44	17	877
Bethany Hospital							
San Fernando, 21,625—Pampanga	Gen	Gov t	50				
Pampanga Provincial Hospital							
San Jose—Antique	Gen	Gov t	10	6	8	5	254
Antique Provincial Hospital							
San Juan del Monte 6,016—Rizal	Gen	Indiv	100			35	
Manila Heights Hospital							
San Miguel 18,147—Bulacan	Gen	City	10	2	11	2	206
Fladde Memorial Hospital							
San Pablo 31,214—Laguna	Gen	City	20				
San Pablo Hospital							
San Pedro 4,184—Rizal	Gen	NPAren	40	10			
Hospital Espanol de Santiago							
San Roque—Cavite	MatCh	Indiv	14	10			
San Ramon Maternity and Child Hospital							
San Barbara, 30,013—Hollo	Lepro	Gov t	250				181
Western Visayas Treatment Station							
Santa Cruz 14,151—Laguna	Gen	Gov t	60	9		25	1,047
Laguna Provincial Hospital							
Santo—Rizal	TB	NPAren	271			252	810
Santo Tuberculosis Sanat							
Shay 23,006—Occidental Negros	Gen	City	21	6			
Shay Maternity and Children's Hospital							

PHILIPPINE ISLANDS—Continued

Hospitals Sanatoriums and Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Tacolohan 15,478—Leyte	Gen	Church	32	2	0	7	342
Bethany Hospital							
Leyte Provincial Hospital	Gen	Gov t	21	2			
Tagbilaran, 12,600—Bohol	Gen	Gov t	6	1		8	527
Bohol Provincial Hospital							
Presbyterian Mission Hospital	Gen	Church	26	4	25	11	564
Tanauan 19,074—Leyte	Gen	NPAren	20				
Maternity Hospital							
Tarlac 21,880—Tarlac	Gen	Gov t	30				
Tarlac Provincial Hospital							
Vigan 17,764—Ilocos Sur	Gen	Gov t	9				
Ilocos Sur Provincial Hospital							
Philippine Christian Inst Hosp	Gen	Church	30	5			
Zamboanga 3,028—Zamboanga	Gen	Church	30	3			
Brent Hospital	Inst	Gov t	20				
San Ramon Prison Hospital	Gen	Army	20			2	123
Station Hospital							
Zamboanga General Hosp	Gen	Gov t	60	10	120	42	1,637

PUERTO RICO

Aguadilla 10,952—Aguadilla	Gen	City	24	4			
Hospital Municipal							
Anasco, 9,064—Aguadilla	Gen	City	16	3			
Municipal Hospital of Anasco							
Bayamon 12,186—San Juan	Gen	City	50				
Hospital Municipal de Bayamon							
Cabo Rojo 4,600—Mayaguez	Gen	City	16		10	15	179
Hospital Municipal							
Cayey 1,653—Guayama	Gen	Indiv	18	6			
Clinica Dr Villeneuve							
Fajardo 7,322—Humacao	Gen	City	35		133	30	1,207
Luis Manuel Hospital							
Guahio 3,468—Humacao	Gen	City	20	4	62	10	600
Municipal Hospital							
Hato Rey—San Juan	NAM	Indiv	125		95		135
Clinica Dr M Julia							
Humacao 7,931—Humacao	Gen	Church	46	6	100	36	1,214
Ryder Memorial Hospital							
Juana Diaz, 2,460—Ponce	Gen	City	36	6	65	36	554
Hospital Municipal							
Juncos 2,297—Humacao	Gen	City	18		125	30	600
Hospital Municipal							
Lares 3,049—Aguadilla	Gen	Indiv	8	2	10	1	66
Clinica San Jose							
Lares Municipal Hospital	Gen	City	28		70	20	350
Las Piedras 1,335—Humacao	Gen	City	16				
Las Piedras Municipal Hosp							
Lolza 1,600—Humacao	Gen	City	15		40	18	360
Lolza Municipal Hospital							
Manati, 7,449—Arecibo	Gen	City	25				
Hospital Municipal Manati							
Manabo 1,117—Guayama	Gen	City	9	2			
Hospital San Jose							
Mayaguez 37,060—Mayaguez	Gen	Indiv	70		35	45	380
Mayaguez and Western Poly	Gen	Part	30				
Clinic							
Mayaguez Sanatorium							
Naguabo 4,081—Humacao	Gen	City	16	1	40	2	478
Municipal Hospital							
Ponce, 53,430—Ponce	Gen	Indiv	125	18	39	110	1,860
Clinica Quirurgica del Dr Pila							
Hospital Municipal Valentin	Gen	CyCo	150	15	489	145	3,647
Tricocha	Gen	Church	65	6			
St Luke's Memorial Hospital							
Santo Asilo de Damas Hosp	Gen	Church	110				
Quebradillas 1,755—Aguadilla	Gen	City	10				
Hospital Municipal de Quebradillas							
Rio Piedras 13,408—San Juan	Lepro	Gov t	60				16
Insular Leper Colony							
Psychiatric Hospital of P R	Ment	Gov t	1,000				
Sanatorio de la Sociedad Espanola de Auxilio Mutuo 5	Gen	Frat	150	20	54	75	1,263
Beneficencia de Puerto Rico							
Salinas 2,232—Guayama	Gen	City	30	5	28	20	720
Hospital de Salinas							
San Juan 114,715—San Juan	Gen	City	825	40	1,957	300	9,799
Capital City Hospitals							
Hospital de la Penitenciaría	Inst	Gov t	38	20			
Presbyterian Hospital	Gen	Church	105	20	164	70	1,475
Puerto Rico Sanatorium	Gen	NPAren	16				
Quarantine Hospital	Gen	Gov t	50				129
Station Hospital							
University Hosp of the School of Tropical Medicine	Gen	Gov t	50		37	35	606
Santurce—San Juan	Gen	NPAren	15	2			
Santa Rosa Clinic							
Vega Baja 4,784—Arecibo	Gen	City	40	6	21	28	646
Vega Baja Municipal Hospital							
Yabucoa 3,841—Humacao	Gen	City	24	2			
Yabucoa City Hospital							
Yauco 8,607—Mayaguez	Gen	Indiv	19		5	1	52
Clinica El Amparo							
Yauco Hospital	Gen	City	20				

VIRGIN ISLANDS

Christianssted 3,767—St Croix Island	Gen	City	50	6			
Christianssted Municipal Hosp							
Virgin Islands Insane Asylum	Ment	City	25				
Virgin Islands Leper Asylum	Lepro	City	91				
Frederiksted 2,698—St Croix Island	Gen	City	35	6			
Frederiksted Municipal Hosp							
St Thomas 7,036—St Thomas Island	Gen	City	90	10	20	40	1,105
Municipal Hospital							

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MARCH 30, 1935

HOSPITAL DISTRIBUTION AND HOSPITAL SERVICE

In this issue of THE JOURNAL appear the usual list of hospitals registered by the American Medical Association and the data relative to bed capacity, the average number of patients and the patients admitted. At the same time there is made available a survey of the occupancy of various types of hospitals during the last year. The reports are based on a study of 6,334 hospitals with an average daily census of 830,098 patients. The figures indicate that one person in seventeen made use of a hospital during the year. The average length of stay per patient in general hospitals was fourteen days. The other data that are available indicate that hospitals have also improved in the provision of laboratory, x-ray and physical therapy services.

The number of hospitals now in the United States has decreased by 103 over the number reported one year ago. This loss is explained by the development of certain mergers, and the closing of hospital departments of certain custodial institutions. Especially significant in the statistics now made available are the data relative to the length of stay of patients in hospitals. The length of stay of patients in governmental and nonproprietary institutions is considerably beyond that in independent, proprietary and corporation hospitals.

While the figures show that the number of idle beds in 1934 reached a record total of some 218,000, the patient days in all hospitals were almost 303,000,000, a gain of more than 7,000,000 over the previous year.

Almost coincidental with the publication of these data by the hospital department of the American Medical Association there has appeared a consideration of the need for more hospitals in rural areas published under the auspices of the *Modern Hospital*¹. The statement indicates that this study, made by Alden B. and Patsy Mills, involved spotting local and community hospitals in various parts of the country on maps and then analyzing the maps in relationship to statistics of

population and measurements of distance. The results of the study indicate the fallacies that invariably arise in this type of survey. The authors conclude that 1,300 of the 3,075 counties of the United States containing 18,000,000 persons have no hospitals within their borders. They come to the conclusion that there are a considerable number of rural areas now without hospitals which ought to have them. The authors recognize that certain counties are often too small a unit to contain a satisfactory hospital and that frequently some counties do not have hospitals because good ones exist in cities just over the border in a neighboring county. Nevertheless an analysis made by the hospital department of the American Medical Association indicates the generally fallacious character of their observations. As shown in the accompanying table, 2,003 rural hospitals in the United States during 1934 had 50.2 per cent of their beds occupied. Moreover, 2,031 urban hospitals had 62.4 per cent of their beds occupied. While an occasional area might at this time actually require a hospital and be able to support one, the percentage of unoccupancy would indicate the hazard as either a commercial, scientific or philanthropic venture of attempting to establish new hospitals in a period of economic stringency such as now exists.

General Hospitals in Rural Areas Compared with Those in Urban Districts*

	Rural			Places under 10 000 population		Urban 10 000 and over		
	No of Hos pitals	Beds	Bassi nets	Average Patients	Patients Admitted	Per Cent of occu pancy	Length of Stay	
Rural	2,003	68,806	10 710	34 529	1 073 605	50.2	12 da	
Urban	2 031	282 023	37 921	176 060	5,022,426	62.4	13 da	

* Including all registered general hospitals except army, navy, marine and veterans.

Using the method developed by Mr. Mills and his associates for studying hospital distribution as applied to the state of Alabama, one finds a need in that state for 1,905 more hospital beds. In developing their data they included three Florida counties and two Mississippi counties in Alabama and assigned two Alabama counties to Mississippi. A restudy of the situation reveals, however, that those areas to which they allocate the 1,905 additional beds already have sixty general hospitals whose combined capacity is 3,842 beds, of which only 1,778 were occupied. This means an average of 2,064 idle beds in a territory assumed to require 1,905 additional beds. The detailed statistical data concerning this situation are available for those who are interested.

Above all, these comparative studies indicate the danger inherent in attempting to analyze local situations in states far removed on the basis of data found in card indexes in an office in Chicago. In another issue of the *Modern Hospital* appears a series of comments² by Michael M. Davis, Kendall Emerson, Samuel A.

¹ Mills, A. B. and Mills, Patsy. The Need for More Hospitals in Rural Areas. *Modern Hospital* 44: 50 (March) 1935.

² Davis, M. M. Proper Use of Government Funds for Hospital Care—A Symposium, *Modern Hospital* 43: 80 (July) 1934.

Goldsmith, Fred K. Hoehler and Harry L. Lurie supporting the campaign of this journal for the building of more hospitals, again without any adequate recognition of the exact situation in the areas concerned. Thus the propaganda continues, based on preconceived notions rather than on exact and complete knowledge of the situation.

The conclusion is reached editorially in the *Modern Hospital* that government money available for public works should be assigned to the building of hospitals in some 500 or 600 rural sections which are presumed to need them, yet adequate data are not provided to indicate that these areas could actually support a hospital once the government had built it for them or that such a hospital could be adequately staffed from the medical profession available in the vicinity. Presumably Mr. Mills would have these 500 or 600 additional government hospitals staffed by physicians who would also be paid out of public funds.

The data concerning hospitals in this issue of *THE JOURNAL* are the most complete, accurate and up to date that have ever been assembled in any publication in this country. They represent a distinguished service of the Council on Medical Education and Hospitals to the medical profession and to the public. The maps should be studied with a comprehension of their geographic factors, the distribution of the population within the states concerned, the distribution of physicians, the per capita wealth of the community, the nature of its industry, and all the other data that are necessary to form a worthwhile opinion as to hospital services that are available and expansions that are possible.

THE CHEMISTRY OF THE HORMONES

Although the question of the chemical nature of the hormones has been a subject of interest for nearly two decades, progress in this field has been exceedingly difficult because of the lack of endocrine preparations of sufficient purity for accurate chemical studies. Recent extensive investigation, however, has led to vastly improved methods of preparation and ultimately to the isolation in pure crystalline form of a number of the hormones. Thus these heretofore inaccessible substances have been brought within the scope of attack by the chemist. Indeed, at present several hormones have been prepared in crystalline form and the chemical structure and method of synthesis of two of these have been definitely established. Also a number of other hormones have been prepared in a highly purified although noncrystalline state, and some information regarding their chemical properties has been obtained.

The first hormone to be isolated in crystalline form was epinephrine (1901). The determination of its chemical structure and synthesis followed within a few years. The structural similarity of epinephrine and tyramine, the decarboxylation product of the amino

acid tyrosine, suggests the possibility that this compound may serve as a metabolic precursor of the hormone. Epinephrine is optically active, the naturally occurring levo form possessing far greater physiologic activity than its optical antipode. The isolation in 1914 of a second crystalline hormone, thyroxine, was followed at length by the elucidation of its chemical structure and by its synthesis (1926). The striking chemical characteristics of thyroxine are the presence of iodine in the molecule and the similarity of a portion of its structure to tyrosine. As in the case of epinephrine, thyroxine is optically active and the naturally occurring levo form is far more active than the dextro isomer. Subsequent to the isolation in crystalline form of an estrogenic hormone from the urine of pregnant women (theelin) in 1929 and the testis hormone from male urine in 1932, these substances have been the subject of intensive chemical studies. Their properties early aroused the belief that they were closely related to the sterols; indeed, they appeared to be derivatives of cholesterol. The most recent studies have supported this hypothesis.¹ At the present time the fact has been fairly well established that theelin is ketohydroxy-estrin,² a derivative of phenanthrene, while the testis hormone differs from it only in the presence of a methyl group on the phenanthrene nucleus. The hydrated form of theelin, "theelol," is a trihydroxy-estrin which differs from theelin in its estrogenic potency.

Of the other known hormones, insulin has been prepared in a high state of purity. Apparently, insulin is an extremely large, complex, protein-like molecule and contains a number of the common amino acids. This conception is strengthened by the fact that crystals of the amino acids tyrosine, cystine, arginine, proline, phenylalanine and histidine have been obtained from hydrolyzed insulin. Pure insulin has not yet been isolated in crystalline form; however, the crystalline compounds obtained have been found to consist of salts of zinc or cadmium. A notable advance has been made in the isolation of progesterin, the progestational hormone of the corpus luteum; crystalline fractions have been obtained but these require more study. A number of other hormones, such as those of the anterior and posterior lobes of the hypophysis, parathyroid, gastrointestinal tract and thymus, have been prepared as physiologically active but chemically crude products. Particularly is this true in the case of the hormones of the anterior³ and posterior⁴ lobes of the hypophysis.

Thus, as was pointed out in the introduction⁵ to the articles on endocrinology now appearing in *THE JOUR-*

1 Du Vigneaud, V. The Chemistry of the Hormones from a Structural Standpoint. *Scient. Monthly* **40** 138 (Feb.) 1935.

2 Dodds, E. C. The Hormones and Their Chemical Relations. *Lancet* **1** 931 (May 5) 987 (May 12), 1048 (May 19) 1934.

3 Evans, H. M. Clinical Manifestations of Dysfunction of the Anterior Pituitary. *J. A. M. A.* **104** 464 (Feb. 9) 1935. Smith, P. E. General Physiology of the Anterior Hypophysis. *ibid.* **104** 548 (Feb. 16) 1935.

4 Geiling, E. M. K. The Posterior Hypophysis. *J. A. M. A.* **104**: 738 (March 2) 1935.

5 Fishbein, Morris. Glandular Physiology and Therapy. Introduction. *J. A. M. A.* **104** 463 (Feb. 9) 1935.

NAL, while information regarding the chemistry of the hormones is far more elaborate today than a few years ago, "only a beginning has really been made in our knowledge of this exceedingly complex and fascinating field." In view of the current intensive work on the constitution of the hormones, it is safe to predict that the story of the chemistry of many more of these powerful regulators of physiologic processes will soon be revealed.

THE STRUCTURE OF THE CELL

The usefulness of microscopic sections in investigative and clinical work has long clouded the fact that such pictures of cell structures are obtained only after subjecting the tissue to various physical and chemical procedures in order to make them visible. The technical methods of fixation and staining yield beautiful colors and a variety of lines and shades which are interpreted widely as evidence of what exists in the living cell, healthy or diseased, but this confidence in the reality of observations made by the usual technical methods has been gradually disappearing. The change in attitude has been aided by the results that have been achieved through direct studies of living tissue made possible by dark field illumination, tissue culture, microdissection, micrometabolism, vital staining and other methods.

The defects of the ordinary stained microscopic section have become apparent also with the realization that morphology cannot be divorced from function and that function depends to a great extent on the chemical changes that constantly go on within and between cells. Many recent studies, for example, have shown that the cancer cell has characteristic properties referable not so much to its shape or form as to its chemical behavior, particularly in relation to the chemical behavior of normal cells. Attempts have been made for decades to study the actual chemical structure of cells, but the problem has been beset with many difficulties. In making cellular details visible, profound alterations in their physical and chemical state occur. Within the last few years, however, the Altmann freezing-drying method has been elaborated at the Hull Laboratory of Anatomy of the University of Chicago and has been found to yield preparations of undenatured material on which a number of cytologic problems have been investigated. These observations have been recently published in a series of papers by Bensely and Gersh¹ and by Bensely and Hoerr.²

First the Chicago investigators attacked the problem of the chemical nature of mitochondria, those struc-

tures in the cytoplasm to which important functions have been attributed. The mitochondria contain 43.6 per cent of fatty substances but no lecithin or cephalin. They contain two different proteins. The so-called Nissl substance of the nerve cell is not uniformly distributed through the cytoplasm. Their variations as seen in disease may be due in part at least to artefacts produced by the fixation methods. Still other experiments have led to new conceptions of the structure of the cell nucleus, indicating among other things the possibility of a synthesis of nucleoprotein in the nuclear juice. Such fundamental considerations as the actual chemical basis of the organization of the cell form the topic of additional observations. They lead to the elucidation of the great biochemical riddle of the difference between protoplasm and solutions of protein.

These results have profound significance. In inflammation and repair, in bacterial and metabolic disease and in cancer the mystery of cellular activity holds the ultimate key to our understanding of disease. Life itself in the last analysis depends on cell structure and behavior. Many tools have been used to pry open the secret of the cell, but tools are only the eye-pieces of the scientific worker. Industrious and intelligent as he is, the practical inferences from his work depend on how closely his vision reaches to reality. Technical methods are nowhere more important than in the domain of the microscopic world. The boundaries of vision extended by the microscope now await only such methods as will not distort the living cell but actually bring to light its chemical behavior. The investigations that are being carried on by Bensely and his co-workers are precisely in this direction.

Current Comment

GENERAL SCIENTIFIC MEETINGS AT ATLANTIC CITY

The General Scientific Meetings arranged for the Cleveland session were so successful that they have been developed still further for the meeting to take place in Atlantic City from June 10 to 14. The complete program of the General Scientific Meetings appears under Association News in this issue of THE JOURNAL (page 1177). It will be noted that these meetings occupy three half-day periods on the first and second days of the annual session. They cover a wide variety of topics of current interest, including particularly changes in the blood, questions of diagnosis, and advances in endocrinology and therapeutics. These three special meetings, in which physicians from all over the United States and Canada will participate, constitute a concentrated postgraduate course for the general practitioner who wishes in a brief period to bring himself abreast of current knowledge in many fields.

1 Bensely R. R. and Gersh I. Studies on Cell Structure by the Freezing Drying Method. I. Introduction. *Anat. Rec.* 57: 205 (Oct.) 1933. II. Nature of Mitochondria. *ibid.* 57: 217 (Oct.) 1933. III. The Distribution in Cells of the Basophile Substances. *ibid.* 57: 369 (Nov.) 1933. Bensely R. R. IV. The Structure of the Interkinetic and Resting Nuclei. *ibid.* 58: 1 (Dec.) 1933.

2 Bensely R. R. and Hoerr N. L. V. The Chemical Basis of the Organization of the Cell. *Anat. Rec.* 60: 251 (Oct.) 1934. VI. The Preparation and Properties of Mitochondria. *ibid.* 60: 449 (Nov.) 1934.

Association News

THE ATLANTIC CITY SESSION Program of the General Scientific Meetings

In the General Scientific Meetings, which are held on the first two days of the annual session, the following papers will be read

MONDAY, JUNE 10—2 P M

Empyema in Children JAMES M MASON, Birmingham, Ala
Treatment of Deficiency Conditions C P RHODES, New York

The Relationship of Drug Therapy to Agranulocytosis ROY R KRACHE, Emory University, Ga
Our Knowledge Concerning the So Called Lymphoblastomas EDWARD B KRUMBHAR, Philadelphia
Growth, Normal and Abnormal WILLIAM BOYD, Winnipeg, Manit

TUESDAY, JUNE 11—9 A M

Evidence in Favor of a More Active Puerperium A Study of Five Hundred Cases H B ATLEE, Halifax, N S
Treatment of Diabetic Coma HENRY J JOHN, Cleveland
Pitfalls to be Avoided in Abdominal Diagnosis JOHN M T FINNEY, Baltimore

Diet in Treatment of Disease LOUIS H NEWBURGH, Ann Arbor, Mich
The Surgeon's Responsibility in Cases of Duodenal Ulcer R. R GRAHAM, Toronto, Ont

TUESDAY, JUNE 11—2 P M

Recent Developments in the Field of Endocrinology DAVID P BARR, St Louis
Scope of Thoracic Surgery JOHN ALEXANDER, Ann Arbor, Mich

Bone Changes in Certain Medical Diseases A H GORDON, Montreal
Uses and Abuses of Modern Gland Products in Gynecologic Disorders EMIL NOVAK, Baltimore
Advances in Therapeutic Technique BERNARD FANTUS, Chicago

Golf Tournaments at Atlantic City, June 10

The American Medical Golfing Association will hold its twenty-first annual tournament at the Northfield Country Club in Atlantic City, Monday, June 10

Thirty-six holes of golf will be played in competition for the seventy trophies and prizes in the nine events. Trophies will be awarded for the Association Championship, thirty-six holes gross the Will Walter Trophy, the Association Handicap Championship, thirty-six holes net, the Detroit Trophy, the Championship Flight, First Gross, thirty-six holes, the St Louis Trophy, the Championship Flight, First Net thirty-six holes, the President's Trophy, the Eighteen Hole Championship, the Golden State Trophy, the Eighteen Hole Handicap Championship, the Ben Thomas Trophy, the Maturity Event, limited to Fellows over 60 years of age, the Minneapolis Trophy, the Oldguard Championship limited to competition of past presidents, the Wendell Phillips Trophy, and the Kickers Handicap, the Wisconsin Trophy. Other events and prizes will be announced at the first tee.

Dr Charles Lukens of Toledo is president and Dr C H Henninger of Pittsburgh and Dr John B Morgan of Cleveland are vice presidents of the American Medical Golfing Association, which was organized in 1915 by Dr Will Walter, Dr Wendell Phillips and Dr Gene Lewis, and now totals 1,100 members representing every state in the union. The first president, Dr Wendell Phillips of New York, played in every tournament since 1915, until his death Nov. 16, 1934.

ATLANTIC CITY COMMITTEE

The Atlantic City Committee is under the chairmanship of Dr Walt P Conaway, 1723 Pacific Avenue, Atlantic City, assisted by Drs I R Beir, John Pennington, Alfred Westney and Rostin White.

APPLICATION FOR MEMBERSHIP

All male Fellows of the American Medical Association are cordially invited to become members of the A M G A. Write the Executive Secretary Bill Burns, 4421 Woodward Avenue, Detroit, for an application blank. Participants in the A. M. G. A. tournament are required to furnish their home club handicap, signed by the secretary. No handicap over 25 is allowed, except in the Kickers' (Blind Bogey). Only active members of the A. M. G. A. may compete for prizes. No trophy is awarded a Fellow who is absent from the annual dinner.

MEDICAL BROADCASTS Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next three broadcasts will be as follows:

April 4 Negro Health Week W W Bauer M D
April 11 Sickness Insurance R G Leland M D
April 18 Catarrh, W W Bauer, M D

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next three broadcasts will be as follows:

April 2 Sickness Insurance or Your Own Private Physician R. G Leland M D
April 9 Crying for the Moon, W W Bauer M D
April 16 Meeting a Challenge W W Bauer, M D

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Society News—The Pima County Medical Society was addressed in Tucson in February by Drs Frank Gregory Connell, Oshkosh, Wis., on "Surgical Treatment of Peptic Ulcer," and Samuel J Fogelson, Chicago, on "Mucin Treatment of Peptic Ulcer." Dr John Alexander, Ann Arbor, discussed thoracic surgery before the society at the March meeting.

ARKANSAS

Bills Enacted—The following bills have become laws. S 267, requiring the homeopathic medical board, the eclectic medical board, the "State Medical Board of the Arkansas Medical Society," the board of osteopathic examiners, and the board of chiropractic examiners to file with the secretary of state a list of all persons who have been licensed within the past twenty years, and to file with the secretary of state similar lists with respect to all licenses to be issued in the future by them, within one week of the issuance of the licenses, H 218 amending the medical practice act so as to authorize the board of medical examiners in its discretion to license without examination diplomates of the National Board of Medical Examiners, and H 189, prohibiting the sale of barbituric acid derivatives and/or compounds thereof except on the prescription of a licensed physician.

CALIFORNIA

Society News—The radiologic section of the Los Angeles County Medical Society presented the society with a speakers' stand recently. Speakers before the Los Angeles Surgical Society, March 8, were Drs Philip J Murphy on "Diagnosis and Surgical Judgment in the Acute Abdomen", Rafe C. Chaffin, Vesicovaginal Fistula with a New Technique for Post-operative Treatment", William H Daniel, "Surgical Management of Carcinoma of the Rectum", Edward J Kilfooy, "Paralytic Ileus Following Removal of Cataract."—The Los Angeles Society of Neurology and Psychiatry devoted its meeting, March 20, to a symposium on the postconcussion syndrome. Speakers were Drs Arthur R Timme, Cullen W Irish, Johannes M Nielsen, Carl W Rand, Cyril B Courville and

Samuel D. Ingham.—San Francisco reported an infant mortality rate of 33 per thousand in 1932, the lowest rate on record, an increase was noted in the birth rate, 104 per thousand—**Dr. Frederick C. Warnshuis**, San Francisco, addressed the San Francisco County Medical Society, March 12, on "The Medical Profession's Declaration of National Principles as Related to Medical Economics"

COLORADO

Narcotic Drug Law Enacted.—Two bills, which were approved by Governor Johnson March 16 and which were to become effective immediately, are of considerable interest to physicians. One of them (H 557) prohibits the retail sale except on the written prescription of a licensed physician, dentist or veterinarian, of barbitol, sulphonethylmethane (trional), sulphonmethane (sulphonal), diethylsulphon diethylmethane (tetronal), paraldehyde, and chloral or chloral hydrate or any derivatives compounds or mixtures of any of these drugs possessing hypnotic properties or effects. The other (H 138) is the uniform narcotic drug act, drafted by the Conference of Commissioners on Uniform State Laws with the aid of the Bureau of Legal Medicine and Legislation of the American Medical Association, and approved by both the American Medical Association and the American Bar Association. The term "narcotic drug," as used in this law, includes coca leaves, opium, cannabis and every substance neither chemically nor physically distinguishable from them. A physician or a dentist, acting in good faith and in the course of his professional practice only, may prescribe, administer and dispense narcotic drugs or he may cause them to be administered by a nurse or intern under his direction and supervision. Physicians and dentists are to keep a record of such narcotic drugs received by them and a record of all such drugs administered, dispensed or professionally used by them otherwise than by prescription. Uniform narcotic drug acts have been enacted in about fifteen other states. Both laws will be published in full in a coming issue of *Colorado Medicine*.

GEORGIA

Bill Passed.—H 230 has passed the house, proposing to amend those provisions of the medical practice act which require an applicant for a license to be a graduate of a legally incorporated medical college in good standing with the board by permitting graduates 'of one of the two colleges of medicine now existing in the state of Georgia' also to qualify.

Bills Introduced.—H 918 proposes a new insurance code. Among other things, it proposes to permit any hospital or group of hospitals, not maintained by public funds, approved by the Georgia Hospital Association, the Georgia Medical Association, the American College of Surgeons or the American Medical Association, to form a nonprofit organization to provide hospitalization to the public, in consideration of weekly, monthly or annual dues. H 874, to supplement the chiroprody practice act, proposes (1) that the joint secretary of the examining boards of Georgia act as joint secretary of the state board of chiroprody examiners, (2) to provide that a member of the board may not be directly or indirectly associated or connected with any institution teaching chiroprody, (3) to require all institutions in the state teaching chiroprody to register the name of each student with the joint secretary not later than thirty days after the enrolment of that student and (4) to authorize the board to inspect and classify all institutions teaching chiroprody.

ILLINOIS

Society News.—At a meeting of the Vermilion County Medical Society, March 6, Dr. Arthur H. Parmelee, Oak Park, spoke on 'Respiratory Diseases in Children'—Dr. Chauncey C. Maher, Chicago, addressed the Whiteside County Medical Society, February 28, in Sterling on hypertension—Dr. Harold O. Jones, Chicago, discussed 'Diagnosis and Treatment of Carcinoma of the Cervix and Uterine Endometrium' before the Peoria City Medical Society, March 5.

Bills Introduced.—H 672 proposes to prohibit the retail sale or distribution of veronal, barbitol or any of their salts, derivatives or compounds except on the prescription of a licensed physician, dentist or veterinarian. H 559 to amend the optometry practice act, proposes among other things, (1) to require applicants for licenses to be citizens of the United States or to have received their first naturalization papers, (2) to prohibit corporations from practicing optometry and (3) to prohibit advertising that in any way will tend to deceive or defraud the public the free examination of eyes or of fixed prices for optometric services. H 634 proposes to require employers to install exhaust systems for removing dust and dirt from grinding, polishing and buffing operations.

CHICAGO

Anniversary of Maimonides.—The eight hundredth anniversary of Maimonides was observed at a celebration at the Standard Club, March 24. The occasion was also an observance of the tenth anniversary of the opening of the Hebrew University in Jerusalem. Dr. Morris Fishbein, editor of *THE JOURNAL*, was chairman. Rabbi Solomon Goldman gave an address on Maimonides, and Drs. Nathan O. Ratnofsky, Marcus Rothschild and Israel Strauss, New York, spoke on the medical department of the Hebrew University.

Vitamin D Milk Standards Adopted.—The Chicago Board of Health has recently adopted rules and regulations for the production and control of vitamin D milk. Three processes for this purpose have been accepted, including ultraviolet irradiation, the addition of an approved vitamin D concentrate in a satisfactory manner, and the feeding of concentrated vitamin D substances to dairy cows under suitable conditions. A series of regulation application forms and other data have been developed to guide those who wish to apply to the board for permits to distribute such milk in the Chicago area.

Banquet in Honor of Dr. Tice.—About 1,400 persons attended a banquet in Chicago at the Palmer House, March 23, to honor the long services of Dr. Frederick Tice, clinical professor of medicine, Rush Medical College, to the Cook County Hospital and the Municipal Tuberculosis Sanatorium. Dr. Frank Jirka, state health commissioner, Springfield, was toastmaster. Addresses were made by many public officials and also Drs. William A. Pusey, Samuel R. Slaymaker, Allan J. Hruby and Morris Fishbein. Dr. Tice is also emeritus professor of medicine at the University of Illinois College of Medicine.

IOWA

Bill Passed.—S 20 has passed the house, proposing that before any applicant for a license to practice medicine, osteopathy, osteopathy and surgery or chiropractic may be examined by his professional board he must first pass an examination before an impartial basic science board in anatomy, physiology, chemistry, pathology, bacteriology and hygiene.

Bills Introduced.—S 220, to amend the chiropractic practice act, proposes (1) to define chiropractors as persons who treat human ailments by the adjustment by hand of the articulation [sic] of the spine or by other incidental adjustments calculated to remove any cause and/or effect of any nerve interference, who may use in connection therewith, physical, mechanical, hygienic and sanitary measures, and (2) to provide that a license to practice chiropractic shall not authorize the holder thereof to practice operative surgery, osteopathy, nor to administer or prescribe any drug or medicine included in materia medica. S 250 and H 383 propose to authorize the board of supervisors of any county to make contracts with licensed practitioners of the healing art for the care of the indigent sick of the county. S 256 and H 378 propose to prohibit public nurses from favoring any particular branch of the healing art or from discriminating against any practitioner. H 329 proposes to amend the law according to hospitals treating persons injured through the fault of others liens on all claims, judgments, settlements or compromises accruing to the injured persons by reason of their injuries, by according the lien also to physicians who have treated such persons. H 396 proposes to require insurance companies to recognize any required report or statement or notice relative to an insured person when furnished by any licensed practitioner of the healing art.

Society News.—Speakers before a meeting of the Tri-County Medical Society (Henry, Washington, Jefferson) in Mount Pleasant, February 28, were Drs. Walter D. Abbott, Des Moines, "Peripheral Nerve Injuries", Arthur W. Erskine, Cedar Rapids, "Common Fractures of Wrist Joint," and Oliver J. Fay, Des Moines, "What of Your Economic and Professional Future?"—Dr. Frederick H. Falls, Chicago, discussed "The Early Diagnosis and Treatment of Carcinoma of the Uterus" before the Black Hawk County Medical Society, February 19.—Dr. Lee W. Dean, St. Louis, will speak before the Linn County Medical Society, April 11, in Cedar Rapids his subject will be "The Diagnosis and Treatment of Nasal Sinus Disease in Infants and Young Children."—At a meeting of the Cass and Audubon county medical societies in Atlantic, February 27, speakers included Dr. Matthew E. O'Keefe, Council Bluffs, on "Intestinal Obstruction Secondary to Acute Infections."—Dr. Joseph L. Stech, Council Bluffs, among others, addressed the Clarke County Medical Society in Osceola, February 5, on "Management of Head Injuries."—Speakers before the Fremont County Medical Society in Hamburg, February 13, included Dr. Donald J. Wilson, Omaha, on "Common Lesions About the Mouth and Mucous Membranes."—The Hardin

County Medical Society was addressed in Eldora, February 26, by Dr Herbert W Rathe, Waverly, on "Modern Treatment of Lobar Pneumonia"

MARYLAND

Study of Maternal Mortality—The Baltimore City Medical Society adopted a resolution, February 15 requesting the city health department to undertake a survey of causes of maternal mortality. The resolution urges members of the society to support the health department in developing its new division of maternity hygiene. This division replaces the home obstetric service, which was abandoned by the department, March 1.

Spinal Meningitis—Fourteen cases of spinal meningitis with six deaths were reported to the Baltimore Health Department between January 1 and February 12, according to *Baltimore Health News*. Two of the deaths were of nonresidents brought to Baltimore for hospitalization. One of the cases occurred in a transient bureau dormitory in the city, while two others were in transients quartered at an army camp within the city limits.

MASSACHUSETTS

Grant to Publish Research Material—The Massachusetts Department of Mental Diseases announces the acceptance of a grant of \$26,000 from the Rockefeller Foundation to finance publication of research material embracing a study since 1928 of many thousands of cases of mental illness throughout the state. At least four volumes will be published under the grant, which will cover a period of five years. According to the report, the first volume will be based on a study of 120,000 cases, the second, 20,000, the third 11,000 and the fourth, 4,000. The material has been compiled under the supervision of Dr Neil A Dayton, Boston, director of statistics and research for the department. Dr Winfred Overholser, Boston, is commissioner of mental diseases.

Discontinue Publicizing Clinics—In accordance with a recent decision of the state department of health, local cancer committees have been asked to discontinue publicity urging patients to attend clinics. Instead, patients will be asked to consult their private practitioners who in turn will refer them to the clinics. The revision of the program was said to have been caused by the protests of private practitioners who said they had lost practice through the increasing number of persons attending cancer clinics. There are fifteen of these clinics in Massachusetts, it was stated, all of which are governed by a program of the state department of health, which has been in force for several years. Under the new plan it is expected that the cancer clinics will become highly specialized consultation services where patients will be sent by private practitioners who have definitely diagnosed a cancerous or precancerous condition.

MICHIGAN

Dr Ekelund Named Secretary of State Society—Dr Clifford T Ekelund Pontiac, has been selected as the secretary of the Michigan State Medical Society, succeeding Dr Frederick C. Warnshuis, who resigned to accept a similar position with the California Medical Association. Dr Ekelund, who is 41 years of age graduated from the University of Minnesota Medical School, Minneapolis, in 1918. He is now president of the Oakland County Medical Society.

MINNESOTA

Dr Vogt Warned to Stop Practice—The Minnesota State Board of Medical Examiners issued a warning, February 22, to Dr Frederick C Vogt, Chicago, to stop practicing medicine without a license in Minnesota. Dr Vogt is licensed to practice in Illinois but has no license in Minnesota. According to the board, he was conducting a so called graduate class in hernia at the Curtis Hotel in Minneapolis and charging a tuition fee of ten dollars. About forty physicians were in attendance from Minnesota, North Dakota and Wisconsin. At first Dr Vogt stated that he was called in consultation, but when this was refuted he said he was merely giving lectures. However, he finally admitted that persons had been treated for hernia by injections. Dr Vogt was born in 1881 and holds a diploma from the St Louis University School of Medicine 1906. He is not a member of the American Medical Association. He was formerly associated with an advertising varicose vein treatment concern known as the Viscose Ambulatorium. In 1931 he was associated with the Illinois Intravenous Institute and with the Vertex Company in a varicose vein treatment. He is now connected with the Loop Health Center, 159 North State Street, Chicago, the board reports. He told the Minnesota board that he would leave the state at once.

NEVADA

Bills Introduced—A 261 proposes that all applicants for licenses to practice medicine, surgery, osteopathy, chiropractic, naturopathy or any other system or method of healing, as a condition precedent to examination by their respective professional boards, pass examinations in human anatomy, human physiology, human pathology, chemistry and hygiene, to be given by an impartial board of examiners. The governor is to appoint such examiners as are necessary to conduct the examinations but no examiner is to be actually engaged in the practice of any method or system of healing. S 142, to amend the medical practice act, proposes (1) to make "disobedience," rather than "wilful disobedience," of the law or of the rules and regulations of the state board of health a ground for revoking a license to practice medicine, (2) in addition to authorizing the board to revoke licenses for cause, to permit the board to suspend licenses for a period not exceeding one year or 'to take such other action in relation to the punishment of the holder of said certificate as in its discretion it may deem proper," and (3) to require a person whose license has been revoked or suspended, to petition within thirty days (rather than sixty days) after the board has certified to the appropriate county recorder that it has revoked or suspended the license, the appropriate district court to review that action. A 260 proposes to create a board to arrange for and to supply necessary maintenance, medical and surgical treatment, and hospitalization to indigent expectant mothers.

NEW JERSEY

Millions for Medical Institutions—By the will of the late Walter G Ladd, the following bequests will become effective after the death of his widow. Somerset Hospital, Somerville, N J, \$100,000, Elizabeth General Hospital and Dispensary, Elizabeth N J, \$25,000. The remainder of the estate about \$10,000,000, is to be divided into three trust funds: one to maintain his family estate in New Jersey as a convalescent home for "deserving gentlewomen," one to aid such persons elsewhere and the third to be used for hospitals, medical schools, universities, colleges and similar institutions "not existing for pecuniary profit." At the end of fifty years, the trusts are to be terminated and the principal to be divided among several institutions, including New York Post-Graduate Medical School and Hospital, New York, and Johns Hopkins Hospital, Baltimore.

NEW YORK

Bill Passed—A 461 has passed the assembly, proposing to amend the medical practice act by making it unlawful for any one other than a licensed physician to conduct, direct, supervise or control the work or reports of a clinical laboratory which is defined as "a laboratory in which tests are made on individual persons, their secretions, excretions, blood and tissues, to aid in the diagnosis, prognosis, or treatment of the individual's physical or mental state or states."

Dr Smiley Joins State Education Department—Dr Dean Franklin Smiley, for fifteen years director of the student health service at Cornell University, Ithaca, has been appointed director of the divisions of health and physical education in the state education department at Albany. The position, vacant for several years, was at one time occupied by Frederick Rand Rogers, PhD, now at Boston University. Dr Smiley, who was also assistant professor of hygiene at Cornell, was president of the American Student Health Association in 1932. In 1927 he made a study of the effect of athletic training on student health and the hygiene of undergraduate athletics as part of a study made by the Carnegie Foundation for the Advancement of Teaching.

Bills Introduced—S 1667, to amend the medical practice act, proposes to authorize the revocation of the license of a physician who "has been guilty in any way of unprofessional conduct." S 1714 proposes that the commissioner of education prescribe rules and regulations for the establishment and regulation of schools of natural therapy and to license graduates of such schools to practice natural therapy. The course of instruction in such a school is to include a 'complete analytical and comprehensive study of the following subjects: 1 Hydrotherapy 2 Balneology 3 Cibology 4 Dietology 5 Hirudology 6 Hygiene 7 Clismology 8 Lavatology 9 Massage 10 Phlebotomy 11 Potiology 12 Rotology 13 Electrolysis 14 Scalp treatment 15 Physiotherapy." A 2207 proposes to forbid the operation of any x-ray machine or apparatus in connection with laboratory or hospital work, unless such x-ray machine or apparatus is equipped with a shock absorbing device of a design approved by the commissioner of health.

New York City

Personal—Dr Leona Baumgartner has been awarded the prize of the New England Pediatric Society for the best paper presented last year by fourth year medical students in New England on a subject of scientific interest in connection with the health of children. Dr Baumgartner's subject was "Age and Antibody Production." She graduated in June 1934 from Yale University School of Medicine, New Haven.

Society News—A symposium on angina pectoris with special reference to coronary artery disease was presented at the stated meeting of the New York Academy of Medicine, March 7, by Drs Harold M. Marvin, New Haven, Conn., Emanuel Libman and Harlow Brooks.—Dr Alfred W. Adson, Rochester, Minn., among others, addressed a joint meeting of the New York Neurological Society and the section of neurology and psychiatry of the New York Academy of Medicine, March 5, on "Malignant Hypertension: Results Obtained by Sympathectomies and Rhizotomies."—The Medical Society of the County of New York held an open forum, March 28, for the discussion of "The Future of Medicine." Speakers were Drs Morris Rosenthal, Frederic E. Sondern, Haven Emerson and Samuel J. Kopetzky.—Dr Frederic E. Sondern addressed the Bronx County Medical Society, February 20, on national health insurance in England.—Dr Ralph Colp addressed the New York Surgical Society, February 27, on "The Relation of Cholecystitis to Pathologic Changes in the Liver."—Speakers at a meeting of the Kings County Medical Society, February 19, were Drs John A. Kolmer, Philadelphia, on "Immunity and Vaccination Against Acute Anterior Poliomyelitis," and LeGrand Kerr, Pediatrics in the Gay Nineties.—Dr John C. MacLitt, on behalf of alumni of St. Mary's Hospital, presented to the society a portrait of Dr John Byrne, who became a member of the society in 1858. Dr Byrne was president of the New York Obstetrical Society in 1874 of the Brooklyn Gynecological Society, 1890, and of the American Gynecological Society, 1892. He was one of the founders of the Long Island College Hospital.

NORTH CAROLINA

Bill Enacted—H 148 has become a law granting to physicians and hospitals treating persons injured through the negligence of others liens on all sums recovered as damages by the injured persons by reason of their injuries.

Bill Passed—H 539 has passed the house, proposing to repeal the law requiring a male applicant for a marriage license either to sign an affidavit that he is free from venereal disease and active tuberculosis or to present a certificate from a licensed physician to that effect.

OHIO

Officers of State Board—Dr James G. Blower, Akron, was elected president of the Ohio State Medical Board at a recent meeting. Other officers elected are Drs John R. Shoemaker, Cuyahoga Falls, vice president, Louis T. Franklin, Chillicothe, treasurer, and Herbert M. Platter, Columbus, secretary.

Appointments at University of Cincinnati—Dr David A. Tucker Jr., associate clinical professor of contagious diseases at the University of Cincinnati College of Medicine, was appointed professor of the history of medicine at the February meeting of the board of directors. Dr George M. Guest was promoted to associate professor of pediatrics, among other changes. Dr Robert D. Maddox was appointed lecturer in military medicine and is giving a new course in that subject this semester.

Bills Introduced—H 307, to amend the sales tax law, proposes that a sales tax shall not be levied on the sale of medicine on a prescription issued by a licensed physician, when filled by a registered pharmacist.—H 497 proposes to establish, in the state department of health a bureau of social hygiene to reduce illegitimacy and to improve health and family conditions by the control of venereal diseases. The bureau is to be authorized to establish local clinics for the administration of free treatments for venereal diseases.

Fifty Years in Practice—Dr Florus F. Lawrence, Columbus, was the guest of honor at a dinner given by his colleagues, March 7, in celebration of his completion of fifty years of medical practice.—Dr Wilson H. Button, Hubbard, recently celebrated the fiftieth anniversary of his graduation from Western Reserve University School of Medicine, Cleveland. Dr Button has practiced in Hubbard since 1896.—Dr James B. Hannah Addyston, marked the completion of fifty years of medical practice, March 5. Dr Hannah was graduated from the Medical College of Ohio, Cincinnati, in 1885.

OKLAHOMA

Bills Introduced—H 80, to amend the workmen's compensation act, proposes, among other things, to permit an injured employee to select at the employer's expense his own physician to treat his industrial injuries. H 207 proposes to exempt from the provisions of the insurance laws of the state all hospital associations engaged in the business of "indemnifying policy or certificate holders in said associations against the cost of medical surgical and hospital services and accommodations." H 425 proposes to prohibit the sale or other distribution, except by a licentiate of the state board of pharmacy, of appliances, drugs or medicinal preparations intended or having special utility for the prevention of conception and/or of venereal diseases.

Society News—Drs Edward H. Skinner, Kansas City, Mo., and Wendell M. Long, Oklahoma City, discussed cancer and conducted clinics at a meeting of the Garfield County Medical Society, Enid, February 19.—Among speakers at a meeting of the Southern Oklahoma Medical Association, Ada, March 5, were Drs George L. Carlisle and Arthur J. Schwenkenberg, Dallas, Texas, on cardiac neurosis, James B. Eskridge Jr., Oklahoma City, female sex hormones, and Henry H. Turner, Oklahoma City, endocrine glands.—Physicians of Cherokee, Haskell, McIntosh, Muskogee, Okfuskee, Okmulgee, Tulsa and Wagoner counties participated in a joint meeting of the Muskogee, Tulsa and Okmulgee county medical societies in Muskogee, March 28. Speakers were Drs Isaac W. Bollinger, Henryetta, on silicosis, Walter S. Larrabee, Tulsa, disorders of the back, and Ira B. Oldham Jr., Muskogee, skeletal fixation in fractures.—At a meeting of the Carter County Medical Society, Ardmore, February 25, speakers were three Dallas physicians: Drs Ben R. Buford, on pellagra, Walter G. Reddick, differential diagnosis of conditions causing edema, and Dayton C. McBride, obesity.—Drs Jefferson R. Lemmon, Amarillo, Texas, and Herbert L. Wright, Supply, among others, addressed the Woodward County Medical Society, February 12, on "Pneumonia in Children" and "Purposes of the Allied Sciences," respectively.

OREGON

Endowment for Children's Hospital—The First Hebrew Benevolent Association of Portland recently gave to the Doernbecher Memorial Hospital for Children at the University of Oregon Medical School a fund of \$5,000 for maintenance of a bed in memory of the late Marx Cohen. The fund was left by Mr. Cohen to the association as a trust fund to be utilized for medical and surgical treatment of children under 16 who through poor financial circumstances would be unable to obtain such treatment.

PENNSYLVANIA

Hospital News—The secretary of the staff of the Center County Hospital, Bellefonte, has notified THE JOURNAL that Dr Enoch H. Adams, Berwick, has not been made surgeon in chief to the Center County Hospital, as was reported February 16.

Bills Introduced—H 1521 proposes that all hospitals receiving state appropriations have in attendance at all times at least one licensed physician or resident intern who shall have graduated from an approved medical college. H 1604, to supplement the workmen's compensation act, proposes to make the following occupational diseases compensable: chrome ulceration, epitheliomatous cancer, ulceration of the skin or the corneal surface of the eye, chronic miners' asthma, silicosis, anthrax, infection or inflammation of the skin due to contact with oils, cutting compounds or lubricants, dusts, liquids, fumes, gases or vapors, and poisoning from lead, mercury, phosphorus, arsenic, methanol, carbon bisulphide, naphtha or volatile halogenate hydrocarbons, manganese dioxide, brass, zinc, benzol, nitro and amido derivatives of benzol, and radium.

Philadelphia

New Professorships—Three new clinical professorships have been established at the University of Pennsylvania School of Medicine and have been filled by the advancement of Drs Thomas Grier Miller, Richard A. Kern and Charles C. Wolferth from the rank of assistant professor. Dr Truman G. Schnabel, assistant professor of medicine, has been advanced to an associate professorship.

Personal—A portrait of Dr Martha Tracy, dean of the Woman's Medical College of Pennsylvania, was presented to the college on its eighty-fifth anniversary, March 9. This is Dr Tracy's twenty-fifth year at the college. Dr Ellen C. Potter, Trenton, N. J., made the presentation. Dr Helen Ingleby, professor of pathology on behalf of trustees faculty,

students and friends, presented in automobile to Dr Tracy. —The obstetric staff of Jefferson Medical College gave a dinner in honor of Dr P Brooke Bland, recently, in honor of his completion of ten years as professor of obstetrics at the college. Speakers were Drs Jacob Parsons Schieffer, Henry K Mohler, Charles E G Shannon and Edward L Bauer. —The first Edwin A Jurecki Memorial Lecture at the Jewish Hospital was given, February 4 by Dr Samuel A Levine, Boston on "The Relation of the Thyroid Gland to Heart Disease." Dr Jurecki who died Sept 9, 1934, was chief resident physician at the hospital.

VIRGINIA

Course in Pediatrics—Dr Samuel F Ravenel Greensboro N C, is giving a graduate course in pediatrics in South Boston under the auspices of the department of clinical and medical education of the Medical Society of Virginia. Meetings began, March 5, to be held twice each week for five weeks.

The McGuire Lectures—The Stuart McGuire Lectures at the Medical College of Virginia, Richmond, will be given April 29-30, by Dr Gunnar Nyström professor of surgery, University of Upsala, Sweden. His subjects will be Embolism of the Arteries of the Extremities and Pulmonary Embolism. During the day of April 30, the college will hold its spring graduate clinics.

New Health Units—The state health department has recently established new units in several sections of Virginia by the aid of \$66,000 allocated to the state by the U S Public Health Service. The following health officers have been appointed:

Dr Chas H Dawson, Suffolk, the district including James City, York, Warwick and Elizabeth City counties.
Dr William F Wild, Bridgeport Conn, to succeed Dr Dawson at Suffolk and the district including Nansemond and Isle of Wight counties.
Dr David H Andrew, formerly of Parkton Md, Wythe County, with headquarters at Wytheville.
Dr Daniel C Steelsmith, formerly state health officer of Iowa, the district made up of Halifax and Pittsylvania counties at South Boston.

RHODE ISLAND

Bills Introduced—H 708 proposes to require all applicants for licenses to practice any of the healing arts, as a condition precedent to examination by their respective professional boards, to pass examinations in anatomy, physiology, pathology, diagnosis, chemistry, bacteriology and public health to be given by a board of examiners in the basic sciences. The board is to be composed of three members appointed by the director of public health, all of whom shall be selected for their proficiency in the basic sciences, and none of whom may be a member of any of the various professional examining boards. H 712 to amend the osteopathic practice act, proposes that "a certificate to practice osteopathy shall confer upon the holder thereof the same rights and privileges and the same duties and obligations as a certificate to practice medicine, except the practice of major surgery." H 736 proposes to limit the retail sale or distribution of contraceptive devices, prophylactic rubber goods and other articles, drugs or medicinal preparations primarily manufactured, produced or intended to be used as contraceptives or for the prevention of venereal diseases, to licensed physicians and pharmacists.

SOUTH CAROLINA

Bills Introduced—H 583 to amend the optometry practice act, proposes that "an optician as licensed under this act shall be deemed to be any person who fills the order or prescription of a licensed optometrist or legally qualified physician and surgeon for lenses, spectacles or eyeglasses or parts thereof, or who surface grinds lenses, or edges, drills, mounts, assembles or adjusts spectacles, or eyeglasses, or parts thereof, to given measurements." Nothing in the law is to be construed to permit licensed opticians to do more than is covered by the foregoing definition. The bill also proposes to prohibit the practice of optometry by corporations and to define optometry as "the science and art which treats of the measurement of the functions and powers of vision and the anomalies thereof, and their emendation by physical means." H 246 proposes to compensate workmen for injuries arising out of and in the course of their employment. The employer must furnish and pay for such medical, surgical, hospital and other treatment as may be reasonably required to relieve the injured workman from the effects of his industrial injury, for a period of not exceeding ten weeks from the date of the injury and for such additional time as in the judgment of the South Carolina Industrial Commission will tend to lessen the period of compensation.

WEST VIRGINIA

Bills Enacted—The following bills have become laws. H 160 amending the workmen's compensation act by (1) requiring the compensation commissioner to pay such sums for medical, surgical and hospital treatment as may reasonably be required to relieve an injured employee, the prior law limiting such payments to \$800, and (2) eliminating those portions of the prior law which prohibited the commissioner from paying for medical and hospital services furnished an injured workman, if the workman was entitled under a contract connected with his employment or by reason of a subscription list, to receive medical, surgical and hospital treatment without further charge to him, and S 155, supplementing the insurance laws, by permitting stock companies to incorporate under the general incorporation laws of the state. Companies so incorporated are to be permitted to issue policies providing "every coverage appertaining to accident and health insurance." Specifically they may issue policies providing "reimbursement for expenses incident to personal injury, sickness or death," but they may issue also policies of accident and health insurance covering personal injury, disablement or death by accident, disability resulting from sickness." The provisions of this law may be construed to authorize a corporation organized under it to furnish directly to its policyholders medical nursing, laboratory and hospital services.

WISCONSIN

Bills Introduced—A 488 proposes that no person not a graduate of a class A medical school, as classified by the American Medical Association, shall be on the medical staff of state hospitals and institutions. A 507 proposes to amend the law requiring a male applicant for a license to marry to present a physician's certificate showing freedom from venereal diseases by requiring such certificates from both parties to a proposed marriage.

GENERAL

Society News—The Pan-American Medical Association has chartered the S S Columbia for its second "floating congress, July 18-August 28, for which the following itinerary has been announced: New York, Havana, Curaçao, five days at Rio de Janeiro for a scientific congress, three days at Santos for a meeting in São Paulo, returning via Trinidad, Santo Domingo, Kingston, Havana and New York. These plans were announced at a dinner in honor of Oswaldo Aranha, Brazilian ambassador to the United States, given by the New York chapter of the association at the Hotel Ritz Tower, March 1. Dr Joseph Jordan Eller, 745 Fifth Avenue, New York, is director general of the association. —The Population Association of America will sponsor a conference on population studies in relation to social planning at the Hotel Willard, Washington, D C, May 2-4. Henry Pratt Fairchild, New York, is president of the association and Frank Lorimer, 308 Victor Building, Washington, D C, secretary. —Dr Stephen S Brown, director of the Maine General Hospital, Portland, was elected president of the New England Hospital Association at its annual meeting, February 7-9. Dr Albert G Engelbach, Massachusetts General Hospital, Boston, was reelected secretary. —The sixty-fourth annual meeting of the American Public Health Association will be held in Milwaukee, October 7-10.

Medical Bills in Congress—*Changes in Status* S 5 proposing to prevent the manufacture, shipment and sale of adulterated or misbranded food, drink, drugs and cosmetics, and to prevent the false advertisement of such articles, has been favorably reported to the Senate, with amendments (S Rept. 361). S 1850 has passed the Senate, proposing to amend an act entitled "An Act to recognize the high public service rendered by Major Walter Reed and those associated with him in the discovery of the cause and means of transmission of yellow fever," by including Roger P Ames among those honored by the act. *Bills Introduced* S 2314, introduced by Senator Shipstead, Minnesota, proposes to extend the benefits of the Emergency Officers' Retirement Act to certain emergency officers of the War with Spain, the Philippine Insurrection, and the Chinese Boxer Rebellion. H R 6873, introduced by Representative Rabaut, Michigan, proposes to erect a veterans hospital in or near the city of Detroit. H R 6906, introduced by Representative Mead, New York, proposes to revise and amend the federal food and drugs act to prevent the manufacture, shipment and sale of adulterated or misbranded food, drugs and cosmetics, and to prevent the false advertising of such articles. H R 6907, introduced by Representative Hoeppe, California, proposes to extend the benefits of existing veterans' laws and regulations to officers and enlisted men of the Army, Navy, Marine Corps and Coast Guard who suffer injury, disease or death while on authorized leave of absence or furlough.

Foreign Letters

LONDON

(From Our Regular Correspondent)

March 9, 1935

Whither National Health Insurance?

In previous letters it has been shown that the further socialization of medicine is a primary object of the labor party and that the future of health insurance depends on whether that party again attains power, a danger that is generally admitted. In 1930, when this party was in power, the British Medical Association brought forward a scheme for a state medical service for the whole population. This great plunge into further medical socialism was not proposed because of any desire for it on the part of the profession or of the association but to forestall a possible scheme of the labor government. Soon afterward the prodigal finance of that government brought the country to the brink of ruin. There was a first class financial crisis and the pound crashed. The crushing defeat of the labor party followed and removed the danger—for a time—and no more has been heard of the association's scheme. At the recent annual conference of the labor party the national executive committee of the party submitted a report stating that there are grave defects in the panel system as regard both the type and the standard of medical care. The committee proposes that medical benefit should be taken away from health insurance altogether and that the insured should receive only cash benefit. It would enlarge the insurance scheme by including nonmanual workers with incomes up to \$2,500. But the insured would look to the local authorities for medical care, both at home and in the hospital. This would be provided at public expense. The committee visualizes a system of clinics, which would be 'well equipped surgeries where the patient would receive the best examination, diagnosis and treatment, without the interminable periods of waiting of the average hospital outpatient department'. Around these clinics would revolve domiciliary attendance and other facilities of the public health service. The medical profession would thus become officials employed by and paid by the state.

It is interesting to compare this program with that of the Medical Practitioners' Union. As stated in *THE JOURNAL*, January 19, page 228, this body is a medical trade union, which recently affiliated with the Trade Union Congress. The medical secretary of the British Medical Association declared in a press interview that the object was "to anticipate the political movement in the country," by which he must have meant the return to power of the labor party. The Medical Practitioners' Union can therefore now be described as a constituent of the labor party. In its organ the *Medical World* it has published a lengthy memorandum advocating extension of the general practitioner service of the insurance system to the whole population. The union 'expects that private practice will continue to exist although it will be considerably restricted'. In a universal service of this kind there will be no place for any contributory system for purely medical purposes" which exists at present. But the union does not want to abolish contribution for sickness benefit (that is, the payments made to sick members), which could be regarded as one form of unemployment benefit and part of a wider problem than the problems with which the medical profession is concerned. As much of the present contribution as is applied to the provision of medical benefit should cease. Whence the money for the payment of medical benefit is to come, the union does not condescend to say. It can only be from the taxpayer, who in the view of this socialist body is a beast of burden that does not even deserve to be mentioned for the service to be put on him.

It is thus evident that the future of the insurance system is bound up in the much greater question of the future of the political situation. If the labor party should again return to power, the system will certainly become more socialistic. Probably, as suggested, medical benefit will become noncontributory and therefore free and also will be extended to the whole population. The medical profession will for the most part be state paid, if indeed its members do not become mere state officials. The British Medical Association will resist this last proposal, as its policy has always been to protect private practice against the encroachments of official practice and if on no other point the Medical Practitioners' Union will be in agreement, for it is in favor of "free choice of doctor." But what the socialist politicians may decide is another matter. There of course would still be the luxury of private practice for persons who could afford to pay for it. But they would be a disappearing class. They are already disappearing under oppressive differential taxation. An official table, just issued, shows that the number of persons with incomes exceeding \$10,000 in 1932-1933 was 84,175, the lowest for six years, the highest was in 1929-1930, when the figure was 108,532. The main cause of the excessive taxation is socialistic expenditure.

PARIS

(From Our Regular Correspondent)

Feb. 22, 1935

Foreigners Must Be Naturalized Ten Years Before Beginning to Practice Medicine

In the *Concours medical* of February 17 appears the draft of a bill introduced in the French house of representatives by Mr. Dommange, which will place a serious obstacle in the path of any physician of foreign birth who seeks to practice in France. In July 1934 a bill was passed and became a law to the effect that naturalized citizens could not be admitted to the bar or occupy any official position until ten years had elapsed since their becoming French citizens. The Dommange bill proposes to extend this ten year period to the medical profession in order that a physician shall during such interval become thoroughly familiar with the language and customs of the country in which he intends to practice. This proposed law is in line with the recent agitation on the part of the medical students against the constantly increasing number of foreigners in the schools and hospitals of France.

Foreign Medical Students and Physicians in France

The editor-in-chief of the *Presse médicale*, Dr. Desfosses, discussed foreign medical students and physicians in France in the February 16 issue. France has always been liberal in admitting foreign students to its medical schools. An honorary diploma, or "diplôme universitaire," which did not entitle the holder to practice medicine in France has been popular with foreigners who intended to practice in their home countries. Since the war, and particularly since the limitation of students in eastern Europe, the "non-Aryan" agitation in Germany and the raising of standards for admission in the United States and other countries, a large number of foreign medical students have matriculated in the French medical schools. A treaty with Rumania, dating back to 1860, enabled students to matriculate without even being required to present a bachelor of arts degree, such as is indispensable for French students. Some of the foreign students who matriculated only with the idea of receiving an honorary degree have been able to convert it into a state license which permits them to remain in France. The number of licenses to practice in Paris granted to foreigners is gradually increasing in proportion to those given to French citizens. The French medical schools are overcrowded, so that native students find it difficult to attend lectures and to work in the laboratories and dissecting rooms.

The Arnbruster law, now in force, will virtually put a stop to foreigners practicing medicine in France, but unfortunately it cannot affect foreign students already pursuing their studies in French medical schools. It is applicable only to those matriculating last fall. The Arnbruster law left a loophole in the form of permitting citizens of those countries which do not require naturalization for French citizens who wish to practice medicine or dentistry in the respective country to do so in France. This loophole will probably be closed if the Dom-mange amendment becomes a law, as every one who wishes to practice medicine or dentistry will either have to be naturalized ten years before receiving such a license or, at least, have lived in France a similar length of time, even in the case of countries in which reciprocity exists, before being allowed to practice. Desfosses cites the number of foreign and French students matriculated at the various French medical schools during the 1933-1934 term. Of 1,080 students matriculating at the University of Paris Medical School for that term, 295, or over 27 per cent, were foreigners. Of 125 foreigners who received the 'diplome d'etat' or state license to practice during the scholastic year 1933-1934, ninety-seven were from Rumania alone and the remainder, except three, from the central and eastern countries of Europe, three being from Egypt. None were from the United States or Canada. Of 112 students who received the honorary degree or 'diplome universitaire,' without privilege to practice, thirty-eight were from Poland, ten from Cuba, nine from Greece, eight from Bulgaria and the rest from all parts of the world, including one from the United States.

The Public Hospitals and the French Medical Crisis

The recent agitation against foreign physicians and medical students has drawn attention to the necessity of lightening the burden of the French medical profession during this period of universal economic crisis. That the influx of foreign competitors alone is not responsible for the marked decrease in income of the French practitioner is shown in the address given by Prof. Emile Sergent incident to his election as president for 1935 of one of the leading medical societies, the Societe medicale des hopitaux de Paris. The public hospitals of Paris have a capacity of 35,000 beds and are governed by the Assistance publique, corresponding to a city hospitals administration in the United States. Theoretically only nonpaying patients were supposed to be cared for but, as the result of the economic crisis and especially of the functioning of the social insurance law, the line is not as closely drawn as it used to be. The attending staffs of these free hospitals are given their positions following a strict civil service examination, based to a great extent on clinical and experimental research as well as previous internship in a Paris public hospital. The staffs are all appointed by the medical faculty of the University of Paris, following such a civil service examination (written, oral, and appraisal of previous work). These positions on the attending staffs are much sought after, because the fortunate competitors automatically become members of the medical faculty, there being only one medical school in Paris. The public, even those who are able to pay, thus feel that the best medical talent is to be found in the hospitals under the control of the Assistance publique, hence the abuse of the original object of these charity hospitals. Professor Sergent called attention to the fact that, little by little, the Assistance publique, as the result of the upheaval of social laws, has forgotten the intention of its founders and as a result the institutions under its supervision have become low priced private hospitals. Many patients who formerly could not be admitted to the charity hospitals are admitted there today, and ever increasing consultations in the outpatient departments are given gratuitously to those able to pay, whereas formerly only the indigent came for advice. On the other hand, many individuals who carry social insurance

are now cared for at home instead of entering the free hospitals. There are fewer people in these public institutions today, but those who enter them pay for their care.

The movement in France toward state medicine is making itself felt more and more every day. It will require the utmost effort of medical organizations to oppose the transformation of physicians into government officials.

BERLIN

(From Our Regular Correspondent)

Jan 14, 1935

Useless Petitions for Sterilization

The minister of the interior has stated that in the trying of complaints before the eugenics supreme court it has been shown that the medical officers entitled to file petitions are not showing much system in the choice of persons recommended for treatment. It is useless to burden the eugenics courts with petitions for sterilization of women more than 45 years old, alcohol addicts in the sixties, 10-year-old weak-minded children, idiots and aged catatonic patients, when persons with hereditary taints, still in the prime of life, have not been sterilized. Likewise the decisions as to whether harelip, congenital luxation of the hip or forms of polydactylism are hereditary diseases within the meaning of the law may be reserved for a later date, when all dangerous patients with hereditary taints have been sterilized. The urgent cases are weak-minded persons of all types, including also mild cases—physically healthy, vivacious males and females between the ages 16 and 40, schizophrenic and manic-depressive patients in stages of remission, epileptic persons, alcohol addicts under 50 years of age, persons presenting hereditary blindness, deafness, and the like. In every case it should be ascertained whether the patient is in the reproductive stage. It must not happen again that, after proceedings lasting for months and costing much money, the eugenics supreme court discovers that the petition should not have been entered at all.

In Hamburg 2,500 cases of hereditary disease have been handled thus far, as appears from a report of the court. The number of persons with hereditary taints in Hamburg lies between 10,000 and 20,000, out of a total population of 1,200,000. The operations are performed in eleven different clinics. The average duration of treatment ranges between three and twelve days. In the Hamburg courts 2,938 petitions have been filed, 2,107 of which demanded sterilization. Seventy-two petitions have been rejected and 1,439 operations have been carried out thus far.

CASTRATION OF FOREIGNERS

A previous letter discussed the application of the sterilization law to foreigners. A recent announcement by the highest German court of justice holds that the possibility of deporting a foreigner from Germany is not subversive of a court order demanding castration. In reaching a decision, the courts need only consider whether the foreigner affected by the petition constitutes a menace to public safety and whether the castration is necessary in order to eliminate this danger. On the other hand, it is left to the discretion of the executive boards as to whether castration may be dispensed with if a deportation order against the foreigner has been issued.

The Determination of Sex

The various theories about influencing the sex of the fetus, which have their origin only in fancy, are of little value. Modern zoology and the science of heredity hold that the sex of the fetus is determined by the spermatozoa. There are believed to be male and female spermatozoa but only one kind of ovum. Thus far no practically useful methods based on this knowledge have been announced.

A few years ago, Professor Unterberger in Königsberg published the observation that boy babies could be secured through alkalization of the vaginal secretion, an announcement that caused a sensation in the columns of the daily papers. Extensive clinical observations and experiments on man or animals, concerning which Dr. Schumacher recently addressed the Gies-sen Medical Society, have shown that Unterberger's contention is not confirmed. Schumacher studied clinically more than 1,500 pregnant women. He proved that the observation of the Cologne gynecologist Professor Füh, made in a small number of cases and constantly cited in support of Unterberger's contention, cannot be substantiated. It had been maintained that in the presence of a strongly acid reaction of the vaginal secretion girl babies and in the event of an alkaline reaction boy babies predominate. The fact is that male births predominate over female births with all degrees of vaginal secretion. Since the clinical tests lent no support to the Unterberger theory, Schumacher and Günther conducted experiments on 200 female mice and 100 female rats without confirming this theory. In experiments on rabbits, in ninety litters with 514 young, alkalization of the vaginal secretion before copulation could not be shown to exert any influence on the sex. In a few rabbits, to be sure, the theory appears to find support, but in an equal number of other female animals the opposite was true. If one combines the results of the various progenies, one gets a final figure that appears to support the Unterberger theory. The predominance of males, after alkalization of the vaginal secretion of the mothers, is, however, too slight and the results of the experiments are too contradictory to justify one in drawing any definitive conclusions. Also the other figures, taking into account the laws of variations, must be regarded as due to accidental circumstances.

A practical application of this method in man is fraught with danger, since it is possible, through a chemical alteration of the vaginal secretion, to cause damage to the offspring.

The attempts to influence the sex of the fetus by treating the mother animals with sex hormones have only theoretical interest as yet and require clarification by systematic experiments on animals.

RIO DE JANEIRO

(From Our Regular Correspondent)

Jan 15, 1935

Staphylococcus Toxin

Dr. J. Travassos, in a recent lecture, said that staphylococcus toxin has a marked antigenic power. The blood serum of animals that have been repeatedly inoculated with small doses of toxin by the subcutaneous and intradermal routes is manifestly antitoxic. Immunization by the intravenous route is difficult because the animals, as a rule, do not withstand the inoculation of increasing doses of the toxin. The antitoxin experimentally obtained by the speaker neutralizes both in vitro and in vivo all the toxic properties of the toxin. Animals actively immunized in the speaker's experiments resisted lethal doses of toxin by intravenous inoculation and proved to be immune to intradermal inoculation of certain doses of toxin that would produce extensive necrotic lesions in nonimmunized rabbits. The speaker's results prove the preventive power of antitoxin in relation to the lethal and necrotic action of filtrates. Antitoxin protects rabbits and guinea-pigs against the effect of the toxin. The protection lasts for a certain time, which varies according to the dose of antitoxin and the route of its inoculation. Staphylococcus antitoxin has a marked preventive power against the effect of the toxin but a limited curative power. The trans-ocular and cisternal inoculation of 100, 200 or 300 units of antitoxin failed to restore the equilibrium in nine out of ten guinea-pigs inoculated five minutes after the onset of the syndrome. The action of staphylococcus antitoxin probably is

similar to that of tetanus antitoxin. The limitation of their curative action in both cases, regardless of their neutralizing effect on free toxins in the brain, is due to the fact that nerve cells more or less injured are unable to regain their integrity. Antitoxin might have a curative action in subacute intoxications of low evolution by neutralizing a small amount of toxin, as it is formed in nonextensive foci.

Gastrectomy for Duodenal Ulcer

Dr. Piragive Nogueira of the Faculty of Medicine of São Paulo emphasized in a lecture the satisfactory results of gastrectomy in the treatment of duodenal ulcers, either complicated by the presence of adhesions to the head of the pancreas or perforated at this site. Injury of the common bile duct during gastrectomy is rare (four cases in 1,000 operations). The injuries were successfully corrected by the creation of anastomosis between the common bile duct and the duodenum in three cases, and by an end to end anastomosis of the common bile duct in one case. In two cases the retroduodenal part of the common bile duct formed an angle, the vertex of which was at the base of the ulcer. In a case of duodenal ulcer at a lower site, where it perforated into the head of the pancreas, the canal of Wirsung was injured, resulting in acute necrosis of the pancreas, verified at necropsy.

Test of the Hypophysis in Hyperthyroidism

Drs. Mario Yahn, E. de Aguiar Whitaker and Celso Pereira da Silva recently discussed the value of the test of the hypophysis (injection of 1 cc. of extract of the posterior lobe of the hypophysis) described by Claude, Baudoin and Porak, in the diagnosis of hyperthyroidism. A group of seventeen persons, including eleven patients suffering with hyperthyroidism and six persons without it, were subjected to the test. The results were interpreted by the determination of the basal metabolism. The authors give the technical details to be followed in the test, as well as the criterion for the interpretation of results (either positive or negative). Positive results were obtained in five out of the group of eleven patients suffering with hyperthyroidism and in three of the persons without it. Claude, Baudoin and Porak reported positive results from the test in the whole group of patients with hyperthyroidism and negative results in the whole group of persons without it (thirteen and four cases, respectively). Yahn and his collaborators believe that these results may be due merely to chance and conclude that the test has no value for the diagnosis of hyperthyroidism.

Marriages

HARRY GOFF THOMPSON, Mount Vernon, Ill., to Miss Margaret Matthews of New Haven, Conn., Dec. 1, 1934

JOHN J. FLANAGAN, Newark, N. J., to Miss Helen Patricia Froehlich of Glen Ridge, February 21

SAUL H. KAPLAN, Canandaigua, N. Y., to Miss Ada Schneider of New York, March 3

JAMES A. HARPER JR., to Dr. Edna K. Sexsmith, both of Greenfield, Iowa, Dec. 12, 1934

JAMES JOSEPH ROWLAND, Highlands, N. J., to Miss Dorothy M. Alton of Detroit, March 2

LACY JOHN SALAN, Washington, D. C., to Miss Marie Cecilia Rowan, Nov. 17, 1934

MARTIN T. MEYERS to Miss Marjorie Marvin Wyley, both of Atlanta, Ga., February 27

HAROLD W. KESCHNER to Miss Evelyn Clarice Silver, both of New York, March 14

SAMUEL G. SEINFELD to Miss Charlotte Lois Strumpf, both of Chicago, February 10

PAUL G. THODE, Chicago to Miss Margaret Danielson of Evanston, Ill., March 5

Deaths

Joseph Hammond Bryan * Washington, D C , University of Virginia Department of Medicine Charlottesville, 1877 University of the City of New York Medical Department, 1878 member of the American Laryngological Association and the American Otological Society, fellow of the American College of Surgeons, served during the World War attending surgeon to the Episcopal Eve, Ear, and Throat Hospital consulting laryngologist to the Garfield Memorial Hospital, aged 78, died, February 3, of cerebral hemorrhage

Hilles Talley Brown, Dixon, Ill Northwestern University Medical School, Chicago, 1922, also a dentist formerly demonstrator in anatomy at the Northwestern University Dental School, on the staff of the Dixon State Hospital aged 71 died February 19 in the Veterans' Administration Hospital Milwaukee, of bronchopneumonia and coronary sclerosis

Delphus Brown Virtue, Mansfield Ohio, Starling Medical College Columbus, 1891, past president of the Morrow County Medical Society, served during the World War at one time president of the school board of Iberia formerly affiliated with the U S Veterans' Bureau, aged 68, died, February 26, of angina pectoris

George Irvine McKelway, Westfield N J University of Pennsylvania Department of Medicine, Philadelphia 1889, Jefferson Medical College of Philadelphia 1893 also a pharmacist, past president of the Medical Society of Delaware served during the World War, aged 84, died March 8

Joseph E Robins, Charlestown, W Va Jefferson Medical College of Philadelphia 1883 formerly member and president of the board of education, formerly bank president for many years member and at one time president of the state board of health, aged 73, died, January 8, of heart disease

John W Vizard, Pleasant Mills Ind , National Normal University College of Medicine, Lebanon Ohio 1892 member of the Indiana State Medical Association formerly member of the state legislature aged 65, was found dead in bed February 26, of angina pectoris

Thel Hooks * Smithfield, N C , Medical College of Virginia, Richmond, 1901, formerly secretary of the Johnston County Medical Society served during the World War on the staff of the Johnston County Hospital, aged 58, died, February 18 of cerebral hemorrhage

John Buxton Loughary, Puyallup Wash Bellevue Hospital Medical College, New York, 1888 member of the Washington State Medical Association on the staff of the Puget Sound Sanatorium, aged 74, died, February 17 of cerebral thrombosis

William Marlin Marsh, Ripley Miss , University of Tennessee College of Medicine, Memphis Tenn 1915 member of the Mississippi State Medical Association aged 50 died, February 24, in the Baptist Hospital, Memphis, Tenn, of pneumonia

Robert Alexander Reid, Newton Mass , Bennett College of Eclectic Medicine and Surgery, Chicago 1877, for many years editor of the *Massachusetts Medical Journal* aged 86 died, February 5, of arteriosclerosis and cerebral hemorrhage

Arthur Eugene Roose, East Pittsburgh Pa , Jefferson Medical College of Philadelphia, 1895, member of the Medical Society of the State of Pennsylvania aged 65 died, February 22 at his home in Forest Hills, of coronary occlusion

Charles Virgil Bomar * Newgulf, Texas, Chicago College of Medicine and Surgery 1917, medical director of the Texas Gulf Sulphur Company Hospital, aged 52, died, January 28, of injuries received in an automobile accident

Josiah Griffin Ely, Hamburg Conn , Bellevue Hospital Medical College, New York, 1884, for many years member of the school board, formerly member of the state legislature, aged 77, died, January 23, of pneumonia

William H Delap, La Follette, Tenn., University of Louisville (Ky) Medical Department 1910 served during the World War, aged 60 died, February 22, in the Fort Sanders Hospital, Knoxville, of streptococcal cellulitis

Montgomery Russell, Seattle, Western Pennsylvania Medical College, Pittsburgh, 1889 member of the Washington State Medical Association, aged 75 died, January 17, of pulmonary abscess following pneumonia

Walter R. Ray, Shelbyville, Ky , Louisville Medical College 1885 past president of the Shelby County Medical Society formerly member of the state legislature, aged 74, died, February 4, of heart disease

Charles E Teets, New York, New York Homeopathic Medical College, 1884, formerly professor of laryngology and rhinology at his alma mater, aged 82, died, January 7, of arteriosclerosis and myocarditis

Harry Stafford Brown, Arroyo Grande, Calif College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906, aged 50, died, January 18, of asthma and chronic myocarditis

John Edward Pratt, Dumont, N J , Dartmouth Medical School, Hanover, N H 1878, school physician, on the staff of the Hackensack (N J) Hospital, aged 85, died suddenly, February 5, of angina pectoris

Leon Leo Hale, Chebeague Island, Maine, College of Physicians and Surgeons Boston, 1884, member of the Maine Medical Association formerly a dentist, aged 80, died, February 17, of angina pectoris

Lynn Hersley Harrison, Butler, Ind Barnes Medical College, St Louis, 1895, aged 62, died, February 22, in the Sacred Heart Hospital, Garrett, of pulmonary embolus, myocarditis and endocarditis

John Middleton, Buffalo, L.R.C.P., Edinburgh, and L.R.F.P.S. Glasgow, 1879, member of the Medical Society of the State of New York, aged 83, died, February 13, of cerebral arterial thrombosis

Joseph W Bryan, Lexington, Ky Bellevue Hospital Medical College, New York, 1873, member of the Kentucky State Medical Association, aged 85, died, February 8, of bronchopneumonia

James Edmund Brown, Bryantville, Mass College of Physicians and Surgeons of Baltimore, 1886 member of the Rhode Island Medical Society, aged 81, died, February 8, of lobar pneumonia

James Madison Reynolds, Memphis, Ind , Bellevue Hospital Medical College, New York 1885, member of the Indiana State Medical Association aged 73, died, January 10 of uremia and nephritis

Robert Camden Whitehead, Norfolk Va , University College of Medicine, Richmond, 1905 member of the Medical Society of Virginia aged 58, died, January 27 of heart disease

Joseph L Murdoch, Emerson Ga , Southern Medical College Atlanta 1893 member of the Medical Association of Georgia, aged 72 died, January 29, of lobar pneumonia

Frederick C Van Vliet, Shrewsbury, N J , University of Vermont College of Medicine Burlington 1876, aged 81, died Dec 20, 1934 of heart disease and nephritis

James Turner Rogers, Hamilton, Ont, Canada Trinity Medical College, Toronto, 1889 L.R.C.S., L.R.C.P., Edinburgh Scotland, 1890 died, Dec. 27, 1934

Ohan Karnak Chirmanian, New York University of the City of New York Medical Department, 1881, aged 78, died, Dec 21, 1934, of coronary sclerosis

Lelia Ada Davis, Toronto, Ont, Canada University of Toronto Faculty of Medicine, 1889, Trinity Medical College Toronto, 1895, died, January 23

Oren Cheney Tarbox, Oneonta, N Y , Bellevue Hospital Medical College New York, 1885, aged 74, died, February 12, of influenza and myocarditis

William Frederick Jackson, Brockville, Ont Canada McGill University Faculty of Medicine, Montreal, Que, 1873, aged 82, died, January 29

James Peter Valby, Sioux Falls S D , College of Physicians and Surgeons of Chicago, 1890, aged 78 died, January 23, of cerebral hemorrhage

Samuel Dutton Whitney, Albany N Y , Baltimore University School of Medicine, 1890, aged 65, died, Dec 14, 1934 of pulmonary tuberculosis

Gustave Gaston Smith, L'Orignal, Ont, Canada, Laval University Faculty of Medicine, Quebec, 1885, aged 75, died, in November 1934

J Vinson Richardson, Fort Recovery, Ohio, Medical College of Ohio, Cincinnati, 1872, aged 83, died, January 29, of pneumonia

John B Cress, Knightstown Ind , Indiana Medical College, Indianapolis, 1874, aged 87, died, January 5, of myocarditis

Leland Frazier, Rupert, Idaho, St Louis University School of Medicine, 1906, aged 55 died, February 15, of erysipelas

Charles Francis Ring, Urbana, Ohio New York Homeopathic Medical College, 1881, aged 79, died, Dec 3, 1934

Edward L Locke, Hamburg, Ark (licensed in Arkansas in 1904) aged 58 died, Dec 1, 1934, of prostatitis

Correspondence

STANDARDIZATION IN TREATMENT OF BACILLURIA

To the Editor—Dr Crance in his article entitled "The Necessity for Standardization of the Treatment of Bacilluria" (THE JOURNAL, January 26, p 285) makes a definite advance by his recognition of the necessity of differentiating colon group bacilli into their two genera. This step is of such importance, especially in the evaluation of therapeutics, that it is greatly to be regretted that Dr Crance has not given information in regard to the bacteriologic details necessary for this differentiation. This cannot be done on the basis used by Dr Crance, i. e., the fermentation of sucrose. This test is employed for the differentiation of species of the genus *Escherichia*, of which our old friend *B. coli*-communior most familiarly represents the sucrose fermenting group and *B. coli*-communis the sucrose negative group (Zinsser, Hans, and Bayne-Jones, Stanhope. A Textbook of Bacteriology, 1934, p 561). Only by use of the Voges-Proskauer and methyl red tests can the generic identification be finally made. The methods for these tests are to be found in any textbook of bacteriology. Dorner and Heltinger (*J. Bact.* 29:16 [Jan.] 1935) give a comparison of methods recently developed for the Voges-Proskauer test. It has been my experience that a presumptive generic identification can be reached within twelve hours by the use of the citrate agar medium of Simmons (*J. Infect. Dis.* 39:309 [Sept.] 1926), which I have found to be invaluable, as species of *Escherichia* do not grow on this medium while species of *Aerobacter* grow rapidly and heavily. It is necessary to confirm this presumptive identification with the Voges-Proskauer and methyl red tests because of the rare citrate intermediate forms. The differentiation may be most clearly summarized as follows:

Genus	Voges-Proskauer Test, i. e., Production of Acetyl Methyl Carbinol		Methyl Red Test	Growth on Citrate Agar
	0	+	+	0
<i>Escherichia</i>	0	+	+	0
<i>Aerobacter</i>	+	0	0	+

It has been found in this clinic that 44 per cent of colon group urinary infections are due to species of *Aerobacter* (*J. Bact.* 17:205 [March] 1929). In colon group blood stream invasions, the incidence of *Aerobacter* jumps to about 70 per cent. Moreover, the resistance of *Aerobacter* to drugs is much higher than that of *Escherichia*. For example, mercuric chloride in broth inhibits the growth of *Escherichia* in a dilution of 1:500,000, but 1:30,000 is required to inhibit the growth of *Aerobacter*. Therefore, while we no longer consider the specific identification of colon group bacilli of clinical value, we are glad to find recognition of the importance of generic identification.

JUSTINA H. HILL, M.S., Baltimore.

Bacteriologist, the James Buchanan Brady
Urological Institute, Johns Hopkins University and Hospital

AMERICAN STANDARD INSURANCE CORPORATION

To the Editor—The American Standard Insurance Corporation of Indianapolis is circularizing New York physicians with a letter beginning "Will you accept our Physicians' Non-cancellable Full Lifetime Income Policy for TWO FULL WEEKS—at our risk and expense?"

It should interest all physicians receiving this circular material to know that the New York *Medical Week* for Nov. 10, 1934, published a report on this company's financial status as of Dec. 31, 1933, obtained from the Indiana State Insurance

Department by Dr. A. M. Rabiner of Brooklyn. Prospective clients looking forward to full lifetime non-cancellable income policy will judge for themselves as to the resources backing up these promises.

Capital	None
Income	\$19,197.27
Disbursements	20,053.36
Assets	6,562.51
Liabilities	1,039.36
Balance	5,523.15

RAMSAY SPILLMAN, M.D., New York.

COMMENT—A large number of requests have been received for information concerning the American Standard Insurance Corporation of Indianapolis. When one compares the financial standing of the American Standard Insurance Corporation, with no capital, admitted assets of something over \$6,000 and liabilities of \$1,000, with other well established companies the comparison is most unfavorable to this company.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted, on request.

ACCURACY OF TESTS FOR SYPHILIS

To the Editor—I should like to know the opinion as to the relative value of accuracy of a Kahn, Wassermann and Hinton serologic test for syphilis. Please omit name.

M.D. Texas

ANSWER.—The relative accuracy of different tests for syphilis in this country will soon be evaluated under the auspices of the U. S. Public Health Service, jointly with the American Association of Clinical Pathologists (The Evaluation of Serologic Procedures for the Diagnosis of Syphilis, editorial, THE JOURNAL, Oct. 29, 1934, p 1237. Cumming, H. S., Hazen, H. H., Sanford, A. H., Senear, F. E., Simpson, W. M., and Vonderlehr, R. A. The Evaluation of Serodiagnostic Tests for Syphilis in the United States, *ibid.*, Dec. 1, 1934, p 1705). Approximately 1,000 comparable specimens of blood and spinal fluid will be submitted to authors of different methods or modifications from about December 1934 to March 1935 for serologic examination. Each worker will utilize only one designated method. The final results, to be submitted to the U. S. Public Health Service, should indicate which method is the most satisfactory. Meanwhile the important criteria available for judging Kahn and Wassermann tests are summarized in two reports by the League of Nations (League of Nations, Health Organization, Conference on Serodiagnosis of Syphilis held at Copenhagen, Geneva, 1928, Conference on Serodiagnosis of Syphilis held at Montevideo, Geneva, 1930). The report of the Montevideo conference refers to the Kahn reaction as being "absolutely specific and extremely sensitive" and superior to the Wassermann tests used at both conferences. Since the completion of those conferences, Wassermann procedures have generally been improved on and new precipitation methods have been presented. Reports on the Hinton test are comparatively limited in number. Burdon and Duggan (*Am. J. Syph.* 17:110 [Jan.] 1933) obtained comparable results with the Hinton and Kahn tests. A highly reliable Wassermann technique should compare favorably with either one of these two precipitation methods.

TOXICITY OF HEMATOPORPHYRIN

To the Editor—The question has been asked me whether the mode of murder in a recent murder story was possible and I must ask you. The victim was given hematoporphyrin and death occurred when he went out into the sunshine. Would it be possible for one to get sufficient hematoporphyrin for that to occur? I doubted it but could not be sure. Please omit name.

M.D. Louisiana

ANSWER.—Observations on animals as well as on human beings indicate that hematoporphyrin may cause serious symptoms and even death under certain conditions. When mice are given hematoporphyrin by subcutaneous injection and then exposed to light, the skin will become livid or red and death will occur sooner or later from failure of respiration and fall in the blood pressure (Hausmann, W. Die sensibilisierende Wirkung des Hämatoporphyrins, *Biochem. Ztschr.* 30:276 [1911]). A boy, aged 3 years, was injected intramuscularly with 0.12 Gm. of hematoporphyrin in 80 cc. of weak solution of sodium hydroxide. Two and one-half hours later he was

exposed to a medium bright sun for twelve minutes, and four hours later the skin was markedly reddened. A week later the injection was repeated and this time exposure to sun of medium intensity for ten minutes produced a rather dangerous erythema with marked edema, blisters of varying size and a rise in temperature to 103.5, also headache (Strach C B. Photosensitization, *Am J Dis Child* 40:800 [Oct] 1930). In view of these observations it seems reasonable to conclude that hemitoporphyria might cause death under such circumstances as are outlined in the question. There does not seem to be any good reason to believe that it would be impossible to obtain enough hemitoporphyria to cause death in a human being, especially if injected subcutaneously.

VERTIGO AFTER MOTOR ACCIDENT

To the Editor—A man aged 45 on July 1 1934 had an automobile accident and was struck on the left side of the head in the temporoparietal region. The patient was unconscious for a few hours but roentgen examination showed no fracture, only a scalp wound. He left the hospital after a few days feeling well and resumed his work at the factory. While walking in the street he blew his nose and suddenly was seized with an attack of vertigo and fell. The vertigo passed away and he resumed an upright position and continued to his work. Since then he has noticed that sneezing or blowing the nose or lifting a weight produces a transient vertigo. He does not fall but has learned to be cautious as otherwise he feels that he might. At the time of the accident there was no history of any bleeding from the nose or ears. Examination now shows both ear drums intact with no impairment of hearing. There is no spontaneous nystagmus. Flexing the head on the chest does not induce the vertigo. The eustachian tube on the left side is closed or only partially patent. Nasal respiration is free. Several catheterizations have been done with no improvement as yet. What have you to suggest as a cause or in the way of treatment? Please omit name.

M D Michigan

ANSWER—It is quite possible that the vertigo in this case is due to a caloric reaction. Blowing the nose violently may introduce a considerable quantity of air into the middle ear by way of the eustachian tube, and in some instances this causes a reaction of the vestibular apparatus the same as when cold air, or hot or cold water is introduced into the external auditory canal. When the labyrinth is cooled by such a procedure the rapid component of nystagmus is to the opposite side, and the patient falls toward the same side as the ear that is stimulated. When heat is used, the opposite reaction occurs. So far as the symptoms are concerned when lifting a weight, it is possible that some vascular disturbance in the labyrinth causes these. There is no definite treatment, except the avoidance of the excessive blowing of the nose and violent exercise.

RADICULITIS

To the Editor—A woman aged 70 has had a backache located in the right sacro-lumbar region and pain in the right thigh and leg for the past year. The pain often keeps her up at night and she has lost 25 pounds (11 kg) during this time. The right knee jerk is absent. The Babinski sign is negative. Her leg is so weak that she can walk only with the aid of a cane. There are no bladder or rectal symptoms. A chronic cystitis, which she had responded to silver nitrate irrigation. Roentgen studies of the pelvis and gastro intestinal tract a blood count the blood Wassermann test, and the blood urea and uric acid were all normal. She was found to have mild diabetes with a fasting blood sugar of 168 mg per hundred cubic centimeters. Under treatment with diet and insulin the glycosuria is easily controlled and she has gained back 10 pounds (4.5 kg) but no remedies thus far (local heat adhesive strapping of the pelvis infra red analgesics epidural block with procaine hydrochloride and physiologic solution of sodium chloride) have had any value in relieving the back and leg pain. A neurologist has diagnosed the condition as a lumbar radiculitis of either inflammatory or toxic origin. There are no apparent foci of infection. Are there any other therapeutic means of relieving her pain? What is the outlook for permanent relief of these pains? Will she recover the use of her right leg? Kindly omit name and address if published.

M D New York

ANSWER—Neurologic study has presumably excluded the possibility of an intraspinal lesion compressing the nerve roots and has shown the absence of spinal fluid block. The continued unilaterality of the symptoms and the absence of vesical and rectal disturbance tend to confirm this. Hence it appears that the radiculitis is associated with the diabetic condition, a possible arteriosclerosis or an osteo-arthritis. In the first case there should be improvement with alleviation of the diabetic state, though there may be a prolonged course. In the other conditions the main therapeutic effort is with the general state of health. Suggestions for therapy other than those already followed concern rest, possibly with extension of the limb, massage, climatic adjustment, baths and sedative forms of electric current. An exact answer to the second and third questions is not possible without more precise diagnosis, but many such cases do show amelioration and some recovery even after a prolonged duration.

MAPPING MOTOR FIELDS

To the Editor—Please give me information concerning the method of mapping out the efficiency of muscle function according to your industrial motor field chart. I have some of your charts for recording the results of this examination but would like to know the apparatus necessary to perform the test. I am aware of the fact that these twenty squares are placed on a blackboard but do not know the size of each square the size of the test object used or the distance the patient is seated from the blackboard. Information concerning this matter will be highly appreciated by me.

E O ALVIS MD, Indianapolis

ANSWER—No special apparatus is required for mapping the motor field. This procedure is best carried out with the patient seated about 1 meter away from a blank wall. The twenty squares are mapped out roughly on the wall in an area 6 feet vertically and 8 feet horizontally, thus making each square approximately 13 by 18 inches. The target used should be a minute point of light, preferably the shielded light of a self-luminous ophthalmoscope. A red glass is held before one eye of the patient, whose head should be held rigidly in the primary position. The light is then shown in each square consecutively and, when diplopia is announced by the patient, it should be recorded on the motor field chart.

EVOLUTION

To the Editor—In THE JOURNAL Nov. 24 1934 page 1626 second paragraph appears the statement: "Is Darwin's principle of the elimination of the unfit and the survival of the fit the only explanation?" Darwin relied on inheritance of the effects of use and disuse as an aid in natural selection but the evidence of genetics shows conclusively that these effects are not inherited. I'll bet dollars to rotten apples that Darwin did not say that and I'll eat my words if you will tell me where he says it. If there is one thing that Darwin and Sir Alfred Russel Wallace both stressed in contradistinction to Lamarck it was that acquired characteristics could not be transmitted, that use or disuse played not a single note in heredity by reason of the fact that the germ cells of a future generation were intact before the fetus was fully developed or born.

O R HAGEN, MD Paterson N J

ANSWER—The editorial in question was based wholly on Professor Conklin's lecture on progress in the study of evolution (*Science* 80:147 [Aug 17] 1934). Professor Conklin says that, in the old evolution of Lamarck and Darwin, "attention was fixed upon the developed organism and evolutionary changes were supposed to be first made in the adult and then by some mysterious process to be transferred to the germ cells, in the newer views of evolution changes are first wrought in the germ cells and only later appear in the developed organism." Professor Conklin also points out that Darwin and many others sought refuge "in the inherited effects of use and disuse as an aid to natural selection, but this refuge is now denied us, for the evidence from genetics are conclusive that such effects are not inherited." It is not claimed that Darwin made any particular statement, the object of the editorial was only to summarize as correctly as possible Professor Conklin's discussion.

ANTITYPHOID VACCINATION IN CHILD GOING TO PUERTO RICO

To the Editor—Would it be wise or essential to administer typhoid paratyphoid vaccine prophylaxis to a 6 year old child who expects to spend the winter in Puerto Rico?

EDWIN P RUSSELL, MD Rome N Y

ANSWER—It is certainly advisable to immunize this child against typhoid. Since rather severe reactions sometimes follow the administration of the vaccine, it would be wise to begin with one third of the usual dose, giving the vaccine in five or six injections. The Puerto Rican Health Bureau reports show that there has been no recent epidemic of typhoid but that the disease is endemic. The number of cases reported during the last two years has varied from seven to thirty-five monthly. In 1931 the mortality rate was 66 per hundred thousand, in 1932, 51.

X-RAYS IN PROSTATIC HYPERTROPHY

To the Editor—Has treatment with x-rays ever been successful in reducing the size (and thus giving better bladder drainage) of a non-malignant hypertrophied prostate? I have been told that it will reduce uterine fibroids in size. Why will it not reduce the size of the prostate?

G B TIMBERLAKE MD, Atlanta, Ga

ANSWER—The use of x-rays in the treatment of benign hypertrophy of the prostate has not been successful either in reducing the size of the gland or in relieving the obstruction or symptoms. X-rays have been successfully used to reduce the size of uterine fibroids. An explanation does not seem to have been given for the fact that they work in fibroids and not in the prostate.

TREATMENT OF TABETIC PAINS

To the Editor—In case of tabes dorsalis in a woman aged 50 of a number of years duration having had antisyphilitic treatment years ago and at present a negative blood and spinal fluid Wassermann reaction, what is the best analgesic for the relief of severe lightning pains of the extremities (morphine nauseates coal tar products take too long)? What may be used in place of intravenous trypanamide when the veins are too small (she is receiving iodobismutol and iodides)? Please omit name.

MD New York

ANSWER—From the question it is judged that the pains are so severe as to make life unbearable. Consideration may then be given to the use of such measures as the epidural (not intradural) injection of physiologic solution of sodium chloride, with or without the addition of small amounts of procaine hydrochloride. Sometimes these will result in prolonged remissions. When the pain is so severe as to cause exhaustion it may be necessary to resort to division of the pain tracts in the cord, either by chordotomy or by division of the posterior commissure. These are dangerous procedures and must be carried out by an experienced neurosurgeon. There are no substitutes for trypanamide that can be administered orally. Consideration might be given to the use of pyretotherapy the results of which are variably reported.

INSOMNIA IN AGED

To the Editor—A woman aged 86 is suffering with chronic insomnia. Once she gets a good night's sleep she is up and about the next day feeling fine. Without a good night's sleep she is miserable the whole day. She has a chronic myocarditis and a chronic gastritis of some sort and gets along well on a milk and egg diet though there is no definite evidence of ulcer of the stomach. The blood pressure is 160 systolic 90 diastolic. There are no other significant physical manifestations. She requires large doses of hypnotics 80 grains (5 Gm.) of sodium bromide does not avail. It takes 9 grains (0.6 Gm.) of sodium amylal or orol to put her to sleep for several hours and she has to have it every night. Kindly suggest the best thing to do in this case. Please omit name.

MD New York

ANSWER—Treatment for insomnia in the aged is always a difficult and individual problem. It may be necessary to continue the use of the hypnotics that are found to be efficacious. Sometimes small doses of alcohol will produce the desired effect. This treatment may be combined with advantage in some cases with paraldehyde. It is assumed that attention has been given to general hygienic measures and predormital occupation.

UNION OF SKULL SUTURES IN INFANT

To the Editor—In Queries and Minor Notes in THE JOURNAL, December 29 1934 page 2046 you answered an M.D. from California on the question of premature osseous union of skull sutures in a 10 weeks old infant. You stated that this was probably secondary to failure of brain growth and led to the group called microcephalic. I am sure you are correct in this statement but I do not feel that the question was fully answered.

It is known that oxycephaly and acrocephaly which are due to premature synostosis of the sutures can lead to feeble-mindedness (Bronfenbrenner A. N. Oxycephaly as a Pathogenic Entity *Am J Dis Child* 42: 837 [Oct.] 1931) also that the condition if found early enough may be amenable to surgical intervention (Gilman in Cabot Case Reports *New England J Med* 204: 274 [Feb. 5] 1931).

Although I know of no reports in infancy it is conceivable although very improbable that this mechanism may be at play in the questioned case. The M.D. should be able to rule out this remote possibility by:

- 1 Feeling of the sutures which at this age are open giving a flexibility to the skull plates.
- 2 A fundus examination.
- 3 A lumbar puncture.

B. BARRETT GILMAN, M.D. Boston
Epidemiologist Commonwealth of Massachusetts
Department of Public Health

POSSIBLE HYPERINSULINISM

To the Editor—In answer to a query of a Texan physician entitled Vomiting in Childhood which appeared in THE JOURNAL, January 26 the differential diagnosis included recurrent or cyclic vomiting allergic reaction or overfeeding and appendicitis. The syndrome as given was of a well boy aged 6 years who while playing suddenly goes to his mother complains of nausea vomits then becomes completely relaxed and pale and has a bowel movement. This is followed by a short sleep of two or three hours following which the child is apparently well. If these symptoms follow close on one another in approximately the same sequence each time the child has an attack and the whole picture covers a comparatively short period of time every month or so I think it is well to consider also in this case a type of petit mal or possibly a so-called epileptic equivalent. Because of the voracious appetite it would be well to exclude a possibility of hyperinsulinism. The child may have enough dextrose to keep all symptoms in abeyance until he overexerts himself such as in playing and running about when he may develop a temporary hypoglycemic state.

MICHAEL A. BRESCHIA, M.D. Queens N. Y.

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *Written (Group B candidates)* The examination will be held in various cities throughout the country April 29 *Oral (Group A and Group B candidates)* New York June 10 Sec. Dr. C. Guy Lane, 416 Marlborough St. Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Final oral and clinical examination (Group A and Group B candidates)* Atlantic City N. J. June 10-11 Sec. Dr. Paul Titus, 1015 Highland Bldg. Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY Philadelphia June 8 and New York June 10 *Applications must be filed before April 10* Sec. Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY New York June 8 Sec. Dr. W. P. Wherry, 1500 Medical Arts Bldg. Omaha.

AMERICAN BOARD OF PEDIATRICS Atlantic City N. J. June 10 and St. Louis Nov. 19 Sec. Dr. C. A. Aldrich, 723 Elm St. Winnetka Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY Philadelphia June 7-8 Sec. Dr. Walter Freeman, 1726 Eye St. N.W. Washington D. C.

AMERICAN BOARD OF RADIOLOGY San Francisco May 10-12 and Atlantic City N. J. June 8-10 Sec. Dr. Byrl R. Kirklin, Mayo Clinic Rochester Minn.

ARIZONA Phoenix April 23 Sec. Dr. J. H. Patterson, 826 Security Bldg. Phoenix.

ARKANSAS *Basic Science* Little Rock May 6 Sec. Mr. Louis E. Gebauer, 701 Main St., Little Rock. *Regular* Little Rock May 14 Sec. Dr. A. S. Buchanan, Prescott. *Elective* Little Rock May 14 Sec. Dr. L. L. Marshall, 820 W. 14th St. Little Rock.

CALIFORNIA *Reciprocity* San Francisco May 15 Sec. Dr. Charles B. Pinkham, 420 State Office Bldg. Sacramento.

COLORADO Denver April 3 Sec. Dr. Wm. Whitridge Williams, 422 State Office Bldg. Denver.

IDAHO Boise April 2 Commissioner of Law Enforcement, Hon. Emmitt Pfost, 203 State House Boise.

ILLINOIS Chicago April 9-11 Superintendent of Registration Department of Registration and Education Mr. Eugene R. Schwartz, Springfield.

MINNESOTA *Basic Science* Minneapolis April 23 Sec. Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota. *Minneapolis Medical* Minneapolis April 16-18 Sec. Dr. E. J. Engberg, 350 St. Peter St. St. Paul.

MONTANA Helena, April 2 Sec. Dr. S. A. Cooney, 7 W. 6th Ave. Helena.

NATIONAL BOARD OF MEDICAL EXAMINERS The examination will be held in all centers where there are Class A medical schools and five or more candidates desiring to take the examination June 24-26. Ex. Sec. Mr. Everett S. Elwood, 225 S. 15th St. Philadelphia.

NEBRASKA *Basic Science* Omaha May 7-8 Dir. Bureau of Examining Boards Mrs. Clark Perkins, State House, Lincoln.

NEVADA Carson City May 6 Sec. Dr. Edward E. Hamer, Carson City.

NEW MEXICO Santa Fe April 8-9 Sec. Dr. P. G. Cornish Jr., 221 W. Central Ave. Albuquerque.

OREGON *Basic Science* Portland May 18 Sec. Mr. Charles D. Byrne, University of Oregon, Eugene.

RHODE ISLAND Providence April 4-5 Dir. Department of Public Health Dr. Edward A. McLaughlin, 319 State Office Building, Providence.

Florida November Examination

Dr. William M. Rowlett, secretary, Florida State Board of Medical Examiners, reports the examination held in Tampa Nov. 12-13, 1934. Sixty candidates were examined, 39 of whom passed and 21 failed. The following schools were represented:

School	PASSED	Year	
		Grad	Per Cent
College of Medical Evangelists	(1931)	79	4
Yale University School of Medicine	(1931)	82	2
Georgetown University School of Medicine	(1931)	75	5
Emory University School of Medicine	(1929) 86.2	(1934) 78.1	80.9
University of Georgia School of Medicine	(1932) 75.9	(1934) 75	79.9
Rush Medical College	(1934) 81.3	84.7	*
Indiana University School of Medicine	(1921)	77.7	
Univ. of Louisville School of Medicine	(1933) 83.3	(1934)	91.3
Tulane University of Louisiana School of Medicine	(1934)	76	
Johns Hopkins Univ. School of Medicine	(1932) 83.6	(1930)	88.5
University of Michigan Medical School	(1924)	75.2	
Univ. of Minnesota College of Medicine and Surgery	(1905)	78.7	
University of Minnesota Medical School	(1920)	77.4	
Albany Medical College	(1908)	80.6	
New York Homeopathic Med. College and Flower Hosp.	(1922)	78.9	
New York University and Bellevue	(1928)	81.6	
Hospital Medical College	(1932)	81.5	
University of Buffalo School of Medicine	(1933)	76.4	
University of Rochester School of Medicine	(1934)	78.2	*
Univ. of Cincinnati College of Medicine	(1928) 79.2	(1934)	80.3
Hahnemann Med. College and Hospital of Philadelphia	(1933)	80.3	
Jefferson Medical College of Philadelphia	(1932)	88.3	
University of Pennsylvania School of Medicine	(1920)	79.6	
Medical College of the State of South Carolina	(1930)	76	
Meharry Medical College	(1933)	80.1	
University of Tennessee College of Medicine	(1932)	75	
Vanderbilt University School of Medicine	(1930) 82.4	(1934)	81.2
Medical College of Virginia	(1933) 79.1	(1934)	76.1
Univ. of Virginia Department of Medicine	(1932) 85.4	(1934)	83.9
School	FAILED	Year	
		Grad	Per Cent
University of Arkansas School of Medicine	(1933)	69.1	
Howard University College of Medicine	(1934)	62.6	
Atlanta College of Physicians and Surgeons	(1913)	68.8	
Chicago College of Medicine and Surgery	(1916)	70.5	

College of Physicians and Surgeons of Chicago	(1905)	40 9
Loyola University School of Medicine	(1922)	58 6
Rush Medical College	(1913)	68 8
University of Illinois College of Medicine	(1932)	68 7
University of Louisville School of Medicine	(1927)	62 5
Johns Hopkins University School of Medicine	(1925)	69 5
Barnes Medical College, Missouri	(1898)	73 7
Eclectic Medical College, Ohio	(1926)	73 3
Ohio State University College of Medicine	(1920)	64 8
University of Oklahoma School of Medicine	(1915)	72 5
Meharry Medical College	(1934)	62 2
Vanderbilt University School of Medicine	(1882)	67 2
University of Vermont College of Medicine	(1918)	72 8
Universidad de la Habana Facultad de Medicina y Farmacia	(1916) 38 3 † (1925) 71 6	(1928) 64 1 †

* This applicant has completed his medical course and will receive his M.D. degree on completion of internship.

† Verification of graduation in process.

Book Notices

Treatment by Diet. By Clifford J. Harborka B.S. M.S. M.D. Department of Medicine Northwestern University Medical School Chicago. Cloth. Price, \$5. Pp. 615 with illustrations. Philadelphia & London J. B. Lippincott Company 1931.

Perhaps no field of human thought has become permeated with more sentiment and prejudice than the subject of dietetics. Accordingly, it is refreshing to read a book in which sound judgment and logical thinking born of practical experience replace lengthy accounts of theories developed by food faddists with their pseudoscientific gestures to promote health. For a long time there has been a need for a book on dietetics for physicians that would stress the elementary principles of nutrition and relate their practical application to clinical medicine. This book comes as close to meeting this need as any that has appeared recently. It is concise in organization, the data are unusually complete but simply and clearly stated and the manner of presentation is systematic and practical. The book is divided into five parts. In the first part the author gives a brief but adequate discussion of diet in health. The following part is concerned with the application of dietotherapy and affords the physician an excellent method of teaching the patient to visualize definite portions and servings of various foodstuffs. The third part is devoted to diet in disease and uniquely divided into conditions in which diet is of paramount importance and diseases in which diet is of varying importance. Such a manner of presentation assumes a clinical background and the author is well prepared by virtue of his long experience in hospital work and private practice. The fourth section is devoted to routine hospital diets and special methods of feeding. The concluding section deals with standard weight charts, tables of equivalents, approximate weights and measures, and other useful information for the physician in instructing the patient for the diet prescribed. A well chosen bibliography of current and standard literature in the field of nutrition is given at the end of the book. Every physician in the practice of medicine should find this work a helpful adjunct to his other books on treatment. It is written especially for him, anticipating his practical need and sparing him of much useless and controversial data, so often found in textbooks of this type. Wherever possible the author has resorted to tables and outline, so the essence of his subject will be readily apparent. While any one interested in dietetics can profit from his book, the man in the actual practice of medicine will welcome it.

Néphropathies et néphrites. Leçons cliniques. Par F. Rathery professeur à la Faculté de médecine de Paris. Paper. Price 45 francs. Pp. 208. Paris. Librairie J. B. Baillière et Fils 1934.

This is written in the form of clinical lessons, so popular in France since the days of Trousseau. The method has certain didactic advantages, particularly for the practicing physician and advanced student, in that it facilitates concentration on special topics and the presentation of the individual point of view of the author. On the other hand, the lecture is less well adapted to the systematic elucidation of a broad subject. The book has the advantages and disadvantages of its expository method. The reader who is already tolerably well oriented in the field will probably find considerable food for thought in the author's experiences and points of view on the subjects considered: precocious arterial hypertension, hypertensive crises in the course of chronic nephritis, juvenile albuminuria, changes in the proteins and lipids of the plasma in nephritis, nephritis

with hyperchloremia, malignant chronic nephritis in the adolescent, pure azotemic nephritis, acute nephritis and erythema nodosum, renal amyloidosis, renal diabetes, and nephrotic syndromes in the tuberculous. However, none of the subjects are considered in detail, and some of the conclusions seem based on insufficient evidence. Certain of Rathery's conceptions are in diametrical contradiction to those dominant in this country. He believes that hypertension is most often a result of disease of the kidney. There is insufficient discrimination between those forms of hypertension which are the result of inflammation of the kidneys and those which are of extrarenal genesis. Following in the tradition of Widal, renal disease is largely classified on the basis of whether nitrogen or chloride is retained, with only secondary consideration of the nature of the process in the kidneys. Chronic appendicitis is stated to be a frequent cause of renal lesions, but there is no supporting evidence. There is some interesting casuistic material in the book. Some of the data regarding the individual lipid fractions in the plasma and the chloride content of the red cells and plasma in various forms of renal disease may be of value to American readers. Rathery rightfully emphasizes that the chloride content of the red cells is not necessarily an accurate index of the concentration of chloride in the tissues in general, an assumption made by some investigators.

What About Sterilization? A Series of Eight Articles Discussing the Question from the Moral and Scientific Points of View. By Rev. Ignatius W. Cox S.J. and James J. Walsh M.D. Ph.D. Paper. Price 15 cents. Pp. 31. Washington D.C. National Catholic Welfare Conference 1934.

This is a fusion of medical and biologic science with religion, the latter dominant. Sterilization under any and all conditions is unqualifiedly condemned "as an invasion of God's exclusive dominion over man's faculties." On the strictly scientific side the pamphlet does not give fairly the views of such competent biologists as Professor Jennings, who admits that the sterilization of definite mental defectives will reduce mental defectives in society by a considerable percentage. The pamphlet is also in conflict with the famous ruling of the late Justice Holmes of the United States Supreme Court "Three generations of imbeciles is enough."

The Practice of Dietetics. By L. H. Newburgh M.D. Professor of Clinical Investigation the Medical School University of Michigan Ann Arbor and Frances Mackinnon A.B. Dietitian Diet Therapy Clinic University Hospital University of Michigan. Cloth. Price \$4. Pp. 264. New York. Macmillan Company 1934.

This book is presented in three parts, the first discussing the needs of the body, the second the methods of selecting these materials, and the third the problems associated with the use of diet in the control of disease. The book is written primarily for the doctor and the dietitian rather than the average lay reader. It is a scientific consideration of the subject and quite up to date. Its chapters on therapy are concerned largely with the dietary control of diabetes and of renal disease. There is no attempt to provide recipes or menus, but rather to give enough information about the disease concerned and the foods to be used to permit an intelligent physician to prescribe scientifically for his patient.

Lectures on Medical Electricity. By Elkin P. Cumberbatch M.A. B.M. D.M.R.E. Medical Officer in Charge Electrical Department and Lecturer on Medical Electricity St. Bartholomew's Hospital. Cloth. Price 6/- Pp. 236 with 38 illustrations. London. Henry Kimpton 1934.

As in his book "Essentials of Medical Electricity," Dr. Cumberbatch pays greatest attention to the subject of the galvanic current. Eight out of the twelve lectures contained in the book are devoted to this subject. Medical and surgical diathermy, the static current, infra-red, and visible and ultra-violet radiation are covered in the remaining four chapters. The emphasis placed on the galvanic current is out of proportion to its relative use in actual medical practice. The lectures are written in colloquial manner with the injunction to "be down the following note." These notes are printed in for differing from that of the general text. This style meets or simplicity and clarity. With the exception of the sketchy galvanic current, the subject matter of the book is of value to the medical student, is covered in a manner to permit it to be of any great value to the practitioner of medicine.

Our Heritage and Other Addresses By Colonel Hon Herbert A. Bruce R.A.M.C. M.D. L.R.C.P. Lieutenant Governor of Ontario Cloth Price \$2.50 Pp 392 Toronto The Macmillan Company of Canada Ltd 1934

In chronological order Dr. Bruce presents addresses delivered by him as lieutenant governor of Ontario from Dec. 31, 1932, through November 1934. The addresses cover almost every phase of human interest. Of particular medical interest are those on the romance of surgery, sterilization of the feeble-minded, cheaper convalescence, medicine acknowledges no national barriers, quacks versus science, cost of convalescence, the literary practices of some medical practitioners, and numerous addresses on such subjects as housing and education which are in the field of social medicine. The point of view of Dr. Bruce is unusually sound and yet fairly advanced. He writes directly and simply. Unfortunately some of the addresses are pointed for the occasion on which they were given and will have but little interest for those who read them in this collection.

Medicolegal

Malpractice Baldness Attributed to Roentgen Treatment—The patient had a small sore on the crown of her head which the appellant physician diagnosed as favus. He administered three roentgen treatments to her head. As a result of the negligent administration of the treatments, it was alleged, the patient suffered a severe burn resulting in permanent baldness of most of her head. The father, as next friend of the patient, his minor daughter, sued the physician and obtained judgment in the trial court. The physician appealed to the court of civil appeals of Texas, Austin.

The physician contended that the baldness was due to the disease. He testified that the first treatment was for five minutes on the sore spot, the second for five minutes each on five different areas in the region of the sore spot, and the third for eight minutes on the sore spot. He and other experts testified that this was the proper method of roentgen treatment. The girl's parents, who accompanied her at the time of each treatment, testified that the first treatment was from fifteen to thirty minutes, the second for one hour and a half, and the third for a longer period of time than eight minutes. After the second exposure, or treatment, according to the testimony, the girl's head began to turn red and blisters appeared. Later the head became as "a piece of raw meat" and continued so for several months causing her great pain, and in the end sloughed off to the bone, leaving her bald. The testimony of the experts as to whether favus would cause complete baldness conflicted. Some testified that in extreme cases it would, while another testified that only the immediate hair involved would die. After examining the girl's head before the jury, one of the experts testified that her baldness was caused by a burn and that she would be permanently bald. The doctrine of *res ipsa loquitur*, said the court, is not involved in this case and under the evidence it was clearly a question for the jury to determine whether the injuries were caused by the physician's negligence.

The physician further contended that the court erred in permitting a picture from a medical textbook to be exhibited to the jury to test the weight to be given to the testimony of an expert witness called by him. This witness testified that a favus infection might produce complete or splotched baldness, depending on the extent and severity of the infection, and that the straight lines of demarcation of the bald and hairy portions of the girl's head were a mere coincidence, in that the infection of hair follicles happened to stop at the straight lines. On cross-examination, this witness testified that a certain textbook on roentgen rays was a standard authority. He was shown a picture in the textbook as typical of baldness caused by favus infection, which he said showed a moderate infection, because the patient had hair scattered over his head. Over objection, the picture was exhibited to and inspected by the jury. The rule is settled, said the court, that the knowledge and qualification of an expert witness may be tested as against accepted authorities on the subject testified about. The same rule should apply to a picture as to the written text.

There was sufficient evidence, the court said, that the girl would suffer physical discomfort in the future because of her baldness, and the trial court did not err in submitting such discomfort as an element of damages suffered by her. The judgment of the trial court was affirmed.—*Hess v Millsap (Texas)* 72 S.W. (2d) 923

Society Proceedings

COMING MEETINGS

- Alabama, Medical Association of the State of Mobile April 16-18
Dr. D. L. Cannon 519 Dexter Avenue Montgomery Secretary
American Association of Anatomists St. Louis April 18-20 Dr. George W. Corner, University of Rochester School of Medicine, Rochester N. Y. Secretary
American Association of Pathologists and Bacteriologists New York April 18-19 Dr. Howard T. Karsner, 2085 Adelbert Road, Cleveland Secretary
American Association of the History of Medicine Atlantic City May 6
Dr. Edward J. G. Beardsley 1919 Spruce Street, Philadelphia Secretary
American Association on Mental Deficiency Chicago, April 25-27 Dr. Groves B. Smith Beverly Farms Godfrey Ill. Secretary
American College of Physicians Philadelphia April 29-May 3 Mr. E. R. Loveland 133 South 36th Street Philadelphia Executive Secretary
American Dermatological Association White Sulphur Springs W. Va., May 24 Dr. William H. Guy 500 Penn Avenue Pittsburgh Secretary
American Pediatric Society Cleveland May 2-4 Dr. Hugh McCulloch 325 North Euclid Avenue St. Louis Secretary
American Physiological Society Detroit April 10-13 Dr. Frank C. Mann Mayo Clinic Rochester Minn. Secretary
American Psychiatric Association Washington, D. C. May 13-17 Dr. William C. Sandy, State Education Building Harrisburg Pa. Secretary
American Society for Clinical Investigation Atlantic City May 8
Dr. H. L. Blumgart 330 Brookline Avenue, Boston Secretary
American Society for Experimental Pathology Detroit April 10-13 Dr. Shields Warren 195 Pilgrim Road Boston Secretary
American Society for Pharmacology and Experimental Therapeutics Detroit April 10-13 Dr. E. M. K. Geiling 710 N. Washington Street Baltimore Secretary
American Society of Biological Chemistry, Detroit April 10-13 Dr. H. A. Mattill State University of Iowa Iowa City Secretary
Arizona State Medical Association Phoenix April 25-27 Dr. D. F. Harbridge 15 East Monroe Street Phoenix Secretary
Arkansas Medical Society Fort Smith, April 15-17 Dr. W. R. Brookshier 602 Garrison Avenue Fort Smith Secretary
Association of American Physicians, Atlantic City May 7-8 Dr. James H. Means Massachusetts General Hospital Boston Secretary
California Medical Association Yosemite May 13-16 Dr. F. C. Warnshuis 450 Sutter Street San Francisco Secretary
Connecticut State Medical Society, New Haven May 22-23 Dr. C. W. Comfort Jr. 27 Elm Street New Haven Secretary
District of Columbia Medical Society of the Washington May 1
Dr. C. B. Conklin 1718 M Street N.W. Washington Secretary
Federation of American Societies for Experimental Biology, Detroit April 10-13 Dr. H. A. Mattill State University of Iowa Iowa City, Secretary
Florida Medical Association Ocala May 13-15 Dr. Shaler Richardson 111 West Adams Street Jacksonville Secretary
Georgia, Medical Association of Atlanta May 7-10 Dr. Allen H. Bunce 139 Forrest Avenue N.E. Atlanta Secretary
Illinois State Medical Society Rockford May 21-23 Dr. Harold M. Camp Lahl Building Monmouth, Secretary
Iowa State Medical Society Davenport May 8-10 Dr. Robert L. Parker 3510 Sixth Avenue Des Moines Secretary
Kansas Medical Society, Salina May 8-10 Mr. Clarence Munns Stormont Building Topeka Executive Secretary
Louisiana State Medical Society New Orleans April 29-May 1 Dr. P. T. Talbot 1430 Tulane Avenue, New Orleans Secretary
Maryland Medical and Chirurgical Faculty of Baltimore April 23-24 Dr. Walter Dent Wise 1211 Cathedral Street Baltimore, Secretary
Mississippi State Medical Association, Biloxi May 14-16 Dr. T. M. Dye McWilliams Building Clarkdale Secretary
Missouri State Medical Association Excelsior Springs, May 6-9 Dr. E. J. Goodwin 634 North Grand Boulevard, St. Louis Secretary
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Titles marked with an asterisk (*) are abstracted below.

American Journal of Clinical Pathology, Baltimore

7 198 (Jan.) 1935

- Pathogenesis of Primary Cancer of Lung. H. C. Swains. Chicago—p. 1.
Determination of Lead in Excreta and Tissues. R. A. Kehoe. Cincinnati—p. 17.
Studies of Edema. Especially Edema of Renal Origin. F. J. Kirk. Omaha—p. 21.
Mechanism of Jaundice. Working Hypothesis. A. W. Elton. Reading, Pa.—p. 40.
New Antigens for Kolmer Modification of Wassermann Test. J. A. Kolmer. Philadelphia—p. 55.
Anatomic Study of Thoracopagus Monster Delivered Dead at Full Term. L. W. Larson and P. W. Freise. Bismarck, N. D.—p. 60.
Survey of Training Courses for Laboratory Technicians in General Hospitals. A. Heda. St. Paul—p. 64.

Antigens for Modification of Wassermann Test.—Kolmer states that the acetone insoluble lipoids recovered from the ether extractions of beef heart powder in the preparation of the Kahn antigen have definite antigenic value. The addition of 2 Gm. of these lipoids to the Kolmer cholesterolized and lecithinized alcoholic extract of heart definitely increases its antigenic sensitiveness with a slight or no increase in the anticomplementary activity. A simplified or alternative method of preparing this antigen reinforced with 2 Gm. of lipoids per hundred cubic centimeters is described. This simplified antigen is preferred because it is more antigenic and simpler and easier to prepare. Because of its higher antigenic sensitiveness the author recommends the use of 20 antigenic units instead of 10 units of either antigen in performing the Kolmer modification of the Wassermann test. These antigens in a dose of 20 antigenic units increase the sensitiveness of the Kolmer complement fixation test for syphilis while preserving its higher specificity or freedom from falsely positive reactions when the test is conducted as described originally.

American J. Digestive Diseases of Children, Chicago

1 759 826 (Jan.) 1935

- The Problem of Infection in Gallbladder Disease. Report on Experimental Production of Cholecystitis. M. E. Rehfuss and G. M. Nelson. Philadelphia—p. 759.
Intestinal Giardiasis in New England. Notes on Its Pathogenicity and Symptomatology. I. MacPhee and B. S. Walker. Boston—p. 768.
Functional and Nervous Disorders of Stomach and Alimentary Tract. B. B. Crohn. New York—p. 773.
One Hundred and Sixty Nine Studies in Gastric Secretion During the Night. A. Winkelstein. New York—p. 776.
Clinical Notes Concerning Distal Ileitis as Manifestation of Bacillary Dysentery. J. Felsen. New York—p. 782.
Inhibitory Effect of Histamine on Gastric Secretion. Armine Allen. Montreal—p. 787.
Vitamin A as Prophylactic Against the Common Cold in Groups of School Children. Esther M. Tress. Long Beach, N. Y.—p. 795.
Differentiation of Confusing Shadows in Cholecystography. M. A. Hershenov. Pittsburgh—p. 799.
Treatment of Massive Gastroduodenal Hemorrhage. F. Smithies. Chicago—p. 803.
Silent Carcinomas of Large Intestine. E. L. Strohl and J. A. Bargen. Rochester, Minn.—p. 808.
Portal Cirrhosis. Combined Medical and Surgical Management. Report of Instance. H. A. Rusk and H. C. Newman. St. Louis—p. 810.

Experimental Production of Cholecystitis.—For the experimental production of cholecystitis, Rehfuss and Nelson obtained organisms in pure cultures of hormone broth from areas clinically believed to be diseased nasal discharges, abscessed teeth, gums, tonsils, bile, urine, prostatic secretion and colon walls. Subcultures on agar mediums were preserved at refrigerator temperature as sources from which subsequent cultures were obtained. It was their desire to produce chronic

lesions more like those which one would expect to occur from a focal area that probably throws into the blood stream at varying intervals a small number of organisms or their by products. Small, ascending amounts were injected into rabbits ear veins usually beginning with 0.02 cc. of the six hour culture. These were repeated in larger doses once or twice a week depending on whether or not there were signs which would lead one to believe that the rabbits were sick. Prior to each injection the cultures were examined and smears were made in order to be sure that contamination had not occurred. Postmortem examinations were performed on the rabbits after from two to ten months, except in the case of a few that died or were killed because of extreme illness. Histologic observations illustrate the engorgement of blood vessels, distention of the gallbladder, thickening of the wall and the leukocytic infiltration. Such were the observations in varying degrees of those considered to be diseased gallbladders. Of the several hundred animals that had not received bacterial injections none presented gallbladders similar to those considered to be diseased. With one exception diseased gallbladders were found after the injection of a variety of organisms obtained from various focal areas. Twenty-five per cent of the rabbits were so affected. Organisms were recovered at times from the bile of gallbladders believed to be grossly normal. The route by which bacteria reach the gallbladder in the majority of instances appears to be by way of the blood stream. In general, from this study the authors believe that almost half of the cases of gallbladder disease seen clinically are bacterial in origin.

Studies in Gastric Secretion.—Winkelstein studied the curve of gastric secretion during the night in 169 patients. He observed that normal persons have little or no free hydrochloric acid during the night. Patients having duodenal, gastric and jejunal ulcer have a high nocturnal curve and a high titer of free acid. In gastric neuroses there is a low nocturnal curve of secretion. In gastric carcinoma the gastric contents during the night resemble those found in the usual day test meal, i. e. a low acidity with increased mucus and blood. The nocturnal hypersecretion and hyperchlorhydria in peptic ulcer cannot be controlled by alkalis, olive oil, atropine and aspiration. In the author's opinion the best medical method of controlling the gastric secretion during the night is the milk drip. Surgically partial gastrectomy frequently accomplishes the same result. He discusses the significance of these observations particularly in the problem of peptic ulcer and emphasizes the injurious effect on the gastric mucosa of an increased fasting or interdigestive secretion.

American Journal of Physiology, Baltimore

111 1230 (Feb. 1) 1935. Partial Index

- Effects of Adrenalin Injection in Moderate Work. D. B. Dill, H. T. Edwards and R. H. de Meo. Boston—p. 9.
Blood Sugar Regulation in Exercise. D. B. Dill, H. T. Edwards and S. Mead. Boston—p. 21.
Rates of Resorption in Gallbladder. Estimations Based on Experiments with Methylene Blue on Rabbits. B. Halpert, W. R. Thompson and F. L. Marting. New Haven, Conn.—p. 31.
Insensible Perspiration and Galvanic Skin Reflex. G. L. Freeman and C. W. Darrow. Chicago—p. 33.
Effects of Carbon Dioxide on Urine Formation and Glomerular Blood Flow. E. F. Adolph. Rochester, N. Y.—p. 64.
Manner in Which Electric Currents Generated by Heart Are Conducted Away. I. N. Katz and H. Korey. Chicago—p. 83.
Thyroxine and Tissue Metabolism. Aletha Hopping Scott. New York—p. 107.
Effect of Feeding High Amounts of Soluble Iron and Aluminum Salts. H. J. Deobald and C. A. Elvehjem. Madison, Wis.—p. 118.
Liver Amylase. Effect of Nutrition and of Hormones. F. H. Scharles, Phoebe D. Robb and W. T. Salter. Boston—p. 130.
Phospholipid Content of Liver, Skeletal Muscle and Whole Blood as Affected by Thyroxine Injections. L. H. Schmidt. Cincinnati—p. 134.
Monophasic Electrogram Obtained from Mammalian Heart. K. Jochim, L. N. Katz and W. Mayne. Chicago—p. 177.
Study of Variations in Saccharogenic Power of Human Saliva. Florence Walker and Lillian Sheppard. New Brunswick, N. J.—p. 192.
Vago-Inhibitory Effects on Respiratory Metabolism of Heart After Treatment with Dinitrophenol. W. E. Garrey and J. T. Boykin. Nashville, Tenn.—p. 196.
Effect of Estrin Injections on Developing Ova of Mice and Rabbits. H. O. Burdick and G. Pincus. Cambridge, Mass.—p. 201.
Increase in Insulin Secretion Following Injection of Epinephrine and Its Relation to High Liver Glycogen Values Obtained. Jane L. Childs and J. A. Dye. Ithaca, N. Y.—p. 223.

Journal of Experimental Medicine, New York

61 149 298 (Feb 1) 1935

- Studies on Anaphylaxis with Pollen C Bernstein Jr Chicago—p 149
- Salt and Water Losses in Diuretic Diuresis and Their Relation to Serum Nonprotein Nitrogen and Electrolyte Concentrations E Kerpel Frontus and A M Butler Boston—p 157
- Experimental Production in Dogs of Acute Stomatitis Associated with Leukopenia and Maturation Defect of Myeloid Elements of Bone Marrow D K Miller and C P Rhoads New York—p 173
- Further Studies on Kala Azar Leishmania in Nasal and Oral Secretions of Patients and Bearing of This Finding on Transmission of Disease C E Forkner and Lily S Zia Peiping China—p 183
- Diagnosis of Psittacosis in Man by Means of Injections of Sputum into White Mice T M Rivers and G P Berry New York—p 205
- *Study of Repeated Attacks of Experimental Pneumococcus Lobar Pneumonia in Dogs L T Coggeshall and O H Robertson Chicago—p 213
- *Tests for Pneumococcus Hypersensitiveness in Dogs After Recovery from Experimental Pneumococcus Lobar Pneumonia L T Coggeshall Chicago—p 235
- Development of Pure Cultures of Fibroblasts from Single Mononuclear Cells J K Moen New York—p 247
- Blood Plasma Protein Regeneration Controlled by Diet Systematic Standardization of Food Proteins for Potency in Protein Regeneration Fasting and Iron Feeding W T Pommerenke H B Slavin D H Karther and G H Whipple Rochester N Y—p 261
- Dog Plasma Protein Given by Vein Utilized in Body Metabolism of Dog Horse Plasma and Dog Hemoglobin Not Similarly Utilized W T Pommerenke H B Slavin D H Karther and G H Whipple Rochester N Y—p 283

Repeated Attacks of Experimental Pneumococcal Pneumonia—Coggeshall and Robertson studied the effects of repeated attacks of lobar pneumonia produced by the intrabronchial injection of pneumococcus type I in twenty-five dogs undergoing seventy-eight infections induced at intervals of from three days to nineteen months. The number of attacks to which animals were subjected ranged from two to eleven. The dogs were killed during the final infection and the pulmonary pathologic changes were studied. That recovery from the experimental disease conferred on the animal increased resistance against subsequent infections was shown by the fact that such animals regularly survived doses of culture which in the dog infected for the first time produced a fatal outcome. The recurrent attacks of pneumonia were uniformly mild in character; the febrile course was brief, the pulmonary lesion was usually confined to a single lobe and bacteremia seldom occurred. The time intervals between attacks bore no relationship to the severity of the experimental disease. Tests for acquired antipneumococcal immune substances in the blood after recovery showed their presence in some animals and not in others; yet dogs without demonstrable humoral immunity appeared to be just as resistant to reinfection as those possessing it. Secondary lesions produced in the lobe previously affected tended to evolve much more rapidly than did the primary ones. They were characterized by the early appearance of a generalized macrophage reaction and a marked diminution in the numbers of pneumococci in the tissues or their complete absence. These changes occurred more slowly in secondary lesions initiated in heretofore uninvolved lobes. The macrophage reaction which consists of a swelling of the fixed tissue cells (histiocytes) and a subsequent liberation of macrophages into the alveolar exudate, is regarded as a significant evidence of increased antipneumococcal resistance, since it has been observed to occur regularly at the time of recovery from the first infection and is accompanied by the local disappearance of the invading micro-organisms.

Tests for Hypersensitiveness After Recovery from Experimental Pneumonia—Coggeshall bases his conclusion that dogs do not develop hypersensitivity to the pneumococcus as the result of experimental lobar pneumonia on the following: 1 Fifteen dogs were given type I and II pneumococcus lobar pneumonia and following recovery, were tested for hypersensitiveness by means of intrabronchial and intracutaneous injections of the autolysate made from the homologous pneumococcus. 2 Seven dogs showed a pulmonary lesion discernible with the x-rays at the site of the autolysate inoculation; three of these dogs were normal controls. 3 No evidence of a positive skin reaction was found in any of the fifteen dogs; many of which received repeated infections and intradermal autolysate injections. 4 Subsequent infections in the same animals were

definitely milder than the initial infection. 5 The infections following the administration of intrapulmonary and cutaneous autolysate were of about the same intensity as the initial infection. 6 Temperature, pulse rates, white blood counts and differential blood pictures showed no significant variations following intrapulmonary injection of autolysate. 7 Tests for the acquisition of humoral immune bodies following autolysate injection and recovery from the experimental disease showed the presence of these substances in some of the dogs and their absence in others. 8 Study of the pathology of the pulmonary lesions produced by the autolysate failed to reveal histologic changes characteristic of an allergic reaction. However, the presence of perivascular accumulations of large mononuclear cells observed in the lesions of the recovered dogs does suggest a locally accelerated reactivity of the fixed tissue cells to the products of the pneumococcus.

Journal of Industrial Hygiene, Baltimore

17 136 (Jan) 1935

- Lead Intoxication in Etiology of Hypertonia N A Vigdorichik Leningrad U S S R—p 1
- Effect of Salts on Determination of Traces of Lead by Chromate Method A W Middleton London England—p 7
- Effect of Repeated Lead on Blood Picture in Guinea Pigs J Krafka Jr Augusta Ga—p 13
- Factors Influencing Lethal Action of Illuminating Gas Erma Smith E McMillan and Lillian Mack Ames Iowa—p 18
- Control of Occupational Diseases by Laboratory Methods C O Sappington Chicago—p 21
- Detection of Mineral Particles in Sputum in Silicosis H E Burke Ray Brook N Y—p 27
- *Method for Analysis of Dust Samples Employing X-Ray Diffraction Preliminary Report W F Bale and W W Fray Rochester N Y—p 30

Method for Analysis of Dust Samples—Bale and Fray believe that their method of employing x-ray powder spectroscopy promises to aid materially in the qualitative analysis of dust samples. The results of the test are available at the end of from twenty-four to forty-eight hours. The dust is very finely pulverized and inserted in a capillary glass tube. The properly filtered Ka radiation of a molybdenum target x-ray tube is used to produce a nearly monochromatic beam, which is passed through the contents of the capillary tube, producing diffractive effects identified on the film as bands of different density and intensity separated by areas of comparatively clear film. The blackening of the film occurs in bands, because these areas represent directions in which reinforcement of the roentgen energy occurs from diffractive interference while the clear areas show little blackening, owing to the fact that these areas relate to the aphasical character of the roentgen energy diffracted in these directions. The quantitative amounts of sand or mica in a mixed dust sample of unknown character may be determined at least approximately by comparing the relative film densities of selected strong bands of the substance in the mixed sample with that of a known mixed control of the same substances.

New Jersey Medical Society Journal, Trenton

32 158 (Jan) 1935

- Osteogenic Tumors J D Tidback Summit and A Galasso Morris town—p 7
- The Medical Society of New Jersey Experiments in Furnishing Community Health Services L A Wilkes Trenton—p 11
- Allergy in Clinical Medicine R A Cooke, New York—p 15
- Pneumonia in Adults L F Barker Baltimore—p 24
- Röntgenologic Diagnosis of Lesions of Esophagus C F Baker and W J Marquis Newark—p 29

New York State Journal of Medicine, New York

35:41 100 (Jan 15) 1935

- Psychogenic Factors in Asthma C P Oberndorf New York—p 41
- Nondrainage Treatment of Peritonitis G W Cottis and H W Ingham Jamestown—p 49
- Observations on Some Disturbances of Vestibular Function P Northington New York—p 56
- Chemistry in Medicolegal Autopsy A O Gettler New York—p 66
- Cutaneous Reactions to Hemolytic Streptococcus Nucleoprotein in Rheumatic and in Nonrheumatic Children A D Kaiser and J D Keith Rochester—p 69
- Arteriography J C Knapp Woodhaven N Y—p 76
- The Physician and Pharmacist of the Future F D Lascoff New York—p 79

Philippine Journal of Science, Manila

55: 91 192 (Oct.) 1934 Partial Index

- Human Infestations with *Ascaris* and *Trichuris* in Different Parts of the Philippine Islands M A Tubungui M Brava and A M Pasco Manila —p 91
Hemorrhagic Filariasis in Cattle Caused by New Species of *Parafilaria*. Z de Jesus Manila —p 125

Southern Medical Journal, Birmingham, Ala

29: 107 196 (Feb.) 1935

- Gastric Carcinoma Clinical Research Preoperative Course and Post operative Results E H Gauthier Baltimore —p 107
Pseudohypertrophic Progressive Muscular Dystrophy Preliminary Report of Cases Treated with Glycocoll J I Bender Philadelphia —p 114
Relation of Vitamin Deficiency to Toxemia of Pregnancy R A Ross Durham N C —p 120
Occurrence of Different Types of Mental Changes in Brain Tumor E Sachs, St Louis —p 122
Further Observations on Prenatal Medication as Possible Etiologic Factor of Deafness in the New Born H M Taylor Jacksonville Fla —p 125
Diathermy in Diseases of Eye Ear Nose and Throat H I Hilgartner Jr and H I Hilgartner Austin Texas —p 130
Interpretation of Abdominal Pain T K Boland Atlanta Ga —p 133
Diagnosis and Treatment of Duodenal Ulcer I Abell Louisville Ky —p 138
Factors That Maintain High Death Rate in Acute Appendicitis J H Blackburn Bowling Green Ky —p 141
Nine Years' Experience with Gallbladder Visualization D Spangler Dallas Texas —p 144
Dermonecrotic Properties of *Staphylococcus Filtrates* P T Stookey and L A Scarpellino Kansas City Mo —p 148
Tumors and Tumorlike Conditions of the Lymphocyte Myelocyte Erythrocyte and Reticular Cell G R Callender Fort Sam Houston Texas —p 152
Coarctation of Aorta Its Importance and Diagnosis W K Purks and W P Robert Vicksburg Miss —p 158
Lutein Cell Carcinoma of Ovary P I Nixon and H Hartman San Antonio Texas —p 161
Prophylaxis of Shock W C Jones Miami Fla —p 166
Use of High Protein Low Caloric Acid Ash Diet in Obesity W Baumgarten St Louis —p 169
Effect of Dietary Changes on Urinary Reaction F C Neff Kansas City Mo —p 172
Boundaries of Dermatology T W Murrell Richmond Va —p 176
Diagnostic Points in Pulmonary Tuberculosis P H Ringer Asheville N C —p 178
How to Increase the Physician's Income and at the Same Time Reduce the Cost of Medical Care M L Boyd Atlanta Ga —p 180
Diphtheria Immunization. A H Flicker Fort Worth Texas —p 185
Some Developments in Psychiatric Teaching S Ackerly Louisville Ky —p 186

Dermonecrotic Properties of *Staphylococcus Filtrates*

—Stookey and Scarpellino discuss the association of a dermonecrotic, hemolytic and toxic filtrate obtained from toxin producing *staphylococci* and its relationship to certain diseases of the skin. They believe that pyoderma gangrenosa has much in common with osteomyelitis. In primary osteomyelitis the *staphylococcus* is blood borne from a primary focus usually situated in the skin, and after a varying period of pyemia it is embolically deposited in the bone, which produces the osteomyelitis. Pyoderma gangrenosa represents a reversal of this process. There is usually a primary focus, frequently hidden, from which the *staphylococcus* enters the blood at irregular intervals to be embolically deposited in the skin. To obtain *staphylococcus* toxin, the original culture should be made in sugar free mediums. Many strains of the *staphylococcus* are toxin makers, but on repeated subculture they lose their toxin-making properties, and, if the hydrogen ion concentration of the mediums is not adjusted properly, toxin formation will be inhibited or abolished. Animal passage will restore the original toxin making properties of the *staphylococcus*. The necrotic properties of the filtrate usually disappear before the hemolytic properties. This toxin has a marked antigenic action. Immune substances are carried in the pseudoglobulin fraction of the blood serum. Some observers consider that the hemolysin elaborated by several species of bacteria are identical. If this is true, antihemolysins, due to hemoglobin-destroying organisms, should cross neutralize one another. The authors have worked with *staphylococci* obtained from three cases of vegetative bacterial endocarditis. The blood cultures were positive in all three cases for *Staphylococcus aureus*, which possessed hemolytic and dermonecrotic properties. In nineteen cases of primary osteomyelitis *staphylococci* were isolated in all instances. Fifteen were found to have hemolytic properties and thirteen of these produced a dermonecrotic toxin. Four cases of

cavernous sinus thrombosis, secondary to furuncles in the danger area, all showed dermonecrotic and hemolytic toxin. From the pus obtained from fourteen furuncles, *staphylococci* have been isolated in all instances. Nine were found to be hemolytic and necrotic, three were hemolytic and nonnecrotic, and two lacked completely either hemolytic or necrotic properties. Cavernous sinus thrombosis seems to result from a *staphylococcal* infection in the anatomic area that drains into the skull, chiefly through the angular and ophthalmic veins. The primary lesion is usually a furuncle. There is a secondary thrombosis into the veins leading into the cavernous sinus, with an extension of the thrombus in the cavernous sinus.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Tuberculosis, London

29: 162 (Jan.) 1935

- Problem of Acute Pulmonary Phthisis of Young Females S L Cummins —p 4
Place of Phrenicectomy in Treatment of Pulmonary Tuberculosis J Gravesen —p 12
Christopher Bennet H Rolleston —p 16
Assmann's Focus P Kerley —p 19
Tuberculin Treatment of Pulmonary Tuberculosis H Sutherland —p 26
Tuberculin in Iridocyclitis and Scleritis C L Gimblett —p 38

British Medical Journal, London

1: 93 138 (Jan. 19) 1935

- Some Recent Advances in Cardiovascular Disease C Wilson —p 93
*Treatment of Lymphedema by Plastic Operation Preliminary Report H Gillies and F R Fraser —p 96
Role of Vitamin A in Nutrition Marion B Richards —p 99
Evaluation of Modern Diphtheria Prophylactics C J McSweeney —p 103
*Treatment of Bedsore with Elastic Adhesive Plaster T J A Carty —p 105

Treatment of Lymphedema by Plastic Operation.—Gillies and Fraser report a case of lymphedema of the lower extremities in which there was no evidence of acute lymphangitis, and although there were possible sources of infection the evidence for an inflammatory origin is not convincing. In view of the crippled condition of the patient and of the failure of all forms of treatment that had been tried, they attempted to restore lymph drainage from the legs to the trunk by means of grafts of skin and subcutaneous tissues so as to bridge the obstruction. The forearm could easily be brought close to the upper part of the thigh and, if two raw areas were made on the opposing surfaces, a large surgical union would take place, while, if the lymphatics also anastomosed, the lymph of the thigh would drain through the joint and be carried by way of the lymphatics of the arm into the general system, the block being thereby sidetracked. Four operations were carried out altogether. When the arm was joined to the thigh on the left side (first operation), the experimental lymphatic "tap" proved itself so efficient that the edema definitely subsided after three weeks and continued to do so after the patient had learned to hobble about. The other leg remained swollen. When the experimental operation was completed into a permanent plastic (fourth operation), the union of the two systems of lymphatics proved adequate to keep all discomfort and all swelling (except a small patch of the calf) from the operated leg after that date. Their experience appears to prove that a lymphatic tap below the obstruction is sufficient to cure the whole limb. It is desirable that some simpler "tap" than the arm-flap plastic should be discovered. The principle having been proved, simpler modifications of forming a bridge may suggest themselves.

Treatment of Bedsore with Elastic Adhesive Plaster.—Carty successfully treated ten cases of bedsore by applying elastic adhesive plaster (elastoplast dressing). Fifteen days was the longest time taken for healing and no case proved intractable. No systemic reaction due to retention of discharge about the ulcer was observed. In carrying out the method, two pieces of elastic adhesive plaster, one over the other, are applied so that the bedsore and the skin surrounding it for at least an inch are covered. If the bedsore has a greater diameter than the bandage two pieces may be laid side by side and held together by two other pieces placed at right angles. The

bandage is left in position as long as it will adhere—usually, in the early stages when discharge is plentiful, from twelve to forty-eight hours. It is then replaced by similar pieces of adhesive plaster and repeated until healing is complete. On removal of the bandage no attempt should be made to clean the surface of the sore; it suffices to wipe away the discharge from the surrounding skin with absorbent cotton or a soft cloth before applying a new piece of bandage.

Journal of Pathology and Bacteriology, Edinburgh

40 1 200 (Jan.) 1935

- Structure of Teratomas R A Willis—p 1
 Reconstruction Models Showing Moderately Early Simple Silicotic Process and How It Affects Definite Parts of Primary Unit of Lung F W Simson—p 37
 Leukemia Coincident with and Transmissible by Spindle-Cell Sarcoma in Mouse L Dorothy Parsons—p 45
 *Infection with Neurotropic Yellow Fever Virus Following Instillation into Nares and Conjunctival Sac G M Findlay and L P Clarke—p 55
 Immunization of Mice Against Rift Valley Fever R D Mackenzie—p 65
 Adsorption and Elution of Agglutinins A H Rosenheim—p 75
 Natural Occurrence of Pleuropneumonia-like Organisms in Apparent Symbiosis with Streptobacillus Moniliformis and Other Bacteria Emmy Klieneberger—p 93
 Experiments with BCG Cultures M F Shaffer—p 107
 Size of Virus of Poliomyelitis as Determined by Ultrafiltration Analysis W J Elford I A Galloway and J R Perdrau—p 135
 Size of St Louis Encephalitis Virus as Determined by Ultrafiltration Analysis W J Elford and J R Perdrau—p 143
 Cultivation of Virus of Infectious Ectromelia with Observations on Formation of Inclusion Bodies in Vitro A W Downie and C A McGaughey—p 147
 *The Ectopic Testicle H W C Vines—p 161
 Complexity of Antigens in Relation to Zones in Precipitation Reaction E Goldsworthy and G V Rudd—p 169

Infection with Yellow Fever Virus Following Instillation into Nares—Findlay and Clarke state that the nasal instillation of neurotropic yellow fever virus in monkeys and mice is followed by the development of encephalitis; the virus also reaches the peripheral blood stream. The virus is present in the olfactory lobes of a monkey and in the cerebral hemispheres of mice two days after nasal instillation. Later there is a general spread throughout the brain. Instillation of the virus in the conjunctival sacs of mice is followed in certain cases by encephalitis. Monkeys that have immune bodies to yellow fever present in the blood do not develop encephalitis after nasal instillation of the virus. The possible routes by which the virus reaches the brain from the nasal cavities are discussed.

The Ectopic Testicle—Vines examined histologically forty-four cases of ectopic testicles of which thirty-eight showed unilateral and six bilateral misplacement. Unilateral and bilateral ectopic testicles are histologically distinct at and after puberty; before puberty no constant differences have been observed in equally immature testicles. After puberty the unilateral ectopic testicle undergoes progressive atrophy involving first and chiefly the spermatic epithelium and later the interstitial cells. In bilateral ectopia complete testicular atrophy does not occur; there is either normal spermatogenesis or else the spermatic tissue atrophies while the interstitial cells undergo marked hyperplasia. The atrophy of the spermatic tissue which may occur in both types of ectopia, is a result of puberty. It is probably due to the incapacity of the immature testicle to respond successfully to the stimulus of puberty. The interstitial hyperplasia in bilateral ectopia is also an effect of puberty and does not occur in the prepubertal period. The author suggests that bilateral ectopia and its associated malformations of the genitalia are not governed by the gonad but are parts of an endocrine syndrome that causes masculinization of the female in early fetal life.

Journal of State Medicine, London

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- Inspection of Dairy Cattle Under the Milk and Dairies (Consolidation) Act 1915 B Wood White—p 1
 The Milk Problem T Ruddock West—p 17
 Weakness of Pasteurization as Means of Safeguarding the Milk Supply D Hall—p 24
 Midwifery Service in Rural District H H Thomson—p 28
 Antenatal Work in Cumberland K Fraser—p 32
 The Crippled Child H A Brittain—p 36
 Citizenship and Tuberculosis J H H Williams—p 43

Journal of Tropical Medicine and Hygiene, London

38 17 28 (Jan 15) 1935

- Ocular Filariasis Adult Wuchereria Bancrofti in Anterior Chamber of Human Eye S E Fernando—p 17
 Some Pathologic Changes Met with in Filarial Orchitis and Their Significance T B Menon and D R Annamalai—p 18

Presse Medicale, Paris

43 137 160 (Jan 26) 1935

- Heterotopic Osteogenesis Obtained with Help of Grafts in Muscles of Strip of Vesical Mucosa or of Grafts of Aponeurosis in Bladder R. Lerche and E Lucinisco—p 137
 Observations on Heterotopic Osteogenesis in Spleen A Jung and S Cemil—p 140
 Pulmonary Steatosis R Debre G See and E Normand—p 142
 *Besnier-Boeck's Disease (Multiple Benign Sarcoma) I M Pautrier—p 146
 Roentgenologic Diagnosis of Suppurated Hydatid Cysts of Lung H Constantini and E Curtillet—p 150
 Influence of Some Metals on Fixation of Mineral Components in Osteoblast Cultures Biologic Study of Osteosynthesis G Menegaux and D Odette—p 152
 *Hernias of Mediastinum and Their Pathogenesis F Triboulet and J Lecœur—p 156

Besnier-Boeck's Disease—Pautrier discusses in detail the clinical and pathologic manifestations of multiple benign sarcoma in various tissues. The cutaneous lesions, which have been the longest known, appear as nodosities of varying sizes. They develop slowly during years and may leave a central scar. The histologic picture is characteristic. They are formed of a dermal infiltration predominantly epithelioid and separated by narrow bands of collagen. Histiocytes and lymphocytes are frequently present. The infiltrating nodules border the hypoderm without producing the least reaction. The lesions in the ganglions, tracheobronchial glands, lungs, osseous tissue, viscera and nasal and conjunctival mucosa are histologically identical. The condition is therefore revealed as a generalized systemic disease primarily reticulo-endothelial. No agreement as to etiology has been reached. The consensus allies it with tuberculosis in an attenuated form. The author employs a treatment consisting of tuberculin and neoarsphenamine and has obtained many good results with it.

Hernias of Mediastinum—Triboulet and Lecœur discuss the anatomic and functional factors concerned in mediastinal herniation. Two cases are reported. As a result of their studies they conclude that the pathogenic mechanism is not simple. It is usually due to pressing back of the pleural cul-de-sac through a weakened zone of the mediastinum owing to the simple influence of disequilibrium of pressures created by pneumothorax and manifesting itself through a maximum of expiratory distention. More rarely a different mechanism is involved in which the hernias are of maximum inspiration resulting from the aspirating action exerted by the opposite lung and are a simple manifestation of the retractable tendency of lesions at this site.

Revue Française de Pédiatrie, Paris

10: 709-864 (No 6) 1934

- Tetany in Infants Under Three Months E Gorter and Johanna J de Dier—p 709
 Histophysiologic Study of Infantile Rickets A Policard M Péhu and J Boucomont—p 723 p 722
 Prognosis of Intrathoracic Tuberculosis of Child J Lundquist—p 769
 Peculiarities of Blood Biochemistry and Metabolism in Infantile Nephropathies M S Maeslov—p 783
 *Prophylaxis of Measles with Adult Serum A S Levine—p 825

Prophylaxis of Measles—Measles and its complications account for a high percentage of the infectious disease mortality. The struggle against measles according to Levine lies in the domain of general prophylaxis, hygiene and specific immunobiology. The immunizing action of adult serum may perhaps be explained in two ways: the presence of proteins and the presence of specific antibodies. He observed several groups of infants with various degrees of exposure and immunization to measles. He concludes that adult serum is a valuable prophylactic agent against measles. Convalescent serum has given brilliant results. Late introduction of serum has no results; early administration even of small quantities, often is advantageous. The introduction of serum lengthens the period of incubation. Large doses of serum (60 cc.) given in the first

days of the incubation period protect the child from the disease and give a passive immunity. Smaller doses of adult serum (from 15 to 20 cc), given up to the fifth day of incubation or larger doses given later, attenuate the disease and produce an active immunity. The author believes that only the passive immunization should be given to nurslings, the active method being reserved for older children.

Prensa Medica Argentina, Buenos Aires

22 109 158 (Jan 16) 1935

- Generalized Verrucous Sporotrichosis Case C Seminario E R Gavila Alvarado and T Negri—p 109
Abscesses of Lung in Children F A Beretervide—p 125
Spirochaetosis Icterohemorrhagica E Barros—p 140
Verification of Efficacy of Artificial Pneumothorax A I Heudtlass O Garré and J Viale—p 149
Removal of Parotid Gland J F Fiorillo—p 150
Korsakoff's Psychosis in Children A Carcio J E Viviani and A Cerleiro—p 153

Verification of Efficacy of Artificial Pneumothorax—Heudtlass and his collaborators assert that plain roentgen kymography is of great value in the verification of immobilization of the lung after artificial pneumothorax in pulmonary tuberculosis. They used a modification of Stumpf's technic by interposing between the patient and the film, in a vertical position, a grate with lead bars, opaque to the roentgen rays, 145 mm in width and 5 mm apart. The grate is slowly and uniformly displaced from left to right during respiration, by a special mechanism. The roentgenkymogram has a series of parallel vertical lines the interspaces of which represent the space covered by two openings in the grate. Motions in the lung are graphically registered, appearing in the interspace of the roentgenkymogram in the form of waves, following a horizontal direction and the amplitude of which depends on the intensity of the movement in the pulmonary field. Two waves are recorded by a pulmonary movement during two inspirations. The reading of the roentgenkymogram is made from left to right. If there is an abnormal image of the lung and the waves are synchronous to those given by diaphragmatic, costal or mediastinal movements, the movement of the pulmonary field is related to those organs. If, on the contrary, the waves do not coincide with those given by diaphragmatic, costal or mediastinal movements, the movement in the pulmonary field is independent of those organs.

Archiv für Verdauungs-Krankheiten, Berlin

57:1 112 (Jan) 1935 Partial Index

- B Vitamins as Substitute for Insulin? W von Drigalski—p 1
Dyspeptic Disturbances in Patients with Chronic Cardiac Insufficiency D Branisteanu and I Fainita—p 15
Studies on Uric Acid Metabolism D Joffe—p 25

B Vitamins as Substitute for Insulin.—Von Drigalski reviews the literature of the action of vitamin B on the carbohydrate metabolism. The numerous reports which seemed to indicate that medication with vitamin B could be a substitute for insulin induced the author to treat with yeast ten cases of diabetes mellitus of various degrees of severity. Two patients were treated with fresh yeast (from 100 to 150 Gm) daily, while the other eight were treated with dry yeast. In order to determine the action of the yeast on the metabolism, the author studied the glycosuria, the blood sugar, the acidosis and the body weight. The tabular reports indicate clearly that yeast exerts no influence on glycosuria, acidosis, blood sugar content, insulin requirements and body weight of patients with diabetes mellitus and that consequently it cannot replace insulin in the treatment of diabetes mellitus. The author points out that the conditions in some of the animal experiments by which other investigators proved the influence of yeast on the carbohydrate metabolism correspond so little to the conditions in human diabetes mellitus that there is no necessity of discussing the contradictions between animal and human tests.

Dyspeptic Disturbances in Patients with Cardiac Insufficiency—Branisteanu and Fainita point out that patients with decompensated heart disease are frequently subject to dyspeptic disturbances with loss of appetite, coated tongue, feeling of fulness after eating, heartburn, eructation, abdominal flatulence and constipation. The general opinion is that the stasis in the abdominal organs is the cause of these dyspeptic

disturbances. The stasis involves all abdominal organs, but the most noticeable symptoms of this stasis are those caused by the stomach and liver. For this reason the author studied in twenty-two patients with cardiac decompensation the roentgenologic and functional aspects of the stomach and the functional aspects of the liver. The patients were treated for several days with bed rest and digitalis, and after that the gastric mucous membrane was examined by roentgenography. Gastric juice was withdrawn and examined to determine the functional activity of the stomach. In order to determine the functional activity of the liver, the urine was examined for bilirubin and urobilinogen and the blood for lactic acid and bilirubin. The roentgenoscopy of the stomach revealed a swollen condition of the gastric folds, which may be interpreted as a manifestation of gastritis caused by stasis. Such changes in the gastric mucous membrane are generally found in postmortem examinations of patients with cardiac decompensation. An impairment of the liver was present in 81 per cent of the patients. The author concludes that the stasis gastritis and the insufficiency of the liver explain the dyspeptic disturbances in patients with cardiac insufficiency.

Munchener medizinische Wochenschrift, Munich

82 163 202 (Jan 31) 1935 Partial Index

- Investigations and Observations on Cancer of the Uterine Os H Schridde and H Berning—p 166
Significance of Quantitative Determination of Porphyrin by Means of Luminescence Test for Examination of Hepatic Function and for Problems of Nutrition K Franke and R Fikentscher—p 171
Occlusion of Vaginal Vestibule in Small Girls E Flusser—p 172
Treatment of Hypertrichosis E Karpelis—p 179
Is Particular Caution Necessary in Use of Salyrgan? W Hug—p 184
Use of Salyrgan as Diuretic in Severe Cardiac Weakness S Tziwanopoulos—p 185
Diuretic Action of Complex Mercury Compounds H Gremels—p 186

Determination of Porphyrin by Means of Luminescence Test for Examination of Hepatic Function.—Franke and Fikentscher demonstrate that the quantitative determination of porphyrin by means of the luminescence method is an unusually exact test of the hepatic function. Even a simple overtaking of the normal activity of the liver cells and the slightest hepatic disturbances result in an increased elimination of the ether-soluble porphyrins in the urine, and the luminescence test clearly indicates this. A number of factors, to which formerly only slight importance was attached (expenditure of energy, constitution and nutrition), influence the porphyrin content of the urine. Thus the estimation of the porphyrin elimination has only clinical value, if these factors are taken into consideration. The diet should be given especial attention. In case of continuous tests, the patient should be put on a standard diet (restriction of meat and of proteins as well as of fats, with the exception of butter). The authors studied the modification of the porphyrin content of the urine by various diets. They observed an increase in the urinary porphyrin elimination not only following the intake of foods that contain porphyrin (exogenous porphyrin) but also after ingestion of large quantities of foods that tax the liver cells greatly. Especially the consumption of large quantities of fats (with the exception of butter) and of fats and proteins combined, results in a considerable increase in the urinary porphyrin elimination. The determination of the porphyrin content of the urine is thus helpful in estimating how the organism tolerates a certain type of diet.

Necessity of Caution in Use of Salyrgan?—Hug says that he would not like to dispense with a diuretic as effective as salyrgan in spite of the fatality caused by it in his hospital. He thinks that in every medicament which is administered intravenously a thrombosis is possible, but he considers this not a sufficient reason to reject the remedy entirely. It is a well known fact that patients with cirrhosis of the liver have an especially poor tolerance for intravenously administered remedies and the author points out that the patient who died following the administration of salyrgan not only had a severe cardiac myodegeneration but also cirrhosis of the liver. Moreover, it has been proved that the liver plays an important part in the action mechanism of salyrgan diuresis. In view of these facts the fatality observed by the author following the administration of salyrgan is the more understandable, and since he gained the impression that generally salyrgan is well tolerated by young

as well as by old patients and in administration into the muscle, the vein or the peritoneum he thinks that there is no reason to discontinue its use. He says that the considerable relief effected by salyrgan often induces the patients to request an injection.

Salyrgan as Diuretic in Severe Cardiac Weakness—According to Tziwanopoulos, most authorities agree that in severe cardiac insufficiency with a low maximum blood pressure and with myocardial changes a sudden artificial increase in the diuresis, which might cause a disturbance in the labile equilibrium of the circulation is to be avoided. He points out that the danger involved in the use of salyrgan in severe heart disease has been stressed repeatedly and that it has been recommended that the administration of salyrgan be preceded by a thorough digitalization.

Wiener klinische Wochenschrift, Vienna

48: 97-128 (Jan. 25) 1935 Partial Index

- Significance of Habit in Clinical Pathology F. Hamburger—p. 97
- *Clinical Aspects of Carcinoma of Head of Pancreas L. Hess and J. Falittschek—p. 103
- *Histamine Action and Its Modifiability in Children G. Papp—p. 107
- Nourishing Diet F. Hausers—p. 109
- Influenza N. von Jagic—p. 113
- Treatment of Renovesical Tuberculosis T. Hryntschak—p. 114

Clinical Aspects of Carcinoma of Head of Pancreas—Hess and Falittschek call attention to the fact that the neoplasms developing in the head of the pancreas because of their spatial relation to the large bile duct, the pancreatic duct and the duodenum, are characterized by a number of symptoms, the concurrence of which makes a diagnosis possible. They describe one case of carcinoma showing the triad of typical symptoms: mechanical icterus with continuous complete acholia, continuous melena and Courvoisier's sign. Then they describe another case, in which the same syndrome was caused not by carcinoma but by cirrhosis of the pancreas. From this observation they conclude that the classic triad of symptoms does not permit a definite diagnosis of cancerous stenosis of the bile duct as long as ascites is absent. But, although the triad of symptoms lacks complete conclusiveness as regards a malignant process in the region of the bile passages, the intermittence of the biliary occlusion does not, as was formerly believed, indicate always a lithogenic closure but may occur also in the occlusion that results from malignant processes. The authors report a case history to illustrate this. They point out that, because of the nearness of the head of the pancreas to the duodenum, passage disturbances in this portion of the intestine may develop as the result of pancreatic carcinoma. In this connection they relate the clinical history of a man in whom during the beginning period of the cancer, incomplete duodenal stenosis without icterus was the main symptom. On the basis of this symptom an ulcerating process of the duodenum had been assumed at first. The authors stress that in patients of advanced age in whom roentgenoscopy reveals changes in the duodenum, the possibility of an incipient malignant growth of the pancreas should not be overlooked.

Histamine Action and How It Is Modified in Children—Papp studied the pharmacologic action of histamine in children. He observed the general condition, the cutaneous symptoms, the blood pressure, the pulse, the formation of gastric juice, the pupillary reaction and the urine. He administered subcutaneously from 0.25 to 1 mg. of histamine. He observed various degrees of erythema, particularly in the face and at the site of injection. Increase in the temperature, headaches and tremors developed in many children. The formation of gastric juice was always greatly increased. However, histamine influenced neither the pulse nor the blood pressure. The author tried to inhibit or modify the action of histamine by various substances. He found that the administration of hypophyseal extract influences the erythema continuously and that epinephrine and dextrose influence the erythema slightly. The acid solutions of sodium phosphate and of sodium carbonate exert a hardly perceptible influence, and the solution of calcium exerts only a weak influence. The stimulating action exerted by histamine on the formation of gastric juice remains uninfluenced by any of the substances. Solution of sodium hydrocarbonate seems to increase further the action of histamine on the gastric juice.

Hospitalstidende, Copenhagen

78 128 (Jan. 1) 1935

- *Plasma Phosphatase in Normal and Rachitic Children O. Andersen—p. 5
- *Acute Barbitol Intoxication with Especial Regard to Organic Degenerations J. Ravn—p. 19

Plasma Phosphatase in Normal and Rachitic Children—Andersen's investigations in thirteen children aged up to 3 years, and twelve aged from 3 to 13, all without signs of rickets, showed average plasma phosphatase values of 0.25 in the first group, with boundary values from 0.14 to 0.34, and of 0.15 in the second group, with boundary values from 0.06 to 0.26. In twenty-five children, aged from 3 to 27 months, with typical signs of rickets, the average value was 0.86, with boundary values from 0.42 to 1.41. The lowest limit for beginning pathologic values is set at 0.30. Antirachitic treatment in rachitic children results in a reduction of the plasma phosphatase, the decrease being slow in comparison to the increase in calcium and phosphorus values and apparently following more closely the clinical improvement. No relation is apparent between the absolute phosphatase and calcium values, but a certain relation is seen between the phosphorus count and plasma phosphatase count, high phosphatase values usually appearing with low phosphorus values and vice versa. The absolute phosphatase value seems to be independent of the degree of the rickets. The establishment of increased phosphatase without simultaneous clinically demonstrable rickets may indicate latent D avitaminosis. Determination of the plasma phosphatase may perhaps be applied in confirming the optimal dose of vitamin D in the treatment of rickets.

Barbital Intoxication and Organic Degenerations—In the fatal case reported by Ravn, both liver and kidney degeneration were confirmed in the first twenty-four hours. The pancreas is thought possibly also to have been affected. He says that since liver insufficiency may occur in barbital intoxication, the use of dextrose in treatment is rational.

78 29-56 (Jan. 8) 1935

- *Eosinophilia After Intravenous Oil Injection J. Engelbreth Holm—p. 29
- *Solitary Cecal Diverticula H. Thomsen—p. 45

Eosinophilia After Intravenous Oil Injection—Engelbreth-Holm's experiments in animals show that chaulmoogra oil does not have a positive eosinotoxic effect. Like any other oil it can, on intravenous injection, cause infarct formation in the lungs. Intravenous injection of oil irrespective of the kind of oil, will cause eosinophilia in the blood of rabbits. Since lung infarcts are the only pathologic process established in the animals with eosinophilia and since they are confirmed in all the animals with eosinophilia, the two changes are apparently related. In man a relation is seen between the blood eosinophilia observed after intravenous injection of chaulmoogra oil and the pulmonary changes analogous to those noted in animal experimentation. These changes or infarcts are not a specific chaulmoogra oil effect but are due to the fact that the substance is an oil.

Solitary Cecal Diverticula—Thomsen says that these diverticula are extremely rare and cites the eight cases found by him in the literature and presents three additional cases. The ages of the patients varied from 20 to 60. Solitary cecal diverticula (i. e., the cecal diverticula seen in patients not previously appendectomized) appear singly or at the most as two or three small pouches from the size of a pea to that of a walnut on the anterior wall of the cecum. The symptoms are identical with those of acute appendicitis, and the diagnosis in all the reported cases has been acute appendicitis. The danger of perforation seems to be greater in cecal diverticula than in appendicitis. Treatment has consisted in resection of the diverticulum itself or of the cecum. All the patients have recovered without any especial complications. Only one had perforation and peritonitis (Moschowitz).

CORRECTION

Use of Iron in Treatment of Pernicious Anemia—In the abstract of Mogensens article in THE JOURNAL, February 16, page 604 in the third line from the bottom, the words "blood platelet production" should be replaced by "red blood cell production."

